Appendix

Appendix A: Purpose and Need Figures

Appendix B: Alternatives Figures

Appendix C: Affected Environment Figures

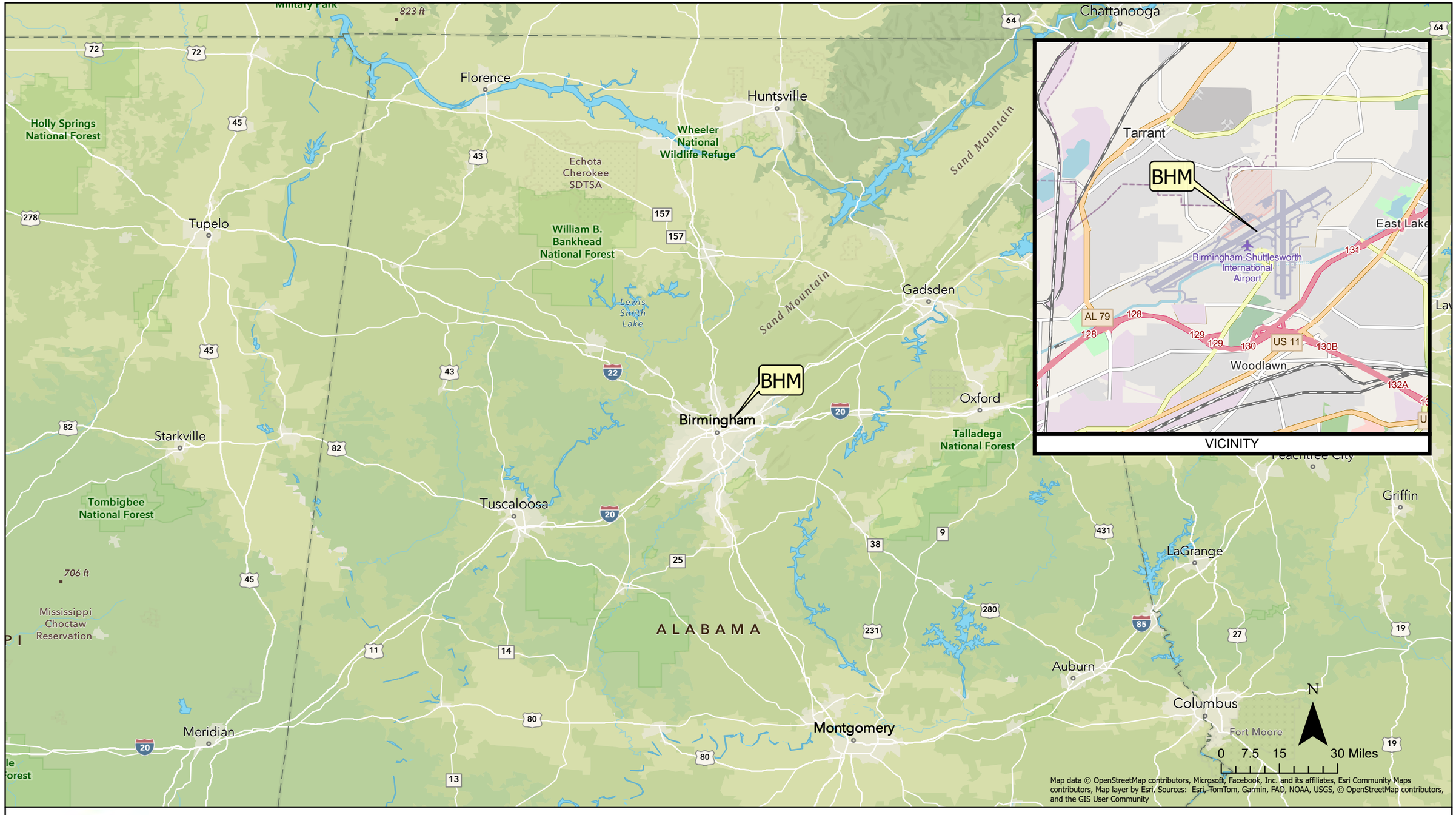
Appendix D: Environmental Consequences Reports

Appendix E: Agency and Public Involvement Letters

Appendix F: Taxiway A and Village Creek Relocation Design

Appendix A

Purpose and Need Figures



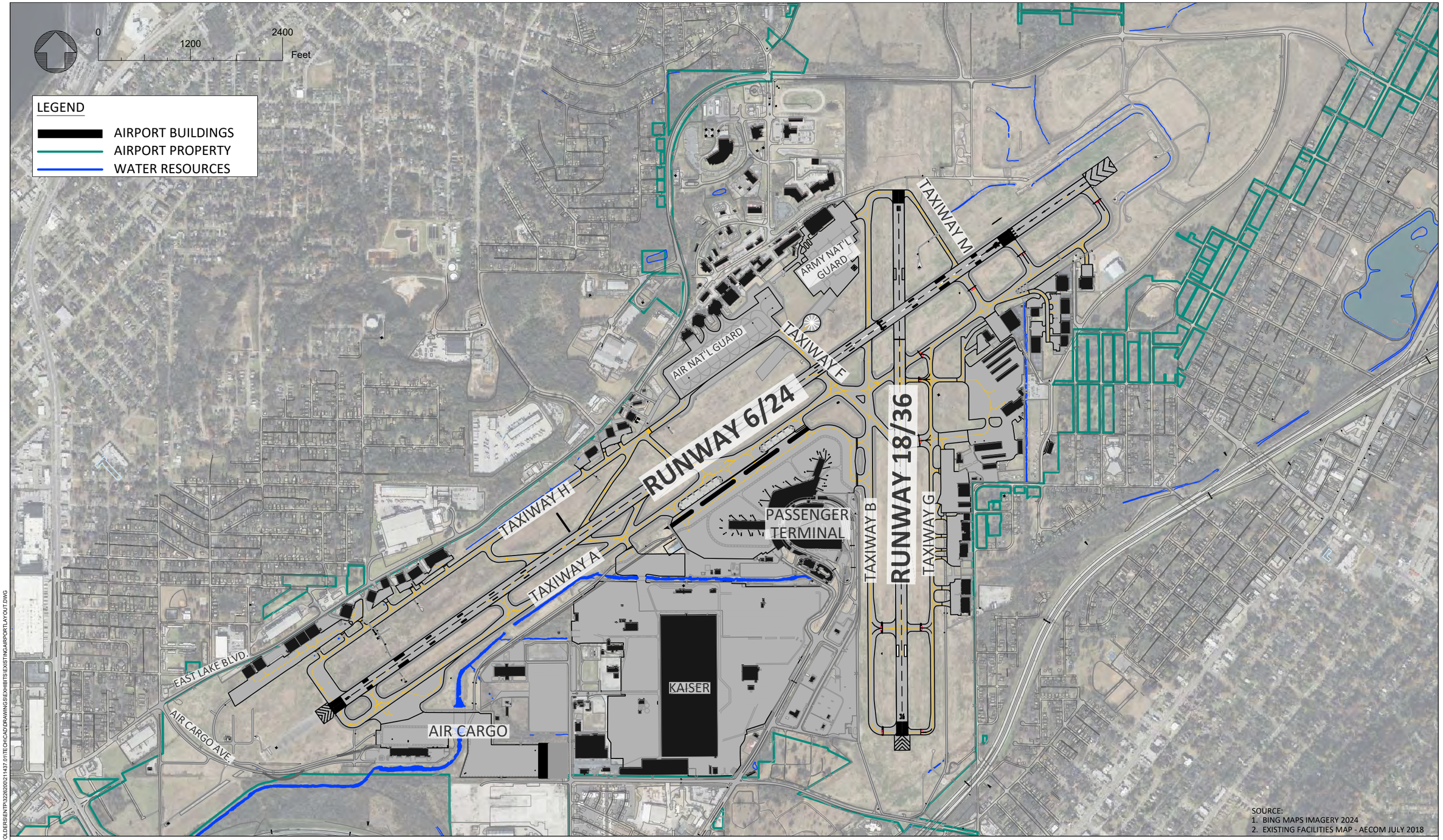
BIRMINGHAM SHUTTLESWORTH
INTERNATIONAL AIRPORT

AIRFIELD SAFETY & CAPACITY PROGRAM
ENVIRONMENTAL ASSESSMENT

OCTOBER 2024

FIGURE A1 LOCATION AND VICINITY MAP

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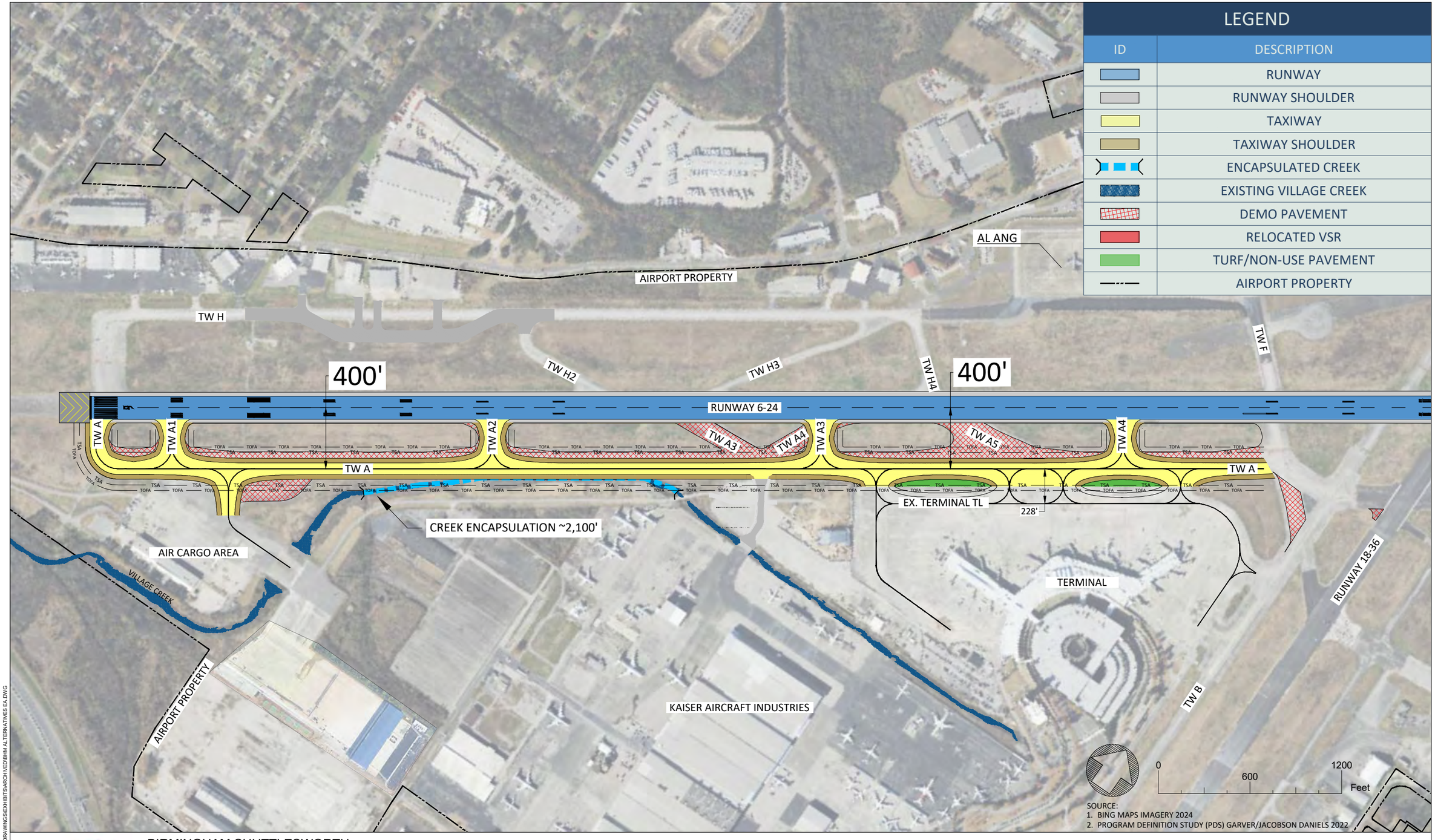
FIGURE A2 EXISTING AIRPORT LAYOUT

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Appendix B

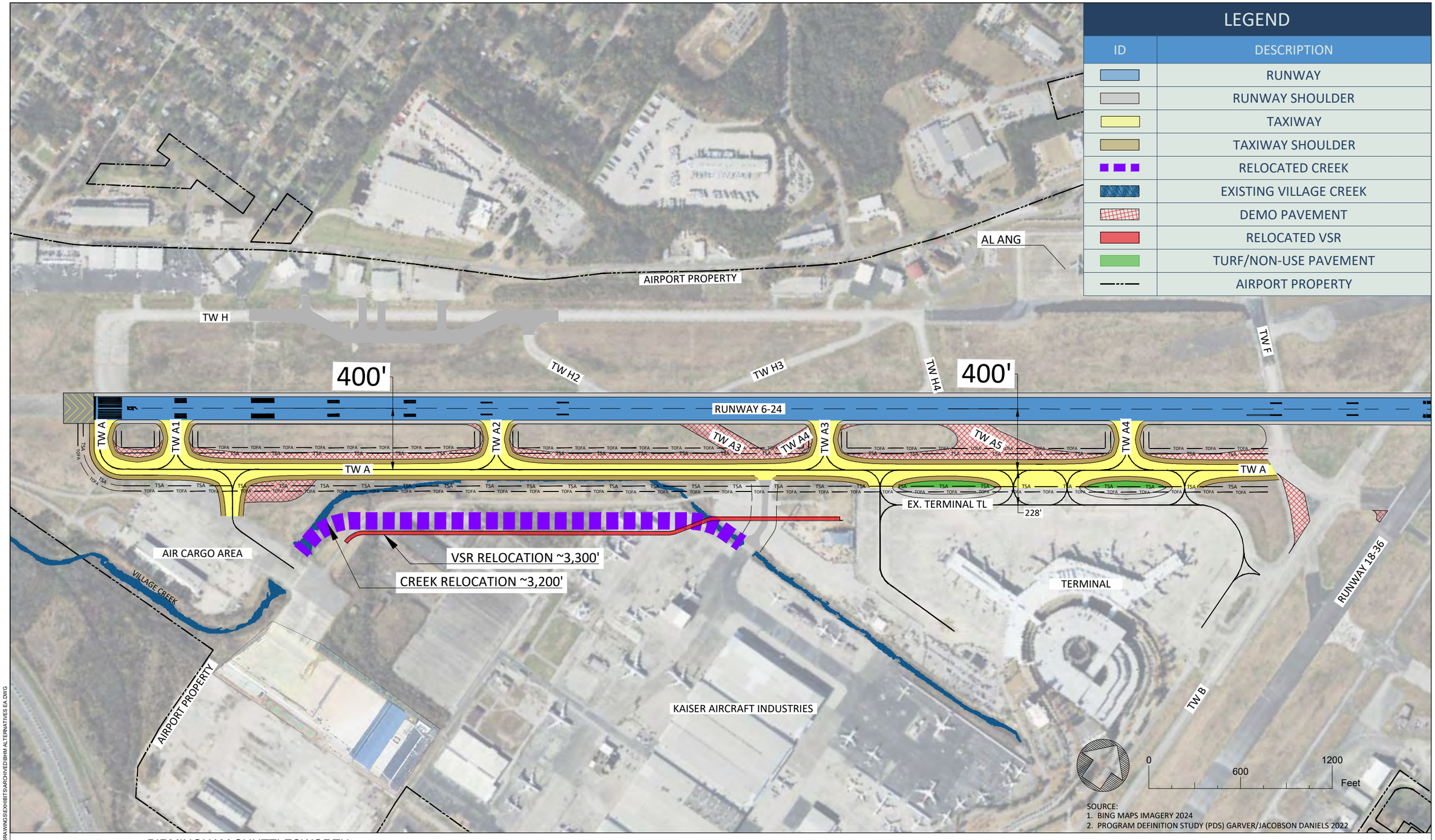
Alternatives Figures



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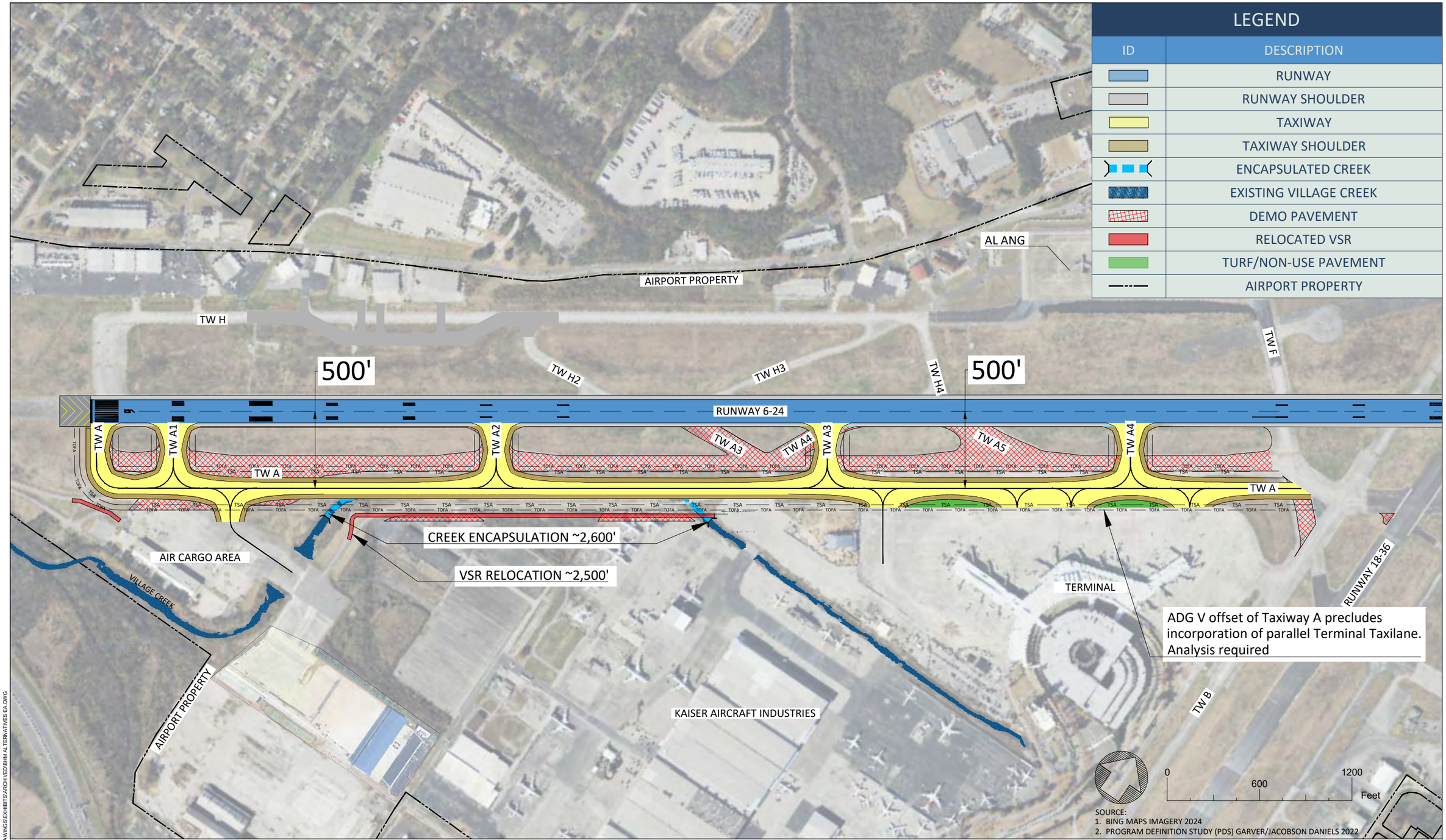
FIGURE B1 ALTERNATIVE 1: VILLAGE CREEK ENCAPSULATION IN PLACE AND TAXIWAY A RELOCATION TO 400 FEET



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FIGURE B2 ALTERNATIVE 2: VILLAGE CREEK RELOCATION
AND TAXIWAY A RELOCATION TO 400 FEET



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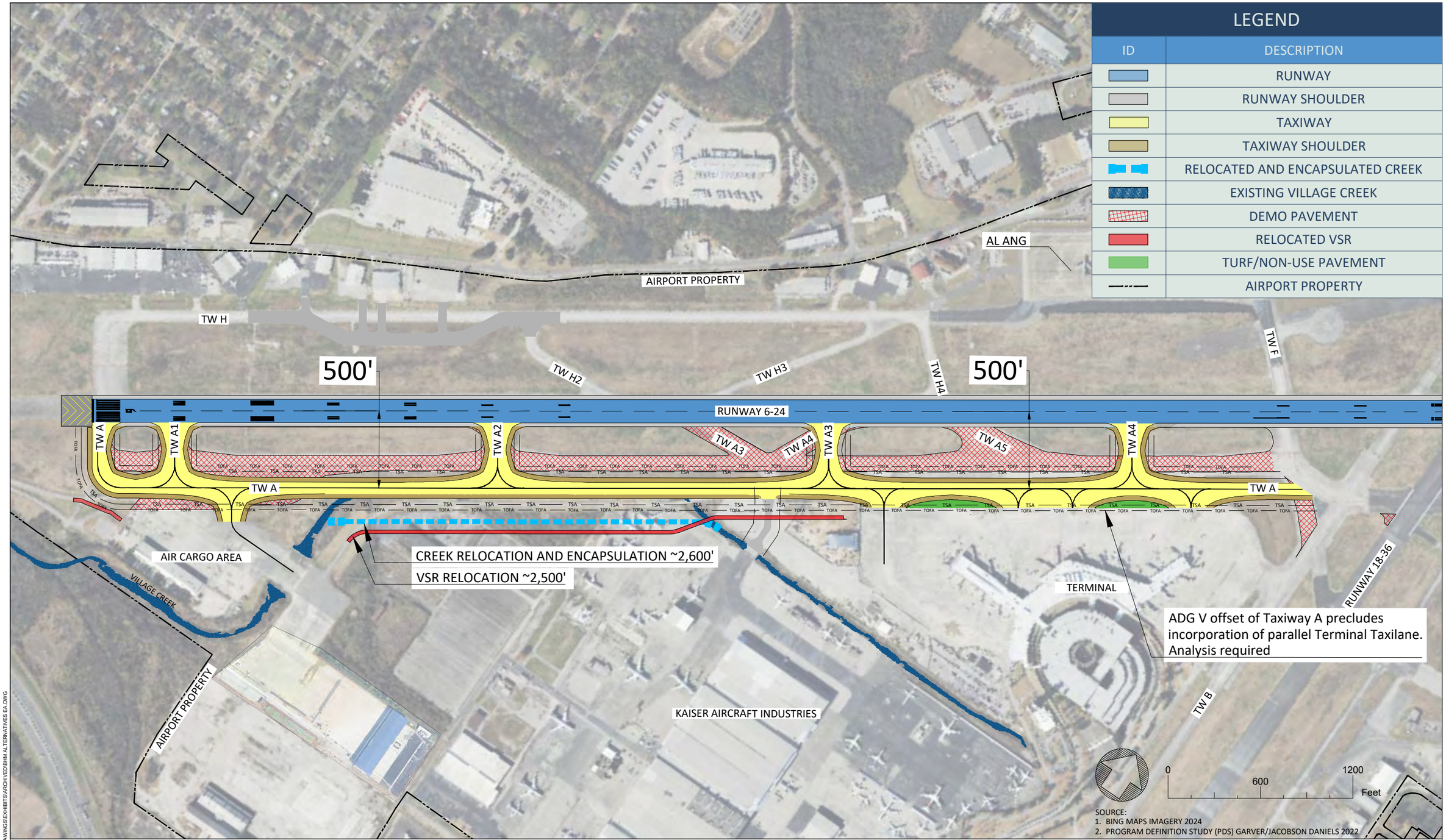
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FIGURE B3 ALTERNATIVE 3a: VILLAGE CREEK ENCAPSULATION IN PLACE AND TAXIWAY A RELOCATION TO 500 FEET



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FIGURE B4 ALTERNATIVE 3b: VILLAGE CREEK RELOCATION AND ENCAPSULATION AND TAXIWAY A RELOCATION TO 500 FEET

LEGEND	
ID	DESCRIPTION
	RUNWAY
	RUNWAY SHOULDER
	TAXIWAY
	TAXIWAY SHOULDER
	RELOCATED CREEK
	EXISTING VILLAGE CREEK
	DEMO PAVEMENT
	RELOCATED VSR
	TURF/NON-USE PAVEMENT
	AIRPORT PROPERTY

AL ANG

AIRPORT PROPERTY

TW H

TW H2

TW H3

TW H4

TW F

500'

500'

RUNWAY 6-24

TW A

TW A1

TW A2

TW A3

TW A4

TW A5

TW A

TW A

AIR CARGO AREA

VILLAGE CREEK

VSR RELOCATION ~3,300'

CREEK RELOCATION ~3,200'

TERMINAL

RUNWAY 18-36

ADG V offset of Taxiway A precludes incorporation of parallel Terminal Taxilane. Analysis required

TW B

AIRPORT PROPERTY

KAISER AIRCRAFT INDUSTRIES

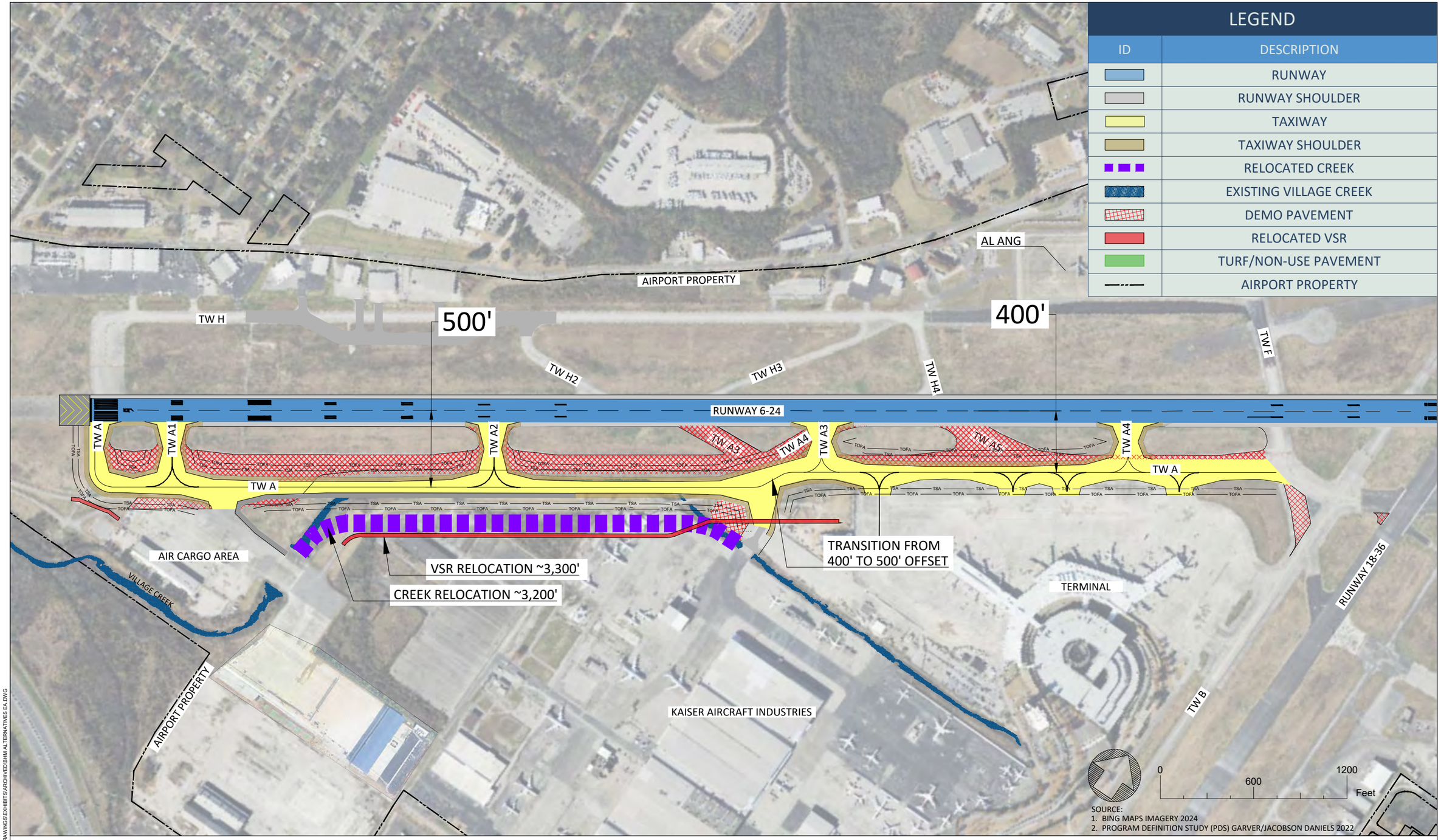
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FIGURE B5 ALTERNATIVE 4: VILLAGE CREEK RELOCATION AND TAXIWAY A RELOCATION TO 500 FEET



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INTERNATIONAL AIRPORT

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MAY 2025

FIGURE B6 ALTERNATIVE 5: VILLAGE CREEK RELOCATION
AND HYBRID 400'/500' TAXIWAY A RELOCATION

LEGEND	
ID	DESCRIPTION
	RUNWAY
	RUNWAY SHOULDER
	TAXIWAY
	TAXIWAY SHOULDER
	EXISTING VILLAGE CREEK
	DEMO PAVEMENT
	RELOCATED VSR
	AIRPORT PROPERTY

AIRPORT PROPERTY
TW H
TW H2
350'
TW H3
TW H4
TW F
RUNWAY 6-24
TW A
TW A1
TW A2
TW A3
TW A4
TW A5
TW A4
TW A
TW A
286'
EX. TERMINAL TL
AIR CARGO AREA
VILLAGE CREEK
AIRPORT PROPERTY
KAISER AIRCRAFT INDUSTRIES
TERMINAL
RUNWAY 18-36
TW B
0
600
1200
Feet

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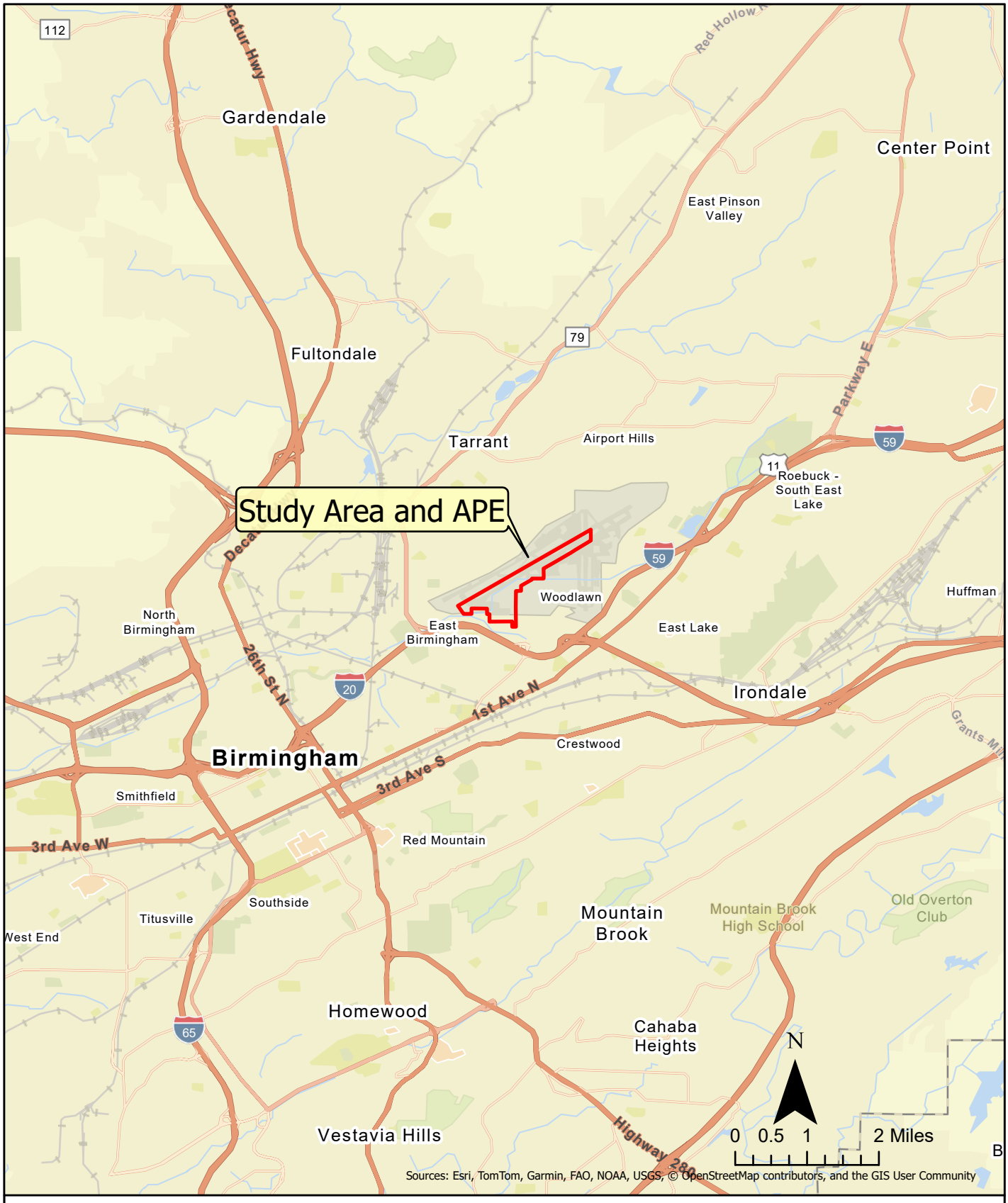
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ENVIRONMENTAL ASSESSMENT
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MAY 2025

FIGURE B7 NO ACTION - REHAB AND RECONSTRUCT IN CURRENT LOCATION

Appendix C

Affected Environment Figures



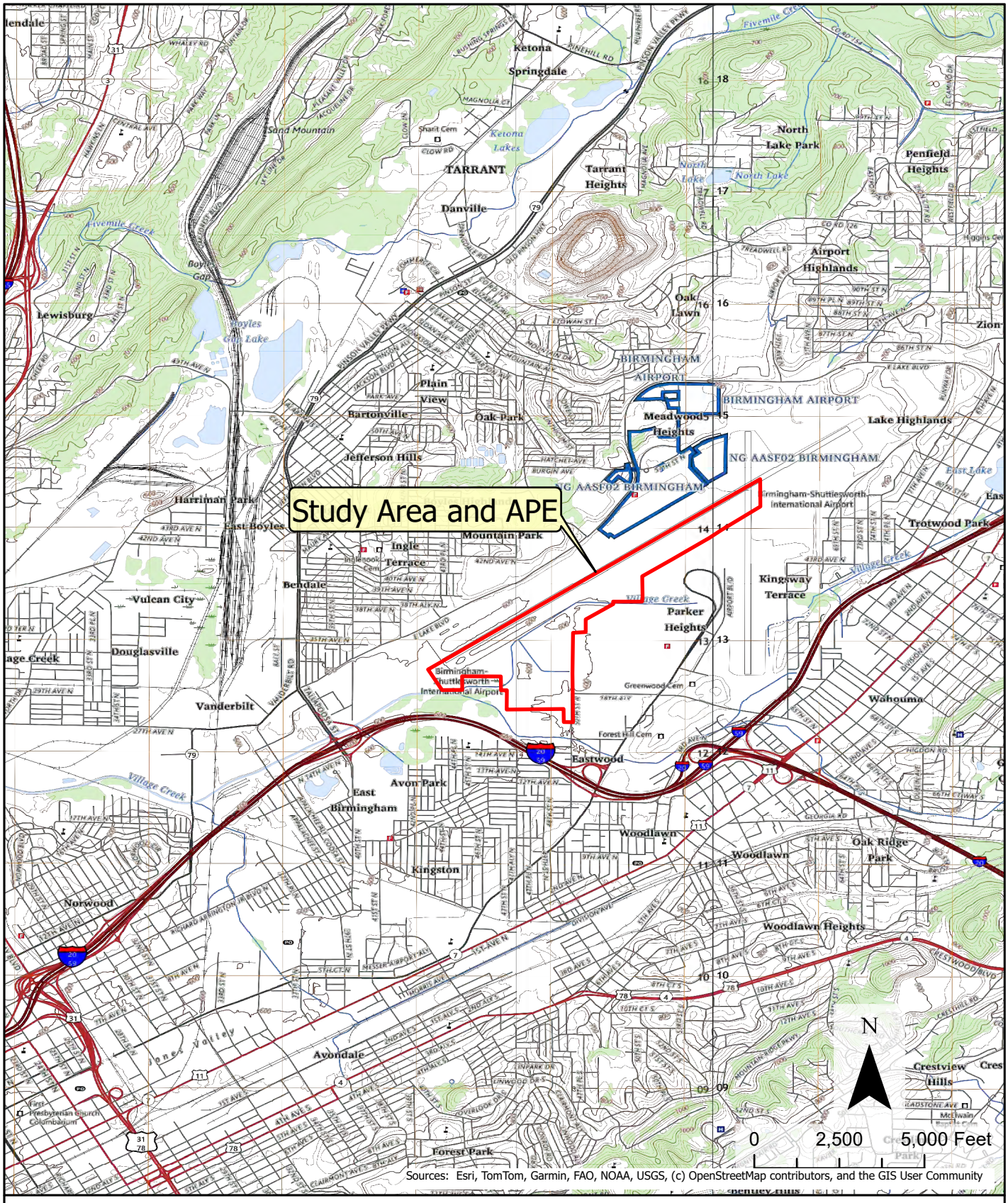
BIRMINGHAM SHUTTLESWORTH INTERNATIONAL AIRPORT

ENVIRONMENTAL ASSESSMENT

STUDY AREA AND APE LOCATION MAP

APRIL 2025

FIGURE C1



BIRMINGHAM SHUTTLESWORTH INTERNATIONAL AIRPORT

ENVIRONMENTAL ASSESSMENT

STUDY AREA AND APE VICINITY MAP

APRIL 2025

FIGURE C2



BIRMINGHAM SHUTTLESWORTH INTERNATIONAL AIRPORT

ENVIRONMENTAL ASSESSMENT

STUDY AREA AND APE
PROJECT AREA

APRIL 2025

FIGURE C3

Appendix D

Environmental Consequences Reports

Draft

Aviation Emissions and Air Quality and Noise Technical Report

Birmingham-Shuttlesworth International Airport
Taxiway A Relocation Project Environmental Assessment

July 2025

Prepared for:

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Prepared by:

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HMMH Report No: 03-13160.005.001

Quality Assurance Review

This document has been reviewed for accuracy and completeness to meet quality assurance standards established by HMMH. A signature indicates approval of this document.

As primary author, I have reviewed the document for accurate technical content.

Trent Tougas

08/01/2025

Trent Tougas, ENV. SP, Senior Consultant — Date
Primary Author

I have reviewed the document for compliance with HMMH's quality assurance/quality control standards.

Philip M. DeVita

08/01/2025

Philip M. DeVita, CCM, Director, Air Quality — Date
Technical Reviewer

I have reviewed the document for copyediting and formatting purposes.

08/01/2025

Erin Greenfield, Technical Editor — Date
Editorial Reviewer

As Project Manager, I have reviewed the document for overall structure, content, and accuracy.

Tyler White

08/01/2025

Tyler White, Principal Technical Analyst — Date
Project Manager

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Attachment A. Air Emissions Spreadsheet Calculations A-1

Attachment B. FHWA Construction Noise Equipment List B-1

1 Introduction

In support of an Environmental Assessment (EA) for the Birmingham Airport Authority (Authority), Harris Miller Miller & Hanson Inc. (HMMH) has prepared this *Draft Aviation Emissions and Air Quality and Noise Technical Report*, providing the construction-related emissions and noise impacts associated with the proposed Taxiway A Relocation Project (the Project) at Birmingham-Shuttlesworth International Airport (BHM or the Airport).

The purpose of the Proposed Action is to provide airfield safety and enhancements to accommodate the future aircraft fleet mix and meet Federal Aviation Administration (FAA) design standards for the Airport's primary runway and its associated taxiways.

Six construction alternatives (Alternatives 1, 2, 3, 4, 5, and 6) were developed and considered for the Proposed Action. After consideration, only two alternatives were determined feasible and carried forward for analysis: Alternative 2 (Preferred Alternative) and Alternative 4. The Proposed Action in this report evaluated both Alternative 2 and Alternative 4. Alternative 2 includes the following components:

- Airside project components including demolition of existing structures
- A 400-foot realignment, reconstruction, and widening of parallel Taxiway A
- A 400-foot realignment, reconstruction, and widening of Taxiways connectors A1, A2, A3, and A4
- Grading of Runway 6-24 shoulders, relocation or encapsulation of approximately 2,500 linear feet of Village Creek, and relocation of 2,700 linear feet of vehicle service roads
- Utility relocation/ improvements

Alternative 4 includes the following components:

- Airside project components including demolition of existing structures
- A 500-foot realignment, reconstruction, and widening of parallel Taxiway A
- A 500-foot realignment, reconstruction, and widening of Taxiway connectors A1, A2, A3, and A4
- Grading of Runway 6-24 shoulders, relocation or encapsulation of approximately 2,500 linear feet of Village Creek, and relocation of 2,500 linear feet of vehicle service roads
- Utility relocation/ improvements

Construction activities associated with both Alternative 2 and Alternative 4 are assumed to occur over the same five-year period beginning in 2027 and ending in 2031.

This report provides detailed information for the EA in accordance with the National Environmental Policy Act (NEPA) and includes the methodology and assumptions for estimating air emissions and noise exposure from construction and demolition activities of Alternative 2 and Alternative 4. Neither Proposed Alternatives are anticipated to increase the number of forecast aircraft operations and/or the number of vehicle trips or stationary combustion equipment compared to the No Action Alternative. Therefore, additional aircraft operations and associated ancillary activities were not evaluated in this EA.

Comparing the inventory of air emissions for those pollutants designated by the United States Environmental Protection Agency (US EPA) as "attainment" associated with each year of activity to the General Conformity *de minimis* thresholds for General Conformity Applicability is the basis for evaluating the potential for significant impacts under NEPA and Federal Aviation Administration (FAA) Order 1050.1G, *Environmental Impacts: Policies and Procedures* (FAA 2025) and FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions* (FAA 2006).

Construction noise levels are qualitatively analyzed in **Section 4** following the methods and approaches as directed by the Federal Highway Administration (FHWA) and U.S. Department of Housing and Urban Development (HUD) standards for construction equipment using the Roadway Construction Noise Model (RCNM) towards the HUD 45 A-weighted decibel (dBA) equivalent continuous sound level (Leq) interior standard for residential dwellings. There are no impacts per the HUD interior standards of 45 Leq anticipated from project activities at nearby residences, which are all over 1,500 feet away.

Section 2 of this report presents the air quality affected environment, including standards, rules, and attainment status. **Section 3** presents the air quality environmental consequences associated with Alternative 2 and Alternative 4. **Section 4** includes a qualitative assessment of noise from construction activities associated with both Proposed Alternatives. **Attachment A** includes air emissions spreadsheet calculations. **Attachment B** presents a table of noise levels from equipment and distances developed by FHWA.

2 Air Quality Affected Environment

Under NEPA, federal agencies must consider the impact of their actions on the environment compared to a No Action Alternative. According to FAA, NEPA implementing guidance (FAA Order 1050.1G and FAA Order 5050.4B), impacts to air quality must be considered as part of the environmental analysis (FAA 2025; FAA 2006). Potential effects of the Proposed Action are evaluated against the National Ambient Air Quality Standards (NAAQS), as promulgated by the US EPA under the federal Clean Air Act (CAA).

2.1 National Ambient Air Quality Standards

Under the NAAQS, the US EPA currently regulates six criteria pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM), and lead (Pb). PM is divided into two particle size categories: coarse particles with a diameter of less than 10 micrometers (PM_{10}) and fine particles with a diameter of less than 2.5 micrometers ($PM_{2.5}$). The NAAQS are expressed in terms of pollutant concentration measured (or averaged) over a defined period of time and are two-tiered. The first tier (the "primary standard") is intended to protect public health; the second tier (the "secondary standard") is intended to protect public welfare and prevent further degradation of the environment. **Table 2-1** shows the NAAQS primary and secondary standards for the criteria pollutants (US EPA 2025a).

Section 176(c) of the CAA states that federal agencies cannot engage, support, or provide financial assistance for licensing, permitting, or approving any project that could cause or contribute to the severity and/or number of violations of the NAAQS, or could inhibit the expeditious attainment of these standards (US EPA 1993).

The standards in **Table 2-1** apply to the concentration of a pollutant in outdoor ambient air. If the air quality in a geographic area is equal to or better than the national standard, the US EPA will typically designate the region as an "attainment area." An area where air quality does not meet the national standard is typically designated by the US EPA as a "nonattainment area." Once the air quality in a nonattainment area improves to the point where it meets the standards and the additional requirements outlined in the CAA, the US EPA can redesignate the area to attainment upon approval of a Maintenance Plan, and these areas are then referred to as "maintenance areas."

Each state is required to prepare a State Implementation Plan (SIP) that outlines measures that regions within the state will implement to attain the applicable air quality standards in nonattainment areas for applicable criteria air pollutants, and to maintain compliance with the applicable air quality standards in maintenance areas. The status and severity of pollutant concentrations in a particular area will impact the types of measures a state must take to reach attainment with the NAAQS. The US EPA must review and approve each state's SIP to ensure the proposed measures are sufficient to either attain or maintain compliance with the NAAQS within a set period of time.

The Clean Air Act Amendments (CAAA) of 1990 require states to make recommendations to the US EPA regarding the attainment status of all areas within their borders when the US EPA finalizes an update to any NAAQS. Under its CAAA authority, the US EPA further classifies nonattainment areas for some pollutants, such

as O_3, based on the severity of the NAAQS violation as marginal, moderate, serious, severe, and extreme. To further improve the nation's air quality, the US EPA lowered the O_3 standard in 2015 to 0.070 parts per million (ppm). Similarly in February 2024, the US EPA strengthened the primary annual $PM_{2.5}$ standard to 9 micrograms per cubic meter (µg/m^3) of air from 12 µg/m^3 (US EPA 2024).

Table 2-1. National Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standards	Secondary Standards
CO	8-Hour	9 ppm	None
CO	1-hour	35 ppm	None
Pb	Rolling 3 Month Average	0.15 µg/m^3	Same as Primary
NO_2	Annual Arithmefic Mean	0.053 ppm (100 µg/m^3)	Same as Primary
NO_2	1-hour	0.100 ppm [b]	None
O_3	8-hour (2015 standard) [d]	0.070 ppm	Same as Primary
$PM_{2.5}$	Annual Arithmefic Mean	9 µg/m^3 [e]	12 µg/m^3
$PM_{2.5}$	24-hour	35 µg/m^3	Same as Primary
PM_{10}	24-hour	150 µg/m^3 [a]	Same as Primary
SO_2	1-hour	75 parts per billion (ppb) [c]	None
SO_2	3-hour	None	0.5 ppm

Definifions:
CO = carbon monoxide; NO_2 = nitrogen dioxide; O_3 = Ozone; Pb = lead; $PM_{2.5}$ = parficulate mafter with a diameter of less than 2.5 micrometers; PM_{10} = parficulate mafter with a diameter less than 10 micrometers; SO_2 = sulfur dioxide; ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter

Notes:
a For PM_{10}, the 24-hour standard is not to be exceeded more than once per year on average over three years. For $PM_{2.5}$, the 24-hour standard is aftained when 98 percent of the daily concentrafions, averaged over three years, are equal to or are less than the standard.
b To aftain this standard, the three-year average of the 98th percenfile of the daily maximum one-hour average at each monitor within an area must not exceed 0.100 ppm (effecfive January 22, 2010).
c Final Rule (FR) signed June 2, 2010. To aftain this standard, the three-year average of the 99th percenfile of the daily maximum one-hour average at each monitor within an area must not exceed 75 ppb.
d US EPA updated the NAAQS for O_3 to strengthen the primary eight-hour standard to 0.07 ppm on October 1, 2015. An area will meet the standard if the fourth-highest maximum daily eight-hour O_3 concentrafion per year, averaged over three years is equal to or less than 70 ppb.
e US EPA strengthened the annual $PM_{2.5}$ standard to 9 µg/m3 on February 7, 2024 (see hftps://www.epa.gov/newsreleases/epa-finalizes-stronger-standards-harmful-soot-pollufion-significantly-increasing).

Source: US EPA, NAAQS Table, hftps://www.epa.gov/criteria-air-pollutants/naaqs-table

2.2 Attainment Status

Air quality in the BHM area, including Jefferson County, is currently designated by the US EPA Greenbook as in attainment for all criteria pollutants except for the 2006 $PM_{2.5}$ standards, which is designated by the US EPA as maintenance (US EPA 2025b). It should be noted that a portion of Jefferson County (Leeds) was designated as nonattainment for the 1978 Lead standard but was later redesignated by US EPA as in attainment (US EPA 1995).

2.3 General Conformity Rule

The General Conformity Rule defines a federal action as any activity engaged in by a department, agency, or instrumentality of the Federal Government, or any activity that a department, agency, or instrumentality of

the Federal Government supports in any way, provides financial assistance for, licenses, permits, or provides approvals.[1] General Conformity is defined as demonstrating that a project or action conforms to the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. Federally funded and approved actions at airports are subject to the US EPA's General Conformity regulations. The General Conformity Rule applies to all federal actions except for certain highway and transit programs which must instead comply with the Transportation Conformity Plans (US EPA 1997).

The General Conformity Rule includes annual emissions thresholds for nonattainment and maintenance areas that trigger the need for a General Conformity determination and defines projects that are typically excluded from General Conformity requirements. Since the General Conformity Rule applies to federally funded projects in US EPA-designated nonattainment and maintenance areas, the General Conformity requirements apply to the Proposed Action at BHM.[2] In addition, the US EPA *de minimis* thresholds were used to determine significant impacts under NEPA for those pollutants that are designated attainment with the NAAQS by US EPA in Jefferson County.

[1] Revisions to the General Conformity Rule are codified under 40 CFR Parts 51 and 93, Subpart W, Revisions to the General Conformity Regulations, Final Rule (April 2010).
[2] BHM is located in an US EPA-designated maintenance area for $PM_{2.5}$.

3 Air Quality Environmental Consequences

Potential air quality impacts associated with construction and demolition activity associated with Proposed Alternative 2 and Alternative 4 are discussed in this section. The Proposed Alternatives would not induce changes in aircraft operations and/or additional vehicle trips, or stationary combustion sources compared to the No Action Alternative after construction. Therefore, air emissions associated with aircraft operations and general access vehicles/stationary sources were not inventoried as part of this analysis.

3.1 Construction Emissions Methodology

This section documents the methods used to calculate emissions of CO, volatile organic compounds (VOCs), NOx, SO_2, PM_{10}, and $PM_{2.5}$ from construction and demolition-related sources associated with the Proposed Alternatives. This analysis develops emission inventories pursuant to NEPA as well as determining whether emissions associated with the Proposed Alternatives would exceed applicable US EPA *de minimis* thresholds consistent with FAA 1050.1G.

Estimates of construction-related emissions were developed for Alternative 2 and Alternative 4 using standard industry methodologies and techniques including the FAA *Aviation Emissions and Air Quality Handbook Version 4* (FAA Handbook Version 4; FAA 2024) and associated US EPA guidance, Motor Vehicle Emission Simulator (MOVES5 latest available edition; US EPA 2025c) for both on-road and off-road source emission factors, respectively. These techniques are described in more detail in the following sections.

3.1.1 Demolition and Construction Activities

Construction activities associated with the Proposed Alternatives were estimated for the years 2027 through 2031. Construction emissions were not estimated for the No Action Alternative, because no construction activity would be associated with the No Action Alternative. The construction associated with the Proposed Alternatives would result in short-term changes in air emissions from sources such as exhaust from nonroad construction equipment such as but not limited to:

- Milling and paving
- Site Work
- Drainage
- Grading
- Demolition
- Fencing
- Runway marking and lighting

On-road vehicles include those associated with:

- Transport and delivery of supplies
- Materials and equipment to and from the site
- Construction worker trips

Additionally, fugitive dust emissions sources include:

- Site preparation and land clearing
- Equipment movement on unpaved and paved roads
- Evaporative emissions from the application of asphalt paving

Table 3-1 and **Table 3-3** presents the primary construction activities for Alternative 2 and Alternative 4, including area estimates, preliminary costs, and anticipated start and end dates of construction. These estimates were used for deriving construction equipment schedules for each Alternative with the Airport Cooperative Research Board's (ACRP's) Airport Construction Emissions Inventory Tool (ACEIT; TRB 2014).

Table 3-1. Alternative 2 Primary Construction Activities

Component	Esfimated Project Costs	Area	Construcfion Start	Construcfion End
Pavement Demolifion	$4,721,120 [a]	1,180,280 sq ft	4/1/2027	11/30/2027
Demolifion of Kaiser Building & Small Shed [b]	$500,000	61,400 sq ft	4/1/2027	11/30/2027
Ufility Relocafion	$18,746,800	455 LF Water; 2,547 LF Sanitary Sewer	4/1/2027	11/30/2027
Relocafion of Vehicle Service Road	$115,034	2,700 LF	4/1/2028	11/30/2028
Relocafion of Village Creek	$13,746,650	2,500 LF	4/1/ 2028	10/31/2029
Realignment/ Reconstrucfion/ Widening of Taxiway A [c]	$35,963,479	952,274 sq ft	4/1/2030	11/30/2031
Realignment/ Reconstrucfion/ Widening of Taxiway Connectors (A1, A2, A3, A4) [c]	-	-	-	-
Lighfing Modernizafion [c]	-	-	-	-
Grading of Runway 06-24 Shoulder	$968,904 [a]	484,452 sq ft	4/1/2030	11/30/2031
Painfing of Exisfing Apron	$300,000 [a]	38,600 sq ft	4/1/ 2030	11/30/2031

Definifions:
LF = linear feet; sq ft = square feet
Notes:
a Cost assumpfions are based on industry standards (cost per square foot) for each acfivity type.
b This acfivity assumes the demolifion of both a 1-story storage building and a small shed.
c Components were modeled together ufilizing the project cost, area of disturbance, and construcfion start and end dates denoted in the Realignment/Reconstrucfion/ Widening of Taxiway A row. Table cells have been unmerged for 508 compliance.
Source: Airfield Safety and Capacity Program Definifion Study, Garver 2024; Data provided by Mead & Hunt, 2025.

Table 3-2. Alternative 4 Primary Construction Activities

Component	Esfimated Project Costs	Area	Construcfion Start	Construcfion End
Pavement Demolifion	$5,123,280 [a]	1,280,820 sq ft	04/01/2027	11/30/2027
Kaiser Building & Small Shed Demolifion [b]	$500,000	61,400 sq ft	04/01/2027	11/30/2027
Ufility Relocafion	$18,746,800	455 LF Water; 2,547 LF Sanitary Sewer	04/01/2027	11/30/2027
Relocafion of Vehicle Service Road	$648,762	2,500 LF	04/01/2028	11/30/2028
Relocafion of Village Creek	$14,743,050	2,500 LF	04/01/2028	10/31/2029
Realignment/ Reconstrucfion/ Widening of Taxiway A [c]	$41,078,017	1,134,645 sq ft	04/01/2030	11/30/2031
Realignment/ Reconstrucfion/ Widening of Taxiway Connectors (A1, A2, A3, A4) [c]	-	-	-	-
Lighfing Modernizafion [c]	-	-	-	-
Grading of Runway 06-24 Shoulder	$1,009,600 [a]	504,800 sq ft	04/01/2030	11/30/2031
Painfing of Exisfing Apron	$300,000 [a]	38,600 sq ft	04/01/2030	11/30/2031

Definifions:
LF = linear feet; sq ft = square feet

Notes:

a Cost assumpfions are based on industry standards (cost per square foot) for each acfivity type.

b This acfivity assumes the demolifion of both a 1-story storage building and a small shed.

c Components were modeled together ufilizing the project cost, area of disturbance, and construcfion start and end dates denoted in the Realignment/Reconstrucfion/ Widening of Taxiway A row. Table cells have been unmerged for 508 compliance.

Source: Airfield Safety and Capacity Program Definifion Study, Garver 2024, Data provided by Mead & Hunt, 2025

The ACRP ACEIT model (TRB 2014) was used to estimate the construction schedule of equipment only for each project component based on the project dimensions and project costs for each activity consistent with the FAA Handbook Version 4 guidance (FAA 2024). The model has the ability to generate construction schedules (i.e., equipment type and hours) for a variety of standard airport construction projects including the associated activity types and the equipment used for these Proposed Alternatives.

ACEIT can also produce emission factors for off-road and on-road construction equipment, as well as for fugitive emission sources using US EPA and industry standard models and methodologies. However, the current version of ACEIT includes an older version of the US EPA's MOVES emission model, MOVES2010a and NONROADs, which have both been updated over the years. Consistent with the recent FAA Handbook Version 4, emission factors were generated outside of ACEIT using the current version of MOVES5 to develop on-road and off-road emission factors for Jefferson County.[3] These emission factors were applied to estimates of vehicle miles traveled (VMT) and construction equipment (hours, horsepower, load factor), respectively, for each construction activity and year. Spreadsheet calculations for construction of the Proposed Alternatives are presented in **Attachment A**.

[3] Construction emissions used in MOVES5 NONROAD assumed a blend of Tier 1, Tier 2, Tier 3, and Tier 4 for Jefferson County based on US EPA phasing ratios of older equipment in future years and does not reflect the primary use of either Tier 1 through Tier 4 engines. MOVES emission factors are specific to Jefferson County as generated within MOVES for each year.

3.1.2 Off-Road Construction Equipment

As discussed above, off-road equipment emission factors for each construction year, using the MOVES model and incorporating county-level data representative of Jefferson County, were used to estimate emissions for criteria pollutants and precursors. Emission factors in grams per horsepower hour (hp-hr) for each off-road equipment type were applied to the equipment size (in hp), load factor, and anticipated activity levels (in hours per year) of expected equipment use, as generated in the construction equipment inventory by ACEIT.

The annual emissions for off-road construction equipment were computed using the following equation:

Off-road Vehicle Construction emissions (tons per year) = emission factor (grams per hp-hr) x size (hp) x load factor x hours per year x (1 pound/453.6 grams) x (1 ton/2,000 pounds)

3.1.3 On-Road Construction Passenger/Truck Delivery Vehicles

VMT data for each on-road employee trip and truck delivery vehicles were derived from round-trip distances and the number of employee hours from the activity-specific construction schedule in ACEIT. It is assumed that all on-road equipment would use gasoline for passenger vehicles and diesel fuel for truck deliveries. Emission factors in grams per mile (g/mile) for each on-road vehicle type were applied to the anticipated VMT. Similar to the way emissions are estimated for off-road equipment, the MOVES5 model uses US EPA vehicle default data representative of Jefferson County for both criteria pollutants and precursors to estimate emissions factors in g/mile. A round-trip distance of 30 miles was assumed for employee trips and 40 miles was assumed for material delivery trips.

The annual emissions for on-road passenger/delivery vehicles were computed for each year using the following equation:

On-road construction vehicles emissions (tons per year) = emission factor (g/mile) x annual VMT x (1 pound/453.6 grams) x (1 ton/2,000 pounds)

3.1.4 Fugitive Dust Emissions

Fugitive dust emissions from site preparation and land clearing, equipment movement on unpaved and paved areas, along with evaporative emissions from asphalt paving activities were estimated using US EPA emission factors and methodologies (TRB 2014). These are all included in the total construction emissions.

3.2 Summary of Construction-Related Emissions

Construction-related emissions of criteria pollutants using the methodology discussed above during the construction years (2027 through 2031) are summarized in **Table 3-3** and **Table 3-4** for Alternative 2 and Alternative 4**,** respectively. Pb emissions are included and are expected to be zero since fuel for the construction equipment and vehicles is expected to be ultra-low diesel fuel and gasoline, neither of which contain Pb. The air emissions spreadsheets are included in **Attachment A**.

Table 3-3. Construction Criteria Pollutant Emission Inventory – Alternative 2

Construcfion Year	Acfivity	CO (tpy)	NOx [a] (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	VOC [a] (tpy)	Pb (tpy)
2027	Off-Road	0.130	0.459	0.003	0.029	0.028	0.036	0.000
2027	On-Road	5.758	0.515	0.005	0.080	0.028	0.177	0.000
2027	Fugifive	0.000	0.000	0.000	0.689	--	0.000	0.000
2027	**Total**	**5.889**	**0.974**	**0.008**	**0.798**	**0.056**	**0.213**	**0.000**
2028	Off-Road	0.110	0.391	0.003	0.028	0.027	0.037	0.000
2028	On-Road	3.086	0.073	0.002	0.025	0.007	0.087	0.000
2028	Fugifive	0.065	0.004	0.001	0.072	--	1.004	0.000
2028	**Total**	**3.262**	**0.467**	**0.007**	**0.124**	**0.034**	**1.127**	**0.000**
2029	Off-Road	0.039	0.169	0.002	0.011	0.010	0.015	0.000
2029	On-Road	1.916	0.040	0.001	0.015	0.004	0.054	0.000
2029	Fugifive	0.000	0.000	0.000	0.008	--	0.000	0.000
2029	**Total**	**1.954**	**0.208**	**0.003**	**0.034**	**0.015**	**0.069**	**0.000**
2030	Off-Road	0.136	0.559	0.005	0.035	0.034	0.046	0.000
2030	On-Road	4.051	0.200	0.003	0.045	0.014	0.066	0.000
2030	Fugifive	1.037	0.065	0.012	0.370	--	15.928	0.000
2030	**Total**	**5.223**	**0.824**	**0.020**	**0.450**	**0.048**	**16.041**	**0.000**
2031	Off-Road	0.155	0.667	0.006	0.040	0.039	0.054	0.000
2031	On-Road	5.753	0.241	0.005	0.061	0.019	0.173	0.000
2031	Fugifive	1.267	0.079	0.015	0.452	--	19.467	0.000
2031	**Total**	**7.175**	**0.987**	**0.026**	**0.554**	**0.058**	**19.695**	**0.000**

Definifions:
CO = carbon monoxide; NO_x = nitrogen oxides; Pb = lead; $PM_{2.5}$ = parficulate mafter with a diameter of less than 2.5 micrometers; PM_{10} = parficulate mafter with a diameter less than 10 micrometers; SO_2 = sulfur dioxide; tpy = tons per year; VOC = volafile organic compound

Note:
[a] Following standard industry pracfice, O_3 was evaluated by evaluafing emissions of VOC and NOx, which are precursors in the formafion of O_3.

[b] Totals may not exactly match due to rounding.

Source: Airfield Safety and Capacity Program Definifion Study, Garver 2024, Data provided by Mead & Hunt, HMMH, 2025

Table 3-4. Construction Criteria Pollutant Emission Inventory – Alternative 4

Construcfion Year	Acfivity	CO (tpy)	NOx [a] (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	VOC [a] (tpy)	Pb (tpy)
2027	Off-Road	0.133	0.473	0.004	0.030	0.029	0.037	0.000
2027	On-Road	5.876	0.550	0.005	0.084	0.029	0.182	0.000
2027	Fugifive	0.000	0.000	0.000	0.734	--	0.000	0.000
2027	**Total**	**6.010**	**1.023**	**0.009**	**0.848**	**0.058**	**0.219**	**0.000**
2028	Off-Road	0.106	0.380	0.003	0.027	0.026	0.035	0.000
2028	On-Road	3.202	0.074	0.002	0.026	0.007	0.090	0.000
2028	Fugifive	0.061	0.004	0.001	0.071	--	0.929	0.000
2028	**Total**	**3.369**	**0.458**	**0.007**	**0.123**	**0.033**	**1.055**	**0.000**
2029	Off-Road	0.039	0.169	0.002	0.011	0.010	0.015	0.000
2029	On-Road	2.056	0.042	0.002	0.016	0.005	0.058	0.000
2029	Fugifive	0.000	0.000	0.000	0.008	--	0.000	0.000
2029	**Total**	**2.094**	**0.211**	**0.003**	**0.035**	**0.015**	**0.073**	**0.000**
2030	Off-Road	0.158	0.647	0.006	0.040	0.039	0.053	0.000
2030	On-Road	4.597	0.228	0.004	0.051	0.016	0.075	0.000
2030	Fugifive	1.235	0.077	0.014	0.431	--	18.980	0.000
2030	**Total**	**5.991**	**0.952**	**0.024**	**0.522**	**0.055**	**19.109**	**0.000**
2031	Off-Road	0.180	0.770	0.007	0.047	0.045	0.063	0.000
2031	On-Road	6.536	0.275	0.005	0.070	0.022	0.197	0.000
2031	Fugifive	1.510	0.094	0.017	0.527	--	23.196	0.000
2031	**Total**	**8.226**	**1.140**	**0.030**	**0.643**	**0.067**	**23.455**	**0.000**

Definitions:
CO = carbon monoxide; NO_x = nitrogen oxides; Pb = lead; $PM_{2.5}$ = particulate matter with a diameter of less than 2.5 micrometers; PM_{10} = particulate matter with a diameter less than 10 micrometers; SO_2 = sulfur dioxide; tpy = tons per year; tpy = tons per year; VOC = volatile organic compound

Note:

[a] Following standard industry practice, O_3 was evaluated by evaluating emissions of VOC and NOx, which are precursors in the formation of O_3.

[b] Totals may not exactly match due to rounding.

Source: Airfield Safety and Capacity Program Definition Study, Garver 2024; Data provided by Mead & Hunt and HMMH, 2025

3.2.1 Significance Thresholds

As provided in FAA Order 1050.1G, an action would cause a significant air quality impact if pollutant concentrations would exceed one or more of the NAAQS established by the US EPA under the CAA, for any of the time periods analyzed, or would increase the frequency or severity of any such existing violations (FAA 2025). Additionally, the CAA requires federal agencies such as the FAA to ensure their actions conform to the appropriate SIP. Conformity requires that a project or action adheres to the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. As stated in **Section 2.3,** the General Conformity Rule applies to the Proposed Action.

If General Conformity applies, an applicability analysis is performed to determine if a General Conformity Determination is required to demonstrate that a project or action conforms to the approved SIP(s). A conformity determination is required if the total direct and indirect pollutant emissions resulting from a project are above the US EPA *de minimis* emissions threshold levels specified in the conformity regulations (US

EPA 2025d). The *de minimis* thresholds represent emission quantities of a NAAQS-regulated pollutant, or its applicable precursors, over which a proposed action in a nonattainment or maintenance area may cause or contribute to a new or continued violation of the NAAQS. A conformity determination is not required if the differences in emissions between the Proposed Action and the No Action Alternative are below the applicable *de minimis* emission threshold levels, or if the Proposed Action is exempt or included in the FAA list of "presumed to conform activities."

As stated in **Section 2.2**, BHM is located in Jefferson County, which is currently designated by the US EPA Greenbook as in attainment for all criteria pollutants except for the 2006 $PM_{2.5}$ standards which are designated by the US EPA as maintenance (US EPA 2025b). Because Jefferson County is designated as maintenance for some pollutants, the General Conformity Rule applies to the Proposed Alternatives.

Federal US EPA *de minimis* emission thresholds for nonattainment areas relevant to Jefferson County are listed in **Table 3-5**. As noted in the table, pollutants designated as attainment do not have US EPA *de minimis* thresholds; therefore, as a conservative assumption, the maintenance area designation *de minimis* thresholds were used to determine significant impacts under NEPA for attainment pollutants.

Table 3-5. General Conformity US EPA *de minimis* Pollutant Emission Thresholds

Pollutants	Aftainment Status (Severity)	Pollutants	Threshold (tpy)
CO	**Aftainment** [a]	CO	**100**
O_3	**Aftainment** [a]	NOx	**100**
O_3	**Aftainment** [a]	VOC	**100**
$PM_{2.5}$	**Maintenance**	$PM_{2.5}$	**100**
PM_{10}	**Aftainment** [a]	PM_{10}	**100**
SO_2	**Aftainment** [a]	SO_2	**100**
Pb	**Aftainment** [a]	Pb	**25**

Definifions:

CO = carbon monoxide; NO_2 = dioxide; NO_x = nitrogen oxides; O_3 = ozone; Pb = lead; $PM_{2.5}$ = parficulate mafter with a diameter of less than 2.5 micrometers; PM_{10} = parficulate mafter with a diameter less than 10 micrometers; SO_2 = sulfur dioxide; tpy = tons per year; VOC = volafile organic compound

Notes:

[a] Pollutants designated as aftainment, no *de minimis* threshold exists for aftainment pollutants. As a conservafive approach, the *de minimis* threshold for maintenance designated areas was assumed for determining significance under NEPA. Following standard industry pracfice, O_3 was analyzed by evaluafing emissions of VOC and NOx, which are precursors in the formafion of O_3.

Source: US EPA, De Minimis Tables, hftps://www.epa.gov/general-conformity/de-minimis-tables

3.2.2 Construction Emission Impacts

Table 3-6 and **Table 3-7** present the emissions associated with demolition and construction of Alternative 2 and Alternative 4, respectively, compared with the appropriate US EPA *de minimis* thresholds.

As discussed above, demolition and construction activities associated with the Proposed Alternatives are expected to occur over a five-year period from 2027 through 2031. As shown in **Table 3-6** and **Table 3-7**, the total emissions for each year of construction activity would be below established *de minimis* thresholds for all criteria pollutants for both Alternatives. Therefore, a General Conformity determination is not required for the construction and demolition activities for the Proposed Alternatives since emissions are below the $PM_{2.5}$ *de minimis* thresholds. Additionally, in accordance with the FAA 1050.1 Desk Reference, the Proposed Action can

be determined to "not cause a significant air quality impact, since it is unlikely the pollutant concentration analyzed would exceed a NAAQS" (FAA 2020). No significant adverse air quality impacts would be expected to result from construction of either Alternative.

Table 3-6. Alternative 2 Construction Emissions for Each Construction Year Compared to US EPA *de minimis* Thresholds

Year	Acfivity	CO [a]	NOx [a]	SO_2 [a]	PM_{10} [a]	$PM_{2.5}$	VOC [a]	Pb [a]
2027	Total Construcfion and Demolifion [b]	5.889	0.974	0.008	0.798	0.056	0.213	0.000
2027	***US EPA de minimis Threshold***	**100**	**100**	**100**	**100**	**100**	**100**	**25**
2027	***Emissions below de minimis thresholds?***	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
2028	Total Construcfion and Demolifion [b]	3.262	0.467	0.007	0.124	0.034	1.127	0.000
2028	***US EPA de minimis Threshold***	**100**	**100**	**100**	**100**	**100**	**100**	**25**
2028	***Emissions below de minimis thresholds?***	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
2029	Total Construcfion and Demolifion [b]	1.954	0.208	0.003	0.034	0.015	0.069	0.000
2029	***US EPA de minimis Threshold***	**100**	**100**	**100**	**100**	**100**	**100**	**25**
2029	***Emissions below de minimis thresholds?***	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
2030	Total Construcfion and Demolifion [b]	5.223	0.824	0.020	0.450	0.048	16.041	0.000
2030	***US EPA de minimis Threshold***	**100**	**100**	**100**	**100**	**100**	**100**	**25**
2030	***Emissions below de minimis thresholds?***	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
2031	Total Construcfion and Demolifion [b]	7.175	0.987	0.026	0.554	0.058	19.695	0.000
2031	***US EPA de minimis Threshold***	**100**	**100**	**100**	**100**	**100**	**100**	**25**
2031	***Emissions below de minimis thresholds?***	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Definifions:
CO = carbon monoxide; NO_x = nitrogen oxides; SO_2 = sulfur dioxide; $PM_{2.5}$ = parficulate mafter with a diameter of less than 2.5 micrometers; PM_{10} = parficulate mafter with a diameter less than 10 micrometers; Pb = lead; VOC = volafile organic compound

Notes:

[a] General Conformity does not apply for these pollutants in the BHM area because the area is designated aftainment/unclassifiable for these NAAQS. The General Conformity *de minimis* threshold for maintenance areas were conservafivity used to determine significance under NEPA for these pollutants.

[b] Pb emissions for construcfion emissions were not esfimated since the fuel used for these sources are gasoline and diesel which do not contain Pb.

Source: Airfield Safety and Capacity Program Definifion Study, Garver 2024; Data provided by Mead & Hunt and HMMH, 2025

Table 3-7. Alternative 4 Construction Emissions for Each Construction Year Compared to US EPA *de minimis* Thresholds

Year	Acfivity	CO [a]	NOx [a]	SO_2 [a]	PM_{10} [a]	$PM_{2.5}$	VOC [a]	Pb [a]
2027	Total Construcfion and Demolifion [b]	6.010	1.023	0.009	0.848	0.058	0.219	0.000
2027	***US EPA de minimis Threshold***	**100**	**100**	**100**	**100**	**100**	**100**	**25**
2027	***Emissions below de minimis thresholds?***	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
2028	Total Construcfion and Demolifion [b]	3.369	0.458	0.007	0.123	0.033	1.055	0.000
2028	***US EPA de minimis Threshold***	**100**	**100**	**100**	**100**	**100**	**100**	**25**
2028	***Emissions below de minimis thresholds?***	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
2029	Total Construcfion and Demolifion [b]	2.094	0.211	0.003	0.035	0.015	0.073	0.000
2029	***US EPA de minimis Threshold***	**100**	**100**	**100**	**100**	**100**	**100**	**25**
2029	***Emissions below de minimis thresholds?***	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
2030	Total Construcfion and Demolifion [b]	5.991	0.952	0.024	0.522	0.055	19.109	0.000
2030	***US EPA de minimis Threshold***	**100**	**100**	**100**	**100**	**100**	**100**	**25**
2030	***Emissions below de minimis thresholds?***	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
2031	Total Construcfion and Demolifion [b]	8.226	1.140	0.030	0.643	0.067	23.455	0.000
2031	***US EPA de minimis Threshold***	**100**	**100**	**100**	**100**	**100**	**100**	**25**
2031	***Emissions below de minimis thresholds?***	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Definitions:
CO = carbon monoxide; NO_x = nitrogen oxides; SO_2 = sulfur dioxide; $PM_{2.5}$ = particulate matter with a diameter of less than 2.5 micrometers; PM_{10} = particulate matter with a diameter less than 10 micrometers; Pb = lead; VOC = volatile organic compound

Notes:

[a] General Conformity does not apply for these pollutants in the BHM area because the area is designated attainment/unclassifiable for these NAAQS. The General Conformity *de minimis* threshold for maintenance areas were conservativity used to determine significance under NEPA for these pollutants.

[b] Pb emissions for construction emissions were not estimated since the fuel used for these sources are gasoline and diesel which do not contain Pb.

Source: Airfield Safety and Capacity Program Definition Study, Garver, 2024; Data provided by Mead & Hunt and HMMH, 2025

3.2.3 No Action Alternative

The No Action Alternative assumes that the Proposed Alternatives are not implemented, and air quality would remain unchanged for the construction years 2027 through 2031. Beyond the construction years, the No Action Alternative would not change traffic patterns, increase the number of operations, or otherwise change air quality beyond the existing projected future activity.

3.2.4 Mitigation

As indicated in **Section 3.2.2**, air quality impacts associated with construction of the Proposed Alternatives would not be significant; therefore, no mitigation measures are required for construction emissions. However,

the airport is committed to best management practices to mitigate construction impacts which could include dust suppression, maintaining construction vehicles, limiting engine idling, etc.

4 Construction Noise

Construction of the Proposed Alternatives for the Proposed Action is expected to occur from 2027 through 2031. Construction operations would be short term and temporary to residential land uses near the project site. The closest residential land uses are north of Runway 6-24 and the proposed project site.

Typically, construction noise does not cause noise impacts (exceedances of the HUD standard of 45 dBA Leq for interior dwellings) beyond 500 feet from the source to receiver (house) for standard construction activities such as those planned for this project (i.e., grading and paving) (HUD 2025). For this project, the closest residences are 1,500 feet from the project site. Therefore, construction noise impacts are not anticipated. Construction would be heard at times during daytime hours; however, daytime construction noise is exempt from most noise ordinances. Construction work at night is not anticipated; therefore, nighttime construction noise limits would not apply, and residents would not expect to hear construction noise during nighttime hours.

To avoid, minimize, and abate temporary adverse construction noise, most local and transportation agency guidance goals are to implement common and easy noise control measures to abate construction noise impacts. The following best management practices to reduce construction noise are examples of common noise abatement measures on construction projects:

- Do not perform construction within 1,000 feet of an occupied dwelling on Sundays or legal holidays, or between the hours of 10:00 p.m. and 6:00 a.m. on other days, without the approval of the Engineer.
- Use equipment with sound control devices no less effective than those provided on the original equipment. Equipment with un-muffled exhausts is prohibited.
- Use equipment complying with pertinent equipment noise standards of the US EPA.
- Do not drive piling or perform blasting operations within 3,000 feet of an occupied dwelling on Sundays or legal holidays, or between 8:00 p.m. and 8:00 a.m. during normal operation on the other days of the week.
- Mitigate the noise from rock crushing or screening operations performed within 3,000 feet of all occupied dwellings by placing material stockpiles between the operation and the affected dwellings, or by other means approved by the Engineer.

If a specific noise impact complaint occurs during the construction of the project, one or more of the following noise mitigation measures may be required:

- Locate stationary construction equipment as far from nearby noise sensitive properties as feasible.
- Shut off idling equipment.
- Reschedule construction operations to avoid periods of noise annoyance identified in the complaint.
- Notify nearby residents whenever extremely noisy work is occurring.
- Install temporary or portable acoustic barriers around stationary construction noise sources.
- Operate electric-powered equipment using line voltage power or solar power.

The FHWA has developed the RCNM, which is used to predict sound levels for construction equipment and distance. Typical noisy equipment used for roadway and development projects include but are not limited to dump trucks, excavators, pavers, rollers, back hoes, and other earth moving and paving equipment (FHWA 2006a). **Attachment B** presents a table of noise levels from equipment and distances developed by FHWA (FHWA 2006b). This table is used as a reference for worst-case noise levels at 50 feet. With standard doubling of distance reductions for construction activity from the project area to residences.

Construction noise typically dissipates between 4.5 dB to 6.0 dB for each doubling of distance (between the noise source and the receptor). As an example, construction equipment with mufflers (independent of background ambient noise levels) during excavation and grading may generate a noise level of 86 dBA Leq at 50 feet from the noise source. Based on a sound dissipation rate of 6 dB per doubling of distance, this equipment would generate a noise of 80 dBA at a distance of 100 feet, 74 dBA at a distance of 200 feet, and so on. At 800 feet, the level would be estimated to be 62 dBA, below the level of speech interference. That sound drop-off rate does not consider intervening shielding (including landscaping or trees) or barriers, such as structures or hills between the noise source and noise receptor.

5 References

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Attachment A. Air Emissions Spreadsheet Calculations

Airport Construction Emissions Inventory Tool (ACEIT)
Version 1.0
Run Date & Time: 7/17/2025 2:15:48 PM

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STUDY

Study Name

BHM Runway Rehab

Study Description

Alt 2 2027

EMISSIONS INVENTORY - DETAILS:

Non-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

											MOVES5 NONROAD Emission Factors (g-hp-hr)						NONROAD Emissions (Tons Per Year)					
											3	5	8	6	7	10						
Scenario ID	Year	Project	Construction Activity	Equipment	MOVES5 Equipment	MOVES5 Lookup	Fuel	HP Average	Load Factor	Hours of Activity	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC
1	2027	Demolition - Asphalt	Asphalt Demolition	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	1180.3	0.064716295	0.215633704	0.001419187	0.015111108	0.014657774	0.010386289	0.00869366	0.028967142	0.000190646	0.00202995	0.001969051	0.001395242
1	2027	Demolition - Asphalt	Asphalt Demolition	Excavator	Excavators	Excavators175	Diesel	175	0.59	1180.3	0.05412755	0.17731496	0.001415506	0.012192621	0.011826843	0.008947677	0.007271221	0.023819595	0.000190152	0.001637895	0.001588758	0.001201986
1	2027	Demolition - Asphalt	Asphalt Demolition	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	2360.6	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.02165266	0.110030606	0.001303622	0.006438375	0.006245234	0.009243502
2	2027	Demolition - Building	Building Demolition	Bob Cat	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes75	Diesel	75	0.21	1473.6	1.704951625	3.398511197	0.001995341	0.294004152	0.285184472	0.356756654	0.043619307	0.086947162	5.10486E-05	0.007521772	0.00729613	0.009127226
2	2027	Demolition - Building	Building Demolition	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	1473.6	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.013516631	0.068686394	0.000813784	0.004019143	0.003898576	0.005770238
2	2027	Demolition - Building	Building Demolition	Excavator with Bucket	Excavators	Excavators175	Diesel	175	0.59	736.8	0.05412755	0.17731496	0.001415506	0.012192621	0.011826843	0.008947677	0.004539046	0.014869336	0.000118702	0.001022453	0.000991779	0.000750337
2	2027	Demolition - Building	Building Demolition	Generator Sets	Other Construction Equipment	Other Construction Equipment40	Diesel	40	0.43	736.8	0.279215562	2.529541105	0.00156942	0.020546895	0.019930491	0.092521314	0.003900535	0.035336728	2.19242E-05	0.000287032	0.000278421	0.001292488
2	2027	Demolition - Building	Building Demolition	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	859.6	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.007884701	0.040067063	0.000474707	0.0023445	0.002274169	0.003365972
3	2027	Site Work - 10000 sqft	Construction Mob & Layout	Survey Crew Trucks	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	10	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	9.17252E-05	0.000466113	5.52242E-06	2.72743E-05	2.64561E-05	3.91574E-05
3	2027	Site Work - 10000 sqft	Construction Mob & Layout	Tractor Trailers Temp Fac.	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	4	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	3.66901E-05	0.000186445	2.20897E-06	1.09097E-05	1.05825E-05	1.5663E-05
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Bulldozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	40	0.064716295	0.215633704	0.001419187	0.015111108	0.014657774	0.010386289	0.000294625	0.000981687	6.46095E-06	6.87944E-05	6.67305E-05	4.72843E-05
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Chain Saws	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.7	40	2.453101234	4.182813068	0.002183181	0.236999172	0.229888713	0.83734822	0.000832861	0.001420122	7.4122E-07	8.04645E-05	7.80504E-05	0.000284291
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Flat Bed or Dump Trucks	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	80	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.000733802	0.003728903	4.41793E-05	0.000218195	0.000211649	0.000313259
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Front Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	40	1.603434243	2.099963372	0.001995736	0.290317245	0.281607687	0.323889814	0.001484694	0.001944453	1.84794E-06	0.000268818	0.000260754	0.000299905
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Grub the site down 2'-0	Other Construction Equipment	Other Construction Equipment40	Diesel	40	0.59	40	0.279215562	2.529541105	0.00156942	0.020546895	0.019930491	0.092521314	0.000290548	0.002632208	1.63312E-06	2.13808E-05	2.07394E-05	9.62765E-05
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Log Chipper	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.43	40	0.347252136	1.113953382	0.001614957	0.05875026	0.056987793	0.031837056	0.000658385	0.002112039	3.06194E-06	0.00011139	0.000108048	0.03626E-05
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Mulcher	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.43	40	0.347252136	1.113953382	0.001614957	0.05875026	0.056987793	0.031837056	0.000658385	0.002112039	3.06194E-06	0.00011139	0.000108048	0.03626E-05
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Ten Wheelers	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	40	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.000366901	0.001864452	2.20897E-05	0.000109097	0.000105825	0.00015663
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Tractor	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	80	1.603434243	2.099963372	0.001995736	0.290317245	0.281607687	0.323889814	0.002969388	0.003888907	3.69589E-06	0.000537636	0.000521507	0.000599809
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Curbing)	Bob Cat	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes75	Diesel	75	0.21	24	1.704951625	3.398511197	0.001995341	0.294004152	0.285184472	0.356756654	0.000710412	0.001416078	8.31411E-07	0.000122504	0.000118829	0.000148652
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Curbing)	Concrete Ready Mix Trucks	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	24	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.000220141	0.001118671	1.32538E-05	6.54584E-05	6.34947E-05	9.39778E-05
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Curbing)	Tractor Trailer with Boom Hoist- Delivery	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	24	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.000220141	0.001118671	1.32538E-05	6.54584E-05	6.34947E-05	9.39778E-05
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Rough Grading)	Compacting Equipment	Plate Compactors	Plate Compactors6	Diesel	6	0.43	24	2.489618544	4.19186665	0.002161869	0.245712504	0.238340785	0.839335854	0.00016993	0.000286118	1.47559E-07	1.67712E-05	1.62681E-05	5.72893E-05
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Rough Grading)	Small Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	24	0.064716295	0.215633704	0.001419187	0.015111108	0.014657774	0.010386289	0.000176775	0.000589012	3.87657E-06	4.12766E-05	4.00383E-05	2.83706E-05
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Top Soil Seed and Plantings)	Forktruck (Hoist)	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.59	80	0.347252136	1.113953382	0.001614957	0.05875026	0.056987793	0.031837056	0.001806731	0.005795829	8.40252E-06	0.000305674	0.000296504	0.000165646
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Top Soil Seed and Plantings)	Roller	Rollers	Rollers100	Diesel	100	0.59	40	0.186333185	0.993132815	0.001588795	0.03435292	0.033322357	0.015916685	0.00048474	0.002583604	4.1332E-06	8.9368E-05	8.66871E-05	4.14068E-05
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Top Soil Seed and Plantings)	Seed Truck Spreader	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	16	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.00014676	0.000745781	8.83587E-06	4.36389E-05	4.23298E-05	6.26519E-05
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Top Soil Seed and Plantings)	Tractor Trailer- Material Delivery	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	80	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.000733802	0.003728903	4.41793E-05	0.000218195	0.000211649	0.000313259
3	2027	Site Work - 10000 sqft	Underground Services to 5 ft. of Building	Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	120	1.603434243	2.099963372	0.001995736	0.290317245	0.281607687	0.323889814	0.004454082	0.00583336	5.54383E-06	0.000806455	0.000782261	0.000899714
3	2027	Site Work - 10000 sqft	Underground Services to 5 ft. of Building	Fork Truck	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.59	60	0.347252136	1.113953382	0.001614957	0.05875026	0.056987793	0.031837056	0.001355048	0.004346872	6.30189E-06	0.000229255	0.000222378	0.000124235
3	2027	Site Work - 10000 sqft	Underground Services to 5 ft. of Building	Tractor Trailer- Material Delivery	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	30	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.000275176	0.001398339	1.65673E-05	8.18229E-05	7.93684E-05	0.000117472
																	Total (Tons Per Year)					
																	0.13024951	***0.45902263***	***0.00338442***	***0.02895235***	***0.02808381***	***0.03626664***

On-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

																			MOVES ONROAD Emission Factors (grams/mile)						ONROAD Emission (Tons Per Year)					
Scenario ID	**Year**	**Project**	**Equipment**	**Equipment Category**	**MOVES ONROAD LOOKUP**	**On-road Activity**	**Fuel**	**Roadway Type**	**Round Trip Distance (miles)**	**Distance for fugitive PM**	**Number of Vehicles**	**Number of Employees**	**Number of Project Days**	**Project Length**	**Project Width**	**Project Area**	**Building Height**	**Open Space Height**	**Number of Trees**	**Activity Rate**	**VMT**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**VOC**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**VOC**
1	2027	Demolition - Asphalt	Dump Truck	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	20	--	172	11803	100	--	--	--	--	--	262289	1.076265702	1.353212101	0.002849317	0.130781037	0.056498692	0.088021546	0.311176012	0.391248318	0.000823811	0.037812151	0.01633522	0.025449286
1	2027	Demolition - Asphalt	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	51.931	51.931	172	--	--	--	--	--	--	--	267964	3.630257639	0.079335761	0.002718908	0.027881191	0.007584252	0.100883797	1.07231019	0.0234343	0.000803115	0.008235582	0.002240246	0.029799186
2	2027	Demolition - Building	Dump Truck	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	172	--	--	61400	20	20	--	--	0	1.076265702	1.353212101	0.002849317	0.130781037	0.056498692	0.088021546	0	0	0	0	0	0
2	2027	Demolition - Building	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	5.5	5.5	172	--	--	--	--	--	--	--	28380	3.630257639	0.079335761	0.002718908	0.027881191	0.007584252	0.100883797	0.113568103	0.002481921	8.50577E-05	0.000872228	0.000237264	0.003156024
3	2027	Site Work - 10000 sqft	Dump Truck Subbase Material	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	172	--	--	10000	--	--	--	--	1233	1.076265702	1.353212101	0.002849317	0.130781037	0.056498692	0.088021546	0.001462814	0.001839228	3.87267E-06	0.000177752	7.6790E-05	0.000119635
3	2027	Site Work - 10000 sqft	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	206.206	206.206	172	--	--	--	--	--	--	--	1064023	3.630257639	0.079335761	0.002718908	0.027881191	0.007584252	0.100883797	4.257895483	0.093052178	0.003188982	0.03270159	0.008895498	0.118325668
3	2027	Site Work - 10000 sqft	Tractor Trailer	Combination Short-haul Truck	DieselUrban Unrestricted AccessCombination Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	172	--	--	10000	--	--	--	0.008	800	2.2620730	3.4046946	0.0054947	0.3270600	0.1246653	0.1192404	0.001994817	0.003002442	4.84556E-06	0.000288419	0.000109937	0.000105153
																										Total (Tons Per Year)						***5.758407419***	***0.515058339***	***0.00490968***	***0.08008772***	***0.02789496***	***0.17695495***

Fugitive Sources

Units for Non-Greenhouse Gases Emission: Short Ton

Scenario ID	**Year**	**Project**	**Fugitive Source Type**	**Number of Months**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**VOC**
1	2027	Demolition - Asphalt	Material Movement (Paved Roads)	8	0	0	0	0.07985	0
1	2027	Demolition - Asphalt	Material Movement (Unpaved Roads)	8	0	0	0	0.25575	0
1	2027	Demolition - Asphalt	Soil Handling	8	0	0	0	0.33405	0
1	2027	Demolition - Asphalt	Unstabilized Land and Wind Erosion	8	0	0	0	3.1745E-07	0
3	2027	Site Work - 10000 sqft	Material Movement (Paved Roads)	8	0	0	0	0.0039915	0
3	2027	Site Work - 10000 sqft	Material Movement (Unpaved Roads)	8	0	0	0	0.0121	0
3	2027	Site Work - 10000 sqft	Soil Handling	8	0	0	0	0.0028305	0
3	2027	Site Work - 10000 sqft	Unstabilized Land and Wind Erosion	8	0	0	0	2.69E-09	0
				TOTAL (Tons Per Year)	***0***	***0***	***0***	***0.68857232***	***0***

Total Construction Emissions by Source

Emission Source	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**VOC**
NonRoad	0.130	0.459	0.003	0.029	0.028	0.036
OnRoad	5.758	0.515	0.005	0.080	0.028	0.177
Fugitive	0.000	0.000	0.000	0.689	--	0.000
TOTAL	***5.889***	***0.974***	***0.008***	***0.798***	***0.056***	***0.213***

Airport Construction Emissions Inventory Tool (ACEIT)
Version 1.0
Run Date & Time: 7/17/2025 3:24:08 PM

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STUDY

Study Name

BHM Runway Rehab

Study Description

Alt 2 2028

EMISSIONS INVENTORY - DETAILS:

Non-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

											MOVESS NONROAD Emission Factors (g/hp-hr)						NONROAD Emissions (Tons Per Year)					
											3	5	8	6	7	10						
Scenario ID	Year	Project	Construction Activity	Equipment	MOVESS Equipment	MOVESS Lookup	Fuel	HP Average	Load Factor	Hours of Activity	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC
1	2028	Service Road	Asphalt Placement	Asphalt Paver	Pavers	Pavers175	Diesel	175	0.59	3.74625	0.073513337	0.256908347	0.001422465	0.017374385	0.016853119	0.01163559	3.13444E-05	0.00010954	6.06506E-07	7.40803E-06	7.18578E-06	4.96114E-06
1	2028	Service Road	Asphalt Placement	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	13.49340293	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000115749	0.000613621	7.44808E-06	3.54155E-05	3.43538E-05	5.18328E-05
1	2028	Service Road	Asphalt Placement	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	7.4925	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	8.1696E-05	0.000200459	8.97802E-07	2.03562E-05	1.97455E-05	1.37713E-05
1	2028	Service Road	Asphalt Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	3.74625	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	3.21385E-05	0.000170376	2.06801E-06	9.83334E-06	9.53834E-06	1.43917E-05
1	2028	Service Road	Asphalt Placement	Roller	Rollers	Rollers100	Diesel	100	0.59	3.74625	0.15799564	0.964323424	0.001584842	0.02963197	0.028743069	0.014176639	3.84947E-05	0.000234951	3.86137E-07	7.21964E-06	7.00307E-06	3.45405E-06
1	2028	Service Road	Asphalt Placement	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	3.74625	3.474992679	4.394927682	0.002180955	0.605662372	0.58749222	0.717177729	0.000226015	0.000285848	1.4185E-07	3.93926E-05	3.82108E-05	4.66417E-05
1	2028	Service Road	Asphalt Placement	Surfacing Equipment (Grooving)	Other Construction Equipment	Other Construction Equipment25	Diesel	25	0.59	4.7952	1.488402809	3.76241875	0.002188421	0.170343469	0.165233336	0.351624322	0.000116045	0.000293341	1.70622E-07	1.3281E-05	1.28826E-05	2.74147E-05
1	2028	Service Road	Clearing and Grubbing	Chain Saw	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.7	14.4	2.459906692	4.183484692	0.002183174	0.238750618	0.231588554	0.837792752	0.000300662	0.000511326	2.66838E-07	2.91813E-05	2.83059E-05	0.000102399
1	2028	Service Road	Clearing and Grubbing	Chipper/Stump Grinder	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.43	14.4	0.278945957	1.044935474	0.00160421	0.047506797	0.046081605	0.023101019	0.000190396	0.000713226	1.09496E-06	3.2426E-05	3.14522E-05	1.59104E-05
1	2028	Service Road	Clearing and Grubbing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	19.2	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000164714	0.000873196	1.05988E-05	5.03971E-05	4.88852E-05	7.37593E-05
1	2028	Service Road	Drainage - 24 inch SICPP	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	86.72	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009515783	0.000575674	0.001892824	1.39854E-05	0.000132071	0.000128109	9.39205E-05
1	2028	Service Road	Drainage - 24 inch SICPP	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	86.72	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000743957	0.003943937	4.78712E-05	0.000227627	0.000220798	0.000331146
1	2028	Service Road	Drainage - 24 inch SICPP	Excavator	Excavators	Excavators175	Diesel	175	0.59	86.72	0.052318238	0.173861284	0.00141482	0.011703848	0.011352723	0.008685845	0.000516379	0.001716006	1.39642E-05	0.000115517	0.000112051	8.5729E-05
1	2028	Service Road	Drainage - 24 inch SICPP	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	86.72	0.567234077	1.319710422	0.001780501	0.136582566	0.132485137	0.194208486	0.005598584	0.013025503	1.75735E-05	0.001348066	0.001307624	0.001916832
1	2028	Service Road	Drainage - 24 inch SICPP	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	86.72	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	0.000945569	0.00232016	1.03914E-05	0.000235608	0.000228539	0.000159393
1	2028	Service Road	Drainage - 24 inch SICPP	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	86.72	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000743957	0.003943937	4.78712E-05	0.000227627	0.000220798	0.000331146
1	2028	Service Road	Drainage - 24 inch SICPP	Roller	Rollers	Rollers100	Diesel	100	0.59	86.72	0.15799564	0.964323424	0.001584842	0.029631997	0.028743069	0.014176639	0.000891093	0.005438768	8.93848E-06	0.000167124	0.00016211	7.9956E-05
1	2028	Service Road	Drainage - 6 inch Perforated Underdrain	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	48.17777778	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000413309	0.002191076	2.65951E-05	0.000126459	0.000122666	0.000185081
1	2028	Service Road	Drainage - 6 inch Perforated Underdrain	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	48.17777778	0.567234077	1.319710422	0.001780501	0.136582566	0.132485137	0.194208486	0.003110324	0.007236391	9.76305E-06	0.000748926	0.000726458	0.001064907
1	2028	Service Road	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	48.17777778	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	0.000525316	0.001288978	5.77299E-06	0.000130893	0.000126966	8.85515E-05
1	2028	Service Road	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	48.17777778	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000413309	0.002191076	2.65951E-05	0.000126459	0.000122666	0.000185081
1	2028	Service Road	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	48.17777778	1.421973907	1.956077636	0.001977099	0.257676578	0.249946118	0.286538927	0.001585858	0.002181517	2.20496E-06	0.000287374	0.000278753	0.000319563
1	2028	Service Road	Dust Control	Water Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	1920	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.016471371	0.08731964	0.001059879	0.050639709	0.049088517	0.007375933
1	2028	Service Road	Excavation (Borrow)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	16.65066667	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009515783	0.000101532	0.000363431	2.68527E-06	2.53583E-05	2.45975E-05	1.80332E-05
1	2028	Service Road	Excavation (Borrow)	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	16.65066667	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000142843	0.000757255	9.19151E-06	4.37055E-05	4.23943E-05	6.39657E-05
1	2028	Service Road	Excavation (Borrow)	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	16.65066667	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000142843	0.000757255	9.19151E-06	4.37055E-05	4.23943E-05	6.39657E-05
1	2028	Service Road	Excavation (Borrow)	Roller	Rollers	Rollers100	Diesel	100	0.59	7.684923077	0.15799564	0.964323424	0.001584842	0.029631997	0.028743069	0.014176639	7.89666E-05	0.000481971	7.92107E-07	1.48101E-05	1.43658E-05	7.08551E-06
1	2028	Service Road	Excavation (Cut to Fill)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	12.488	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009515783	8.28991E-05	0.000272574	2.01395E-06	1.90187E-05	1.84482E-05	1.35249E-05
1	2028	Service Road	Excavation (Cut to Fill)	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	33.30133333	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000285687	0.001514511	1.8383E-05	8.74109E-05	8.47886E-05	0.000127931
1	2028	Service Road	Excavation (Cut to Fill)	Excavator	Excavators	Excavators175	Diesel	175	0.59	9.9904	0.052318238	0.173861284	0.00141482	0.011703848	0.011352723	0.008685845	5.94884E-05	0.000197689	1.60872E-06	1.33079E-05	1.29086E-05	9.87624E-06
1	2028	Service Road	Excavation (Cut to Fill)	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	9.9904	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	8.5706E-05	0.000454353	5.5149E-06	2.62233E-05	2.54366E-05	3.83794E-05
1	2028	Service Road	Excavation (Cut to Fill)	Roller	Rollers	Rollers100	Diesel	100	0.59	9.9904	0.15799564	0.964323424	0.001584842	0.029631997	0.028743069	0.014176639	0.000102657	0.000626562	1.02974E-06	1.92532E-05	1.86756E-05	9.21117E-06
1	2028	Service Road	Excavation (Cut to Fill)	Scraper	Scrapers	Scrapers600	Diesel	600	0.59	12.488	0.078129461	0.229897447	0.001435863	0.016310352	0.015821045	0.017070086	0.000380073	0.001120306	6.99706E-06	7.94815E-05	7.70971E-05	8.31837E-05
1	2028	Service Road	Excavation (Topsoil Stripping)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	4.70116471	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009515783	3.12078E-05	0.000102612	7.58164E-07	7.1597E-06	6.94491E-06	5.09152E-06
1	2028	Service Road	Fencing	Concrete Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	30	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000257365	0.001364369	1.65606E-05	7.87454E-05	7.63831E-05	0.000115249
1	2028	Service Road	Fencing	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	120	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.001029461	0.005457477	6.62424E-05	0.000314982	0.000305532	0.000460996
1	2028	Service Road	Fencing	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	120	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	0.001308444	0.003210554	1.43792E-05	0.000326025	0.000316244	0.000220562
1	2028	Service Road	Fencing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	120	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.001029461	0.005457477	6.62424E-05	0.000314982	0.000305532	0.000460996
1	2028	Service Road	Fencing	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	120	3.474992679	4.394927682	0.002180955	0.605662372	0.58749222	0.717177729	0.007239728	0.009156301	4.54376E-06	0.001261824	0.001223969	0.001494028
1	2028	Service Road	Fencing	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	120	1.421973907	1.956077636	0.001977099	0.257676578	0.249946118	0.286538927	0.003950015	0.005433669	5.49206E-06	0.000715784	0.00069431	0.000795959
1	2028	Service Road	Grading	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	6.0162	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009515783	3.99373E-05	0.000131315	9.70239E-07	9.16243E-06	8.88756E-06	6.51573E-06
1	2028	Service Road	Grading	Grader	Graders	Graders300	Diesel	300	0.59	6.0162	0.023633985	0.123248653	0.001415264	0.007085103	0.006872539	0.010136148	2.77421E-05	0.000144672	1.66127E-06	8.31665E-06	8.06713E-06	1.1898E-05
1	2028	Service Road	Grading	Roller	Rollers	Rollers100	Diesel	100	0.59	6.0162	0.15799564	0.964323424	0.001584842	0.029631997	0.028743069	0.014176639	6.18196E-05	0.000377315	6.20107E-07	1.15942E-05	1.12464E-05	5.54695E-06
1	2028	Service Road	Hydroseeding	Hydroseeder	Other Construction Equipment	Other Construction Equipment600	Diesel	600	0.59	5.42	0.352282138	1.021551034	0.001526781	0.047800481	0.04636644	0.052426664	0.000745075	0.002160574	3.22913E-06	0.000101098	9.80647E-05	0.000110882
1	2028	Service Road	Hydroseeding	Off-Road Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	5.42	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	4.64973E-05	0.000246496	2.99195E-06	1.42267E-05	1.37999E-05	2.08216E-05
1	2028	Service Road	Markings	Flatbed Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	61.71428571	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000529437	0.002806703	3.40675E-05	0.000161991	0.000157131	0.000237084
1	2028	Service Road	Markings	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	61.71428571	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	0.000672914	0.001651142	7.39502E-06	0.00016767	0.00016264	0.000113432
1	2028	Service Road	Markings	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	61.71428571	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000529437	0.002806703	3.40675E-05	0.000161991	0.000157131	0.000237084
1	2028	Service Road	Sidewalks	Concrete Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	72.26666667	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000619964	0.003286614	3.98927E-05	0.000189689	0.000183998	0.000277622
1	2028	Service Road	Sidewalks	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	72.26666667	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000619964	0.003286614	3.98927E-05	0.000189689	0.000183998	0.000277622
1	2028	Service Road	Sidewalks	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	72.26666667	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000619964	0.003286614	3.98927E-05	0.000189689	0.000183998	0.000277622
1	2028	Service Road	Sidewalks	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	72.26666667	1.421973907	1.956077636	0.001977099	0.257676578	0.249946118	0.286538927	0.002378787	0.003272276	3.30744E-06	0.000431061	0.000418129	0.000479344
1	2028	Service Road	Sidewalks	Vibratory Compactor	Plate Compactors	Plate Compactors18	Diesel	6	0.43	72.26666667	2.469816048	4.185277316	0.002161885	0.241088105	0.233853006	0.838173744	0.495496E-04	0.000860178	4.44321E-07	0.000731266	0.000712166	0.000507567
1	2028	Service Road	Soil Erosion/Sediment Control	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	4.8	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	5.23377E-05	0.000128422	5.75168E-07	1.3041E-05	1.26498E-05	8.82247E-06
1	2028	Service Road	Soil Erosion/Sediment Control	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	9.6	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	8.23569E-05	0.000436598	5.29939E-06	2.51985E-05	2.44426E-05	3.68797E-05
1	2028	Service Road	Soil Erosion/Sediment Control	Pumps	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.43	4.8	2.459906692	4.183484692	0.002183174	0.238750618	0.231588554	0.837792752	6.15641E-05	0.0001047	5.46383E-08	5.97521E-06	5.79597E-06	2.09674E-05
1	2028	Service Road	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	4.8	1.421973907	1.956077636	0.001977099	0.257676578	0.249946118	0.286538927	0.000158001	0.000217347	2.19683E-07	2.86314E-05	2.77724E-05	3.18384E-05
1	2028	Service Road	Street Lighting	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	72	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000617676	0.003274486	3.97455E-05	0.000188989	0.000183319	0.000276597
1	2028	Service Road	Street Lighting	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	72	0.567234077	1.319710422	0.001780501	0.136582566	0.132485137	0.194208486	0.004648271	0.010814532	1.45905E-05	0.001115043	0.001085666	0.001591466
1	2028	Service Road	Street Lighting	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	72	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	0.000785066	0.001926332	8.62753E-06	0.000195615	0.000189747	0.000132337
1	2028	Service Road	Street Lighting	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	72	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000617676	0.003274486	3.97455E-05	0.000188989	0.000183319	0.000276597
1	2028	Service Road	Street Lighting	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	72	3.474992679	4.394927682	0.002180955	0.605662372	0.58749222	0.717177729	0.004343837	0.005493781	2.72625E-06	0.000757095	0.000734381	0.000896417
1	2028	Service Road	Street Lighting	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	72	1.421973907	1.956077636	0.001977099	0.257676578	0.249946118	0.286538927	0.002370009	0.003260201	3.29524E-06	0.00042947	0.000416586	0.000477575
1	2028	Service Road	Subbase Placement	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	6.309473684	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009515783	4.18842E-05	0.000137716	1.01754E-06	9.60907E-06	9.3208E-06	6.83336E-06
1	2028	Service Road	Subbase Placement	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	44.4	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.0003809	0.002019267	2.45097E-05	0.000116543	0.000113047	0.000170568
1	2028	Service Road	Subbase Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	6.309473684	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	5.4128E-05	0.000286948	3.48296E-06	1.65614E-05	1.60646E-05	2.42387E-05
1	2028	Service Road	Subbase Placement	Roller	Rollers	Rollers100	Diesel	100	0.59	6.147692308	0.15799564	0.964323424	0.001584842	0.029631997	0.028743069	0.014176639	6.31707E-05	0.000385561	6.3366E-07	1.18476E-05	1.14922E-05	5.66818E-06
1	2028	Service Road	Topsoil Placement	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	13.36933333	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009515783	8.87497E-05	0.00029181	2.15609E-06	2.03609E-05	1.97501E-05	1.44794E-05
1	2028	Service Road	Topsoil Placement	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	13.36933333	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000114693	0.000608024	7.38014E-06	3.50925E-05	3.40397E-05	5.13601E-05
1	2028	Service Road	Topsoil Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	13.36933333	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000114693	0.000608024	7.38014E-06	3.50925E-05	3.40397E-05	5.13601E-05
1	2028	Service Road	Tree Planting	Flatbed Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	0	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0	0	0	0	0	0
1	2028	Service Road	Tree Planting	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	0	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	0	0	0	0	0	0
1	2028	Service Road	Tree Planting	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	0	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0	0	0	0	0	0
1	2028	Service Road	Tree Planting	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	0	1.421973907	1.956077636	0.001977099	0.257676578	0.249946118	0.286538927	0	0	0	0	0	0
2	2028	Detention Basin	Clearing and Grubbing	Chain Saw	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.7	6	2.459906692	4.183484692	0.002183174	0.238750618	0.231588554	0.837792752	0.000125276	0.000213053	1.11183E-07	1.21589E-05	1.17941E-05	4.26663E-05
2	2028	Detention Basin	Clearing and Grubbing	Chipper/Stump Grinder	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.43	6	0.278945957	1.044935474	0.00160421	0.047506797	0.046081605	0.023101019	7.9131E-05	0.000297177	4.56234E-07	1.35108E-05	1.31055E-05	6.62935E-06
2	2028	Detention Basin	Clearing and Grubbing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	8	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	6.86307E-05	0.000363832	4.41616E-06	2.09988E-05	2.03688E-05	3.07331E-05
2	2028	Detention Basin	Drainage - 24 inch SICPP	Excavator	Excavators	Excavators175	Diesel	175	0.59	76.416	0.052318238	0.173861284	0.00141482	0.011703848	0.011352723	0.008685845	0.000455024	0.001512111	1.2305E-05	0.000101791	9.87372E-05	7.55428E-05
2	2028	Detention Basin	Drainage	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	76.416	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009515783	0.000507272	0.00166792	1.23237E-05	0.000116378	0.000112887	8.27609E-05
2	2028	Detention Basin	Drainage	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	76.416	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000655561	0.003475322	4.21832E-05	0.00020058	0.000194563	0.000285562
2	2028	Detention Basin	Drainage	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	76.416	0.567234077	1.319710422	0.001780501	0.136582566	0.132485137	0.194208486	0.004933365	0.011477823	1.54854E-05	0.00118789	0.001152254	0.001689076
2	2028	Detention Basin	Drainage	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	76.416	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	0.000833217	0.002044481	9.15668E-06	0.000207613	0.000201384	0.000140454
2	2028	Detention Basin	Drainage	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	76.416	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000655561	0.003475322	4.21832E-05	0.00020058	0.000194563	0.000285562
2	2028	Detention Basin	Drainage	Roller	Rollers	Rollers100	Diesel	100	0.59	76.416	0.15799564	0.964323424	0.001584842	0.029631997	0.028743069	0.014176639	0.000785214	0.004792538	7.87642E-06	0.000147266	0.000142849	7.04557E-05
2	2028	Detention Basin	Dust Control	Water Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	2160	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.018530292	0.098234595	0.001192364	0.005669672	0.005499581	0.008297925
2	2028	Detention Basin	Excavation (Cut to Fill)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	43.808	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009515783	0.000290811	0.00095619	7.06496E-06	6.67178E-05	6.47638E-05	4.74454E-05
2	2028	Detention Basin	Excavation (Cut to Fill)	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	116.8213333	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.001002191	0.005312915	6.44877E-05	0.000306638	0.000297439	0.000448785

On-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

																			MOVESS ONROAD Emission Factors (grams/mile)						ONROAD Emission (Tons Per Year)					
Scenario ID	**Year**	**Project**	**Equipment**	**Equipment Category**	**MOVESS ONROAD LOOKUP**	**On-road Activity**	**Fuel**	**Roadway Type**	**Round Trip Distance (miles)**	**Distance for fugitive PM**	**Number of Vehicles**	**Number of Employees**	**Number of Project Days**	**Project Length**	**Project Width**	**Project Area**	**Building Height**	**Open Space Height**	**Number of Trees**	**Activity Rate**	**VMT**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**VOC**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**VOC**
1	2028	Service Road	Asphalt 18 Wheeler	Combination Short-haul Truck	DieselUrban Unrestricted AccessCombination Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	172	2700	10	--	--	--	--	--	392	2.227569109	3.139308512	0.005395039	0.323298669	0.120615197	0.111648406	0.000962551	0.001356521	2.33124E-06	0.0001397	5.21188E-05	4.82442E-05
1	2028	Service Road	Dump Truck - Asphalt	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	172	2700	10	--	--	--	--	--	555	1.041526911	1.225381453	0.002765431	0.123046925	0.051261601	0.077820825	0.000637192	0.000749671	1.69185E-06	7.52784E-05	3.13611E-05	4.76097E-05
1	2028	Service Road	Dump Truck Subbase Material	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	172	2700	10	--	--	--	--	--	3330	1.041526911	1.225381453	0.002765431	0.123046925	0.051261601	0.077820825	0.003823149	0.004498027	1.01511E-05	0.00045167	0.000188167	0.000285658
1	2028	Service Road	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	74	74	172	--	--	--	--	--	--	--	381840	3.505708975	0.070934279	0.002652693	0.027008404	0.00745823	0.098398745	1.475583583	0.029856859	0.001116542	0.011368074	0.003139234	0.041416893
2	2028	Detention Basin	Cement Truck for Fencing	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	193	1184	10	--	--	--	--	--	2738	1.041526911	1.225381453	0.002765431	0.123046925	0.051261601	0.077820825	0.003143478	0.003698378	8.34647E-06	0.000371373	0.000154715	0.000234874
2	2028	Detention Basin	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	71.61	71.61	193	--	--	--	--	--	--	--	414622	3.505708975	0.070934279	0.002652693	0.027008404	0.00745823	0.098398745	1.602266437	0.032420151	0.0012124	0.012344054	0.003408746	0.044972645
																										Total (Tons Per Year)						
																										3.086416391	***0.07257961***	***0.00235146***	***0.02475015***	***0.00697434***	***0.08700592***

Fugitive Sources

Units for Non-Greenhouse Gases Emission: Short Ton

Scenario ID	**Year**	**Project**	**Fugitive Source Type**	**Number of Months**	**CO**	**NOx**	**SO_x**	**PM_{10}**	**VOC**
1	2028	Service Road	Asphalt Drying	8	0	0	0	0	1.00165
1	2028	Service Road	Asphalt Storage and Batching	8	0.06535	0.004079	0.000751	0.004474	0.002023
1	2028	Service Road	Material Movement (Paved Roads)	8	0	0	0	0.01195	0
1	2028	Service Road	Material Movement (Unpaved Roads)	8	0	0	0	0.04035	0
1	2028	Service Road	Soil Handling	8	0	0	0	0.00765	0
1	2028	Service Road	Unstabilized Land and Wind Erosion	8	0	0	0	7.26E-09	0
2	2028	Detention Basin	Material Movement (Paved Roads)	9	0	0	0	0	0
2	2028	Detention Basin	Material Movement (Unpaved Roads)	9	0	0	0	0.004034	0
2	2028	Detention Basin	Soil Handling	9	0	0	0	0.003351	0
2	2028	Detention Basin	Unstabilized Land and Wind Erosion	9	0	0	0	3.583E-09	0
			TOTAL (Tons Per Year)		***0.06535***	***0.004079***	***0.00075***	***0.071809011***	***1.003673***

Total Construction Emissions by Source

Emission Source	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**VOC**
NonRoad	0.110	0.391	0.003	0.028	0.027	0.037
OnRoad	3.086	0.073	0.002	0.025	0.007	0.087
Fugitive	0.065	0.004	0.001	0.072	--	1.004
TOTAL	**3.262**	**0.467**	**0.007**	**0.124**	**0.034**	**1.127**

Airport Construction Emissions Inventory Tool (ACEIT)
Version 1.0
Run Date & Time: 7/17/2025 3:27:19 PM

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STUDY

Study Name

BHM Runway Rehab

Study Description

Alt 2 2029

EMISSIONS INVENTORY - DETAILS:

Non-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

											MOVES5 NONROAD Emission Factors (g-hp-hr)						NONROAD Emissions (Tons Per Year)					
											3	5	8	6	7	10						
Scenario ID	Year	Project	Construction Activity	Equipment	MOVES5 Equipment	MOVES5 Lookup	Fuel	HP Average	Load Factor	Hours of Activity	CO	NO_X	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NO_X	SO_2	PM_{10}	$PM_{2.5}$	VOC
1	2029	Detention Basin	Clearing and Grubbing	Chain Saw	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.7	7.2	2.466814854	4.184167555	0.002183172	0.240528002	0.233312526	0.838245382	0.000150753	0.000255705	1.33419E-07	1.46993E-05	1.42583E-05	5.12272E-05
1	2029	Detention Basin	Clearing and Grubbing	Chipper/Stump Grinder	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.43	7.2	0.199849443	0.978823244	0.001592316	0.034912814	0.033865435	0.016434569	6.82041E-05	0.00033405	5.43421E-07	1.1915E-05	1.15575E-05	5.60875E-06
1	2029	Detention Basin	Clearing and Grubbing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	9.6	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	7.81393E-05	0.000428961	5.29772E-06	2.45842E-05	2.38467E-05	3.63337E-05
1	2029	Detention Basin	Drainage - 24 inch SICPP	Excavator	Excavators	Excavators175	Diesel	175	0.59	84.864	0.05080994	0.171203522	0.0014142	0.011337645	0.01099751	0.008453092	0.00049076	0.001653609	1.36594E-05	0.000109507	0.000106222	8.14661E-05
1	2029	Detention Basin	Drainage	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	84.864	0.053513853	0.178081218	0.001415275	0.012019709	0.011659123	0.008857969	0.000516876	0.001720039	1.36698E-05	0.000116095	0.000112612	8.55567E-05
1	2029	Detention Basin	Drainage	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	84.864	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	0.000690751	0.003792011	4.68318E-05	0.000217324	0.000210804	0.00032119
1	2029	Detention Basin	Drainage	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	84.864	0.503424354	1.184538388	0.001765721	0.121743528	0.118091278	0.172415467	0.004862441	0.011441138	1.70546E-05	0.001175888	0.001140612	0.001665315
1	2029	Detention Basin	Drainage	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	84.864	0.103407606	0.261456213	0.001433857	0.025595889	0.024828054	0.016679455	0.000727929	0.001840499	1.00935E-05	0.00018018	0.000174775	0.000117414
1	2029	Detention Basin	Drainage	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	84.864	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	0.000690751	0.003792011	4.68318E-05	0.000217324	0.000210804	0.00032119
1	2029	Detention Basin	Drainage	Roller	Rollers	Rollers100	Diesel	100	0.59	84.864	0.135479927	0.941681003	0.001581712	0.025888896	0.025112192	0.012779831	0.000747751	0.005197397	8.7299E-06	0.000142888	0.000138601	7.05354E-05
1	2029	Detention Basin	Dust Control	Water Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	2400	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	0.019534821	0.10724014	0.001324429	0.006146051	0.005961666	0.009083426
1	2029	Detention Basin	Excavation (Cut to Fill)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	48.692	0.053513853	0.178081218	0.001415275	0.012019709	0.011659123	0.008857969	0.000296565	0.000986898	7.84323E-06	6.66113E-05	6.4613E-05	4.90895E-05
1	2029	Detention Basin	Excavation (Cut to Fill)	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	129.8453333	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	0.001056877	0.00580193	7.16546E-05	0.000332515	0.000322539	0.000491434
1	2029	Detention Basin	Excavation (Cut to Fill)	Excavator	Excavators	Excavators175	Diesel	175	0.59	38.9536	0.05080994	0.171203522	0.0014142	0.011337645	0.01099751	0.008453092	0.000225265	0.000759026	6.26982E-06	5.02652E-05	4.87572E-05	3.74766E-05
1	2029	Detention Basin	Excavation (Cut to Fill)	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	38.9536	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	0.000317063	0.001740579	2.14964E-05	9.97545E-05	9.67618E-05	0.00014743
1	2029	Detention Basin	Excavation (Cut to Fill)	Roller	Rollers	Rollers100	Diesel	100	0.59	38.9536	0.135479927	0.941681003	0.001581712	0.025888896	0.025112192	0.012779831	0.000343227	0.002385668	4.00713E-06	6.55873E-05	6.36196E-05	3.23766E-05
1	2029	Detention Basin	Excavation (Cut to Fill)	Scraper	Scrapers	Scrapers600	Diesel	600	0.59	48.692	0.053421403	0.174104582	0.001426508	0.012406045	0.012033866	0.013866791	0.001015039	0.003308092	2.71045E-05	0.000235722	0.000228651	0.000263477
1	2029	Detention Basin	Excavation (Topsoil Stripping)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	2.29145098	0.053513853	0.178081218	0.001415275	0.012019709	0.011659123	0.008857969	1.39564E-05	4.64435E-05	3.69103E-07	3.13474E-06	3.0407E-06	2.31016E-06
1	2029	Detention Basin	Fencing	Concrete Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	14.62222222	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	0.000119018	0.00065337	8.06921E-06	3.74454E-05	3.6322E-05	5.53416E-05
1	2029	Detention Basin	Fencing	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	58.48888889	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	0.000476071	0.002613482	3.22768E-05	0.000149782	0.000145288	0.000221366
1	2029	Detention Basin	Fencing	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	58.48888889	0.103407606	0.261456213	0.001433857	0.025595889	0.024828054	0.016679455	0.000501694	0.001268485	6.95652E-06	0.000124181	0.000120456	8.09223E-05
1	2029	Detention Basin	Fencing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	58.48888889	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	0.000476071	0.002613482	3.22768E-05	0.000149782	0.000145288	0.000221366
1	2029	Detention Basin	Fencing	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	58.48888889	2.745504854	3.982772137	0.002102531	0.478351738	0.464001834	0.570387842	0.002787935	0.004044324	2.13502E-06	0.000485744	0.000471173	0.000579203
1	2029	Detention Basin	Fencing	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	58.48888889	1.263196017	1.830468211	0.001960771	0.22933095	0.22245103	0.253988758	0.001710291	0.002478343	2.65476E-06	0.0003105	0.000301185	0.000343885
1	2029	Detention Basin	Hydroseeding	Hydroseeder	Other Construction Equipment	Other Construction Equipment600	Diesel	600	0.59	2.652	0.311661884	0.915124273	0.001513972	0.042714651	0.041433176	0.047075087	0.000322528	0.000947029	1.56675E-06	4.42039E-05	4.28777E-05	4.87163E-05
1	2029	Detention Basin	Hydroseeding	Off-Road Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	2.652	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	2.1586E-05	0.0001185	1.46349E-06	6.79139E-06	6.58764E-06	1.00372E-05
1	2029	Detention Basin	Soil Erosion/Sediment Control	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	2.4	0.103407606	0.261456213	0.001433857	0.025595889	0.024828054	0.016679455	2.05862E-05	5.20503E-05	2.8545E-07	5.09559E-06	4.94273E-06	3.32052E-06
1	2029	Detention Basin	Soil Erosion/Sediment Control	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	4.8	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	3.90696E-05	0.00021448	2.64886E-06	1.22921E-05	1.19233E-05	1.81669E-05
1	2029	Detention Basin	Soil Erosion/Sediment Control	Pumps	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.43	2.4	2.466814854	4.184167555	0.002183172	0.240528002	0.233312526	0.838245382	3.08685E-05	5.23586E-05	2.73191E-08	3.00985E-06	2.91956E-06	1.04894E-05
1	2029	Detention Basin	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	2.4	1.263196017	1.830468211	0.001960771	0.22933095	0.22245103	0.253988758	7.01791E-05	0.000101695	1.08934E-07	1.27409E-05	1.23587E-05	1.41108E-05
1	2029	Detention Basin	Topsoil Placement	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	6.541333333	0.053513853	0.178081218	0.001415275	0.012019709	0.011659123	0.008857969	3.98409E-05	0.000132581	1.05367E-06	8.94864E-06	8.68018E-06	6.59473E-06
1	2029	Detention Basin	Topsoil Placement	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	6.541333333	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	5.32432E-05	0.000292289	3.60981E-06	1.67514E-05	1.62489E-05	2.47574E-05
1	2029	Detention Basin	Topsoil Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	6.541333333	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	5.32432E-05	0.000292289	3.60981E-06	1.67514E-05	1.62489E-05	2.47574E-05
														Total (Tons Per Year)			***0.038549392***	***0.168598955***	***0.001724762***	***0.010594066***	***0.010276241***	***0.014526071***

On-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

																			MOVES ONROAD Emission Factors (grams/mile)						ONROAD Emission (Tons Per Year)					
Scenario ID	**Year**	**Project**	**Equipment**	**Equipment Category**	**MOVES ONROAD LOOKUP**	**On-road Activity**	**Fuel**	**Roadway Type**	**Round Trip Distance (miles)**	**Distance for fugitive PM**	**Number of Vehicles**	**Number of Employees**	**Number of Project Days**	**Project Length**	**Project Width**	**Project Area**	**Building Height**	**Open Space Height**	**Number of Trees**	**Activity Rate**	**VMT**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**VOC**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**VOC**
1	2029	Detention Basin	Cement Truck for Fencing	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	–	215	1316	10	–	–	–	–	–	3043	1.011368448	1.116309284	0.0026964	0.116977351	0.047443222	0.069363449	0.003392485	0.003744493	9.04467E-06	0.000392383	0.000159141	0.000232669
1	2029	Detention Basin	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	–	79.53	79.53	215	–	–	–	–	–	–	–	512969	3.38195042	0.063699522	0.002587673	0.02628838	0.007374023	0.095936221	1.912339034	0.036019318	0.001463211	0.014864882	0.004169674	0.054247566
																										Total (Tons Per Year)			*1.915731519*	*0.039763673*	*0.001472256*	*0.015257265*	*0.004328815*	*0.054480236*

Fugitive Sources

Units for Non-Greenhouse Gases Emission: Short Ton

Scenario ID	**Year**	**Project**	**Fugitive Source Type**	**Number of Months**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**VOC**
1	2029	Detention Basin	Material Movement (Paved Roads)	10	0	0	0	0	0
1	2029	Detention Basin	Material Movement (Unpaved Roads)	10	0	0	0	0.004481	0
1	2029	Detention Basin	Soil Handling	10	0	0	0	0.003725	0
1	2029	Detention Basin	Unstabilized Land and Wind Erosion	10	0	0	0	4.42455E-09	0
				TOTAL (Tons Per Year)	*0*	*0*	*0*	*0.008206004*	*0*

Total Construction Emissions by Source

Emission Source	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**VOC**
NonRoad	0.039	0.169	0.002	0.011	0.010	0.015
OnRoad	1.916	0.040	0.001	0.015	0.004	0.054
Fugitive	0.000	0.000	0.000	0.008	–	0.000
TOTAL	*1.954*	*0.208*	*0.003*	*0.034*	*0.015*	*0.069*

Airport Construction Emissions Inventory Tool (ACEIT)
Version 1.0
Run Date & Time: 7/21/2025 9:11:40 AM

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STUDY

Study Name

BHM Runway Rehab

Study Description

Alt 2 2030

EMISSIONS INVENTORY - DETAILS:

Non-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

										MOVESS NONROAD Emission Factors (g-hp-hr)						NONROAD Emissions (Tons Per Year)					
										3	5	8	6	7	10						
Scenario ID	Year	Project	Construction Activity	Equipment	MOVESS Equipment	MOVESS Lookup	Fuel	HP Average	Load Factor	Hours of Activity	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC
1	2030	Taxiways	Asphalt Placement	Asphalt Paver	Pavers	Pavers175	Diesel	175	0.59	59.454375	0.06103755	0.20689485	0.001417986	0.014072775	0.013650549	0.009003037	0.000413026	0.001400007	9.59517E-06	9.5227E-05	9.23699E-05	6.69931E-05
1	2030	Taxiways	Asphalt Placement	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	214.1294316	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.001666912	0.009429844	0.000118136	0.000537598	0.000521469	0.000800573
1	2030	Taxiways	Asphalt Placement	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	118.90875	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	0.000754995	0.002107328	1.40441E-05	0.000181296	0.000175857	0.000120845
1	2030	Taxiways	Asphalt Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	59.454375	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000462829	0.002618255	3.28011E-05	0.000149267	0.000144789	0.000222284
1	2030	Taxiways	Asphalt Placement	Roller	Rollers	Rollers100	Diesel	100	0.59	59.454375	0.114292978	0.920452722	0.001578758	0.022360167	0.021689362	0.011463415	0.000441939	0.00355913	6.10461E-06	8.64604E-05	8.38666E-05	4.43258E-05
1	2030	Taxiways	Asphalt Placement	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	59.454375	2.346448681	3.764691	0.002060626	0.41143145	0.399088575	0.491675251	0.002422044	0.003885977	2.12701E-06	0.000424686	0.000411946	0.000507515
1	2030	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	Other Construction Equipment	Other Construction Equipment25	Diesel	25	0.59	76.1016	1.492301202	3.762982242	0.002188415	0.17152718	0.166381424	0.351800694	0.001846498	0.004656124	2.70783E-06	0.000212239	0.000205872	0.0004353
1	2030	Taxiways	Clearing and Grubbing	Chain Saw	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.7	130.8	2.466354164	4.184120119	0.002183171	0.240410136	0.233197341	0.838215712	0.00273817	0.004645251	2.42378E-06	0.000266906	0.000258898	0.000930595
1	2030	Taxiways	Clearing and Grubbing	Chipper/Stump Grinder	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.43	130.8	0.126583114	0.91437985	0.001581223	0.023426504	0.022723726	0.011576347	0.000784799	0.005669038	9.80338E-06	0.000145241	0.000140884	7.17719E-05
1	2030	Taxiways	Clearing and Grubbing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	174.4	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.001357634	0.007680237	9.6217E-05	0.000437853	0.000424716	0.000652035
1	2030	Taxiways	Drainage - 24 inch SlCPP	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	137.44	0.051693172	0.173051366	0.001414635	0.011488503	0.011143835	0.008610808	0.000808617	0.002706978	2.21286E-05	0.00017971	0.000174319	0.000134696
1	2030	Taxiways	Drainage - 24 inch SlCPP	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	137.44	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.001069915	0.00605259	7.5826E-05	0.00034506	0.000334708	0.000513852
1	2030	Taxiways	Drainage - 24 inch SlCPP	Excavator	Excavators	Excavators175	Diesel	175	0.59	137.44	0.049675166	0.169189212	0.001413721	0.011068492	0.010736433	0.008275873	0.00077705	0.002646564	2.21143E-05	0.00017314	0.000167946	0.000129456
1	2030	Taxiways	Drainage - 24 inch SlCPP	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	137.44	0.439926962	1.048995702	0.00175056	0.106898716	0.103691723	0.150338047	0.006881614	0.01640905	2.73834E-05	0.001672177	0.001622011	0.002351682
1	2030	Taxiways	Drainage - 24 inch SlCPP	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	137.44	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	0.000872656	0.002435743	1.62328E-05	0.00020955	0.000203264	0.000139678
1	2030	Taxiways	Drainage - 24 inch SlCPP	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	137.44	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.001069915	0.00605259	7.5826E-05	0.00034506	0.000334708	0.000513852
1	2030	Taxiways	Drainage - 24 inch SlCPP	Roller	Rollers	Rollers100	Diesel	100	0.59	137.44	0.114292978	0.920452722	0.001578758	0.022360167	0.021689362	0.011463415	0.001021624	0.0082276	1.4112E-05	0.00019987	0.000193874	0.000102467
1	2030	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	76.35555556	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000594397	0.00336255	4.21256E-05	0.0001917	0.000185949	0.000285473
1	2030	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	76.35555556	0.439926962	1.048995702	0.00175056	0.106898716	0.103691723	0.150338047	0.003823119	0.009116139	1.5213E-05	0.000928987	0.000901117	0.00130649
1	2030	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	76.35555556	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	0.000484809	0.001353191	9.01821E-06	0.000116417	0.000112924	7.75988E-05
1	2030	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	76.35555556	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000594397	0.00336255	4.21256E-05	0.0001917	0.000185949	0.000285473
1	2030	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	76.35555556	1.101446683	1.701248302	0.00194403	0.199984167	0.193984374	0.220651589	0.001946839	0.003007005	3.43613E-06	0.000353478	0.000342873	0.000390008
1	2030	Taxiways	Dust Control	Water Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	2160	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.016814737	0.095122197	0.001191678	0.005422945	0.005260246	0.008075667
1	2030	Taxiways	Excavation (Borrow)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	264.2413333	0.051693172	0.173051366	0.001414635	0.011488503	0.011143835	0.008610808	0.001554642	0.0052044	4.25443E-05	0.00034551	0.000335144	0.000258965
1	2030	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	264.2413333	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.002057013	0.011636674	0.000145783	0.00066341	0.000643507	0.000987928
1	2030	Taxiways	Excavation (Borrow)	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	264.2413333	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.002057013	0.011636674	0.000145783	0.00066341	0.000643507	0.000987928
1	2030	Taxiways	Excavation (Borrow)	Roller	Rollers	Rollers100	Diesel	100	0.59	121.9575385	0.114292978	0.920452722	0.001578758	0.022360167	0.021689362	0.011463415	0.00090654	0.00730077	1.25223E-05	0.000177355	0.000172034	9.09246E-05
1	2030	Taxiways	Excavation (Cut to Fill)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	198.181	0.051693172	0.173051366	0.001414635	0.011488503	0.011143835	0.008610808	0.001165982	0.003903315	3.19082E-05	0.000259133	0.000251358	0.000194224
1	2030	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	528.4826667	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.004114026	0.023273348	0.000291565	0.001326821	0.001287013	0.001975857
1	2030	Taxiways	Excavation (Cut to Fill)	Excavator	Excavators	Excavators175	Diesel	175	0.59	158.5448	0.049675166	0.169189212	0.001413721	0.011068492	0.010736433	0.008275873	0.000896371	0.003052961	2.55101E-05	0.000199727	0.000193735	0.000149335
1	2030	Taxiways	Excavation (Cut to Fill)	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	158.5448	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.001234208	0.006982005	8.74696E-05	0.000398046	0.000386104	0.000592757
1	2030	Taxiways	Excavation (Cut to Fill)	Roller	Rollers	Rollers100	Diesel	100	0.59	158.5448	0.114292978	0.920452722	0.001578758	0.022360167	0.021689362	0.011463415	0.001178501	0.009491001	1.62789E-05	0.000230561	0.000223644	0.000118202
1	2030	Taxiways	Excavation (Cut to Fill)	Scraper	Scrapers	Scrapers600	Diesel	600	0.59	198.181	0.039963389	0.147985988	0.001421461	0.009995153	0.009695307	0.012141532	0.003090538	0.011444384	0.000109928	0.000772968	0.000749779	0.000938956
1	2030	Taxiways	Excavation (Topsoil Stripping)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	74.60941176	0.051693172	0.173051366	0.001414635	0.011488503	0.011143835	0.008610808	0.000438958	0.001469485	1.20125E-05	9.75559E-05	9.46291E-05	7.31197E-05
1	2030	Taxiways	Fencing	Concrete Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	47.61111111	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000370633	0.002096701	2.62672E-05	0.000119534	0.000115947	0.000178005
1	2030	Taxiways	Fencing	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	190.4444444	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.001482534	0.008386803	0.000105069	0.000478134	0.000463789	0.000712021
1	2030	Taxiways	Fencing	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	190.4444444	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	0.001209201	0.0033751	2.2493E-05	0.000290364	0.000281654	0.000193545
1	2030	Taxiways	Fencing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	190.4444444	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.001482534	0.008386803	0.000105069	0.000478134	0.000463789	0.000712021
1	2030	Taxiways	Fencing	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	190.4444444	2.346448681	3.764691	0.002060626	0.41143145	0.399088575	0.491675251	0.007758298	0.012447575	6.81325E-06	0.001360357	0.001319546	0.001625675
1	2030	Taxiways	Fencing	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	190.4444444	1.101446683	1.701248302	0.00194403	0.199984167	0.193984374	0.220651589	0.004855764	0.00750001	8.57032E-06	0.000881637	0.000855187	0.00097275
1	2030	Taxiways	Grading	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	52.442	0.051693172	0.173051366	0.001414635	0.011488503	0.011143835	0.008610808	0.000308538	0.001032882	8.44345E-06	6.85708E-05	6.65136E-05	5.13949E-05
1	2030	Taxiways	Grading	Grader	Graders	Graders300	Diesel	300	0.59	52.442	0.020622528	0.114630621	0.001414224	0.00649015	0.006295472	0.009731115	0.000211009	0.001172896	1.44703E-05	6.6407E-05	6.4415E-05	9.95684E-05
1	2030	Taxiways	Grading	Roller	Rollers	Rollers100	Diesel	100	0.59	52.442	0.114292978	0.920452722	0.001578758	0.022360167	0.021689362	0.011463415	0.000389814	0.00313947	5.3846E-06	7.62628E-05	7.39749E-05	3.90978E-05
1	2030	Taxiways	Hydroseeding	Hydroseeder	Other Construction Equipment	Other Construction Equipment600	Diesel	600	0.59	47.245	0.270994936	0.807180668	0.00150084	0.037620196	0.036491589	0.041752989	0.004996051	0.014881147	2.76694E-05	0.000693564	0.000672757	0.000769756
1	2030	Taxiways	Hydroseeding	Off-Road Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	47.245	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000367783	0.002080578	2.60652E-05	0.000118614	0.000115056	0.000176637
1	2030	Taxiways	Lighting	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	58.46666667	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.00045514	0.002574758	3.22562E-05	0.000146788	0.000142384	0.000218591
1	2030	Taxiways	Lighting	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	58.46666667	0.439926962	1.048995702	0.00175056	0.106898716	0.103691723	0.150338047	0.002927423	0.006980373	1.16488E-05	0.00071134	0.00069	0.0010004
1	2030	Taxiways	Lighting	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	58.46666667	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	0.000371226	0.00103616	6.90539E-06	8.91422E-05	8.6468E-05	5.94186E-05
1	2030	Taxiways	Lighting	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	58.46666667	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.00045514	0.002574758	3.22562E-05	0.000146788	0.000142384	0.000218591
1	2030	Taxiways	Lighting	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	58.46666667	2.346448681	3.764691	0.002060626	0.41143145	0.399088575	0.491675251	0.002381807	0.00382142	2.09168E-06	0.000417631	0.000405102	0.000499084
1	2030	Taxiways	Lighting	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	58.46666667	1.101446683	1.701248302	0.00194403	0.199984167	0.193984374	0.220651589	0.001490725	0.002302512	2.6311E-06	0.000270664	0.000262543	0.000298635
1	2030	Taxiways	Markings	Flatbed Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	979.4285714	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.00762446	0.043132129	0.000540354	0.002458975	0.002385202	0.003661824
1	2030	Taxiways	Markings	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	979.4285714	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	0.006218746	0.017357657	0.000115678	0.001493302	0.001448504	0.000995376
1	2030	Taxiways	Markings	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	979.4285714	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.00762446	0.043132129	0.000540354	0.002458975	0.002385202	0.003661824
1	2030	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	43.6	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	0.000276832	0.000772689	5.14951E-06	6.64755E-05	6.44813E-05	4.43099E-05
1	2030	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	87.2	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000678817	0.003840118	4.81085E-05	0.000218926	0.000212358	0.000326018
1	2030	Taxiways	Soil Erosion/Sediment Control	Pumps	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.43	43.6	2.466354164	4.184120119	0.002183171	0.240410136	0.233197341	0.838215712	0.000560673	0.00095117	4.96297E-07	5.46521E-05	5.30124E-05	0.00019055
1	2030	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	43.6	1.101446683	1.701248302	0.00194403	0.199984167	0.193984374	0.220651589	0.00111167	0.001717038	1.96207E-06	0.00020184	0.000195785	0.0002227
1	2030	Taxiways	Subbase Placement	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	100.1336842	0.051693172	0.173051366	0.001414635	0.011488503	0.011143835	0.008610808	0.000589128	0.001972204	1.61221E-05	0.00013093	0.000127002	9.81343E-05
1	2030	Taxiways	Subbase Placement	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	704.6444444	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000485375	0.03103117	0.000388754	0.001769096	0.00171602	0.002634479
1	2030	Taxiways	Subbase Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	100.1336842	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000779501	0.004409693	5.5244E-05	0.000251398	0.000243855	0.000374373
1	2030	Taxiways	Subbase Placement	Roller	Rollers	Rollers100	Diesel	100	0.59	97.56615385	0.114292978	0.920452722	0.001578758	0.022360167	0.021689362	0.011463415	0.000725233	0.005840624	1.00178E-05	0.000141884	0.000137627	7.27397E-05
1	2030	Taxiways	Topsoil Placement	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	116.5373333	0.051693172	0.173051366	0.001414635	0.011488503	0.011143835	0.008610808	0.000685638	0.002295285	1.87632E-05	0.000152379	0.000147807	0.00011421
1	2030	Taxiways	Topsoil Placement	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	116.5373333	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000907197	0.005132077	6.4294E-05	0.000292581	0.000283803	0.000435702
1	2030	Taxiways	Topsoil Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	116.5373333	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000907197	0.005132077	6.4294E-05	0.000292581	0.000283803	0.000435702
2	2030	Runway Markings	Marking Removal	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	14.5	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000112877	0.000638552	7.99969E-06	3.6404E-05	3.53118E-05	5.42117E-05
2	2030	Runway Markings	Marking Removal	Pressure Washer	Other Construction Equipment	Other Construction Equipment25	Diesel	25	0.43	14.5	1.492301202	3.762982242	0.002188415	0.17152718	0.166381424	0.351800694	0.000256413	0.000646569	3.76021E-07	2.94724E-05	2.85883E-05	6.04477E-05
2	2030	Runway Markings	Marking Removal	Sweepers/Scrubbers	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	14.5	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	9.20657E-05	0.000256972	1.71257E-06	2.21077E-05	2.14445E-05	1.47361E-05
2	2030	Runway Markings	Marking Removal	Water Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	14.5	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000112877	0.000638552	7.99969E-06	3.6404E-05	3.53118E-05	5.42117E-05
2	2030	Runway Markings	Markings	Flatbed Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	33.14285714	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000258004	0.001459547	1.8285E-05	8.32092E-05	8.07128E-05	0.000123912
2	2030	Runway Markings	Markings	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	33.14285714	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	0.000210436	0.000587365	3.91444E-06	5.05318E-05	4.90159E-05	3.36825E-05
2	2030	Runway Markings	Markings	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	33.14285714	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000258004	0.001459547	1.8285E-05	8.32092E-05	8.07128E-05	0.000123912
3	2030	Taxiways	Grading	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	22.3077	0.051693172	0.173051366	0.001414635	0.011488503	0.011143835	0.008610808	0.000131246	0.000439366	3.59166E-06	2.91685E-05	2.82935E-05	2.18623E-05
3	2030	Taxiways	Grading	Grader	Graders	Graders300	Diesel	300	0.59	22.3077	0.020622528	0.114630621	0.001414224	0.00649015	0.006295472	0.009731115	8.97587E-05	0.000498925	6.15535E-06	2.82481E-05	2.74008E-05	4.23543E-05
3	2030	Taxiways	Grading	Roller	Rollers	Rollers100	Diesel	100	0.59	22.3077	0.114292978	0.920452722	0.001578758	0.022360167	0.021689362	0.011463415	0.000165818	0.001335411	2.29049E-06	3.24406E-05	3.14673E-05	1.66313E-05
																Total (Tons Per Year)	***0.135718374***	***0.559367665***	***0.005156789***	***0.034830189***	***0.033785243***	***0.046165926***

On-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

																		MOVESS ONROAD Emission Factors (grams/mile)						ONROAD Emission (Tons Per Year)					
Scenario ID	Year	Project	Equipment	Equipment Category	MOVESS ONROAD LOOKUP	On-road Activity	Fuel	Roadway Type	Round Trip Distance (miles)	Distance for fugitive PM	Number of Vehicles	Number of Employees	Number of Project Days	Project Length	Project Width	Project Area	Building Height	Open Space Height	Number of Trees	Activity Rate	VMT	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC
1	2030	Taxiways	Asphalt 18 Wheeler	Combination Short-haul Truck	DieselUrban Unrestricted AccessCombination Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	193	4285	100	--	--	--	--	--	6217	2.177691072	2.674556223	0.005220325	0.317923486	0.114920561	0.099618892	0.014923946	0.018329015	3.57754E-05	0.002178763	0.000787563	0.000682699
1	2030	Taxiways	Dump Truck - Asphalt	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	193	4285	100	--	--	--	--	--	8808	0.986021745	1.019960765	0.002647663	0.111700876	0.044177824	0.062513917	0.009573491	0.009903012	2.57067E-05	0.001084527	0.000428932	0.000606961
1	2030	Taxiways	Dump Truck Subbase Material	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	4	--	193	4285	100	--	--	--	--	--	52848	0.986021745	1.019960765	0.002647663	0.111700876	0.044177824	0.062513917	0.057440946	0.059418072	0.00015424	0.006507163	0.00257359	0.003641764
1	2030	Taxiways	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	178.013	178.013	193	--	--	--	--	--	--	--	1030695	3.26133169	0.062238153	0.002522515	0.025637651	0.007273576	0.049270543	3.705370782	0.070712045	0.002865963	0.029128286	0.008263893	0.05597886
2	2030	Runway Markings	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	7	7	193	--	--	--	--	--	--	--	40530	3.26133169	0.062238153	0.002522515	0.025637651	0.007273576	0.049270543	0.145706225	0.002780608	0.000112698	0.001145411	0.000324961	0.002201256
3	2030	Taxiways	Asphalt 18 Wheeler	Combination Short-haul Truck	DieselUrban Unrestricted AccessCombination Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	193	1817	100	--	--	--	--	--	2636	2.177691072	2.674556223	0.005220325	0.317923486	0.114920561	0.099618892	0.006327734	0.007771479	1.51687E-05	0.000923793	0.000333926	0.000289463
3	2030	Taxiways	Dump Truck - Asphalt	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	193	1817	100	--	--	--	--	--	3735	0.986021745	1.019960765	0.002647663	0.111700876	0.044177824	0.062513917	0.004059604	0.004199336	1.09008E-05	0.00045989	0.000181887	0.000257379
3	2030	Taxiways	Dump Truck Subbase Material	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	2	--	193	1817	100	--	--	--	--	--	22410	0.986021745	1.019960765	0.002647663	0.111700876	0.044177824	0.062513917	0.024357622	0.025196015	6.5405E-05	0.002759338	0.001091321	0.001544277
3	2030	Taxiways	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	3.993	3.993	193	--	--	--	--	--	--	--	23119	3.26133169	0.062238153	0.002522515	0.025637651	0.007273576	0.049270543	0.083113304	0.001586106	6.4285E-05	0.000653362	0.000185363	0.001255634
																										Total (Tons Per Year)						
																										4.050873654	***0.19989569***	***0.00335014***	***0.04484053***	***0.01417144***	***0.06645829***

Fugitive Sources

Units for Non-Greenhouse Gases Emission: Short Ton

Scenario ID	Year	Project	Fugitive Source Type	Number of Months	CO	NOx	SO_2	PM_{10}	VOC
1	2030	Taxiways	Asphalt Drying	9	0	0	0	0	15.8962
1	2030	Taxiways	Asphalt Storage and Batching	9	1.0368	0.06475	0.0119	0.071	0.0321
1	2030	Taxiways	Material Movement (Paved Roads)	9	0	0	0	0.02685	0
1	2030	Taxiways	Material Movement (Unpaved Roads)	9	0	0	0	0.09975	0
1	2030	Taxiways	Soil Handling	9	0	0	0	0.1213	0
1	2030	Taxiways	Unstabilized Land and Wind Erosion	9	0	0	0	1.2965E-07	0
3	2030	Taxiways	Soil Handling	9	0	0	0	0.05145	0
3	2030	Taxiways	Unstabilized Land and Wind Erosion	9	0	0	0	0.000000055	0
				TOTAL (Tons Per Year)	*1.0368*	*0.06475*	*0.0119*	*0.370350185*	*15.9283*

Total Construction Emissions by Source

Emission Source	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC
NonRoad	0.136	0.559	0.005	0.035	0.034	0.046
OnRoad	4.051	0.200	0.003	0.045	0.014	0.066
Fugitive	1.037	0.065	0.012	0.370	--	15.928
TOTAL	**5.223**	**0.824**	**0.020**	**0.450**	**0.048**	**16.041**

Airport Construction Emissions Inventory Tool (ACEIT)
Version 1.0
Run Date & Time: 7/21/2025 9:14:19 AM

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STUDY

Study Name

BHM Runway Rehab

Study Description

Alt 2 2031

EMISSIONS INVENTORY - DETAILS:

Non-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

											MOVES5 NONROAD Emission Factors (g-hp-hr)						NONROAD Emissions (Tons Per Year)					
											3	5	8	6	7	10						
Scenario ID	Year	Project	Construction Activity	Equipment	MOVES5 Equipment	MOVES5 Lookup	Fuel	HP Average	Load Factor	Hours of Activity	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC
1	2031	Taxiways	Asphalt Placement	Asphalt Paver	Pavers	Pavers175	Diesel	175	0.59	72.663375	0.055827279	0.188632625	0.001416109	0.012652818	0.012273234	0.0091771	0.000461699	0.001560016	1.17114E-05	0.00010464	0.000101501	7.58958E-05
1	2031	Taxiways	Asphalt Placement	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	261.7026449	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.001973799	0.01141075	0.000144357	0.000647663	0.000628234	0.000970215
1	2031	Taxiways	Asphalt Placement	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	145.32675	0.070157974	0.202890649	0.001421584	0.016557298	0.016060564	0.011262897	0.000845738	0.002445798	1.71369E-05	0.000199594	0.000193606	0.000135772
1	2031	Taxiways	Asphalt Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	72.663375	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.000548038	0.003168266	4.00816E-05	0.000179828	0.000174433	0.000269386
1	2031	Taxiways	Asphalt Placement	Roller	Rollers	Rollers100	Diesel	100	0.59	72.663375	0.098081261	0.903249691	0.001576524	0.01964218	0.019052913	0.010430795	0.000463511	0.004268565	7.45032E-06	9.28247E-05	9.004E-05	4.92937E-05
1	2031	Taxiways	Asphalt Placement	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	72.663375	2.105308277	3.628547748	0.002035818	0.367888664	0.356852096	0.441898397	0.002655941	0.004577575	2.56827E-06	0.000464108	0.000450185	0.000557475
1	2031	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	Other Construction Equipment	Other Construction Equipment25	Diesel	25	0.59	93.00912	1.489564819	3.762591591	0.002188421	0.170695571	0.165574689	0.351677261	0.002252597	0.005689986	3.30944E-06	0.000258135	0.000250391	0.000531825
1	2031	Taxiways	Clearing and Grubbing	Chain Saw	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.7	159.6	2.461824986	4.183668479	0.00218318	0.239244472	0.232067075	0.837917873	0.003334935	0.005667446	2.95747E-06	0.000324095	0.000314372	0.001135093
1	2031	Taxiways	Clearing and Grubbing	Chipper/Stump Grinder	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.43	159.6	0.109493898	0.900458892	0.001578702	0.020727418	0.020105599	0.010553144	0.000828319	0.006811955	1.19429E-05	0.000156803	0.000152098	7.98343E-05
1	2031	Taxiways	Clearing and Grubbing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	212.8	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.001604968	0.009278498	0.000117382	0.000526639	0.00051084	0.000788917
1	2031	Taxiways	Drainage - 24 inch SICPP	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	167.904	0.05052449	0.171055613	0.001414169	0.011187906	0.010852264	0.008436069	0.000965516	0.00326885	2.70246E-05	0.000213799	0.000207385	0.000161212
1	2031	Taxiways	Drainage - 24 inch SICPP	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	167.904	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.001266356	0.007320944	9.2617E-05	0.00041553	0.000403064	0.000622474
1	2031	Taxiways	Drainage - 24 inch SICPP	Excavator	Excavators	Excavators175	Diesel	175	0.59	167.904	0.049182356	0.168310656	0.001413508	0.010957381	0.010628656	0.008197107	0.000939868	0.003216394	2.70119E-05	0.000209394	0.000203112	0.000156646
1	2031	Taxiways	Drainage - 24 inch SICPP	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	167.904	0.386787912	0.933889484	0.001737738	0.094307629	0.091478563	0.131749985	0.007391465	0.017846503	3.32079E-05	0.001802206	0.001748143	0.002517725
1	2031	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	167.904	0.070157974	0.202890649	0.001421584	0.016557298	0.016060564	0.011262897	0.000977127	0.002825765	1.97991E-05	0.000230602	0.000223684	0.000156864
1	2031	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	167.904	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.001266356	0.007320944	9.2617E-05	0.00041553	0.000403064	0.000622474
1	2031	Taxiways	Drainage - 24 inch SICPP	Roller	Rollers	Rollers100	Diesel	100	0.59	167.904	0.098081261	0.903249691	0.001576524	0.01964218	0.019052913	0.010430795	0.00107104	0.009863417	1.72155E-05	0.000214491	0.000208056	0.000113903
1	2031	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	93.28	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.000703531	0.004067191	5.14539E-05	0.00023085	0.00022325	0.000345819
1	2031	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	93.28	0.386787912	0.933889484	0.001737738	0.094307629	0.091478563	0.131749985	0.004106369	0.009914724	1.84489E-05	0.001001226	0.000971191	0.001398736
1	2031	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	93.28	0.070157974	0.202890649	0.001421584	0.016557298	0.016060564	0.011262897	0.000542848	0.00156987	1.09995E-05	0.000128112	0.000124269	8.71468E-05
1	2031	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	93.28	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.000703531	0.004067191	5.14539E-05	0.00023085	0.00022325	0.000345819
1	2031	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	93.28	0.965165225	1.592707497	0.001929862	0.175597583	0.17032971	0.192796041	0.002084088	0.003439144	4.16716E-06	0.000379169	0.000367794	0.000416306
1	2031	Taxiways	Dust Control	Water Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	2640	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.019911261	0.115109187	0.001456242	0.006533488	0.00633749	0.00978732
1	2031	Taxiways	Excavation (Borrow)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	322.948	0.05052449	0.171055613	0.001414169	0.011187906	0.010852264	0.008436069	0.001857082	0.006287334	5.19793E-05	0.000411224	0.000398887	0.000310077
1	2031	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	322.948	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.00243572	0.014081167	0.00017814	0.000799234	0.000775257	0.001197271
1	2031	Taxiways	Excavation (Borrow)	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	322.948	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.00243572	0.014081167	0.00017814	0.000799234	0.000775257	0.001197271
1	2031	Taxiways	Excavation (Borrow)	Roller	Rollers	Rollers100	Diesel	100	0.59	149.0529231	0.098081261	0.903249691	0.001576524	0.01964218	0.019052913	0.010430795	0.000950791	0.008756022	1.52827E-05	0.00019041	0.000184697	0.000101115
1	2031	Taxiways	Excavation (Cut to Fill)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	242.211	0.05052449	0.171055613	0.001414169	0.011187906	0.010852264	0.008436069	0.001392812	0.0047155	3.89845E-05	0.000308418	0.000299165	0.000232558
1	2031	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	645.896	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.004871441	0.028162335	0.000356281	0.001598467	0.001550515	0.002394542
1	2031	Taxiways	Excavation (Cut to Fill)	Excavator	Excavators	Excavators175	Diesel	175	0.59	193.7688	0.049182356	0.168310656	0.001413508	0.010957381	0.010628656	0.008197107	0.00108465	0.003711864	3.1173E-05	0.00024165	0.000234401	0.000180776
1	2031	Taxiways	Excavation (Cut to Fill)	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	193.7688	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.001461432	0.0084487	0.000106884	0.00047954	0.000465154	0.000718363
1	2031	Taxiways	Excavation (Cut to Fill)	Roller	Rollers	Rollers100	Diesel	100	0.59	193.7688	0.098081261	0.903249691	0.001576524	0.01964218	0.019052913	0.010430795	0.001236028	0.011382829	1.98675E-05	0.000247532	0.000240106	0.00013145
1	2031	Taxiways	Excavation (Cut to Fill)	Scraper	Scrapers	Scrapers600	Diesel	600	0.59	242.211	0.034881103	0.139246753	0.001419565	0.009011062	0.00874073	0.011494357	0.00329681	0.013160995	0.000134171	0.000851686	0.000826136	0.001086396
1	2031	Taxiways	Excavation (Topsoil Stripping)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	91.18541176	0.05052449	0.171055613	0.001414169	0.011187906	0.010852264	0.008436069	0.000524353	0.001775249	1.46765E-05	0.00011611	0.000112627	8.75512E-05
1	2031	Taxiways	Fencing	Concrete Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	58.18888889	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.000438869	0.00253715	3.20974E-05	0.000144006	0.000139686	0.000215725
1	2031	Taxiways	Fencing	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	232.7555556	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.001755476	0.0101486	0.00012839	0.000576025	0.000558745	0.000862899
1	2031	Taxiways	Fencing	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	232.7555556	0.070157974	0.202890649	0.001421584	0.016557298	0.016060564	0.011262897	0.001354535	0.003917194	2.74464E-05	0.00031967	0.00031008	0.000217452
1	2031	Taxiways	Fencing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	232.7555556	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.001755476	0.0101486	0.00012839	0.000576025	0.000558745	0.000862899
1	2031	Taxiways	Fencing	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	232.7555556	2.105308277	3.628547748	0.002035818	0.367888664	0.356852096	0.441898397	0.008507517	0.014662904	8.22671E-06	0.001486632	0.001442034	0.001785704
1	2031	Taxiways	Fencing	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	232.7555556	0.965165225	1.592707497	0.001929862	0.175597583	0.17032971	0.192796041	0.00520029	0.008581474	1.03981E-05	0.000946116	0.000917733	0.001038781
1	2031	Taxiways	Grading	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	64.0659	0.05052449	0.171055613	0.001414169	0.011187906	0.010852264	0.008436069	0.000368405	0.001247271	1.03116E-05	8.15779E-05	7.91305E-05	6.15125E-05
1	2031	Taxiways	Grading	Grader	Graders	Graders300	Diesel	300	0.59	64.0659	0.019981754	0.113311271	0.001413932	0.006380859	0.006189409	0.009624643	0.00024977	0.00141638	1.7674E-05	7.97601E-05	7.7367E-05	0.00012037
1	2031	Taxiways	Grading	Roller	Rollers	Rollers100	Diesel	100	0.59	64.0659	0.098081261	0.903249691	0.001576524	0.01964218	0.019052913	0.010430795	0.000408669	0.003763512	6.5688E-06	8.18418E-05	7.93865E-05	4.34613E-05
1	2031	Taxiways	Hydroseeding	Hydroseeder	Other Construction Equipment	Other Construction Equipment600	Diesel	600	0.59	57.717	0.237107516	0.716561405	0.001489726	0.033392671	0.032390868	0.037323256	0.005340217	0.016138641	3.35521E-05	0.000752081	0.000729518	0.000840607
1	2031	Taxiways	Hydroseeding	Off-Road Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	57.717	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.00043531	0.002516575	3.18371E-05	0.000142838	0.000138553	0.000213975
1	2031	Taxiways	Lighting	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	71.16	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.000536699	0.003102716	3.92524E-05	0.000176107	0.000170824	0.000263813
1	2031	Taxiways	Lighting	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	71.16	0.386787912	0.933889484	0.001737738	0.094307629	0.091478563	0.131749985	0.003132603	0.007563591	1.4074E-05	0.00076399	0.00074087	0.001067046
1	2031	Taxiways	Lighting	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	71.16	0.070157974	0.202890649	0.001421584	0.016557298	0.016060564	0.011262897	0.00041412	0.001197598	8.39115E-06	9.77324E-05	9.48003E-05	6.64812E-05
1	2031	Taxiways	Lighting	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	71.16	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.000536699	0.003102716	3.92524E-05	0.000176107	0.000170824	0.000263813
1	2031	Taxiways	Lighting	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	71.16	2.105308277	3.628547748	0.002035818	0.367888664	0.356852096	0.441898397	0.00260099	0.004482867	2.51514E-06	0.000454506	0.000440871	0.000545941
1	2031	Taxiways	Lighting	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	71.16	0.965165225	1.592707497	0.001929862	0.175597583	0.17032971	0.192796041	0.001589877	0.002623601	3.17898E-06	0.000289255	0.000280577	0.000317585
1	2031	Taxiways	Markings	Flatbed Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	1197.028571	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.009028162	0.052192798	0.000660289	0.002962413	0.002873544	0.004437766
1	2031	Taxiways	Markings	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	1197.028571	0.070157974	0.202890649	0.001421584	0.016557298	0.016060564	0.011262897	0.006966178	0.020145571	0.000141153	0.00164402	0.001594698	0.001118324
1	2031	Taxiways	Markings	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	1197.028571	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.009028162	0.052192798	0.000660289	0.002962413	0.002873544	0.004437766
1	2031	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	53.2	0.070157974	0.202890649	0.001421584	0.016557298	0.016060564	0.011262897	0.000309601	0.000895337	6.27332E-06	7.30658E-05	7.08738E-05	4.97021E-05
1	2031	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	106.4	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.000802484	0.004639249	5.8691E-05	0.000263319	0.00025542	0.000394459
1	2031	Taxiways	Soil Erosion/Sediment Control	Pumps	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.43	53.2	2.461824986	4.183668479	0.00218318	0.239244472	0.232067075	0.837917873	0.000682868	0.001160477	6.05576E-07	6.63623E-05	6.43714E-05	0.000232424
1	2031	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	53.2	0.965165225	1.592707497	0.001929862	0.175597583	0.17032971	0.192796041	0.001188609	0.001961433	2.37664E-06	0.00021625	0.000209763	0.00023743
1	2031	Taxiways	Subbase Placement	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	122.3804211	0.05052449	0.171055613	0.001414169	0.011187906	0.010852264	0.008436069	0.000703737	0.002382571	1.96974E-05	0.000155832	0.000151157	0.000117503
1	2031	Taxiways	Subbase Placement	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	861.1955556	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.006495261	0.037549818	0.000475041	0.002131292	0.002067355	0.003192726
1	2031	Taxiways	Subbase Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	122.3804211	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.000923011	0.005336027	6.75059E-05	0.000302868	0.000293782	0.000453703
1	2031	Taxiways	Subbase Placement	Roller	Rollers	Rollers100	Diesel	100	0.59	119.2424615	0.098081261	0.903249691	0.001576524	0.01964218	0.019052913	0.010430795	0.000760634	0.007004825	1.22262E-05	0.000152328	0.000147758	8.08922E-05
1	2031	Taxiways	Topsoil Placement	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	142.368	0.05052449	0.171055613	0.001414169	0.011187906	0.010852264	0.008436069	0.000818674	0.002771701	2.29145E-05	0.000181283	0.000175845	0.000136694
1	2031	Taxiways	Topsoil Placement	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	142.368	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.00107376	0.006207525	7.85312E-05	0.000352333	0.000341764	0.000527803
1	2031	Taxiways	Topsoil Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	142.368	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.00107376	0.006207525	7.85312E-05	0.000352333	0.000341764	0.000527803
2	2031	Runway Markings	Marking Removal	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	17.7	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.000133496	0.000771755	9.76344E-06	4.38041E-05	4.249E-05	6.56195E-05
2	2031	Runway Markings	Marking Removal	Pressure Washer	Other Construction Equipment	Other Construction Equipment25	Diesel	25	0.43	17.7	1.489564819	3.762591591	0.002188421	0.170695571	0.165574689	0.351677261	0.000312426	0.000789179	4.59007E-07	3.58023E-05	3.47282E-05	7.3762E-05
2	2031	Runway Markings	Marking Removal	Sweepers/Scrubbers	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	17.7	0.070157974	0.202890649	0.001421584	0.016557298	0.016060564	0.011262897	0.000103006	0.000297885	2.08717E-06	2.43095E-05	2.35802E-05	1.65362E-05
2	2031	Runway Markings	Marking Removal	Water Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	17.7	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.000133496	0.000771755	9.76344E-06	4.38041E-05	4.249E-05	6.56195E-05
2	2031	Runway Markings	Markings	Flatbed Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	40.45714286	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.000305134	0.001764011	2.23164E-05	0.000100124	9.712E-05	0.000149988
2	2031	Runway Markings	Markings	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	40.45714286	0.070157974	0.202890649	0.001421584	0.016557298	0.016060564	0.011262897	0.000235443	0.00068088	4.77068E-06	5.55645E-05	5.38976E-05	3.77971E-05
2	2031	Runway Markings	Markings	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	40.45714286	0.019327916	0.111736809	0.001413579	0.006342075	0.006151819	0.009500579	0.000305134	0.001764011	2.23164E-05	0.000100124	9.712E-05	0.000149988
3	2031	Taxiways	Grading	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	26.9841	0.05052449	0.171055613	0.001414169	0.011187906	0.010852264	0.008436069	0.00011517	0.000525342	4.34316E-06	3.436E-05	3.33292E-05	2.59086E-05
3	2031	Taxiways	Grading	Grader	Graders	Graders300	Diesel	300	0.59	26.9841	0.019981754	0.113311271	0.001413932	0.006380859	0.006189409	0.009624643	0.000105201	0.000596569	7.44417E-06	3.35944E-05	3.25864E-05	5.06725E-05
3	2031	Taxiways	Grading	Roller	Rollers	Rollers100	Diesel	100	0.59	26.9841	0.098081261	0.903249691	0.001576524	0.01964218	0.019052913	0.010430795	0.000172128	0.001585164	2.76673E-06	3.44712E-05	3.3437E-05	1.83056E-05
										Total (Tons Per Year)							***0.154886797***	***0.666617736***	***0.006298449***	***0.040469232***	***0.039255183***	***0.054350712***

On-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

																			MOVESS ONROAD Emission Factors (grams/mile)						ONROAD Emission (Tons Per Year)					
Scenario ID	Year	Project	Equipment	Equipment Category	MOVESS ONROAD LOOKUP	On-road Activity	Fuel	Roadway Type	Round Trip Distance (miles)	Distance for fugitive PM	Number of Vehicles	Number of Employees	Number of Project Days	Project Length	Project Width	Project Area	Building Height	Open Space Height	Number of Trees	Activity Rate	VMT	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC
1	2031	Taxiways	Asphalt 18 Wheeler	Combination Short-haul Truck	DieselUrban Unrestricted AccessCombi	Material Delivery	Diesel	Urban Unrestricted	40	5	1	--	236	5237	100	--	--	--	--	--	7599	2.145494061	2.448394445	0.005138804	0.315799476	0.112795504	0.094780711	0.017971747	0.020508994	4.30452E-05	0.002645297	0.000944832	0.000793931
1	2031	Taxiways	Dump Truck - Asphalt	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingl	Material Delivery	Diesel	Urban Unrestricted	40	5	1	--	236	5237	100	--	--	--	--	--	10765	0.959942025	0.929169778	0.002614922	0.106580432	0.040987859	0.057058299	0.011391098	0.01102594	3.10298E-05	0.001264731	0.00048638	0.000677079
1	2031	Taxiways	Dump Truck Subbase Material	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingl	Material Delivery	Diesel	Urban Unrestricted	40	5	4	--	236	5237	100	--	--	--	--	--	64590	0.959942025	0.929169778	0.002614922	0.106580432	0.040987859	0.057058299	0.068346585	0.066155643	0.000186179	0.007588384	0.002918281	0.004062474
1	2031	Taxiways	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPa	Employee Commute	Gasoline	Urban Unrestricted	30	--	217.569	217.569	236	--	--	--	--	--	--	--	1540389	3.135346575	0.057012326	0.002454221	0.025063759	0.00718005	0.092312734	5.32380936	0.096806763	0.00416726	0.042558189	0.012191704	0.156746754
2	2031	Runway Markings	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPa	Employee Commute	Gasoline	Urban Unrestricted	30	--	7	7	236	--	--	--	--	--	--	--	49560	3.135346575	0.057012326	0.002454221	0.025063759	0.00718005	0.092312734	0.171286598	0.003114631	0.000134076	0.001369254	0.000392252	0.005043122
3	2031	Taxiways	Asphalt 18 Wheeler	Combination Short-haul Truck	DieselUrban Unrestricted AccessCombi	Material Delivery	Diesel	Urban Unrestricted	40	5	1	--	236	2200	100	--	--	--	--	--	3192	2.145494061	2.448394445	0.005138804	0.315799476	0.112795504	0.094780711	0.007549127	0.008614911	1.80814E-05	0.001111171	0.000396882	0.000333495
3	2031	Taxiways	Dump Truck - Asphalt	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingl	Material Delivery	Diesel	Urban Unrestricted	40	5	1	--	236	2200	100	--	--	--	--	--	4522	0.959942025	0.929169778	0.002614922	0.106580432	0.040987859	0.057058299	0.004785002	0.004631612	1.30345E-05	0.000531269	0.000204311	0.000284417
3	2031	Taxiways	Dump Truck Subbase Material	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingl	Material Delivery	Diesel	Urban Unrestricted	40	5	2	--	236	2200	100	--	--	--	--	--	27133	0.959942025	0.929169778	0.002614922	0.106580432	0.040987859	0.057058299	0.028711068	0.027790696	7.82101E-05	0.003187732	0.001225913	0.001706566
3	2031	Taxiways	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPa	Employee Commute	Gasoline	Urban Unrestricted	30	--	4.84891	4.84891	236	--	--	--	--	--	--	--	34330	3.135346575	0.057012326	0.002454221	0.025063759	0.00718005	0.092312734	0.118649494	0.002157492	9.2874E-05	0.000948476	0.000271711	0.003493349
																											Total (Tons Per Year)					
																											5.752500079	***0.24080668***	***0.00476379***	***0.0612045***	***0.01903227***	***0.17314119***

Fugitive Sources

Units for Non-Greenhouse Gases Emission: Short Ton

Scenario ID	Year	Project	Fugitive Source Type	Number of Months	CO	NOx	SO_2	PM_{10}	VOC
1	2031	Taxiways	Asphalt Drying	11	0	0	0	0	19.4279
1	2031	Taxiways	Asphalt Storage and Batching	11	1.26715	0.0791	0.01455	0.08675	0.03925
1	2031	Taxiways	Material Movement (Paved Roads)	11	0	0	0	0.03285	0
1	2031	Taxiways	Material Movement (Unpaved Roads)	11	0	0	0	0.12195	0
1	2031	Taxiways	Soil Handling	11	0	0	0	0.14825	0
1	2031	Taxiways	Unstabilized Land and Wind Erosion	11	0	0	0	1.937E-07	0
3	2031	Taxiways	Soil Handling	11	0	0	0	0.06225	0
3	2031	Taxiways	Unstabilized Land and Wind Erosion	11	0	0	0	8.135E-08	0
				TOTAL (Tons Per Year)	***1.26715***	***0.0791***	***0.01455***	***0.452050275***	***19.46715***

Total Construction Emissions by Source

Emission Source	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC
NonRoad	0.155	0.667	0.006	0.040	0.039	0.054
OnRoad	5.753	0.241	0.005	0.061	0.019	0.173
Fugitive	1.267	0.079	0.015	0.452	--	19.467
TOTAL	***7.175***	***0.987***	***0.026***	***0.554***	***0.058***	***19.695***

Airport Construction Emissions Inventory Tool (ACEIT)
Version 1.0
Run Date & Time:7/21/2025 9:37:59 AM

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STUDY

Study Name

BHM Runway Rehab

Study Description

Alt 4 2027

EMISSIONS INVENTORY - DETAILS:

Non-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

											MOVES NONROAD Emission Factors (g-hp-hr)						NONROAD Emissions (Tons Per Year)					
											3	5	8	6	7	10						
Scenario ID	Year	Project	Construction Activity	Equipment	MOVES Equipment	MOVES Lookup	Fuel	HP Average	Load Factor	Hours of Activity	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC
1	2027	Demolition - Asphalt	Asphalt Demolition	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	1280.8	0.064716295	0.215633704	0.001419187	0.015111108	0.014657774	0.010386289	0.009433906	0.031433631	0.000206879	0.002202796	0.002136712	0.001514043
1	2027	Demolition - Asphalt	Asphalt Demolition	Excavator	Excavators	Excavators175	Diesel	175	0.59	1280.8	0.05412755	0.17731496	0.001415506	0.012192621	0.011826843	0.008947677	0.00789035	0.025847783	0.000206343	0.001777358	0.001724038	0.001304332
1	2027	Demolition - Asphalt	Asphalt Demolition	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	2561.6	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.023496337	0.119399475	0.001414623	0.006986588	0.006777003	0.010030567
2	2027	Demolition - Building	Building Demolition	Bob Cat	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes75	Diesel	75	0.21	1473.6	1.704951625	3.398511197	0.001995341	0.294004152	0.285184472	0.356756654	0.043619307	0.086947162	5.10486E-05	0.007521772	0.00729613	0.009127226
2	2027	Demolition - Building	Building Demolition	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	1473.6	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.013516631	0.068686394	0.000813784	0.004019143	0.003898576	0.005770238
2	2027	Demolition - Building	Building Demolition	Excavator with Bucket	Excavators	Excavators175	Diesel	175	0.59	736.8	0.05412755	0.17731496	0.001415506	0.012192621	0.011826843	0.008947677	0.004539046	0.014869336	0.000118702	0.001022453	0.000991779	0.000750337
2	2027	Demolition - Building	Building Demolition	Generator Sets	Other Construction Equipment	Other Construction Equipment40	Diesel	40	0.43	736.8	0.279215562	2.529541105	0.00156942	0.020546895	0.019930491	0.092521314	0.003900535	0.035336728	2.19242E-05	0.000287032	0.000278421	0.001292488
2	2027	Demolition - Building	Building Demolition	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	859.6	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.007884701	0.040067063	0.000474707	0.0023445	0.002274169	0.003365972
3	2027	Site Work - 10000 sqft	Construction Mob & Layout	Survey Crew Trucks	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	10	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	9.17252E-05	0.000466113	5.52242E-06	2.72743E-05	2.64561E-05	3.91574E-05
3	2027	Site Work - 10000 sqft	Construction Mob & Layout	Tractor Trailers Temp Fac.	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	4	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	3.66901E-05	0.000186445	2.20897E-06	1.09097E-05	1.05825E-05	1.5663E-05
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Bulldozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	40	0.064716295	0.215633704	0.001419187	0.015111108	0.014657774	0.010386289	0.000294625	0.000981687	6.46095E-06	6.87944E-05	6.67305E-05	4.72843E-05
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Chain Saws	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.7	40	2.453101234	4.182813068	0.002183181	0.236999172	0.229888713	0.83734822	0.000832861	0.001420122	7.4122E-07	8.04645E-05	7.80504E-05	0.000284291
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Flat Bed or Dump Trucks	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	80	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.000733802	0.003728903	4.41793E-05	0.000218195	0.000211649	0.000313259
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Front Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	40	1.603434243	2.099963372	0.001995736	0.290317245	0.281607687	0.323889814	0.001484694	0.001944453	1.84794E-06	0.000268818	0.000260754	0.000299905
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Grub the site down 2'-0	Other Construction Equipment	Other Construction Equipment40	Diesel	40	0.59	40	0.279215562	2.529541105	0.00156942	0.020546895	0.019930491	0.092521314	0.000290548	0.002632208	1.63312E-06	2.13808E-05	2.07394E-05	9.62765E-05
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Log Chipper	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.43	40	0.347252136	1.113953382	0.001614957	0.05875026	0.056987793	0.031837056	0.000658385	0.002112039	3.06194E-06	0.00011139	0.000108048	6.03626E-05
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Mulcher	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.43	40	0.347252136	1.113953382	0.001614957	0.05875026	0.056987793	0.031837056	0.000658385	0.002112039	3.06194E-06	0.00011139	0.000108048	6.03626E-05
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Ten Wheelers	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	40	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.000366901	0.001864452	2.20897E-05	0.000109097	0.000105825	0.00015663
3	2027	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Tractor	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	80	1.603434243	2.099963372	0.001995736	0.290317245	0.281607687	0.323889814	0.002969388	0.003888907	3.69589E-06	0.000537636	0.000521507	0.000599809
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Curbing)	Bob Cat	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes75	Diesel	75	0.21	24	1.704951625	3.398511197	0.001995341	0.294004152	0.285184472	0.356756654	0.000710412	0.001416078	8.31411E-07	0.000122504	0.000118829	0.000148652
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Curbing)	Concrete Ready Mix Trucks	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	24	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.000220141	0.001118671	1.32538E-05	6.54584E-05	6.34947E-05	9.39778E-05
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Curbing)	Tractor Trailer with Boom Hoist- Delivery	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	24	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.000220141	0.001118671	1.32538E-05	6.54584E-05	6.34947E-05	9.39778E-05
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Rough Grading)	Compacting Equipment	Plate Compactors	Plate Compactors6	Diesel	6	0.43	24	2.489618544	4.19186665	0.002161869	0.245712504	0.238340785	0.839335854	0.00016993	0.000286118	1.47559E-07	1.67712E-05	1.62681E-05	5.72893E-05
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Rough Grading)	Small Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	24	0.064716295	0.215633704	0.001419187	0.015111108	0.014657774	0.010386289	0.000176775	0.000589012	3.87657E-06	4.12766E-05	4.00383E-05	2.83706E-05
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Top Soil Seed and Plantings)	Forktruck (Hoist)	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.59	80	0.347252136	1.113953382	0.001614957	0.05875026	0.056987793	0.031837056	0.001806731	0.005795829	8.40252E-06	0.000305674	0.000296504	0.000165646
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Top Soil Seed and Plantings)	Roller	Rollers	Rollers100	Diesel	100	0.59	40	0.186333185	0.993132815	0.001588795	0.03435292	0.033322357	0.015916685	0.00048474	0.002583604	4.1332E-06	8.9368E-05	8.66871E-05	4.14068E-05
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Top Soil Seed and Plantings)	Seed Truck Spreader	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	16	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.00014676	0.000745781	8.83587E-06	4.36389E-05	4.23298E-05	6.26519E-05
3	2027	Site Work - 10000 sqft	Site Restoration- Landscaping (Top Soil Seed and Plantings)	Tractor Trailer- Material Delivery	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	80	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.000733802	0.003728903	4.41793E-05	0.000218195	0.000211649	0.000313259
3	2027	Site Work - 10000 sqft	Underground Services to 5 ft. of Building	Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	120	1.603434243	2.099963372	0.001995736	0.290317245	0.281607687	0.323889814	0.004454082	0.00583336	5.54383E-06	0.000806455	0.000782261	0.000899714
3	2027	Site Work - 10000 sqft	Underground Services to 5 ft. of Building	Fork Truck	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.59	60	0.347252136	1.113953382	0.001614957	0.05875026	0.056987793	0.031837056	0.001355048	0.004346872	6.30189E-06	0.000229255	0.000222378	0.000124235
3	2027	Site Work - 10000 sqft	Underground Services to 5 ft. of Building	Tractor Trailer- Material Delivery	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	30	0.023506017	0.119448667	0.001415205	0.006989467	0.006779795	0.010034699	0.000275176	0.001398339	1.65673E-05	8.18229E-05	7.93684E-05	0.000117472
																Total (Tons Per Year)	***0.13345256***	***0.472886178***	***0.00352784***	***0.02981287***	***0.02891852***	***0.03727486***

On-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

																			MOVESS ONROAD Emission Factors (grams/mile)						ONROAD Emission (Tons Per Year)					
Scenario ID	Year	Project	Equipment	Equipment Category	MOVESS ONROAD LOOKUP	On-road Activity	Fuel	Roadway Type	Round Trip Distance (miles)	Distance for fugitive PM	Number of Vehicles	Number of Employees	Number of Project Days	Project Length	Project Width	Project Area	Building Height	Open Space Height	Number of Trees	Activity Rate	VMT	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC
1	2027	Demolition - Asphalt	Dump Truck	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	21	--	172	12808	100	--	--	--	--	--	284622	1.0762657	1.3532121	0.00284932	0.13078104	0.05649869	0.08802155	0.337671572	0.42456176	0.00089396	0.04103173	0.01772611	0.0276162
1	2027	Demolition - Asphalt	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	56.353	56.353	172	--	--	--	--	--	--	--	290781	3.63025764	0.07933576	0.00271891	0.02788119	0.00758425	0.1008838	1.163616864	0.02542972	0.0008715	0.00893684	0.002431	0.03233657
2	2027	Demolition - Building	Dump Truck	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	172	--	--	61400	20	20	--	--	0	1.0762657	1.3532121	0.00284932	0.13078104	0.05649869	0.08802155	0	0	0	0	0	0
2	2027	Demolition - Building	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	5.5	5.5	172	--	--	--	--	--	--	--	28380	3.63025764	0.07933576	0.00271891	0.02788119	0.00758425	0.1008838	0.113568103	0.00248192	8.5058E-05	0.00087223	0.00023726	0.00315602
3	2027	Site Work - 10000 sqft	Dump Truck Subbase Material	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	172	--	--	10000	--	--	--	--	1233	1.0762657	1.3532121	0.00284932	0.13078104	0.05649869	0.08802155	0.001462814	0.00183923	3.8727E-06	0.00017775	7.6791E-05	0.00011964
3	2027	Site Work - 10000 sqft	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	206.206	206.206	172	--	--	--	--	--	--	--	1064023	3.63025764	0.07933576	0.00271891	0.02788119	0.00758425	0.1008838	4.257895483	0.09305218	0.00318898	0.03270159	0.0088955	0.11832567
3	2027	Site Work - 10000 sqft	Tractor Trailer	Combination Short-haul Truck	DieselUrban Unrestricted AccessCombination Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	172	--	--	10000	--	--	--	0.008	800	2.2620730	3.4046946	0.0054947	0.3270600	0.1246653	0.1192404	0.001994817	0.00300244	4.8456E-06	0.00028842	0.00010994	0.00010515
																										Total (Tons Per Year)								
																												5.876209653	*0.55036724*	*0.00504821*	*0.08400855*	*0.0294766*	*0.18165926*

Fugitive Sources

Units for Non-Greenhouse Gases Emission: Short Ton

Scenario ID	Year	Project	Fugitive Source Type	Number of Months	CO	NOx	SO_2	PM_{10}	VOC
1	2027	Demolition - Asphalt	Material Movement (Paved Roads)	8	0	0	0	0.0838	0
1	2027	Demolition - Asphalt	Material Movement (Unpaved Roads)	8	0	0	0	0.26925	0
1	2027	Demolition - Asphalt	Soil Handling	8	0	0	0	0.3625	0
1	2027	Demolition - Asphalt	Unstabilized Land and Wind Erosion	8	0	0	0	3.445E-07	0
3	2027	Site Work - 10000 sqft	Material Movement (Paved Roads)	8	0	0	0	0.0039915	0
3	2027	Site Work - 10000 sqft	Material Movement (Unpaved Roads)	8	0	0	0	0.0121	0
3	2027	Site Work - 10000 sqft	Soil Handling	8	0	0	0	0.0028305	0
3	2027	Site Work - 10000 sqft	Unstabilized Land and Wind Erosion	8	0	0	0	2.69E-09	0
				TOTAL (Tons Per Year)	*0*	*0*	*0*	*0.734472347*	*0*

Total Construction Emissions by Source

Emission Source	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC
NonRoad	0.133	0.473	0.004	0.030	0.029	0.037
OnRoad	5.876	0.550	0.005	0.084	0.029	0.182
Fugitive	0.000	0.000	0.000	0.734	--	0.000
TOTAL	*6.010*	*1.023*	*0.009*	*0.848*	*0.058*	*0.219*

Airport Construction Emissions Inventory Tool (ACEIT)
Version 1.0
Run Date & Time: 7/21/2025 9:44:03 AM

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STUDY

Study Name

BHM Runway Rehab

Study Description

Alt 4 2028

EMISSIONS INVENTORY - DETAILS:

Non-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

										MOVESS NONROAD Emission Factors (g-hp-hr)					NONROAD Emissions (Tons Per Year)				
										3	5	4	6	7	10				
Scenario ID	Year	Project	Construction Activity	Equipment	MOVESS Equipment	MOVESS Lookup	Fuel	HP Average	Load Factor	Hours of Activity	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC
1	2028	Service Road	Asphalt Placement	Asphalt Paver	Pavers	Pavers175	Diesel	175	0.59	3.46875	0.073513337	0.256908347	0.001422465	0.017374385	0.016853119	0.01163559	2.90226E-05	0.000101426	5.6158E-07	6.85929E-06	6.6535E-06	4.59365E-06
1	2028	Service Road	Asphalt Placement	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	12.49296567	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000107175	0.000568167	6.89637E-06	3.27921E-05	3.18084E-05	4.79934E-05
1	2028	Service Road	Asphalt Placement	Other Construction Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	6.9375	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	7.56444E-05	0.00018561	8.31298E-07	1.88483E-05	1.82829E-05	1.27512E-05
1	2028	Service Road	Asphalt Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	3.46875	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	2.97578E-05	0.000157755	1.91482E-06	9.10494E-06	8.83179E-06	1.33257E-05
1	2028	Service Road	Asphalt Placement	Roller	Rollers	Rollers100	Diesel	100	0.59	3.46875	0.15799564	0.964323424	0.001584842	0.02963197	0.028743069	0.014176639	3.56432E-05	0.000217548	3.57534E-07	6.68486E-06	6.48432E-06	3.19819E-06
1	2028	Service Road	Asphalt Placement	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	3.46875	3.474992679	4.394927682	0.002180955	0.605662372	0.58749222	0.717117729	0.000209273	0.000264674	1.31143E-07	3.64746E-05	3.53804E-05	4.31868E-05
1	2028	Service Road	Asphalt Placement	Surfacing Equipment (Grooving)	Other Construction Equipment	Other Construction Equipment25	Diesel	25	0.59	4.44	1.488402809	3.76241875	0.002188421	0.170343469	0.165233336	0.351624322	0.000107449	0.000271612	1.57984E-07	1.22972E-05	1.19283E-05	2.5384E-05
1	2028	Service Road	Clearing and Grubbing	Chain Saw	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.7	14.4	2.459906692	4.18348492	0.002183174	0.238750618	0.231588554	0.837792752	0.000300662	0.000511326	2.66838E-07	2.91813E-05	2.83059E-05	0.000102399
1	2028	Service Road	Clearing and Grubbing	Chipper/Stump Grinder	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.43	14.4	0.278945957	1.044935474	0.00160421	0.047506797	0.046081605	0.023310119	0.000190396	0.000713226	1.09496E-06	3.2426E-05	3.14532E-05	1.59104E-05
1	2028	Service Road	Clearing and Grubbing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	19.2	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000164714	0.000873196	1.05988E-05	5.03971E-05	4.88852E-05	7.37593E-05
1	2028	Service Road	Drainage - 24 inch SICPP	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	80.32	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009151783	0.000533188	0.001753132	1.29533E-05	0.000122324	0.000118654	8.69891E-05
1	2028	Service Road	Drainage - 24 inch SICPP	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	80.32	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.006068905	0.003652872	4.43383E-05	0.000210828	0.000204503	0.000308656
1	2028	Service Road	Drainage - 24 inch SICPP	Excavator	Excavators	Excavators175	Diesel	175	0.59	80.32	0.052318238	0.173861284	0.00141482	0.011703848	0.011352723	0.008685845	0.00047827	0.001589363	1.29337E-05	0.000106991	0.000103782	7.94022E-05
1	2028	Service Road	Drainage - 24 inch SICPP	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	80.32	0.567234077	1.319710422	0.001780501	0.136582566	0.132485137	0.194208486	0.005185404	0.012064211	1.62766E-05	0.001248578	0.001211121	0.001775368
1	2028	Service Road	Drainage - 24 inch SICPP	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	80.32	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	0.000857785	0.002148931	9.62448E-06	0.00021822	0.000211673	0.000147629
1	2028	Service Road	Drainage - 24 inch SICPP	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	80.32	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.006968052	0.003652872	4.43383E-05	0.000210828	0.000204503	0.000308656
1	2028	Service Road	Drainage - 24 inch SICPP	Roller	Rollers	Rollers100	Diesel	100	0.59	80.32	0.15799564	0.964323424	0.001584842	0.02963197	0.028743069	0.014176639	0.000825329	0.005037383	8.27881E-06	0.00015479	0.000150147	7.40552E-05
1	2028	Service Road	Drainage - 6 inch Perforated Underdrain	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	44.62222222	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000382807	0.002029373	2.46324E-05	0.000117127	0.000113613	0.000171422
1	2028	Service Road	Drainage - 6 inch Perforated Underdrain	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	44.62222222	0.567234077	1.319710422	0.001780501	0.136582566	0.132485137	0.194208486	0.00288078	0.00670234	9.04253E-06	0.000693654	0.000672845	0.000986316
1	2028	Service Road	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	44.62222222	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	0.000486547	0.001193385	5.34694E-06	0.000121233	0.000117596	8.20183E-05
1	2028	Service Road	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	44.62222222	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000382807	0.002029373	2.46324E-05	0.000117127	0.000113613	0.000171422
1	2028	Service Road	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	44.62222222	1.421973907	1.956077636	0.001977099	0.257676578	0.249946118	0.286538927	0.00146882	0.00202052	2.04223E-06	0.000266166	0.00025818	0.000295979
1	2028	Service Road	Dust Control	Water Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	1920	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.016471371	0.08731964	0.001059879	0.005039709	0.004888517	0.007375933
1	2028	Service Road	Excavation (Borrow)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	15.41733333	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009151783	0.000102345	0.000336512	2.48637E-06	2.348E-05	2.27756E-05	1.66975E-05
1	2028	Service Road	Excavation (Borrow)	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	15.41733333	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000132263	0.000701165	8.51068E-06	4.04682E-05	3.92541E-05	5.92277E-05
1	2028	Service Road	Excavation (Borrow)	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	15.41733333	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000132263	0.000701165	8.51068E-06	4.04682E-05	3.92541E-05	5.92277E-05
1	2028	Service Road	Excavation (Borrow)	Roller	Rollers	Rollers100	Diesel	100	0.59	7.115692308	0.15799564	0.964323424	0.001584842	0.02963197	0.028743069	0.014176639	7.31174E-05	0.000446271	7.33435E-07	1.37131E-05	1.33018E-05	6.56068E-06
1	2028	Service Road	Excavation (Cut to Fill)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	11.563	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009151783	7.67587E-05	0.000252384	1.86478E-06	1.761E-05	1.70817E-05	1.25231E-05
1	2028	Service Road	Excavation (Cut to Fill)	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	30.83466667	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000260526	0.001402329	1.70214E-05	8.09363E-05	7.85082E-05	0.000118455
1	2028	Service Road	Excavation (Cut to Fill)	Excavator	Excavators	Excavators175	Diesel	175	0.59	9.2504	0.052318238	0.173861284	0.00141482	0.011703848	0.011352723	0.008685845	5.50821E-05	0.000183046	1.48956E-06	1.23221E-05	1.19525E-05	9.14409E-06
1	2028	Service Road	Excavation (Cut to Fill)	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	9.2504	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	7.93577E-05	0.000420699	5.10641E-06	2.42809E-05	2.35525E-05	3.55366E-05
1	2028	Service Road	Excavation (Cut to Fill)	Roller	Rollers	Rollers100	Diesel	100	0.59	9.2504	0.15799564	0.964323424	0.001584842	0.02963197	0.028743069	0.014176639	9.50526E-05	0.000580152	9.53465E-07	1.78271E-05	1.72923E-05	8.52889E-06
1	2028	Service Road	Excavation (Cut to Fill)	Scraper	Scrapers	Scrapers600	Diesel	600	0.59	11.563	0.078129461	0.229897447	0.001435863	0.016310352	0.015821045	0.017070086	0.000352529	0.001037324	6.47878E-06	7.35942E-05	7.13864E-05	7.70222E-05
1	2028	Service Road	Excavation (Topsoil Stripping)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	4.352941176	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009151783	2.88961E-05	9.5011E-05	7.02003E-07	6.62935E-06	6.43047E-06	4.71437E-06
1	2028	Service Road	Fencing	Concrete Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	27.77777778	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000238301	0.001263305	1.53339E-05	7.29125E-05	7.07251E-05	0.000106712
1	2028	Service Road	Fencing	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	111.1111111	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000953204	0.00505322	6.13356E-05	0.00029165	0.0002829	0.000426848
1	2028	Service Road	Fencing	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	111.1111111	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	0.003121522	0.002972735	1.33141E-05	0.000301875	0.000292839	0.000204224
1	2028	Service Road	Fencing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	111.1111111	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000953204	0.00505322	6.13356E-05	0.00029165	0.0002829	0.000426848
1	2028	Service Road	Fencing	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	111.1111111	3.474992679	4.394927682	0.002180955	0.605662372	0.58749222	0.717117729	0.006703452	0.008478057	4.20718E-06	0.001168356	0.001133305	0.001383359
1	2028	Service Road	Fencing	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	111.1111111	1.421973907	1.956077636	0.001977099	0.257676578	0.249946118	0.286538927	0.003657421	0.005031175	5.08524E-06	0.000662763	0.00064288	0.000736999
1	2028	Service Road	Grading	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	5.5722	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009151783	3.69899E-05	0.000121624	8.98635E-07	8.48623E-06	8.23165E-06	6.03487E-06
1	2028	Service Road	Grading	Grader	Graders	Graders300	Diesel	300	0.59	5.5722	0.023633985	0.123248653	0.001415264	0.007085103	0.006872539	0.010136148	2.56947E-05	0.000133995	1.53866E-06	7.70287E-06	7.47177E-06	1.10199E-05
1	2028	Service Road	Grading	Roller	Rollers	Rollers100	Diesel	100	0.59	5.5722	0.15799564	0.964323424	0.001584842	0.02963197	0.028743069	0.014176639	9.72572E-05	0.000594868	5.74343E-07	1.07386E-05	1.04164E-05	5.13758E-06
1	2028	Service Road	Hydroseeding	Hydroseeder	Other Construction Equipment	Other Construction Equipment600	Diesel	600	0.59	5.02	0.352282138	1.021551034	0.001526781	0.047800481	0.04636644	0.052426664	0.000690087	0.002001122	2.99082E-06	9.36366E-05	9.08275E-05	0.000102699
1	2028	Service Road	Hydroseeding	Off-Road Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	5.02	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	4.30658E-05	0.000228304	2.77114E-06	1.31767E-05	1.27814E-05	1.9285E-05
1	2028	Service Road	Markings	Flatbed Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	57.14285714	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000490219	0.002598799	3.1544E-05	0.000149991	0.000145492	0.000219522
1	2028	Service Road	Markings	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	57.14285714	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	0.000623068	0.001528835	6.84724E-06	0.000315525	0.000310593	0.000205029
1	2028	Service Road	Markings	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	57.14285714	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000490219	0.002598799	3.1544E-05	0.000149991	0.000145492	0.000219522
1	2028	Service Road	Sidewalks	Concrete Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	66.93333333	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.00057421	0.00304406	3.69486E-05	0.00017569	0.00017049	0.000257133
1	2028	Service Road	Sidewalks	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	66.93333333	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.00057421	0.00304406	3.69486E-05	0.00017569	0.00017049	0.000257133
1	2028	Service Road	Sidewalks	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	66.93333333	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.00057421	0.00304406	3.69486E-05	0.00017569	0.00017049	0.000257133
1	2028	Service Road	Sidewalks	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	66.93333333	1.421973907	1.956077636	0.001977099	0.257676578	0.249946118	0.286538927	0.00220323	0.00303078	3.06335E-06	0.000399248	0.00038727	0.000443968
1	2028	Service Road	Sidewalks	Vibratory Compactor	Plate Compactors	Plate Compactors6	Diesel	6	0.43	66.93333333	2.469616048	4.185427716	0.002161885	0.241088105	0.233855306	0.838173744	0.000470199	0.000796697	4.11533E-07	4.5892E-05	4.45164E-05	0.000159552
1	2028	Service Road	Soil Erosion/Sediment Control	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	4.8	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	5.23377E-05	0.000128422	5.75168E-07	1.30414E-05	1.26498E-05	8.82247E-06
1	2028	Service Road	Soil Erosion/Sediment Control	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	9.6	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	8.23569E-05	0.000436598	5.29939E-06	2.51985E-05	2.44426E-05	3.68797E-05
1	2028	Service Road	Soil Erosion/Sediment Control	Pumps	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.43	4.8	2.459906692	4.18348492	0.002183174	0.238750618	0.231588554	0.837792752	0.156541E-05	0.0000147	5.46383E-08	5.97521E-06	5.79597E-06	2.09674E-05
1	2028	Service Road	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	4.8	1.421973907	1.956077636	0.001977099	0.257676578	0.249946118	0.286538927	0.001558001	0.000217347	2.19683E-07	2.86314E-05	2.77724E-05	3.18384E-05
1	2028	Service Road	Street Lighting	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	66.66666667	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000571923	0.003031932	3.68014E-05	0.00017494	0.00016974	0.000256109
1	2028	Service Road	Street Lighting	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	66.66666667	0.567234077	1.319710422	0.001780501	0.136582566	0.132485137	0.194208486	0.004303954	0.010013456	1.35098E-05	0.001036336	0.001005246	0.001473579
1	2028	Service Road	Street Lighting	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	66.66666667	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	0.000726913	0.001783641	7.98845E-06	0.000181125	0.000175691	0.000122534
1	2028	Service Road	Street Lighting	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	66.66666667	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000571923	0.003031932	3.68014E-05	0.00017494	0.00016974	0.000256109
1	2028	Service Road	Street Lighting	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	66.66666667	3.474992679	4.394927682	0.002180955	0.605662372	0.58749222	0.717117729	0.004022071	0.005086834	2.52431E-06	0.000701014	0.000679983	0.000830016
1	2028	Service Road	Street Lighting	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	66.66666667	1.421973907	1.956077636	0.001977099	0.257676578	0.249946118	0.286538927	0.002194453	0.003018705	3.05115E-06	0.000397658	0.000385728	0.000442399
1	2028	Service Road	Subbase Placement	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	5.842105263	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009151783	3.87837E-05	0.000127515	9.42162E-07	8.89729E-06	8.63037E-06	6.32718E-06
1	2028	Service Road	Subbase Placement	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	41.11111111	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000352686	0.001869691	2.69424E-05	0.00010791	0.00010473	0.000157934
1	2028	Service Road	Subbase Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	5.842105263	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.00118E-05	0.000265693	3.22496E-06	1.53346E-05	1.48746E-05	2.24432E-05
1	2028	Service Road	Subbase Placement	Roller	Rollers	Rollers100	Diesel	100	0.59	5.692307692	0.15799564	0.964323424	0.001584842	0.02963197	0.028743069	0.014176639	5.84914E-05	0.000357001	5.86723E-07	1.0649E-05	1.03425E-05	5.24832E-06
1	2028	Service Road	Topsoil Placement	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	12.38266667	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009151783	8.21999E-05	0.000270275	1.99697E-06	1.88583E-05	1.82926E-05	1.34108E-05
1	2028	Service Road	Topsoil Placement	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	12.38266667	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000106229	0.000563151	6.83548E-06	3.25026E-05	3.15275E-05	4.75696E-05
1	2028	Service Road	Topsoil Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	12.38266667	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000106229	0.000563151	6.83548E-06	3.25026E-05	3.15275E-05	4.75696E-05
1	2028	Service Road	Tree Planting	Flatbed Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	0	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0	0	0	0	0	0
1	2028	Service Road	Tree Planting	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	0	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	0	0	0	0	0	0
1	2028	Service Road	Tree Planting	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	0	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0	0	0	0	0	0
1	2028	Service Road	Tree Planting	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	0	1.421973907	1.956077636	0.001977099	0.257676578	0.249946118	0.286538927	0	0	0	0	0	0
2	2028	Detention Basin	Clearing and Grubbing	Chain Saw	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.7	6	2.459906692	4.18348492	0.002183174	0.238750618	0.231588554	0.837792752	0.000125276	0.000213053	1.11183E-07	1.21589E-05	1.17941E-05	4.26663E-05
2	2028	Detention Basin	Clearing and Grubbing	Chipper/Stump Grinder	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.43	6	0.278945957	1.044935474	0.00160421	0.047506797	0.046081605	0.023310119	7.93316E-05	0.000297177	4.56234E-07	1.35108E-05	1.31055E-05	6.62935E-06
2	2028	Detention Basin	Clearing and Grubbing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	8	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	6.86307E-05	0.000363832	4.41636E-06	2.09988E-05	2.03688E-05	3.07331E-05
2	2028	Detention Basin	Drainage - 24 inch SICPP	Excavator	Excavators	Excavators175	Diesel	175	0.59	76.416	0.052318238	0.173861284	0.00141482	0.011703848	0.011352723	0.008685845	0.000455024	0.001512111	1.2305E-05	0.000101791	9.87372E-05	7.55428E-05
2	2028	Detention Basin	Drainage	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	76.416	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009151783	0.000507272	0.00166792	1.23237E-05	0.000116378	0.000112887	8.27609E-05
2	2028	Detention Basin	Drainage	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	76.416	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000655561	0.003475322	4.21832E-05	0.000200058	0.000194563	0.000293562
2	2028	Detention Basin	Drainage	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	76.416	0.567234077	1.319710422	0.001780501	0.136582566	0.132485137	0.194208486	0.004933365	0.011477823	1.54854E-05	0.00118789	0.001152254	0.001689076
2	2028	Detention Basin	Drainage	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	76.416	0.131450047	0.322541557	0.001444577	0.032753454	0.031770828	0.02215828	0.000833217	0.002044481	9.15668E-06	0.000207613	0.000201384	0.000140454
2	2028	Detention Basin	Drainage	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	76.416	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.000655561	0.003475322	4.21832E-05	0.000200058	0.000194563	0.000293562
2	2028	Detention Basin	Drainage	Roller	Rollers	Rollers100	Diesel	100	0.59	76.416	0.15799564	0.964323424	0.001584842	0.02963197	0.028743069	0.014176639	0.000785214	0.004792538	7.87642E-06	0.000147266	0.000142849	7.04557E-05
2	2028	Detention Basin	Dust Control	Water Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	2160	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.018530292	0.098234595	0.001192364	0.005669672	0.005499581	0.008297925
2	2028	Detention Basin	Excavation (Cut to Fill)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	43.808	0.058325757	0.191776035	0.001416967	0.013381095	0.012979668	0.009151783	0.000290811	0.00095619	7.06494E-06	6.67178E-05	6.47163E-05	4.74454E-05
2	2028	Detention Basin	Excavation (Cut to Fill)	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	116.8213333	0.021984608	0.11654695	0.001414638	0.006726581	0.006524783	0.009844778	0.001002191

On-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

																			MOVESS ONROAD Emission Factors (grams/mile)						ONROAD Emission (Tons Per Year)					
Scenario ID	**Year**	**Project**	**Equipment**	**Equipment Category**	**MOVESS ONROAD LOOKUP**	**On-road Activity**	**Fuel**	**Roadway Type**	**Round Trip Distance (miles)**	**Distance for fugitive PM**	**Number of Vehicles**	**Number of Employees**	**Number of Project Days**	**Project Length**	**Project Width**	**Project Area**	**Building Height**	**Open Space Height**	**Number of Trees**	**Activity Rate**	**VMT**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**VOC**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**VOC**
1	2028	Service Road	Asphalt 18 Wheeler	Combination Short-haul Truck	DieselUrban Unrestricted AccessCombination Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	172	2500	10	--	--	--	--	--	363	2.22756911	3.13930851	0.00539504	0.32329867	0.1206152	0.11164841	0.000891342	0.00125617	2.1588E-06	0.00012937	4.8263E-05	4.4675E-05
1	2028	Service Road	Dump Truck - Asphalt	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	172	2500	10	--	--	--	--	--	514	1.04152691	1.22538145	0.00276543	0.12304693	0.0512616	0.07782082	0.00059012	0.00069429	1.5669E-06	6.9717E-05	2.9044E-05	4.4093E-05
1	2028	Service Road	Dump Truck Subbase Material	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	172	2500	10	--	--	--	--	--	3083	1.04152691	1.22538145	0.00276543	0.12304693	0.0512616	0.07782082	0.00353957	0.00416439	9.3982E-06	0.00041817	0.00017421	0.00026447
1	2028	Service Road	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	74	74	172	--	--	--	--	--	--	--	381840	3.50570898	0.07093428	0.00265269	0.0270084	0.00745823	0.09839875	1.475583583	0.02985686	0.00111654	0.01136807	0.00313923	0.04141689
2	2028	Detention Basin	Cement Truck for Fencing	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	193	1184	10	--	--	--	--	--	2738	1.04152691	1.22538145	0.00276543	0.12304693	0.0512616	0.07782082	0.003143478	0.00369838	8.3465E-06	0.00037137	0.00015471	0.00023487
2	2028	Detention Basin	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	76.813	76.813	193	--	--	--	--	--	--	--	444747	3.50570898	0.07093428	0.00265269	0.0270084	0.00745823	0.09839875	1.718681573	0.03477569	0.00130049	0.01324093	0.00365641	0.0482402
																										Total (Tons Per Year)							*3.20249667*	*0.07444577*	*0.0024385*	*0.02559763*	*0.00720188*	*0.09024521*

Fugitive Sources

Units for Non-Greenhouse Gases Emission: Short Ton

Scenario ID	**Year**	**Project**	**Fugitive Source Type**	**Number of Months**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**VOC**
1	2028	Service Road	Asphalt Drying	8	0	0	0	0	0.92745
1	2028	Service Road	Asphalt Storage and Batching	8	0.0605	0.003777	0.000695	0.0041425	0.0018735
1	2028	Service Road	Material Movement (Paved Roads)	8	0	0	0	0.01195	0
1	2028	Service Road	Material Movement (Unpaved Roads)	8	0	0	0	0.04	0
1	2028	Service Road	Soil Handling	8	0	0	0	0.0071	0
1	2028	Service Road	Unstabilized Land and Wind Erosion	8	0	0	0	6.725E-09	0
2	2028	Detention Basin	Material Movement (Paved Roads)	9	0	0	0	0	0
2	2028	Detention Basin	Material Movement (Unpaved Roads)	9	0	0	0	0.004034	0
2	2028	Detention Basin	Soil Handling	9	0	0	0	0.003351	0
2	2028	Detention Basin	Unstabilized Land and Wind Erosion	9	0	0	0	3.583E-09	0
				TOTAL (Tons Per Year)	*0.0605*	*0.003777*	*0.000695*	*0.07057751*	*0.9293235*

Total Construction Emissions by Source

Emission Source	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**VOC**
NonRoad	0.106	0.380	0.003	0.027	0.026	0.035
OnRoad	3.202	0.074	0.002	0.026	0.007	0.090
Fugitive	0.061	0.004	0.001	0.071	--	0.929
TOTAL	*3.369*	*0.458*	*0.007*	*0.123*	*0.033*	*1.055*

Airport Construction Emissions Inventory Tool (ACEIT)
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STUDY

Study Name

BHM Runway Rehab

Study Description

Alt 4 2029

EMISSIONS INVENTORY - DETAILS:

Non-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

											MOVES5 NONROAD Emission Factors (g-hp-hr)						NONROAD Emissions (Tons Per Year)					
											3	5	8	6	7	10						
Scenario ID	Year	Project	Construction Activity	Equipment	MOVES5 Equipment	MOVES5 Lookup	Fuel	HP Average	Load Factor	Hours of Activity	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC
1	2029	Detention Basin	Clearing and Grubbing	Chain Saw	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.7	7.2	2.466814854	4.184167555	0.002183172	0.240528002	0.233312526	0.838245382	0.000150753	0.000255705	1.33419E-07	1.46993E-05	1.42583E-05	5.12272E-05
1	2029	Detention Basin	Clearing and Grubbing	Chipper/Stump Grinder	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.43	7.2	0.199849443	0.978823244	0.001592316	0.034912814	0.033865435	0.016434569	6.82041E-05	0.00033405	5.43421E-07	1.1915E-05	1.15575E-05	5.60875E-06
1	2029	Detention Basin	Clearing and Grubbing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	9.6	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	7.81393E-05	0.000428961	5.29772E-06	2.45842E-05	2.38467E-05	3.63337E-05
1	2029	Detention Basin	Drainage - 24 inch SICPP	Excavator	Excavators	Excavators175	Diesel	175	0.59	84.864	0.05080994	0.171203522	0.0014142	0.011337645	0.01099751	0.008453092	0.00049076	0.001653609	1.36594E-05	0.000109507	0.000106222	8.16461E-05
1	2029	Detention Basin	Drainage	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	84.864	0.053513853	0.178081218	0.001415275	0.012019709	0.011659123	0.008857969	0.000516876	0.001720039	1.36698E-05	0.000116095	0.000112612	8.55567E-05
1	2029	Detention Basin	Drainage	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	84.864	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	0.000690751	0.003792011	4.68318E-05	0.000217324	0.000210804	0.00032119
1	2029	Detention Basin	Drainage	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	84.864	0.503424354	1.184538388	0.001765721	0.121743528	0.118091278	0.172415467	0.004862441	0.011441138	1.70546E-05	0.001175888	0.001140612	0.001665315
1	2029	Detention Basin	Drainage	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	84.864	0.103407606	0.261456213	0.001433857	0.025595889	0.024828054	0.016679455	0.000727929	0.001840499	1.00935E-05	0.00018018	0.000174775	0.000117414
1	2029	Detention Basin	Drainage	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	84.864	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	0.000690751	0.003792011	4.68318E-05	0.000217324	0.000210804	0.00032119
1	2029	Detention Basin	Drainage	Roller	Rollers	Rollers100	Diesel	100	0.59	84.864	0.135479927	0.941681003	0.001581712	0.025888896	0.025112192	0.012779831	0.000747751	0.005197397	8.7299E-06	0.000142888	0.000138601	7.05354E-05
1	2029	Detention Basin	Dust Control	Water Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	2400	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	0.019534821	0.10724014	0.001324429	0.006146051	0.005961666	0.009083426
1	2029	Detention Basin	Excavation (Cut to Fill)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	48.692	0.053513853	0.178081218	0.001415275	0.012019709	0.011659123	0.008857969	0.000296565	0.000986898	7.84323E-06	6.66113E-05	6.4613E-05	4.90895E-05
1	2029	Detention Basin	Excavation (Cut to Fill)	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	129.8453333	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	0.001056877	0.00580193	7.16546E-05	0.000332515	0.000322539	0.000491434
1	2029	Detention Basin	Excavation (Cut to Fill)	Excavator	Excavators	Excavators175	Diesel	175	0.59	38.9536	0.05080994	0.171203522	0.0014142	0.011337645	0.01099751	0.008453092	0.000225265	0.000759026	6.26982E-06	5.02652E-05	4.87572E-05	3.74766E-05
1	2029	Detention Basin	Excavation (Cut to Fill)	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	38.9536	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	0.000317063	0.001740579	2.14964E-05	9.97545E-05	9.67618E-05	0.00014743
1	2029	Detention Basin	Excavation (Cut to Fill)	Roller	Rollers	Rollers100	Diesel	100	0.59	38.9536	0.135479927	0.941681003	0.001581712	0.025888896	0.025112192	0.012779831	0.000343227	0.002385668	4.00713E-06	6.55873E-05	6.36196E-05	3.23766E-05
1	2029	Detention Basin	Excavation (Cut to Fill)	Scraper	Scrapers	Scrapers600	Diesel	600	0.59	48.692	0.053421403	0.174104582	0.001426508	0.012406045	0.012033866	0.013866791	0.001015039	0.003308092	2.71045E-05	0.000235722	0.000228651	0.000263477
1	2029	Detention Basin	Excavation (Topsoil Stripping)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	2.29145098	0.053513853	0.178081218	0.001415275	0.012019709	0.011659123	0.008857969	1.39564E-05	4.64435E-05	3.69103E-07	3.13474E-06	3.0407E-06	2.31016E-06
1	2029	Detention Basin	Fencing	Concrete Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	14.62222222	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	0.000119018	0.00065337	8.06921E-06	3.74454E-05	3.6322E-05	5.53416E-05
1	2029	Detention Basin	Fencing	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	58.48888889	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	0.000476071	0.002613482	3.22768E-05	0.000149782	0.000145288	0.000221366
1	2029	Detention Basin	Fencing	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	58.48888889	0.103407606	0.261456213	0.001433857	0.025595889	0.024828054	0.016679455	0.000501694	0.001268485	6.95652E-06	0.000124181	0.000120456	8.09223E-05
1	2029	Detention Basin	Fencing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	58.48888889	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	0.000476071	0.002613482	3.22768E-05	0.000149782	0.000145288	0.000221366
1	2029	Detention Basin	Fencing	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	58.48888889	2.745504854	3.982772137	0.002102531	0.478351738	0.464001834	0.570387842	0.002787935	0.004044324	2.13502E-06	0.000485744	0.000471173	0.000579203
1	2029	Detention Basin	Fencing	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	58.48888889	1.263196017	1.830468211	0.001960771	0.22933095	0.22245103	0.253988758	0.001710291	0.002478343	2.65476E-06	0.0003105	0.000301185	0.000343885
1	2029	Detention Basin	Hydroseeding	Hydroseeder	Other Construction Equipment	Other Construction Equipment600	Diesel	600	0.59	2.652	0.311661884	0.915124273	0.001513972	0.042714651	0.041433176	0.047075087	0.000322528	0.000947029	1.56675E-06	4.42039E-05	4.28777E-05	4.87163E-05
1	2029	Detention Basin	Hydroseeding	Off-Road Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	2.652	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	2.1586E-05	0.0001185	1.46349E-06	6.79139E-06	6.58764E-06	1.00372E-05
1	2029	Detention Basin	Soil Erosion/Sediment Control	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	2.4	0.103407606	0.261456213	0.001433857	0.025595889	0.024828054	0.016679455	2.05862E-05	5.20503E-05	2.8545E-07	5.09559E-06	4.94273E-06	3.32052E-06
1	2029	Detention Basin	Soil Erosion/Sediment Control	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	4.8	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	3.90696E-05	0.00021448	2.64886E-06	1.22921E-05	1.19233E-05	1.81669E-05
1	2029	Detention Basin	Soil Erosion/Sediment Control	Pumps	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.43	2.4	2.466814854	4.184167555	0.002183172	0.240528002	0.233312526	0.838245382	3.08685E-05	5.23586E-05	2.73191E-08	3.00985E-06	2.91956E-06	1.04894E-05
1	2029	Detention Basin	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	2.4	1.263196017	1.830468211	0.001960771	0.22933095	0.22245103	0.253988758	7.01791E-05	0.000101695	1.08934E-07	1.27409E-05	1.23587E-05	1.41108E-05
1	2029	Detention Basin	Topsoil Placement	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	6.541333333	0.053513853	0.178081218	0.001415275	0.012019709	0.011659123	0.008857969	3.98409E-05	0.000132581	1.05367E-06	8.94864E-06	8.68018E-06	6.59473E-06
1	2029	Detention Basin	Topsoil Placement	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	6.541333333	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	5.32432E-05	0.000292289	3.60981E-06	1.67514E-05	1.62489E-05	2.47574E-05
1	2029	Detention Basin	Topsoil Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	6.541333333	0.020858756	0.114508133	0.00141419	0.006562588	0.006365706	0.009699037	5.32432E-05	0.000292289	3.60981E-06	1.67514E-05	1.62489E-05	2.47574E-05
															Total (Tons Per Year)		***0.038549392***	***0.168598955***	***0.001724762***	***0.010594066***	***0.010276241***	***0.014526071***

On-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

																			MOVESS ONROAD Emission Factors (grams/mile)						ONROAD Emission (Tons Per Year)					
Scenario ID	Year	Project	Equipment	Equipment Category	MOVESS ONROAD LOOKUP	On-road Activity	Fuel	Roadway Type	Round Trip Distance (miles)	Distance for fugitive PM	Number of Vehicles	Number of Employees	Number of Project Days	Project Length	Project Width	Project Area	Building Height	Open Space Height	Number of Trees	Activity Rate	VMT	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC
1	2029	Detention Basin	Cement Truck for Fencing	Single Unit Short-haul Truck	Diesel\Urban Unrestricted Access\Single Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	215	1316	10	--	--	--	--	--	3043	1.011368448	1.116309284	0.0026964	0.116977351	0.047443222	0.069363449	0.003392485	0.003744493	9.04467E-06	0.000392383	0.000159141	0.000232669
1	2029	Detention Basin	Passenger Car	Passenger Car	Gasoline\Urban Unrestricted Access\Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	85.349	85.349	215	--	--	--	--	--	--	--	550501	3.381955042	0.063699522	0.002587673	0.02628838	0.007374023	0.095936221	2.052257642	0.038654567	0.001570369	0.015952489	0.004474753	0.058216655
																										Total (Tons Per Year)			***2.055650127***	***0.04239906***	***0.001579314***	***0.016344872***	***0.004633895***	***0.058449325***

Fugitive Sources

Units for Non-Greenhouse Gases Emission: Short Ton

Scenario ID	Year	Project	Fugitive Source Type	Number of Months	CO	NOx	SO_2	PM_{10}	VOC
1	2029	Detention Basin	Material Movement (Paved Roads)	10	0	0	0	0	0
1	2029	Detention Basin	Material Movement (Unpaved Roads)	10	0	0	0	0.004481	0
1	2029	Detention Basin	Soil Handling	10	0	0	0	0.003725	0
1	2029	Detention Basin	Unstabilized Land and Wind Erosion	10	0	0	0	4.4245E-09	0
				TOTAL (Tons Per Year)	***0***	***0***	***0***	***0.008206004***	***0***

Total Construction Emissions by Source

Emission Source	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC
NonRoad	0.039	0.169	0.002	0.011	0.010	0.015
OnRoad	2.056	0.042	0.002	0.016	0.005	0.058
Fugitive	0.000	0.000	0.000	0.028	---	0.000
TOTAL	***2.094***	***0.211***	***0.003***	***0.035***	***0.015***	***0.073***

Airport Construction Emissions Inventory Tool (ACEIT)
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STUDY

Study Name

BHM Runway Rehab

Study Description

Alt 4 2030

EMISSIONS INVENTORY - DETAILS:

Non-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

										MOVESS NONROAD Emission Factors (g-hp-hr)						NONROAD Emissions (Tons Per Year)					
										3	5	8	6	7	10						
Scenario ID	Year	Project	Construction Activity	Equipment	MOVESS Equipment	MOVESS Lookup	Fuel	HP Average	Load Factor	Hours of Activity	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC
1	2030	Taxiways	Asphalt Placement	Asphalt Paver	Pavers	Pavers175	Diesel	175	0.59	70.84575	0.06103755	0.20689485	0.001417986	0.014072775	0.013650549	0.009900337	0.000492161	0.001668246	1.14336E-05	0.000113472	0.000110068	7.98289E-05
1	2030	Taxiways	Asphalt Placement	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	255.1563309	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.00198629	0.011236588	0.00014077	0.000640601	0.000621382	0.000953962
1	2030	Taxiways	Asphalt Placement	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	141.6915	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	0.00089965	0.002511089	1.67349E-05	0.000216032	0.000209552	0.000143999
1	2030	Taxiways	Asphalt Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	70.84575	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000551506	0.003119909	3.90858E-05	0.000177867	0.000172531	0.000264873
1	2030	Taxiways	Asphalt Placement	Roller	Rollers	Rollers100	Diesel	100	0.59	70.84575	0.114292978	0.920452722	0.001578758	0.022360167	0.021689362	0.011463415	0.000526613	0.004241054	7.27425E-06	0.000103026	9.99353E-05	5.28185E-05
1	2030	Taxiways	Asphalt Placement	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	70.84575	2.346448681	3.764691	0.002060626	0.41143145	0.399088575	0.491675251	0.002886104	0.004630525	2.53455E-06	0.000506056	0.000490874	0.000604755
1	2030	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	Other Construction Equipment	Other Construction Equipment25	Diesel	25	0.59	90.68256	1.492301202	3.762982242	0.002188415	0.17152718	0.166381424	0.351800694	0.002200284	0.00554823	3.22665E-06	0.000252904	0.000245317	0.000518703
1	2030	Taxiways	Clearing and Grubbing	Chain Saw	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.7	154.8	2.466354164	4.184120119	0.002183171	0.240410136	0.233197341	0.838215712	0.003240587	0.00549759	2.86851E-06	0.000315879	0.000306402	0.001101347
1	2030	Taxiways	Clearing and Grubbing	Chipper/Stump Grinder	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.43	154.8	0.126583114	0.91437985	0.001581223	0.023426504	0.022723726	0.011576347	0.000928799	0.006709229	1.16022E-05	0.000171891	0.000166735	8.4941E-05
1	2030	Taxiways	Clearing and Grubbing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	206.4	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.001606742	0.009089454	0.000113871	0.000518192	0.000502646	0.000771675
1	2030	Taxiways	Drainage - 24 inch SICPP	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	163.712	0.051693172	0.173051366	0.001414635	0.011488503	0.011143835	0.008610808	0.000963186	0.003224424	2.63585E-05	0.000214062	0.00020764	0.000160443
1	2030	Taxiways	Drainage - 24 inch SICPP	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	163.712	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.001274432	0.007209558	9.03204E-05	0.000411019	0.000398688	0.000612076
1	2030	Taxiways	Drainage - 24 inch SICPP	Excavator	Excavators	Excavators175	Diesel	175	0.59	163.712	0.049675166	0.169189212	0.001413721	0.011068492	0.010736433	0.008275873	0.000925585	0.003152461	2.63415E-05	0.000206237	0.000200049	0.000154202
1	2030	Taxiways	Drainage - 24 inch SICPP	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	163.712	0.439926962	1.048995702	0.00175056	0.106898716	0.103691723	0.150338047	0.008197052	0.019545681	3.26178E-05	0.001991818	0.001932063	0.002801212
1	2030	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	163.712	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	0.001039467	0.002901341	1.93357E-05	0.000249606	0.000242118	0.000166378
1	2030	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	163.712	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.001274432	0.007209558	9.03204E-05	0.000411019	0.000398688	0.000612076
1	2030	Taxiways	Drainage - 24 inch SICPP	Roller	Rollers	Rollers100	Diesel	100	0.59	163.712	0.114292978	0.920452722	0.001578758	0.022360167	0.021689362	0.011463415	0.00121691	0.009800327	1.68095E-05	0.000238075	0.000230933	0.000122054
1	2030	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	90.95111111	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000708018	0.00400531	5.0178E-05	0.000228344	0.000221493	0.000340042
1	2030	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	90.95111111	0.439926962	1.048995702	0.00175056	0.106898716	0.103691723	0.150338047	0.004553918	0.010858712	1.8121E-05	0.001106565	0.001073368	0.001556229
1	2030	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	90.95111111	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	0.000577481	0.001611856	1.07421E-05	0.00013867	0.00013451	9.2432E-05
1	2030	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	90.95111111	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000708018	0.00400531	5.0178E-05	0.000228344	0.000221493	0.000340042
1	2030	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	90.95111111	1.101446683	1.701248302	0.00194403	0.199984167	0.193984374	0.220651589	0.002318982	0.003581802	4.09295E-06	0.000421046	0.000408414	0.000464559
1	2030	Taxiways	Dust Control	Water Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	2160	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.016814737	0.095122197	0.001191678	0.005422945	0.005260246	0.008075667
1	2030	Taxiways	Excavation (Borrow)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	314.8706667	0.051693172	0.173051366	0.001414635	0.011488503	0.011143835	0.008610808	0.001852516	0.006201601	5.06959E-05	0.000411711	0.000399359	0.000308583
1	2030	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	314.8706667	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.002451142	0.013866292	0.000173715	0.000790521	0.000766804	0.001177218
1	2030	Taxiways	Excavation (Borrow)	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	314.8706667	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.002451142	0.013866292	0.000173715	0.000790521	0.000766804	0.001177218
1	2030	Taxiways	Excavation (Borrow)	Roller	Rollers	Rollers100	Diesel	100	0.59	145.3249231	0.114292978	0.920452722	0.001578758	0.022360167	0.021689362	0.011463415	0.001080235	0.008699617	1.49216E-05	0.000211336	0.000204996	0.000108346
1	2030	Taxiways	Excavation (Cut to Fill)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	236.153	0.051693172	0.173051366	0.001414635	0.011488503	0.011143835	0.008610808	0.001389387	0.004651201	3.80219E-05	0.000308783	0.000299519	0.000231438
1	2030	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	629.7413333	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.004902285	0.027732583	0.00034743	0.001581043	0.001533609	0.002354436
1	2030	Taxiways	Excavation (Cut to Fill)	Excavator	Excavators	Excavators175	Diesel	175	0.59	188.9224	0.049675166	0.169189212	0.001413721	0.011068492	0.010736433	0.008275873	0.001068118	0.003637916	3.03979E-05	0.000237995	0.000230855	0.000177948
1	2030	Taxiways	Excavation (Cut to Fill)	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	188.9224	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.001470685	0.008319775	0.000104229	0.000473313	0.000460083	0.000706331
1	2030	Taxiways	Excavation (Cut to Fill)	Roller	Rollers	Rollers100	Diesel	100	0.59	188.9224	0.114292978	0.920452722	0.001578758	0.022360167	0.021689362	0.011463415	0.001404305	0.011309502	1.9398E-05	0.000274737	0.000266495	0.00014085
1	2030	Taxiways	Excavation (Cut to Fill)	Scraper	Scrapers	Scrapers600	Diesel	600	0.59	236.153	0.039963389	0.147985988	0.001421461	0.009995153	0.009695307	0.012141532	0.003682693	0.013637158	0.00013099	0.00092107	0.000893439	0.001118863
1	2030	Taxiways	Excavation (Topsoil Stripping)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	88.90447059	0.051693172	0.173051366	0.001414635	0.011488503	0.011143835	0.008610808	0.000523062	0.001751037	1.43141E-05	0.000116248	0.00011276	8.71293E-05
1	2030	Taxiways	Fencing	Concrete Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	56.73333333	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000441646	0.002498426	3.12999E-05	0.000142436	0.000138163	0.000212111
1	2030	Taxiways	Fencing	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	226.9333333	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.001766585	0.009993702	0.0001252	0.000569744	0.000552651	0.000848444
1	2030	Taxiways	Fencing	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	226.9333333	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	0.001440882	0.004021764	2.68027E-05	0.000345998	0.000335618	0.000230628
1	2030	Taxiways	Fencing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	226.9333333	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.001766585	0.009993702	0.0001252	0.000569744	0.000552651	0.000848444
1	2030	Taxiways	Fencing	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	226.9333333	2.346448681	3.764691	0.002060626	0.41143145	0.399088575	0.491675251	0.009244777	0.014832512	8.11866E-06	0.001620999	0.00157237	0.001937152
1	2030	Taxiways	Fencing	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	226.9333333	1.101446683	1.701248302	0.00194403	0.199984167	0.193984374	0.220651589	0.005786122	0.008937001	1.02124E-05	0.001050557	0.001019039	0.001159127
1	2030	Taxiways	Grading	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	62.4664	0.051693172	0.173051366	0.001414635	0.011488503	0.011143835	0.008610808	0.000367516	0.00123032	1.00574E-05	8.16783E-05	7.92278E-05	6.12191E-05
1	2030	Taxiways	Grading	Grader	Graders	Graders300	Diesel	300	0.59	62.4664	0.020622528	0.114630621	0.001414224	0.00649015	0.006295472	0.009731115	0.000251344	0.001397098	1.72363E-05	7.91008E-05	7.67281E-05	0.000118601
1	2030	Taxiways	Grading	Roller	Rollers	Rollers100	Diesel	100	0.59	62.4664	0.114292978	0.920452722	0.001578758	0.022360167	0.021689362	0.011463415	0.000464328	0.003739439	6.41388E-06	9.08406E-05	8.81154E-05	4.65714E-05
1	2030	Taxiways	Hydroseeding	Hydroseeder	Other Construction Equipment	Other Construction Equipment600	Diesel	600	0.59	56.276	0.270994936	0.807180668	0.00150084	0.037620196	0.036491589	0.041752989	0.005951058	0.017725715	3.29585E-05	0.000826141	0.000801357	0.000916897
1	2030	Taxiways	Hydroseeding	Off-Road Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	56.276	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000438086	0.002478286	3.10476E-05	0.000141288	0.000137049	0.000210401
1	2030	Taxiways	Lighting	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	69.41333333	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000540355	0.003056828	3.82955E-05	0.000174271	0.000169042	0.000259518
1	2030	Taxiways	Lighting	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	69.41333333	0.439926962	1.048995702	0.00175056	0.106898716	0.103691723	0.150338047	0.003475522	0.008287303	1.38298E-05	0.000844524	0.000819188	0.001187704
1	2030	Taxiways	Lighting	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	69.41333333	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	0.00044073	0.001230159	8.19828E-06	0.000105832	0.000102657	7.05435E-05
1	2030	Taxiways	Lighting	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	69.41333333	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000540355	0.003056828	3.82955E-05	0.000174271	0.000169042	0.000259518
1	2030	Taxiways	Lighting	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	69.41333333	2.346448681	3.764691	0.002060626	0.41143145	0.399088575	0.491675251	0.00282775	0.004536901	2.4833E-06	0.000495824	0.000480949	0.000592527
1	2030	Taxiways	Lighting	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	69.41333333	1.101446683	1.701248302	0.00194403	0.199984167	0.193984374	0.220651589	0.001769833	0.002733609	3.12372E-06	0.00032134	0.000311699	0.000354549
1	2030	Taxiways	Markings	Flatbed Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	1167.085714	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.009085296	0.051396184	0.000643885	0.002930112	0.002842203	0.004363424
1	2030	Taxiways	Markings	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	1167.085714	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	0.007410248	0.020683359	0.000137842	0.001779417	0.001726036	0.000186088
1	2030	Taxiways	Markings	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	1167.085714	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.009085296	0.051396184	0.000643885	0.002930112	0.002842203	0.004363424
1	2030	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	51.6	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	0.000327627	0.000914467	6.09438E-06	7.86728E-05	7.63127E-05	5.24402E-05
1	2030	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	103.2	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000803371	0.004544727	5.69357E-05	0.000259096	0.000251323	0.000385837
1	2030	Taxiways	Soil Erosion/Sediment Control	Pumps	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.43	51.6	2.466354164	4.184120119	0.002183171	0.240410136	0.233197341	0.838215712	0.000663549	0.001125697	5.87361E-07	6.468E-05	6.27395E-05	0.000225514
1	2030	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	51.6	1.101446683	1.701248302	0.00194403	0.199984167	0.193984374	0.220651589	0.001315646	0.002032091	2.32209E-06	0.000238875	0.000231709	0.000263562
1	2030	Taxiways	Subbase Placement	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	119.3191579	0.051693172	0.173051366	0.001414635	0.011488503	0.011143835	0.008610808	0.000702005	0.002350075	1.9211E-05	0.000156016	0.000151336	0.000116937
1	2030	Taxiways	Subbase Placement	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	839.6533333	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000636366	0.036976699	0.000463239	0.002108053	0.002044807	0.003139241
1	2030	Taxiways	Subbase Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	119.3191579	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000928852	0.005254584	6.58287E-05	0.000299565	0.000290578	0.000446103
1	2030	Taxiways	Subbase Placement	Roller	Rollers	Rollers100	Diesel	100	0.59	116.2596923	0.114292978	0.920452722	0.001578758	0.022360167	0.021689362	0.011463415	0.000864186	0.006959679	1.19372E-05	0.000169069	0.000163996	8.66766E-05
1	2030	Taxiways	Topsoil Placement	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	138.8146667	0.051693172	0.173051366	0.001414635	0.011488503	0.011143835	0.008610808	0.000816705	0.002734053	2.23499E-05	0.000181508	0.000176062	0.000136043
1	2030	Taxiways	Topsoil Placement	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	138.8146667	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.001080617	0.006113128	7.65845E-05	0.000348511	0.000338055	0.000518991
1	2030	Taxiways	Topsoil Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	138.8146667	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.001080617	0.006113128	7.65845E-05	0.000348511	0.000338055	0.000518991
2	2030	Runway Markings	Marking Removal	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	14.5	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000112877	0.000638552	7.99969E-06	3.6404E-05	3.53118E-05	5.42117E-05
2	2030	Runway Markings	Marking Removal	Pressure Washer	Other Construction Equipment	Other Construction Equipment25	Diesel	25	0.43	14.5	1.492301202	3.762982242	0.002188415	0.17152718	0.166381424	0.351800694	0.000256413	0.000646569	3.76021E-07	2.94724E-05	2.85883E-05	6.04477E-05
2	2030	Runway Markings	Marking Removal	Sweepers/Scrubbers	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	14.5	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	9.20657E-05	0.000256972	1.71257E-06	2.21077E-05	2.14445E-05	1.47361E-05
2	2030	Runway Markings	Marking Removal	Water Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	14.5	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000112877	0.000638552	7.99969E-06	3.6404E-05	3.53118E-05	5.42117E-05
2	2030	Runway Markings	Markings	Flatbed Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	33.14285714	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000258004	0.001459547	1.8285E-05	8.32092E-05	8.07128E-05	0.000123912
2	2030	Runway Markings	Markings	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	33.14285714	0.076545027	0.213651177	0.001423858	0.018380694	0.017829289	0.012251839	0.000210436	0.000587365	3.91444E-06	5.05318E-05	4.90159E-05	3.36825E-05
2	2030	Runway Markings	Markings	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	33.14285714	0.019949248	0.112854356	0.001413824	0.00643386	0.006240832	0.009581089	0.000258004	0.001459547	1.8285E-05	8.32092E-05	8.07128E-05	0.000123912
3	2030	Taxiways	Grading	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	23.2356	0.051693172	0.173051366	0.001414635	0.011488503	0.011143835	0.008610808	0.000136705	0.000457642	3.74106E-06	0.000381E-05	2.94703E-05	2.27716E-05
3	2030	Taxiways	Grading	Grader	Graders	Graders300	Diesel	300	0.59	23.2356	0.020622528	0.114630621	0.001414224	0.00649015	0.006295472	0.009731115	9.34922E-05	0.000519678	6.41139E-06	2.94231E-05	2.85405E-05	4.4116E-05
3	2030	Taxiways	Grading	Roller	Rollers	Rollers100	Diesel	100	0.59	23.2356	0.114292978	0.920452722	0.001578758	0.022360167	0.021689362	0.011463415	0.000172716	0.001390958	2.38577E-06	3.37899E-05	3.27762E-05	1.73231E-05
																Total (Tons Per Year)	***0.15808397***	***0.646552459***	***0.005901495***	***0.040363669***	***0.039152713***	***0.053329226***

On-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

																			MOVESS ONROAD Emission Factors (grams/mile)						ONROAD Emission (Tons Per Year)					
Scenario ID	Year	Project	Equipment	Equipment Category	MOVESS ONROAD LOOKUP	On-road Activity	Fuel	Roadway Type	Round Trip Distance (miles)	Distance for fugitive PM	Number of Vehicles	Number of Employees	Number of Project Days	Project Length	Project Width	Project Area	Building Height	Open Space Height	Number of Trees	Activity Rate	VMT	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC
1	2030	Taxiways	Asphalt 18 Wheeler	Combination Short-haul Truck	DieselUrban Unrestricted AccessCombination Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	193	5106	100	--	--	--	--	--	7409	2.177691072	2.674556223	0.005220325	0.317923486	0.114920561	0.099618892	0.017785349	0.02184328	4.26347E-05	0.002596502	0.000938564	0.000813594
1	2030	Taxiways	Dump Truck - Asphalt	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	193	5106	100	--	--	--	--	--	10496	0.986021745	1.019960765	0.002647663	0.111700876	0.044177824	0.062513917	0.011408193	0.011800864	3.06333E-05	0.00129237	0.000511134	0.000723281
1	2030	Taxiways	Dump Truck Subbase Material	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	5	--	193	5106	100	--	--	--	--	--	62974	0.986021745	1.019960765	0.002647663	0.111700876	0.044177824	0.062513917	0.068446982	0.070802938	0.000183794	0.007753975	0.003066706	0.004339548
1	2030	Taxiways	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	203.28	203.28	193	--	--	--	--	--	--	--	1176991	3.26133169	0.062238153	0.002522515	0.025637651	0.007273576	0.049270543	4.231308061	0.080748854	0.003272755	0.033262731	0.009436863	0.063924453
2	2030	Runway Markings	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	7	7	193	--	--	--	--	--	--	--	40530	3.26133169	0.062238153	0.002522515	0.025637651	0.007273576	0.049270543	0.145706225	0.002780608	0.000112698	0.001145411	0.000324961	0.002201256
3	2030	Taxiways	Asphalt 18 Wheeler	Combination Short-haul Truck	DieselUrban Unrestricted AccessCombination Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	193	1893	100	--	--	--	--	--	2747	2.177691072	2.674556223	0.005220325	0.317923486	0.114920561	0.099618892	0.00659419	0.00809873	1.58075E-05	0.000962693	0.000347987	0.000301652
3	2030	Taxiways	Dump Truck - Asphalt	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	1	--	193	1893	100	--	--	--	--	--	3891	0.986021745	1.019960765	0.002647663	0.111700876	0.044177824	0.062513917	0.004229161	0.00437473	1.13561E-05	0.000479098	0.000189484	0.000268129
3	2030	Taxiways	Dump Truck Subbase Material	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	40	5	2	--	193	1893	100	--	--	--	--	--	23347	0.986021745	1.019960765	0.002647663	0.111700876	0.044177824	0.062513917	0.025376055	0.026249503	6.81397E-05	0.002874711	0.001136951	0.001608845
3	2030	Taxiways	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	30	--	4.158	4.158	193	--	--	--	--	--	--	--	24075	3.26133169	0.062238153	0.002522515	0.025637651	0.007273576	0.049270543	0.086550145	0.001651694	6.69432E-05	0.000680379	0.000193028	0.001307556
																											Total (Tons Per Year)					
																											4.597404362	***0.2283512***	***0.00380476***	***0.05104787***	***0.01614568***	***0.07548832***

Fugitive Sources

Units for Non-Greenhouse Gases Emission: Short Ton

Scenario ID	Year	Project	Fugitive Source Type	Number of Months	CO	NOx	SO_2	PM_{10}	VOC
1	2030	Taxiways	Asphalt Drying	9	0	0	0	0	18.9419
1	2030	Taxiways	Asphalt Storage and Batching	9	1.23545	0.07715	0.0142	0.0846	0.03825
1	2030	Taxiways	Material Movement (Paved Roads)	9	0	0	0	0.03135	0
1	2030	Taxiways	Material Movement (Unpaved Roads)	9	0	0	0	0.11685	0
1	2030	Taxiways	Soil Handling	9	0	0	0	0.1445	0
1	2030	Taxiways	Unstabilized Land and Wind Erosion	9	0	0	0	1.545E-07	0
3	2030	Taxiways	Soil Handling	9	0	0	0	0.0536	0
3	2030	Taxiways	Unstabilized Land and Wind Erosion	9	0	0	0	5.73E-08	0
				TOTAL (Tons Per Year)	***1.23545***	***0.07715***	***0.0142***	***0.430900212***	***18.98015***

Total Construction Emissions by Source

Emission Source	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC
NonRoad	0.158	0.647	0.006	0.040	0.039	0.053
OnRoad	4.597	0.228	0.004	0.051	0.016	0.075
Fugitive	1.235	0.077	0.014	0.431	--	18.980
TOTAL	**5.991**	**0.952**	**0.024**	**0.522**	**0.055**	**19.109**

Airport Construction Emissions Inventory Tool (ACEIT)
Version 1.0
Run Date & Time: 7/21/2025 11:16:06 AM

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STUDY

Study Name

BHM Runway Rehab

Study Description

Alt 4 2031

EMISSIONS INVENTORY - DETAILS:

Non-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton
Units for Greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

											MOVESS NONROAD Emission Factors (g-hp-hr)						NONROAD Emissions (Tons Per Year)					
											3	5	8	6	7	10						
Scenario ID	Year	Project	Construction Activity	Equipment	MOVESS Equipment	MOVESS Lookup	Fuel	HP Average	Load Factor	Hours of Activity	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC
1	2031	Taxiways	Asphalt Placement	Asphalt Paver	Pavers	Pavers175	Diesel	175	0.59	86.58	0.055827279	0.188632625	0.00141610	0.012652818	0.012273234	0.0091771	0.000550124	0.001858793	1.39544E-05	0.000124681	0.000120941	9.04315E-05
1	2031	Taxiways	Asphalt Placement	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	311.8244232	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.002351825	0.013596158	0.000172005	0.000771705	0.000748555	0.001156032
1	2031	Taxiways	Asphalt Placement	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	173.16	0.070157974	0.202890649	0.00142158	0.016557298	0.016060564	0.011262897	0.001007715	0.002914222	2.04189E-05	0.000237821	0.000230686	0.000161775
1	2031	Taxiways	Asphalt Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	86.58	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.000652999	0.003775058	4.77581E-05	0.000214269	0.000207841	0.00032098
1	2031	Taxiways	Asphalt Placement	Roller	Rollers	Rollers100	Diesel	100	0.59	86.58	0.098081261	0.903249691	0.00157652	0.01964218	0.019052913	0.010430795	0.000552284	0.005086089	8.87721E-06	0.000110603	0.000107285	5.87345E-05
1	2031	Taxiways	Asphalt Placement	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	86.58	2.105308277	3.628547748	0.00203581	0.367888664	0.356852096	0.441898397	0.003164611	0.005454281	3.06016E-06	0.000552995	0.000536405	0.000664243
1	2031	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	Other Construction Equipment	Other Construction Equipment25	Diesel	25	0.59	110.8224	1.489564819	3.762591591	0.00218842	0.170695571	0.165574689	0.351677261	0.002684019	0.006779742	3.94327E-06	0.000307573	0.000298346	0.000633681
1	2031	Taxiways	Clearing and Grubbing	Chain Saw	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.7	189.6	2.461824986	4.183668479	0.0021831	0.239244472	0.232067075	0.837917873	0.003961802	0.006732756	3.51338E-06	0.000385015	0.000373464	0.001348457
1	2031	Taxiways	Clearing and Grubbing	Chipper/Stump Grinder	Other Construction Equipment	Other Construction Equipment100	Diesel	100	0.43	189.6	0.109493898	0.900458892	0.00157870	0.020727418	0.020105599	0.010553144	0.000984018	0.008092398	1.41877E-05	0.000186277	0.000180688	9.48408E-05
1	2031	Taxiways	Clearing and Grubbing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	252.8	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.001906654	0.011022577	0.00013944	0.000625631	0.000606863	0.00093721
1	2031	Taxiways	Drainage - 24 inch SICPP	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	200	0.05052449	0.171055613	0.00141416	0.011187906	0.010852264	0.008436069	0.001150081	0.003893713	3.21905E-05	0.000254669	0.000247028	0.000192029
1	2031	Taxiways	Drainage - 24 inch SICPP	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	200	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.001508429	0.008720393	0.00011032	0.000494961	0.000480113	0.000741464
1	2031	Taxiways	Drainage - 24 inch SICPP	Excavator	Excavators	Excavators175	Diesel	175	0.59	200	0.049182356	0.168310656	0.00141350	0.010957381	0.010628656	0.008197107	0.00111953	0.00383123	3.21755E-05	0.000249421	0.000241938	0.000186589
1	2031	Taxiways	Drainage - 24 inch SICPP	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	200	0.386787912	0.933889484	0.00173773	0.094307629	0.091478563	0.131749985	0.008804394	0.021257984	3.95559E-05	0.00214671	0.002082313	0.002999005
1	2031	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	200	0.070157974	0.202890649	0.00142158	0.016557298	0.016060564	0.011262897	0.001163912	0.00336593	2.35839E-05	0.000274683	0.000266443	0.00018685
1	2031	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	200	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.001508429	0.008720393	0.00011032	0.000494961	0.000480113	0.000741464
1	2031	Taxiways	Drainage - 24 inch SICPP	Roller	Rollers	Rollers100	Diesel	100	0.59	200	0.098081261	0.903249691	0.00157652	0.01964218	0.019052913	0.010430795	0.001275776	0.011748877	2.05064E-05	0.000255493	0.000247828	0.000135677
1	2031	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	111.1111111	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.000838016	0.004844663	6.12897E-05	0.000274978	0.000266729	0.000411924
1	2031	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	111.1111111	0.386787912	0.933889484	0.00173773	0.094307629	0.091478563	0.131749985	0.00489133	0.011809991	2.19755E-05	0.001192617	0.00115684	0.001666114
1	2031	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	111.1111111	0.070157974	0.202890649	0.00142158	0.016557298	0.016060564	0.011262897	0.000646618	0.001869961	1.31022E-05	0.000152602	0.000148024	0.000103806
1	2031	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	111.1111111	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.000838016	0.004844663	6.12897E-05	0.000274978	0.000266729	0.000411924
1	2031	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	111.1111111	0.965165225	1.592707497	0.00192986	0.175597583	0.17032971	0.192796041	0.002482476	0.00409656	4.96375E-06	0.00045165	0.0004381	0.000495886
1	2031	Taxiways	Dust Control	Water Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	2640	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.019911261	0.115109187	0.00145624	0.006533488	0.0063374	0.00978732
1	2031	Taxiways	Excavation (Borrow)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	384.8	0.05052449	0.171055613	0.00141416	0.011187906	0.010852264	0.008436069	0.002212756	0.007491504	6.19346E-05	0.000489982	0.000475283	0.000369464
1	2031	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	384.8	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.002902217	0.016778036	0.00021258	0.000952305	0.000923737	0.001426576
1	2031	Taxiways	Excavation (Borrow)	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	384.8	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.002902217	0.016778036	0.00021258	0.000952305	0.000923737	0.001426576
1	2031	Taxiways	Excavation (Borrow)	Roller	Rollers	Rollers100	Diesel	100	0.59	177.6	0.098081261	0.903249691	0.00157652	0.01964218	0.019052913	0.010430795	0.001132889	0.010433003	1.82097E-05	0.000226877	0.000220071	0.000120481
1	2031	Taxiways	Excavation (Cut to Fill)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	288.6	0.05052449	0.171055613	0.00141416	0.011187906	0.010852264	0.008436069	0.001659567	0.005618628	4.64509E-05	0.000367487	0.000356462	0.000277098
1	2031	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	769.6	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.005804434	0.033556072	0.00042451	0.001904611	0.001847474	0.002853152
1	2031	Taxiways	Excavation (Cut to Fill)	Excavator	Excavators	Excavators175	Diesel	175	0.59	230.88	0.049182356	0.168310656	0.00141350	0.010957381	0.010628656	0.008197107	0.001292386	0.004422772	3.71434E-05	0.000287932	0.000279294	0.000215399
1	2031	Taxiways	Excavation (Cut to Fill)	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	230.88	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.00174133	0.010066822	0.00012735	0.000571383	0.000554242	0.000855946
1	2031	Taxiways	Excavation (Cut to Fill)	Roller	Rollers	Rollers100	Diesel	100	0.59	230.88	0.098081261	0.903249691	0.00157652	0.01964218	0.019052913	0.010430795	0.001472756	0.013562904	2.36726E-05	0.000294941	0.000286092	0.000156625
1	2031	Taxiways	Excavation (Cut to Fill)	Scraper	Scrapers	Scrapers600	Diesel	600	0.59	288.6	0.034881103	0.139246753	0.00141956	0.009011062	0.00874073	0.011494357	0.003928225	0.01568163	0.00015986	0.001014804	0.00098436	0.001294466
1	2031	Taxiways	Excavation (Topsoil Stripping)	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	108.6494118	0.05052449	0.171055613	0.00141416	0.011187906	0.010852264	0.008436069	0.000624778	0.002115248	1.74874E-05	0.000138348	0.000134197	0.000104319
1	2031	Taxiways	Fencing	Concrete Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	69.33333333	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.000522922	0.00302307	3.82448E-05	0.000171587	0.000166439	0.000257041
1	2031	Taxiways	Fencing	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	277.3333333	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.002091688	0.012092278	0.00015297	0.000686346	0.000665757	0.001028163
1	2031	Taxiways	Fencing	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	277.3333333	0.070157974	0.202890649	0.00142158	0.016560564	0.011262897	0.001613958	0.004667423	3.2703E-05	0.000380894	0.000369467	0.000259099
1	2031	Taxiways	Fencing	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	277.3333333	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.002091688	0.012092278	0.00015297	0.000686346	0.000665757	0.001028163
1	2031	Taxiways	Fencing	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	277.3333333	2.105308277	3.628547748	0.00203581	0.367888664	0.356852096	0.441898397	0.010136893	0.017471171	9.8023E-06	0.001771355	0.001718215	0.002127706
1	2031	Taxiways	Fencing	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	277.3333333	0.965165225	1.592707497	0.00192986	0.175597583	0.17032971	0.192796041	0.006196259	0.010225014	1.23895E-05	0.001127318	0.001093499	0.00123773
1	2031	Taxiways	Grading	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	76.3125	0.05052449	0.171055613	0.00141416	0.011187906	0.010852264	0.008436069	0.000438828	0.001485695	1.22827E-05	9.7172E-05	9.42568E-05	7.3271E-05
1	2031	Taxiways	Grading	Grader	Graders	Graders300	Diesel	300	0.59	76.3125	0.019981754	0.113311271	0.00141932	0.006380859	0.006189409	0.009624643	0.000297515	0.00168713	2.10525E-05	9.50068E-05	9.21562E-05	0.000143305
1	2031	Taxiways	Grading	Roller	Rollers	Rollers100	Diesel	100	0.59	76.3125	0.098081261	0.903249691	0.00157652	0.01964218	0.019052913	0.010430795	0.000486788	0.004482931	7.82447E-06	9.74864E-05	9.45618E-05	5.17692E-05
1	2031	Taxiways	Hydroseeding	Hydroseeder	Other Construction Equipment	Other Construction Equipment600	Diesel	600	0.59	68.75	0.237107516	0.716561405	0.00148972	0.033392671	0.032390868	0.037323256	0.006361035	0.019223653	3.99658E-05	0.000895847	0.000868971	0.001001295
1	2031	Taxiways	Hydroseeding	Off-Road Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	68.75	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.000518522	0.002997635	3.7923E-05	0.000170143	0.000165039	0.000254878
1	2031	Taxiways	Lighting	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	84.53333333	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.000637563	0.003685819	4.66292E-05	0.000209204	0.000202928	0.000313392
1	2031	Taxiways	Lighting	Loader	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes175	Diesel	175	0.59	84.53333333	0.386787912	0.933889484	0.00173773	0.094307629	0.091478563	0.131749985	0.003721324	0.008985041	1.67189E-05	0.00090734	0.000880124	0.001267579
1	2031	Taxiways	Lighting	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	84.53333333	0.070157974	0.202890649	0.00142158	0.016557298	0.016060564	0.011262897	0.000491947	0.001422666	9.96813E-06	0.0001161	0.000112616	7.89753E-05
1	2031	Taxiways	Lighting	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	84.53333333	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.000637563	0.003685819	4.66292E-05	0.000209204	0.000202928	0.000313392
1	2031	Taxiways	Lighting	Skid Steer Loader	Skid Steer Loaders	Skid Steer Loaders75	Diesel	75	0.21	84.53333333	2.105308277	3.628547748	0.00203581	0.367888664	0.356852096	0.441898397	0.003089803	0.005325347	2.98782E-06	0.000539923	0.000523725	0.000648541
1	2031	Taxiways	Lighting	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	84.53333333	0.965165225	1.592707497	0.00192986	0.175597583	0.17032971	0.192796041	0.001888667	0.003116663	3.77642E-06	0.000343615	0.000333307	0.00037727
1	2031	Taxiways	Markings	Flatbed Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	1426.285714	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.010757253	0.06218886	0.00078749	0.00352978	0.003423891	0.005287695
1	2031	Taxiways	Markings	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	1426.285714	0.070157974	0.202890649	0.00142158	0.016557298	0.016060564	0.011262897	0.008300354	0.024003888	0.00016818	0.001958885	0.001900117	0.001332508
1	2031	Taxiways	Markings	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	1426.285714	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.010757253	0.06218886	0.00078749	0.00352978	0.003423891	0.005287695
1	2031	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	63.2	0.070157974	0.202890649	0.00142158	0.016557298	0.016060564	0.011262897	0.000367796	0.001063634	7.45251E-06	8.68E-05	8.41959E-05	5.90446E-05
1	2031	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	126.4	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.000953327	0.005511288	6.97231E-05	0.000312815	0.000303431	0.000468605
1	2031	Taxiways	Soil Erosion/Sediment Control	Pumps	Other Construction Equipment	Other Construction Equipment11	Diesel	11	0.43	63.2	2.461824986	4.183668479	0.0021831	0.239244472	0.232067075	0.837917873	0.000811226	0.001378612	7.19406E-07	7.88364E-05	7.64713E-05	0.000276113
1	2031	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes100	Diesel	100	0.21	63.2	0.965165225	1.592707497	0.00192986	0.175597583	0.17032971	0.192796041	0.001412032	0.002330123	2.82338E-06	0.000256898	0.000249192	0.00028206
1	2031	Taxiways	Subbase Placement	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	145.8189474	0.05052449	0.171055613	0.00141416	0.011187906	0.010852264	0.008436069	0.000838518	0.002838886	2.34699E-05	0.000185678	0.000180107	0.000140007
1	2031	Taxiways	Subbase Placement	Dump Truck (12 cy)	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	1026.133333	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.007739246	0.044741429	0.00056602	0.002539481	0.002463299	0.003804203
1	2031	Taxiways	Subbase Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	145.8189474	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.001099788	0.006357993	8.04348E-05	0.000360874	0.000350048	0.000540597
1	2031	Taxiways	Subbase Placement	Roller	Rollers	Rollers100	Diesel	100	0.59	142.08	0.098081261	0.903249691	0.00157652	0.01964218	0.019052913	0.010430795	0.000906312	0.008346402	1.45677E-05	0.000181502	0.000176057	9.63849E-05
1	2031	Taxiways	Topsoil Placement	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	169.584	0.05052449	0.171055613	0.00141416	0.011187906	0.010852264	0.008436069	0.000975177	0.003301557	2.7295E-05	0.000215939	0.0002094	0.000162825
1	2031	Taxiways	Topsoil Placement	Dump Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	169.584	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.001279027	0.007394196	9.35437E-05	0.000419687	0.000407097	0.000628702
1	2031	Taxiways	Topsoil Placement	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	169.584	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.001279027	0.007394196	9.35437E-05	0.000419687	0.000407097	0.000628702
2	2031	Runway Markings	Marking Removal	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	17.7	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.000133496	0.000771755	9.76344E-06	4.38041E-05	4.249E-05	6.56195E-05
2	2031	Runway Markings	Marking Removal	Pressure Washer	Other Construction Equipment	Other Construction Equipment25	Diesel	25	0.43	17.7	1.489564819	3.762591591	0.00218842	0.170695571	0.165574689	0.351677261	0.000312426	0.000789179	4.59007E-07	3.58023E-05	3.47282E-05	7.3762E-05
2	2031	Runway Markings	Marking Removal	Sweepers/Scrubbers	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	17.7	0.070157974	0.202890649	0.00142158	0.016557298	0.016060564	0.011262897	0.000103006	0.000297885	2.08717E-06	2.43095E-05	2.35802E-05	1.65362E-05
2	2031	Runway Markings	Marking Removal	Water Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	17.7	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.000133496	0.000771755	9.76344E-06	4.38041E-05	4.249E-05	6.56195E-05
2	2031	Runway Markings	Markings	Flatbed Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	40.45714286	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.000305134	0.001764011	2.23164E-05	0.000100124	9.712E-05	0.000149988
2	2031	Runway Markings	Markings	Other General Equipment	Other Construction Equipment	Other Construction Equipment175	Diesel	175	0.43	40.45714286	0.070157974	0.202890649	0.00142158	0.016557298	0.016060564	0.011262897	0.000235443	0.00068088	4.77068E-06	5.55645E-05	5.38976E-05	3.77971E-05
2	2031	Runway Markings	Markings	Pickup Truck	Off-highway Trucks	Off-highway Trucks600	Diesel	600	0.59	40.45714286	0.019327916	0.111736809	0.00141379	0.006342075	0.006151819	0.009500579	0.000305134	0.001764011	2.23164E-05	0.000100124	9.712E-05	0.000149988
3	2031	Taxiways	Grading	Dozer	Crawler Tractor/Dozers	Crawler Tractor/Dozers175	Diesel	175	0.59	28.3638	0.05052449	0.171055613	0.00141416	0.011187906	0.010852264	0.008436069	0.000163103	0.000552202	4.56523E-06	3.61168E-05	3.50333E-05	2.72334E-05
3	2031	Taxiways	Grading	Grader	Graders	Graders300	Diesel	300	0.59	28.3638	0.019981754	0.113311271	0.00141932	0.006380859	0.006189409	0.009624643	0.00011058	0.000627072	7.82479E-06	3.53121E-05	3.42526E-05	5.32634E-05
3	2031	Taxiways	Grading	Roller	Rollers	Rollers100	Diesel	100	0.59	28.3638	0.098081261	0.903249691	0.00157652	0.01964218	0.019052913	0.010430795	0.000180929	0.001666214	2.90819E-06	3.62337E-05	3.51467E-05	1.92416E-05
																Total (Tons Per Year)	***0.18030992***	***0.77032479***	***0.00720875***	***0.04686148***	***0.04545567***	***0.06274229***

On-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton
Units for Greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

																			MOVESS ONROAD Emission Factors (grams/mile)						ONROAD Emission (Tons Per Year)					
Scenario ID	Year	Project	Equipment	Equipment Category	MOVESS ONROAD LOOKUP	On-road Activity	Fuel	Roadway Type	Round Trip Distance (miles)	Distance for fugitive PM	Number of Vehicles	Number of Employees	Number of Project Days	Project Length	Project Width	Project Area	Building Height	Open Space Height	Number of Trees	Activity Rate	VMT	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC
1	2031	Taxiways	Asphalt 18 Wheeler	Combination Short-haul Truck	DieselUrban Unrestricted AccessCombination Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted	40	5	1	--	236	6240	100	--	--	--	--	--	9054	2.145494061	2.448394445	0.005138804	0.315799476	0.112795504	0.094780711	0.021412843	0.024435904	5.12872E-05	0.003151798	0.001125742	0.000945947
1	2031	Taxiways	Dump Truck - Asphalt	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted	40	5	1	--	236	6240	100	--	--	--	--	--	12827	0.959942025	0.929169778	0.002614922	0.106580432	0.040987859	0.057058299	0.013573024	0.013137923	3.69735E-05	0.001506986	0.000579545	0.000806771
1	2031	Taxiways	Dump Truck Subbase Material	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted	40	5	5	--	236	6240	100	--	--	--	--	--	76960	0.959942025	0.929169778	0.002614922	0.106580432	0.040987859	0.057058299	0.081436031	0.078825488	0.000221835	0.009041679	0.003477177	0.004840502
1	2031	Taxiways	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted	30	--	248.512	248.512	236	--	--	--	--	--	--	--	1759465	3.135346575	0.057012326	0.002454221	0.025063759	0.00718005	0.092312734	6.080968012	0.110574739	0.004759933	0.048610867	0.013925623	0.179039468
2	2031	Runway Markings	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted	30	--	7	7	236	--	--	--	--	--	--	--	49560	3.135346575	0.057012326	0.002454221	0.025063759	0.00718005	0.092312734	0.171286598	0.003114631	0.000134076	0.001369254	0.000392252	0.005043122
3	2031	Taxiways	Asphalt 18 Wheeler	Combination Short-haul Truck	DieselUrban Unrestricted AccessCombination Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted	40	5	1	--	236	2313	100	--	--	--	--	--	3356	2.145494061	2.448394445	0.005138804	0.315799476	0.112795504	0.094780711	0.007936989	0.009057532	1.90104E-05	0.001168261	0.000417273	0.000350629
3	2031	Taxiways	Dump Truck - Asphalt	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted	40	5	1	--	236	2313	100	--	--	--	--	--	4755	0.959942025	0.929169778	0.002614922	0.106580432	0.040987859	0.057058299	0.005031553	0.00487026	1.37062E-05	0.000558643	0.000214839	0.000299072
3	2031	Taxiways	Dump Truck Subbase Material	Single Unit Short-haul Truck	DieselUrban Unrestricted AccessSingle Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted	40	5	2	--	236	2313	100	--	--	--	--	--	28527	0.959942025	0.929169778	0.002614922	0.106580432	0.040987859	0.057058299	0.030186144	0.029218486	8.22283E-05	0.003351507	0.001288896	0.001794244
3	2031	Taxiways	Passenger Car	Passenger Car	GasolineUrban Unrestricted AccessPassenger Car	Employee Commute	Gasoline	Urban Unrestricted	30	--	5.0897	5.0897	236	--	--	--	--	--	--	--	36035	3.135346575	0.057012326	0.002454221	0.025063759	0.00718005	0.092312734	0.124542223	0.002264643	9.74865E-05	0.000995583	0.000285206	0.003666846
																										Total (Tons Per Year)						*6.536373418*	*0.27549961*	*0.00541654*	*0.06975458*	*0.02170655*	*0.1967866*

Fugitive Sources

Units for Non-Greenhouse Gases Emission: Short Ton

Scenario ID	Year	Project	Fugitive Source Type	Number of Months	CO	NOx	SO_2	PM_{10}	VOC
1	2031	Taxiways	Asphalt Drying	11	0	0	0	0	23.14875
1	2031	Taxiways	Asphalt Storage and Batching	11	1.5098	0.09425	0.01735	0.1034	0.04675
1	2031	Taxiways	Material Movement (Paved Roads)	11	0	0	0	0.03835	0
1	2031	Taxiways	Material Movement (Unpaved Roads)	11	0	0	0	0.1429	0
1	2031	Taxiways	Soil Handling	11	0	0	0	0.1766	0
1	2031	Taxiways	Unstabilized Land and Wind Erosion	11	0	0	0	2.308E-07	0
3	2031	Taxiways	Soil Handling	11	0	0	0	0.06545	0
3	2031	Taxiways	Unstabilized Land and Wind Erosion	11	0	0	0	8.555E-08	0
				TOTAL (Tons Per Year)	*1.5098*	*0.09425*	*0.01735*	*0.526700316*	*23.1955*

Total Construction Emissions by Source

Emission Source	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC
NonRoad	0.180	0.770	0.007	0.047	0.045	0.063
OnRoad	6.536	0.275	0.005	0.070	0.022	0.197
Fugitive	1.510	0.094	0.017	0.527	--	23.196
TOTAL	*8.226*	*1.140*	*0.030*	*0.643*	*0.067*	*23.455*

Attachment B. FHWA Construction Noise Equipment List

Equipment Descripfion	Impact Device?	Acousfical use Factor (%)	Specified Lmax @ 50 ft. (dBA, slow)	Actual Measured Lmax @ 50 ft. (dBA, slow)
All Other Equipment > 5 HP	No	50	85	-N/A-
Auger Drill Rig	No	20	85	84
Backhoe	No	40	80	78
Bar Bender	No	20	80	-N/A-
Blasfing	Yes	-N/A-	94	-N/A-
Boring Jack Power Unit	No	50	80	83
Chain Saw	No	20	85	84
Clam Shovel (dropping)	Yes	20	93	87
Compactor (ground)	No	20	80	83
Compressor (air)	No	40	80	78
Concrete Batch Plant	No	15	83	-N/A-
Concrete Mixer Truck	No	40	85	79
Concrete Pump Truck	No	20	82	81
Concrete Saw	No	20	90	90
Crane	No	16	85	81
Dozer	No	40	85	82
Drill Rig Truck	No	20	84	79
Drum Mixer	No	50	80	80
Dump Truck	No	40	84	76
Excavator	No	40	85	81
Flat Bed Truck	No	40	84	74
Front End Loader	No	40	80	79
Generator	No	50	82	81
Generator (<25KVA, VMS signs)	No	50	70	73
Gradall	No	40	85	83
Grader	No	40	85	-N/A-
Grapple (on backhoe)	No	40	85	87
Horizontal Boring Hydraulic Jack	No	25	80	82
Hydra Break Ram	Yes	10	90	-N/A-
Impact Pile Driver	Yes	20	95	101
Jackhammer	Yes	20	85	89
Man Lift	No	20	85	75
Mounted Impact hammer (hoe ram)	Yes	20	90	90
Pavement Scarafier	No	20	85	90
Paver	No	50	85	77
Pickup Truck	No	40	55	75
Pneumafic Tools	No	50	85	85
Pumps	No	50	77	81
Refrigerator Unit	No	100	82	73
Rivet Buster/Chipping Gun	Yes	20	85	79
Rock Drill	No	20	85	81
Roller	No	20	85	80

Equipment Descripfion	Impact Device?	Acousfical use Factor (%)	Specified Lmax @ 50 ft. (dBA, slow)	Actual Measured Lmax @ 50 ft. (dBA, slow)
Sand Blasfing (Single Nozzle)	No	20	85	96
Scraper	No	40	85	84
Shears (on backhoe)	No	40	85	96
Slurry Plant	No	100	78	78
Slurry Trenching Machine	No	50	82	80
Soil Mix Drill Rig	No	50	80	-N/A-
Tractor	No	40	84	-N/A-
Vacuum Excavator (Vac-Truck)	No	40	85	85
Vacuum Street Sweeper	No	10	80	82
Venfilafion Fan	No	100	85	79
Vibrafing Hopper	No	50	85	87
Vibratory Concrete Mixer	No	20	80	80
Vibratory Pile Driver	No	20	95	101
Warning Horn	No	5	85	83
Welder/Torch	No	40	73	74

USFWS IPaC Report

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
Phone: (251) 441-5181 Fax: (251) 441-6222
Email Address: alabama@fws.gov

In Reply Refer To: 04/17/2025 13:57:40 UTC
Project Code: 2025-0084556
Project Name: Birmingham Airport EA

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

To Whom It May Concern:

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

Project consultation requests may be submitted by mail or email (Alabama@fws.gov). **Ensure that the Project Code in the header of this letter is clearly referenced in any request for consultation or correspondence submitted to our office.**

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

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

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

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

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

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

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

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

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

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. **Ensure that the Project Code in the header of this letter is clearly referenced with any request for consultation or correspondence about your project that you submit to our office.**

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

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

This species list is provided by:

Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
(251) 441-5181

PROJECT SUMMARY

Project Code: 2025-0084556
Project Name: Birmingham Airport EA
Project Type: Airport - Maintenance/Modification
Project Description: The proposed project is conducting a stream restoration project for Village creek.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@33.56008955,-86.75905852602546,14z



Counties: Jefferson County, Alabama

ENDANGERED SPECIES ACT SPECIES

There is a total of 11 threatened, endangered, or candidate species on this species list.

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

MAMMALS

NAME	STATUS
Gray Bat *Myotis grisescens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6329	Endangered
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Whooping Crane *Grus americana* Population: U.S.A. (AL, AR, CO, FL, GA, ID, IL, IN, IA, KY, LA, MI, MN, MS, MO, NC, NM, OH, SC, TN, UT, VA, WI, WV, western half of WY) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/758	Experimental Population, Non-Essential

REPTILES

NAME	STATUS
Alligator Snapping Turtle *Macrochelys temminckii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4658	Proposed Threatened
Flattened Musk Turtle *Sternotherus depressus* Population: Black Warrior R. system upstream from Bankhead Dam No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6961	Threatened

AMPHIBIANS

NAME	STATUS
Black Warrior (=sipsey Fork) Waterdog *Necturus alabamensis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5426	Endangered

FISHES

NAME	STATUS
Rush Darter *Etheostoma phytophilum* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2779	Endangered

NAME	STATUS
Watercress Darter *Etheostoma nuchale* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1838	Endangered

CLAMS

NAME	STATUS
Ovate Clubshell *Pleurobema perovatum* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5430	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

CRITICAL HABITATS

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

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

IPAC USER CONTACT INFORMATION

Agency: Birmingham city
Name: Casey Nowell
Address: 3535 grandview parkway, suite 600
City: Birmingham
State: AL
Zip: 35243
Email casey.nowell@volkert.com
Phone: 2055155755

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Aviation Administration

ADCNR Correspondence

Jenna Weigman

From: Fobian, Todd <Todd.Fobian@dcnr.alabama.gov>
Sent: Monday, June 30, 2025 2:32 PM
To: Jenna Weigman
Cc: Silvano, Amy; Threadgill, Carrie
Subject: Birmingham-Shuttlesworth International Airport (BHM) – Environmental Assessment (EA) – Taxiway A
Attachments: Bham Airport EA RE Relocating Taxiway A_Jefferson_063025_tbf.pdf

You don't often get email from todd.fobian@dcnr.alabama.gov. Learn why this is important

Good afternoon,

Attached, please find our review of the proposed Birmingham-Shuttlesworth International Airport (BHM) – Environmental Assessment (EA) – Taxiway A Relocation project in Jefferson County Alabama. If you have any questions or concerns regarding our review, please contact me. Thank you for the opportunity to review this project.

Sincerely, Todd

Todd Fobian
Environmental Affairs Supervisor
Alabama Wildlife and Freshwater Fisheries Division
64 N. Union Street, Suite 551
Montgomery, AL 36130
Office: 334-353-7484
Cell: 334-850-3798
Todd.Fobian@dcnr.alabama.gov

STATE OF ALABAMA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
WILDLIFE AND FRESHWATER FISHERIES DIVISION

64 North Union Street, Ste. 567
P. O. Box 301456
Montgomery, AL 36130-1456
Phone: (334) 242-3465 Fax: (334) 242-3032
www.outdooralabama.com

KAY IVEY
GOVERNOR

CHRISTOPHER M. BLANKENSHIP
COMMISSIONER

EDWARD F. POOLOS
DEPUTY COMMISSIONER

The mission of the Wildlife and Freshwater Fisheries Division is to manage, protect, conserve, and enhance the wildlife and aquatic resources of Alabama for the sustainable benefit of the people of Alabama.

CHARLES F. "CHUCK" SYKES
DIRECTOR

FRED R. HARDERS
ASSISTANT DIRECTOR

June 30, 2025

MEAD & HUNT, Inc.
Attn: Jenna Weigman
1702 Lawrence Dr
De Pere, WI 54115
Jenna.Weigman@meadhunt.com
(920) 593-6869

RE: Birmingham-Shuttlesworth International Airport (BHM) – Environmental Assessment (EA) – Taxiway A Relocation – Agency Solicitation of Views, Jefferson County Alabama

Dear Jenna Weigman:

The Alabama Department of Conservation and Natural Resources, Division of Wildlife and Freshwater Fisheries, (ADCNR-WFF) has reviewed the above-referenced project and provides the following comments and recommendations:

- Based on the information provided in your letter received on May 29, 2025, and our own research, our records indicate the state and federally protected Watercress Darter (*Etheostoma nuchale*) and state protected Brazilian Free-tailed Bat (*Tadarida brasiliensis*), Tricolored Bat (*Perimyotis subflavus*) are known to occur within 3-miles of the project, primarily in nearby spring and karst habitats. Due to the presence of these species, the upmost care should be taken to avoid impacts, directly or indirectly.

- Federally-protected species are under the jurisdiction of the U. S. Fish and Wildlife Service (USFWS). Please contact the USFWS (251-441-5181) regarding potential impacts to federally-protected species.

- If streams, ditches, or wetlands will be impacted by the proposed activity, the Mobile District, Army Corps of Engineers should be contacted at (251-690-3188) to determine if the activity falls under a Corps regulation requiring mitigation for adverse ecological, morphological, or hydrological impacts.

- The state and federally protected aquatic species in Jefferson County are highly sensitive to runoff, erosion and sedimentation from disturbed soils. Environmental impacts should be minimized prior to and during construction by strict adherence to proper erosion control and re-vegetation procedures. Installation and implementation of best management practices (BMPs), as outlined in the Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas (July 2018) and the Field Guide for Erosion and Sediment Control on Construction Sites in Alabama (4th Edition, 2022), will aid in minimizing erosion and migration of sediments into nearby streams and creeks. Adherence to BMPs is critical in reducing potential impacts.

The Department of Conservation and Natural Resources does not discriminate on the basis of race, color, religion, age, sex, national origin, disability, pregnancy, genetic information or veteran status in its hiring or employment practices nor in admission to, access to, or operations of its programs, services, or activities.

- The site should be seeded as soon as possible to ensure that sediments do not run off into nearby streams and creeks. We recommend native ground cover be used, with seed mixes compatible to species naturally occurring at this site. Appropriate siltation barriers include green zones, sod strips, silt fences, erosion eels or other superior means of erosion control that will minimize impacts. Sediment traps should be constructed and checked and cleaned frequently.

- Construction activities, occurring during the spring and early summer spawning season, have the potential to adversely impact sport fish and other spring spawning species and their reproductive success by increasing the number of fine particles in the water column. For in-stream construction activities occurring in warmwater fisheries, we recommend these construction activities occur from June 1 through November 30 in warmwater fisheries.

- Impacts to natural stream habitat can negatively impact aquatic, semi-aquatic, and terrestrial species. Studies have shown that undeveloped natural streams and riparian areas provide the most suitable habitat for maintaining abundance, diversity, and species richness of aquatic, semi-aquatic, and terrestrial species. The project boundary includes stream habitat that has been highly impacted by past channelization, concrete base/substrate, and concrete aprons. We recommend investigating and pursuing redevelopment designs in consultation with state and federal resource agencies that restore natural stream features and vegetated bank slopes (pools, runs, riffles) to enhance shallow water spawning, rearing and feeding habitat for fish and other aquatic species. Designs should also consider fish passage and stream connectivity improvements, often caused by poor bridge and culvert design and/or placement.

- State water quality standards (particularly those related to erosion control, water turbidity, and dissolved oxygen) should be strictly adhered to.

- If a project will have impacts to state-owned lands and/or water bottoms, or if you are unsure if your project may impact these lands and bottoms, ADCNR State Lands Division (334-242-3484) should be consulted.

- This agency should also be notified 48 hours prior to instream blasting (if any). The party responsible for blasting may be required to provide compensation for the replacement cost of fish, mussels, or other biota killed by the blast and for all expenses associated with blast damage assessment by our personnel.

- If creek crossings are upgraded, the use of bottomless culverts and bridges are preferred to circular pipe style culverts. We recommend that heavy machinery and trucks be kept out of creeks and streams as much as possible. If heavy traffic will occur at stream and creek crossings, we recommend bridges with appropriate culverts be built and installed.

- Minimize tree removal as much as possible in riparian buffer zones. If tree removal is necessary for the project, we recommend tree removal (between October 15 and March 31) outside of bat roosting periods, to avoid disturbing potential habitat for state-wide ranging protected bat species. We recommend restoring buffer zones when feasible to reduce sedimentation. Ideal riparian zones should be no less than 50 ft on each side of intermittent streams and 150 ft on each side of perennial streams. We also recommend 50% retention of crown cover for shading and water temperature stabilization of streams and creeks.

- Due to unique geology of the area, construction activities have the potential to adversely impact nearby caves and spring habitats. We recommend consulting with Geological Survey of Alabama, Geologic Investigations Program (205-247-3613) to evaluate potential impacts to karst geology.

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- The Migratory Bird Treaty Act (MBTA) prohibits the take of migratory birds, their nests, and eggs, except when specifically authorized by the Department of the Interior. Also, bald eagles are protected under the Bald and Golden Eagle Protection Act. Eagles can be found in the area in high numbers because of the increased population statewide. This letter does not exempt a project from federal provisions as listed under the MBTA or Bald and Golden Eagle Protection Act.

- We recommend that if any state or federally protected species are observed during surveys and/or construction, the team should halt work activities and contact USFWS and ADCNR-WFF for further instructions and to re-evaluate project activities.

We appreciate the opportunity to comment on these projects. Please contact me if we may be of further assistance.

Sincerely,

Todd Fobian
Environmental Affairs Supervisor

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Aquatics Survey

AST Environmental

July 15, 2025 JS25-109

TO: Volkert, Inc.
1110 Montlimar Drive
Mobile, AL 36609

ATTN: Paige Felts

RE: Protected Species Survey
Birmingham Airport (BAA) – Village Creek
Jefferson County, Alabama
USFWS IPaC Project Code: 2025-0084556

Ms. Felts:

This report of findings is in response to a request for a protected species survey and a habitat assessment in Village Creek located within the boundary of the Birmingham Airport in Jefferson County, Alabama. AST Environmental (AST) understands the project involves rerouting an approximately 2,600 feet long reach of Village Creek. See Site Map.

In June, AST conducted a protected species survey and habitat assessment in Village Creek for the following protected freshwater species:

Mussel		
Ovate Clubshell	*Pleurobema perovatum*	Endangered
Fish		
Watercress Darter	*Etheostoma nuchale*	Endangered
Rush Darter	*Etheostoma phytophilum*	Endangered
Amphibian		
Black Warrior Waterdog	*Necturus alabamensis*	Endangered
Reptile		
Flattened Musk Turtle	*Sternotherus depressus*	Threatened

Specifically, AST surveyed the proposed project area within Village Creek for presence or absence of federally protected mussel and fish species and for the presence or absence of suitable habitat for the listed Black Warrior Waterdog and Flattened Musk Turtle. The final methodology for the survey was approved by the USFWS. See Appendix A. The survey was

led by Jeff Selby (USFWS Federal Collection Permit ES100626) following USFWS protocol. The stream survey included the 2,600 feet long reach with buffers extending 50 meters upstream and 100 meters downstream from the proposed construction boundaries. See Site Map and Survey Boundaries Map.

SITE

Box culverts were located near the upstream and downstream survey boundaries on Village Creek, and the channel in between appears to have been historically channelized. A small islanded was present just upstream of the downstream box culvert, and the channel braids around the island were covered with American Water-willow, *Justicia americana*. Patches of American Water-willow were sparsely distributed along the margins of the survey reach. Water-willow was the only rooted aquatic plant of noticeable significance within the survey reach.

The maximum depth of the survey reach of Village Creek was three feet and the estimated average depth was 1.5 feet. Wetted width ranged from 20 feet to 55 feet and averaged approximately 40 feet. Width at top-of-bank ranged from 30 feet to 70 feet and averaged about 55 feet. The substratum was comprised of approximately 20% boulder, 20% cobble, 20% gravel, 20% sand, 10% bedrock, and 10% mud. Flow within the survey reach was moderate to swift. Riffle-run-pool sequences were present within the survey reach. See Photographs.

METHODS

AST conducted a mussel survey within the survey reach for the presence or absence of protected mussel species. The mussel survey was completed using a combination of visual and tactile examination of the substrate throughout the survey reach. SCUBA diving was utilized by divers in order to complete the survey. All diving operations were conducted in accordance with the AST Dive Standards and Safety Manual protocol following the American Academy of Underwater Scientists. Clear-bottom viewing devices, wading, and hand grubbing were utilized in shallower areas.

AST also conducted a fish survey within the survey reach for the presence or absence of protected fish species. A fine-meshed seine net and dip nets were utilized to complete the survey. Fish sampling efforts focused on habitat types preferred by the target species. Additionally, all habitat types present on site were sampled in order to compile an exhaustive fish taxa list for this location. All representative species collected were documented and photographed. Fish identifications were verified by Dr. Jeff Ray (University of North Alabama).

AST completed a habitat assessment for the presence or absence of suitable habitat for the Flattened Musk Turtle (*Sternotherus depressus*) and Black Warrior (=Sipsey Fork) Waterdog (*Necturus alabamensis*). Habitat characteristics were visually estimated based on experience and focused on substrata composition, flow regime, presence of riffle-run-pool complexes, and physical stream dimensions.

WATER QUALITY

Water quality data were collected on-site using standard methods. Water quality parameters were: temperature, dissolved oxygen, pH, conductivity and turbidity. A YSI DO200a unit was used to measure dissolved oxygen and temperature. An Oakton PCSTestr50 meter was used to assess pH and conductivity. An Oakton T-110 meter was used to take turbidity readings. Water parameter measurements were:

Date	**6-17-25**	**6-25-25**
temperature	22.9 °C	25.1 °C
dissolved oxygen	122.0% / 10.36 ppm	145.3% / 12.09 ppm
pH	8.08	8.21
conductivity	386.0 µS	406.0 µS
turbidity	5.50 FTU	1.67 FTU

RESULTS

Mussels

No protected mussel species were collected during the survey. No live or relic mussels were collected during the survey in Village Creek. The Asian Clam, *Corbicula fluminea*, was present. Appropriate habitat for the Ovate Clubshell was marginally present throughout the survey reach and limited to a few silty sand patches along the stream margins.

Fish

No protected fish species were collected during the survey. A total of six fish species were collected during the survey, including *Campostoma oligolepis*, *Gambusia affinis*, *Hypentelium etowanum*, *Lepomis macrochirus*, *Micropterus nigricans*, and *Semotilus atromaculatus*. The majority of fish species collected throughout the whole survey reach was the Largescale Stoneroller, *Campostoma oligolepis*.

Appropriate habitat for the Watercress Darter was not present within the survey reach. Flow within the survey reach was generally too swift lacked pools or runs choked with aquatic vegetation like watercress. Appropriate habitat for the Rush Darter was marginally present within the survey reach. The primary aquatic macrophyte present within the survey reach was American Water Willow, and its distribution was limited. Root wads were not present in any significance within the survey reach. The Rush Darter is closely associated with root wads and macrophytes such as rushes and sedges more so than water willow. Stream size was appropriate for the Rush Darter; however flow was generally too swift and lacking sluggish margins supportive of rushes and sedges.

Amphibian

Appropriate habitat for the Black Warrior Waterdog was not present within the survey reach. This amphibian has been historically known from the Black Warrior Basin with a distribution range restricted to above the Fall Line. The Black Warrior Waterdog inhabits clean flowing water with hard stable substrate with an abundance of rocky crevices and submerged logs for refuge. They are reliably found in submerged leaf beds, as they used them for both shelter and foraging habitat. Village Creek is within the Black Warrior Basin and the location of the survey

area is above the Fall Line. The areas of hard stable substrate with rocky crevices could potentially provide suitable refugia for the Black Warrior Waterdog; however, the survey area lacked suitable leaf pack forage areas. There were no incidental observations of *Necturus* species including *Necturus alabamensis*, the Black Warrior Waterdog.

Turtle

Appropriate habitat for the Flattened Musk Turtle was present within the survey reach. This turtle has been historically known from the Black Warrior Basin with a distribution range restricted to above the Fall Line. The Flattened Musk Turtle is typically known to inhabit medium-sized to larger streams with clean water, riffle-pool complexes, an abundance of invertebrates for a food source and adequate large rock and submerged logs for refuge.

Village Creek is within the Black Warrior Basin and the location of the survey area is above the Fall Line. Stream size, large boulder and bedrock substrata, and the presence of riffle-run-pool complexes provide suitable habitat for the Flattened Musk Turtle. Two turtle species were incidentally observed in Village Creek during the survey represented by a Yellow-bellied Pond Slider, *Trachemys scripta scripta*, and Eastern Musk Turtle, *Sternotherus odoratus*. See Photographs.

CONCLUSIONS

We believe that the proposed action is not likely to adversely affect Ovate Clubshell, Watercress Darter, Rush Darter, and Black Warrior Waterdog individuals or populations. With the presence of suitable habitat and other turtle species, we believe that the proposed action may affect the Flattened Musk Turtle. Written concurrence should be obtained from the United States Fish and Wildlife Service prior to implementation of the proposed project. If you need any additional information, please contact me at (256) 476-7355 or Elaina Browder at (256) 278-5117.

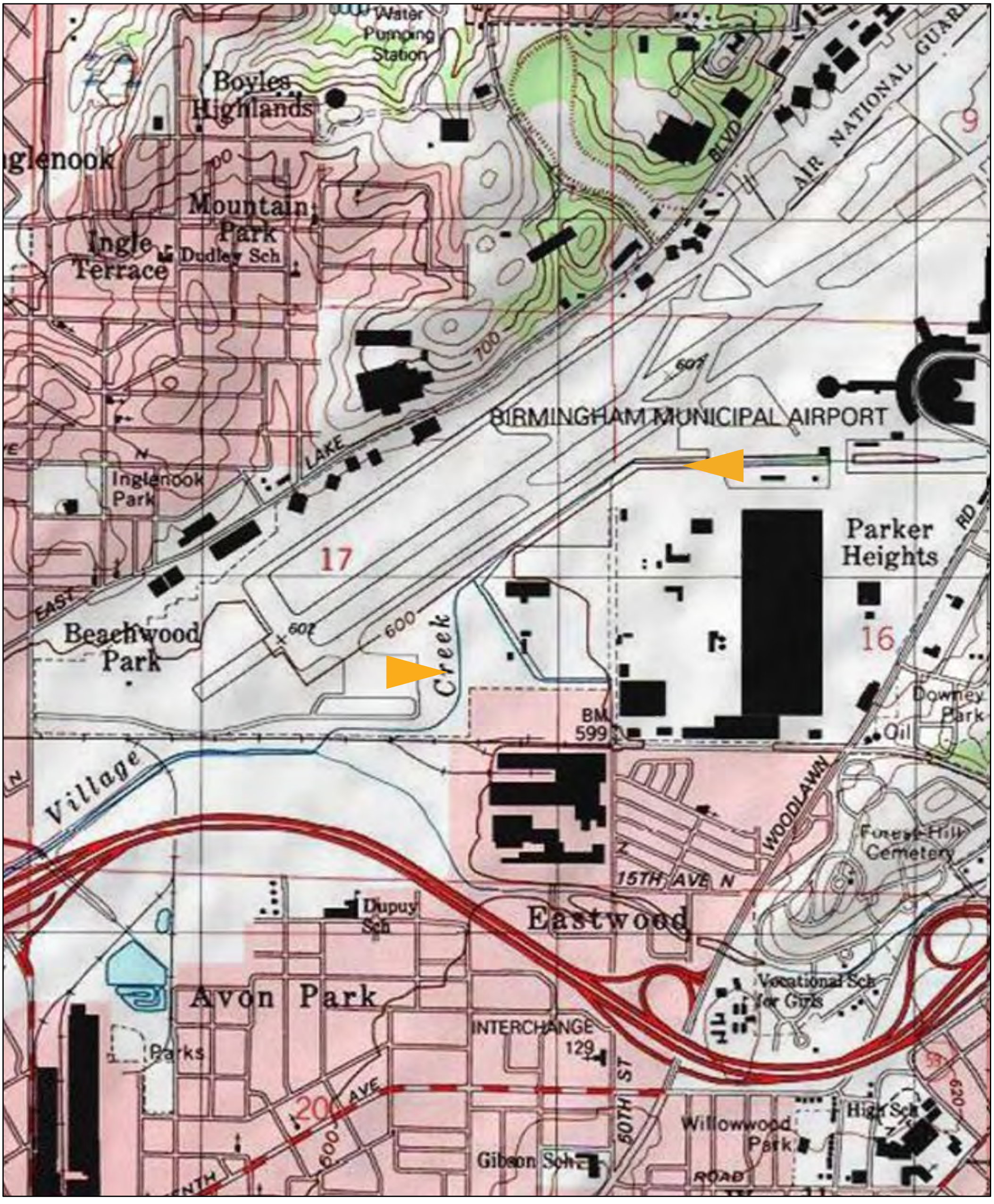
Sincerely,

Jeff Selby, M.S.
Member / Senior Biologist
AST Environmental

Elaina Browder, M.S.
Environmental Scientist
AST Environmental

Attachments:

Site Map
Survey Boundaries Map
Site Photographs
Appendix A. USFWS approved Sampling Protocol



SITE MAP
JS25-109

Village Creek
Birmingham-Shuttlesworth Airport
Jefferson County, AL

Survey Boundaries:

N33.55805, W-86.76313

2,600 feet project limits

Scale = 1:12,000

0 0.1 0.2 0.4 mi
0 0.17 0.35 0.7 km

Source: USA Topo Map.
Copyright:© 2013 National Geographic Society, i-cubed

AST Environmental



SURVEY BOUNDARIES MAP
JS25-109

Village Creek
Birmingham-Shuttlesworth Airport
Jefferson County, AL

Survey Boundaries:

50 meters upstream to 100 meters downstream and the 2,600 feet Project Limits

Scale = 1:9,000

0 0.07 0.15 0.3 mi
0 0.13 0.25 0.5 km

Source: NAIP Imagery and Maxar

AST Environmental

PHOTOGRAPH 1



Village Creek facing downstream / south from a location near the downstream survey boundary. Taken by Jeff Selby, 6-17-2025.

PHOTOGRAPH 2



Village Creek facing upstream / north from a location near the downstream project limits. Taken by Jeff Ray, 6-25-2025.

PHOTOGRAPH 3



Village Creek facing downstream / south from a location near the downstream project limits. Taken by Mike McConnell, 6-25-2025.

PHOTOGRAPH 4



Village Creek facing upstream / northeast from a location within the downstream portion of the survey reach. Taken by Mike McConnell, 6-25-2025.

PHOTOGRAPH 5



Tributary #1 to Village Creek. Located in the downstream portion of the survey reach. Taken by Jeff Selby, 6-17-2025.

PHOTOGRAPH 6



Tributary #2 to Village Creek. Located near the middle portion of the survey reach. Taken by Jeff Selby, 6-18-2025.

PHOTOGRAPH 7



Village Creek facing downstream / southwest from a location within the downstream portion of the survey reach. Taken by Mike McConnell, 6-25-2025.

PHOTOGRAPH 8



Village Creek facing upstream / northeast from a location within the downstream portion of the survey reach. Taken by Mike McConnell, 6-25-2025.

PHOTOGRAPH 9



Culvert within Village Creek. Located near the middle portion of the survey reach. Taken by Jeff Selby, 6-18-2025.

PHOTOGRAPH 10



Village Creek facing north / upstream from a location near the middle portion of the survey reach. Taken by Mike McConnell, 6-26-2025.

PHOTOGRAPH 11



Village Creek facing west / downstream from a location near the middle portion of the survey reach. Taken by Mike McConnell, 6-26-2025.

PHOTOGRAPH 12



Village Creek facing west / downstream from a location within the upstream portion of the survey reach. Taken by Mike McConnell, 6-26-2025.

PHOTOGRAPH 13



Village Creek facing east / upstream from a location within the upstream portion of the survey reach. Taken by Mike McConnell, 6-26-2025.

PHOTOGRAPH 14



Village Creek facing east / upstream from a location near the upstream project limits. Taken by Mike McConnell, 6-26-2025.

PHOTOGRAPH 15



Village Creek facing west / downstream from a location near the upstream project limits. Taken by Mike McConnell, 6-26-2025.

PHOTOGRAPH 16



Bedrock and boulder substrata within the downstream portion of the survey reach. Taken by Mike McConnell, 6-25-2025.

PHOTOGRAPH 17



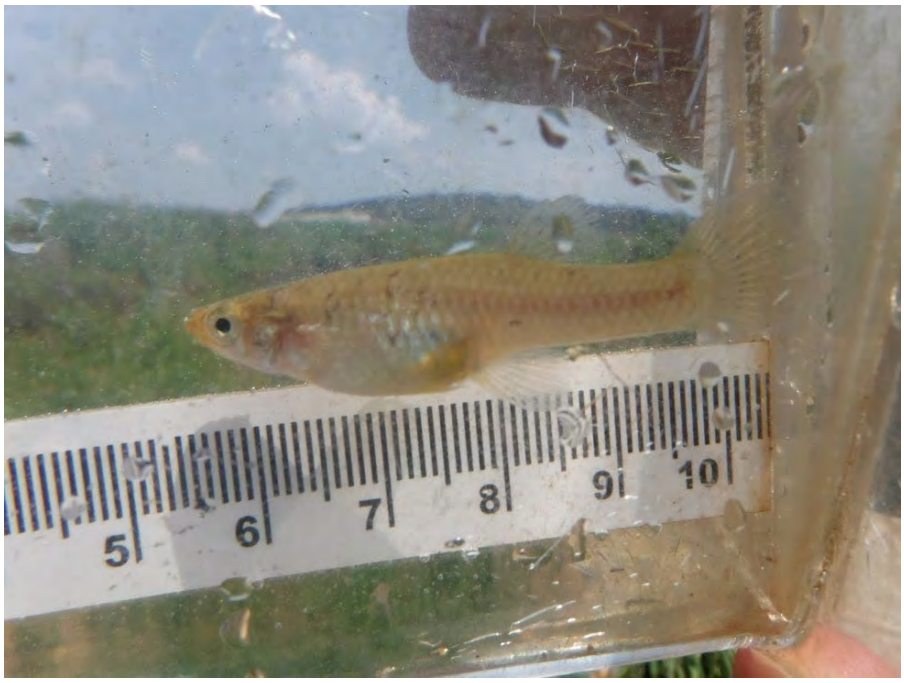
Bedrock and boulder substrata within the downstream portion of the survey reach. Taken by Jeff Selby, 6-18-2025.

PHOTOGRAPH 18



Largescale stoneroller (*Campostoma oligolepis*) collected during the survey. Taken by Mike McConnell, 6-25-2025.

PHOTOGRAPH 19



Mosquitofish (*Gambusia affinis*) collected during the survey. Taken by Mike McConnell, 6-25-2025.

PHOTOGRAPH 20



Alabama hogsucker (*Hypentelium etowanum*) collected during the survey. Taken by Mike McConnell, 6-25-25.

PHOTOGRAPH 21



Bluegill (*Lepomis macrochirus*) collected during the survey. Taken by Jeff Ray, 6-26-2025.

PHOTOGRAPH 22



Largemouth bass (*Micropterus nigricans*) collected during the survey. Taken by Jeff Ray, 6-25-2025.

PHOTOGRAPH 23



Creek chub (*Semotilus atromaculatus*) collected during the survey. Taken by Mike McConnell, 6-25-2025.

PHOTOGRAPH 24



Yellow-bellied pond slider (*Trachemys scripta scripta*) collected during the survey. Taken by Mike McConnell, 6-26-2025.

PHOTOGRAPH 25



Eastern musk turtle (*Sternotherus odoratus*) collected during the survey. Taken by Mike McConnell, 6-26-2025.

Sampling Protocol

AST Environmental

98 Mark Selby Pvt. Dr.
Decatur, AL 35603
Phone: (256) 476-7355

JG

RECEIVED
MAY 05 2025
BY:

May 5, 2025
JS25-109

TO: Field Supervisor
Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419

ATTENTION: Bill Pearson

RE: Protected Species Survey
Birmingham Airport (BAA) – Village Creek
Jefferson County, Alabama
USFWS IPaC Project Code: 2025-0084556

Mr. Pearson:

AST Environmental has been contracted by Volkert to perform presence / absence surveys for protected species for the above referenced project. Our proposed sampling protocol and schedule are detailed below:

PROJECT INFORMATION

AST Environmental understands that the proposed project referenced above consists of rerouting an approximately 2,600 feet long reach of Village Creek located within the boundary of the Birmingham Airport.

The United States Fish and Wildlife Service (USFWS) IPaC data base report lists the following aquatic species for the project site:

Mussel		
Ovate Clubshell	*Pleurobema perovatum*	Endangered
Fish		
Watercress Darter	*Etheostoma nuchale*	Endangered
Rush Darter	*Etheostoma phytophilum*	Endangered
Amphibian		
Black Warrior Waterdog	*Necturus alabamensis*	Endangered
Reptile		
Flattened Musk Turtle	*Sternotherus depressus*	Threatened

No critical habitat was listed.

In keeping with USFWS protocols, AST Environmental intends to survey the 2,600 feet long reach of Village Creek proposed for relocation for the presence of protected fish, and mussels. In addition to the Fish and mussel surveys, AST will complete habitat assessments for the Black Warrior Waterdog (BWD) and Flattened Musk Turtle (FMT). If habitat is determined to be present for the Black Warrior Waterdog or Flattened Musk Turtle, AST will initiate consultation with the USFWS for additional survey protocol approval. Our anticipated survey parameters are detailed below.

SCOPE OF SERVICES

AST Environmental will complete a protected species survey in accordance with the typical USFWS protocols. Surveys will be conducted under the terms and conditions of our USFWS Federal Collection Permit TE100626.

Fish and mussel surveys will include the 2,600 feet long relocation reach. Mollusk surveys will include intense examination of the stream substrate for the presence of freshwater mussels within the survey limits. Fish sampling will include netting and seining focusing on habitat types preferred by the Watercress Darter and the Rush Darter within the survey area. Additionally, all habitat types present on site will be sampled in order to compile an exhaustive fish taxa list for this location.

A detailed habitat assessments for the Black Warrior Waterdog (BWD) and Flattened Musk Turtle (FMT) will be completed at the time of the fish and mollusk surveys. If habitat is determined to be present for the Black Warrior Waterdog or Flattened Musk Turtle, AST will further initiate consultation with the USFWS for survey protocol approval. Should it be determined to be required, the Flattened Musk Turtle survey will be conducted during times with appropriate seasonal water temperatures for the target species. A trapline will be run for Flattened Musk Turtles for up to three consecutive nights. Traps will include a series soft mesh traps. Flattened Musk Turtle Survey reach lengths will be determined through consultation with the USFWS. Traps and sampling equipment required to complete the surveys will be provided by AST Environmental.

Should it be determined to be required, the Black Warrior Waterdog survey will be conducted during times with appropriate seasonal water temperatures for the target species. A trapline will be run for the Black Warrior Waterdog for up to three consecutive nights. Traps will include a series soft mesh traps and modified minnow traps. Black Warrior Waterdog Survey reach lengths will be determined through consultation with the USFWS. Traps and sampling equipment required to complete the surveys will be provided by AST Environmental.

Surveys will be completed in accordance with USFWS protocol and the terms and conditions of USFWS Federal Collection Permit ES100626-10. The survey will be completed pursuant to Section 7 of the Endangered Species Act with a report of findings to be submitted to the client.

- A combination of visual and tactile examination will be used to complete the mollusk survey. SCUBA or surface-supplied-air diving will be implemented during the survey, if necessary.

- A fish inventory will be completed within the survey reach. Fish will be collected with dipnets and or a fine-meshed seine.

- A detailed habitat description will be completed for the survey reach and habitat assessed in comparison to target species.

- The surveys will be completed in accordance with the USFWS guidance.
- The surveys will be completed pursuant to Section 7 of the Endangered Species Act with a report of findings to be submitted to the client for further distribution.
- The mollusk and fish surveys and the FMT and BWD habitat assessments will include the 2,600 feet long survey reach.

SCHEDULE:
AST Environmental expects that the above scope of work can be completed within 90 days of receiving approval of our sampling protocol.

AUTHORIZATION:
We are requesting your approval of our sampling protocol. Please feel free to call should you have further questions. I can be reached at **(256) 476-7355.**

Sincerely,

AST Environmental

Jeff Selby, M.S.
Member / Senior Biologist

U.S. Fish and Wildlife Service
1208-B – Daphne, Alabama 36526
Phone: 251-441-5181 Fax: 251-441-6222

The Alabama Ecological Services Field Office has reviewed and agrees with your proposed survey plan(s). Please ensure that you maintain a copy of this letter in your possession when conducting the survey(s). We look forward to receiving the report of your survey results, as conditioned by your section 10(a)(1)(A) permit issued under the U.S. Endangered Species Act.

William J. Pearson
Field Supervisor
Alabama Ecological Services Field Office

MAY 14 2025
Date

11

BIOLOGICAL ASSESSMENT

Birmingham Shuttlesworth International Airport Taxiway A Relocation

Birmingham, Jefferson County, Alabama

Prepared for
Birmingham Airport Authority
5900 Messer Airport Highway
Birmingham, Alabama 35212

Prepared by

Casey Nowell, MS, PWS, CE-ESA
Environmental Scientist
Volkert, Inc.

August 2025

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1.0 INTRODUCTION

This Biological Assessment (BA) was conducted by Volkert, Inc to identify the potential presence of protected species, including threatened and endangered species, bald and golden eagles, and migratory birds within the study area for the Taxiway A Relocation project at the Birmingham-Shuttlesworth International Airport for the Birmingham Airport Authority (BAA) in Birmingham, Jefferson County, Alabama. Protected species include those listed by the U.S. Fish and Wildlife Service (USFWS) as being threatened or endangered, or species protected by the Bald and Golden Eagle Protection Act (BGEPA) or the Migratory Bird Treaty Act (MBTA). The study area includes approximately 268.3 acres within existing BAA property and is illustrated on **Figure 1** found in **Appendix A.**

The purpose of the proposed project is to maximize the airfield's ability to accommodate the increasing demand for both passenger and cargo aircraft operations in a safe and efficient manner. The project proposes relocating existing Taxiway A to enhance airfield safety, accommodate the future aircraft fleet mix, and to meet airfield design standards as outlined in FAA AC 150/5300-13B, *Airport Design*. In doing so, the proposed project will require the relocation of approximately 2,500 linear feet of Village Creek.

This BA presents Volkert's review and assessment of federally listed species that potentially occur within the study area. Information from the USFWS official species list for the study area was reviewed and can be found in **Appendix A**. Background research also included a review of environmental datasets including topographic imagery, Federal Emergency Management Agency (FEMA) floodplain maps, U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service's (NRCS) Web Soil Survey, USFWS National Wetland Inventory maps, and aerial imagery of the study area. These illustrations can be found in **Appendix B**. Field surveys were conducted the week of May 15, 2025 and July 11, 2025 by qualified biologists to identify suitable terrestrial habitats within the study area and to survey for the potential presence of protected terrestrial species. A field survey for potential presence of protected aquatic species was conducted the week of July 15, 2025 by AST Environmental. The aquatic species report can be found in **Appendix C**.

2.0 OVERVIEW OF ESA COMPLIANCE

The purpose of the Endangered Species Act (ESA) is to conserve threatened and endangered species and the ecosystems upon which they depend. When Congress passed the ESA in 1973, they recognized that the natural heritage of the U.S. was of "esthetic, ecological, educational, recreational, and scientific value to our Nation and its people." Congress understood that, without protection, many of our Nation's living resources would become extinct. Species at risk of extinction are considered endangered, whereas species that are likely to become endangered in the foreseeable future are considered threatened.

Under Section 7 of the ESA, federal agencies must review their actions to determine if the proposed project may affect endangered or threatened species or their habitat(s). If one or more listed species may be present in the study area or if it is to occur within critical habitat for a listed species, the federal agencies must evaluate the potential effects of their action and determine if

consultation with the USFWS is required.

3.0 SITE DESCRIPTION

The study area is approximately 268.3 acres and is located within property owned by the BAA. Existing land uses in the study area include Runway 9/24, Taxiway A, the Kaiser building, the airport cargo area, and vacant properties associated with demolished buildings, remnant parking lots, and maintenance areas. Village Creek flows parallel to Taxiway A through the study area.

The elevation of the study area ranges from 580 to 620 feet above Mean Sea Level with gradual topographic relief towards the southwest. According to the Geological Survey of Alabama, the study area is in the Cambrian system. These formations are then specified by the Ketona Dolomite formation of the Appalachian Plateaus Province.

The upland herb stratum in the study area was dominant and consisted of common grasses such as Bermuda grass (*Cynodon dactylon*) and bahia grass (*Paspalum notatum*). Forested upland areas were characteristic of successional hardwood forests and consisted of hackberry (*Celtis occidentalis*), pignut hickory (*Carya glabra*) and hop-hornbeam (*Ostrya virginiana*). Emergent wetland areas were mostly composed of various sedge species (*Carex* sp.) and wetland tolerant dallis grass (*Paspalum dilatatum*). Pockets of forested wetland areas contained obligate and facultative wetland species such as cattails (*Tyhpa latifolia*), black willow (*Salix nigra*), and water hickory (*Carya aquatica*). Various invasive species were observed throughout the study area consisting of Chinese privet (*Ligustrum sinense*), mimosa tree (*Albizia julibrissin*) and kudzu (*Pueraria montana*). Photos of the study area are included in **Appendix D**.

A review of the USDA NRCS Web Soil Survey revealed one soil type, Urban Land (UdB). Urban Land (UdB) is not classified as hydric soil by the Web Soil Survey. According to the National Weather Service, the average winter temperature in Jefferson County is 44 degrees Fahrenheit (F) and the average temperature is 81 degrees F in the summer. Precipitation in this area averages approximately 56 inches per year. Most of the precipitation in this area occurs in the summer months.

4.0 THREATENED AND ENDANGERED SPECIES

Federally listed species and their habitats are protected under the ESA of 1973 (16 U.S.C§ 1531-1544, 87 Stat. 884), as amended. Section 7 of the ESA requires coordination with the USFWS for projects that have a federal nexus. On April 17, 2025, an official project specific USFWS species list was generated through the Information for Planning and Consultation (IPaC) system to determine if any federally listed species could potentially occur or if critical habitats existed within the study area. See **Appendix A** for the IPaC species list. Four terrestrial species and six aquatic species with federal-listing status of endangered, threatened, proposed endangered, proposed threatened, or candidate were identified. No critical habitats were found within the study area. In addition, an early coordination letter was sent to the USFWS on May 29, 2025, requesting information on threatened or endangered species within the study area of the project. USFWS responded on July 7, 2025 with one additional species that was not listed on the IPaC generated species list. **See Appendix E** for USFWS early coordination letter. The following table contains a list of the species along with their listing status, preferred habitat, whether habitat for

the species was found within the study area, and an effect determination of whether the proposed action would affect or impact each species.

Species	Federal Status	Habitat Description	Preferred Habitat Present in Study Area?	Species Effect/ Impact	Pertinent Project Information
Gray Bat (*Myotis grisescens)*	Endangered	With rare exceptions, gray bats roost in caves carved out of limestone formations. In the winter they seek deep, vertical caves with narrow entrances that deflect the cold winds. Summer roosts and maternity caves are nearly always located near rivers or reservoirs where insects are abundant. Adult gray bats feed over water, along rivers or reservoir edges.	No	No Effect	Cave formations, which is a preferred habitat of the gray bat, were not identified within or adjacent to the study area during the field survey. Additionally, no individuals were identified.
Indiana Bat (*Myotis sodalist*)	Endangered	Indiana bat habitat includes, forested wooded habitats and some adjacent non forested habitats such as emergent wetlands and agricultural fields. Potential roosts consist of live trees or snags with greater than 5 inches dbh and have exfoliating bark, cracks, or crevices.	No	No Effect	No snags or live trees with crevices, cracks, or exfoliating bark were identified within the study area. Additionally, no individuals were identified.
Northern Long-eared Bat (*Myotis septentrionalis)*	Endangered	Northern long eared bat habitat includes, forested wooded habitats and some adjacent non forested habitats such as emergent wetlands and agricultural fields. Potential roosts consist of live trees or	No	No Effect	No snags or live trees with crevices, cracks and exfoliating bark were identified within the study area. Additionally, no individuals were identified.

Species	Federal Status	Habitat Description	Preferred Habitat Present in Study Area?	Species Effect/ Impact	Pertinent Project Information
		snags with greater than 3 inches dbh and have exfoliating bark, cracks, or crevices.			
Tri-colored Bat (*Perimyotis subflavus)*	Proposed Endangered	During the winter, tricolored bats are found in caves and mines, although in the southern United States, where caves are sparse, tricolored bats can be found roosting in culverts. During the spring, summer and fall, tricolored bats are found in forested habitats where they roost in trees, primarily among leaves.	Yes	May Affect but Not Likely to Adversely Affect	Pine trees, leaf clusters of deciduous hardwood trees, culverts, and various abandoned buildings with open access for roosting were identified within the study area. No individuals of this species were identified during the field survey. Construction activities that require tree clearing will be conducted during the inactive season (November 16th to March 14th). If this conservation measure cannot be implemented, USFWS will be contacted, and acoustical surveys will be performed.
Alligator Snapping Turtle (*Macrochelys temminckii*)	Proposed Threatened	The alligator snapping turtle is almost exclusively aquatic and tends to stay submerged and motionless for so long that algae begins to grow on their shells. Except for egg-laying females, these turtles almost never come on land. River systems, lakes, and wetlands comprise their preferred habitats.	Yes	May Affect but Not Likely to Adversely Affect	Wetlands were identified within the study area and were of low quality, vegetated, with little to no surface water present and have a history of being repeatedly disturbed. The perennial streams in the study area are swift to low flowing streams that could provide suitable habitable for the alligator snapping turtle. No individuals of this species were identified during the field survey. This species is mobile and would likely relocate to other areas of suitable habitat during construction activities.
Flattened Musk Turtle (*Sternotherus depressus*)	Threatened	Healthy populations of flattened musk turtles must contain abundant mollusks, low silt loads and deposits, moderate temperatures and clean, well	No	No Effect	A habitat assessment was conducted for suitable habitat for the flattened musk turtle. No individuals of this species were identified during the field survey. The habitat assessment found that this species is known to inhabit medium-sized to larger stream with clean water, riffle-pool

Species	Federal Status	Habitat Description	Preferred Habitat Present in Study Area?	Species Effect/ Impact	Pertinent Project Information
		oxygenated water. Preferred habitat substrate consists of rocky bottomed to sandy, perennial streams above the fall line. Additionally, this species requires large, submerged rock and boulders and is the main factor in habitat selection. Extensive sand deposits were also a major physical component of most high-density sites.			complexes, an abundance of invertebrates for a food source and adequate large rock and submerged logs for refuge. Although Village Creek meets the physical criteria of stream size, contains large boulder and bedrock substrata, and riffle-run-pool complexes, it is located in a highly urbanized area and was historically channelized. Water quality in this segment of Village Creek is impaired as it has an approved TMDL for pathogens and siltation and is listed on ADEM's 303 d list for pathogens.
Black Warrior Waterdog (*Necturus alabamensis*)	Endangered	The Black Warrior waterdog depends on specific stream substrates for normal and robust life processes such as breeding, rearing, protection of young, protection of adults when threatened, foraging, and feeding. Preferred substrates are dominated by clay or bedrock with little sand. These areas also contain abundant rock crevices and rock slabs for shelter and areas for laying eggs. Breeding sites for the Black Warrior waterdog are large bedrock outcrops or large boulders with sand and gravel beneath them. Retreat areas were typically downstream of	No	No Effect	A habitat assessment was conducted for suitable habitat for the Black Warrior waterdog. The habitat assessment results indicated that areas of hard stable substrate with rocky crevices in the creek could provide suitable refugia for the waterdog; however, the survey area lacked suitable leaf pack forage areas. No individuals of this species were identified during the field survey.

Species	Federal Status	Habitat Description	Preferred Habitat Present in Study Area?	Species Effect/ Impact	Pertinent Project Information
		the large boulders on rock slabs free of algae and debris.			
Rush Darter (*Etheostoma phytophilum*)	Endangered	This species scatters eggs among the fine leaves of aquatic plants, providing no parental care. The larvae of the rush darter are extremely tiny and tend to stay in still water with little to no current. Habitat for the rush darter consists of clear, shallow waters where it shelters around the root masses of aquatic vegetation. It tolerates a variety of substrates, including sand, silt and gravel.	No	No Effect	A fish survey was conducted in Village Creek. No protected fish species were collected during the survey. Suitable habitat for this species was marginally present. The primary aquatic macrophyte present within the survey reach was American water willow and its distribution was limited. Root wads and macrophytes such as rushes and sedges were lacking.
Watercress Darter (*Etheostoma nuchale*)	Endangered	The watercress darter inhabits deep, slow-moving backwaters of spring outflows. These areas support dense aquatic vegetation and particularly watercress (*Nasturtium officinale*), which attracts a large community of aquatic insects. This darter feeds on aquatic insects, crustaceans, and snails. Little is known about its behavior.	Yes	May Affect but Not Likely to Adversely Affect	A fish survey was conducted in Village Creek. No protected fish species were collected during the survey. Although the flow in the survey reach was generally too swift and lacked pools or runs choked with aquatic vegetation, informal discussion with the USFWS indicated that recent data shows that this species has potential to inhabit this section of Village Creek in the cooler months. No in-stream construction activities will occur between November 1st to March 31st.
Ovate Clubshell (*Pleurobema perovatum*)	Endangered	Preferred habitat includes clean, loose sand and gravel in medium to small rivers and	No	No Effect	A protected mussel survey was performed in Village Creek. No live or relic protected mussels were collected during the survey. Suitable habitat for the ovate clubshell was marginally present throughout the survey reach and was

Species	Federal Status	Habitat Description	Preferred Habitat Present in Study Area?	Species Effect/ Impact	Pertinent Project Information
		streams. This mussel will bury itself in the bottom substrate to depths of up to four inches. Reproduction requires a stable, undisturbed habitat and a sufficient population of fish hosts to complete the mussel's larval development.			limited to a few silty sand patches along the stream margins.
Monarch Butterfly (*Danaus plexippus*)	Proposed Threatened	Monarch butterflies may be found throughout North America feeding on milkweed, their toxic host plant. Monarch butterflies live mainly in prairies, meadows, grasslands and along roadsides, across most of North America	No	No Effect	Although the monarch butterfly can inhabit several ecosystems, no individuals of this species were identified during the field survey, and no desirable milkweed plants were identified during the field survey. The study area contains routinely maintained turf grass adjacent to wooded areas.

5.0 SUMMARY OF THREATENED AND ENDANGERED SPECIES FINDINGS

Suitable habitat for two of the eleven species was observed in the study area during the field surveys. These species include the tri-colored bat and the alligator snapping turtle. Informal consultation with the USFWS identified use of this segment of Village Creek by the watercress darter in the cooler months. Conservation measures will be implemented for the tri-colored bat and watercress darter. It is believed that since the alligator snapping turtle is mobile, it would move out of the project area on its own once construction began. Therefore, a *May Affect, Not Likely to Adversely Affect* determination has been made for these species. Due to a lack of suitable habitat, a *No Effect* determination was made for the gray bat, Indiana bat, northern long-eared bat, flattened musk turtle, Black Warrior waterdog, rush darter, ovate clubshell, and monarch butterfly.

6.0 THE BALD AND GOLDEN EAGLE PROTECTION ACT

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), enacted in 1940 prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, (any bald eagle or golden eagle), alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

The Act defines "disturb" as: “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.” The Act also provides protection for impacts that resulted from human-induced alterations initiated around a previously used nest site during a time when eagles were not present.

No eagles or eagle nests were observed during the field survey. Therefore, the proposed project is anticipated to have *No Effect* on eagles or raptors.

7.0 THE MIGRATORY BIRD TREATY ACT

For projects that may affect migratory birds, the MBTA (16 U.S.C.703-712), implements various treaties and conventions for the protection of these species. Under the MBTA, taking, killing, or possessing migratory birds is unlawful. Migratory birds may nest in trees, brushy areas, or other areas of suitable habitat. The USFWS recommends activities requiring vegetation removal or disturbance to avoid the peak nesting period of March 15 through September 15 to avoid destruction of individuals, nests, or eggs. If project activities, including vegetation clearing, must be conducted during this time, it is recommended that a qualified biologist conduct a survey for nests prior to conducting work. If nesting birds are found, USFWS recommends a buffer of vegetation remain around the nest until the young have fledged or the nest is abandoned.

No nesting migratory birds were observed within the study area during the field survey. Therefore, the proposed project is anticipated to have *No Effect* on migratory birds.

8.0 CONCLUSION

This BA was conducted to determine whether protected species or their habitats are located within the study area for the Taxiway A Relocation project at the Birmingham-Shuttlesworth International Airport for the BAA in Birmingham, Jefferson County, Alabama. This assessment included a background review of environmental datasets including topographic imagery, FEMA floodplain maps, USDA NRCS Web Soil Survey, USFWS National Wetland Inventory maps, aerial imagery, and USFWS list of federally listed species of potential occurrence in the study area. In addition, field surveys were conducted within the study area the week of May 15 and July 11, 2025 and an aquatics survey was completed by AST Environmental the week of July 15, 2025.

No federally listed threatened or endangered species were observed in the study area during the field survey. There is no designated critical habitat for any listed species in the study area. There is suitable habitat within the study area for the tri-colored bat and alligator snapping turtle. Informal consultation with the USFWS identified use of this segment of Village Creek by the watercress darter in the cooler months. Conservation measures will be implemented for the tri-colored bat and watercress darter. It is believed that since the alligator snapping turtle is mobile, it would move out of the project area on its own once construction began. Therefore, a *May Affect, Not Likely to Adversely Affect* determination has been made for these species. Due to a lack of suitable habitat, a *No Effect* determination was made for the gray bat, Indiana bat, northern long-eared bat, flattened musk turtle, Black Warrior waterdog, rush darter, ovate clubshell, and monarch butterfly.

No bald eagles, golden eagles, or raptor nests, or nesting migratory birds were observed within the study area during the field surveys. The study area is within a highly urbanized area and regularly maintained, turfgrass within airport boundary that cannot be utilized by migratory birds. As a result, the proposed action is anticipated to have *No Effect* on bald eagles, golden eagles, or nests, or nesting migratory birds.

9.0 LITERATURE CITED

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
Phone: (251) 441-5181 Fax: (251) 441-6222
Email Address: alabama@fws.gov

In Reply Refer To: 04/17/2025 13:57:40 UTC
Project Code: 2025-0084556
Project Name: Birmingham Airport EA

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

To Whom It May Concern:

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

Project consultation requests may be submitted by mail or email (Alabama@fws.gov). **Ensure that the Project Code in the header of this letter is clearly referenced in any request for consultation or correspondence submitted to our office.**

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

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

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

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

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

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

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

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

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

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. **Ensure that the Project Code in the header of this letter is clearly referenced with any request for consultation or correspondence about your project that you submit to our office.**

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

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

This species list is provided by:

Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
(251) 441-5181

PROJECT SUMMARY

Project Code: 2025-0084556
Project Name: Birmingham Airport EA
Project Type: Airport - Maintenance/Modification
Project Description: The proposed project is conducting a stream restoration project for Village creek.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@33.56008955,-86.75905852602546,14z



Counties: Jefferson County, Alabama

ENDANGERED SPECIES ACT SPECIES

There is a total of 11 threatened, endangered, or candidate species on this species list.

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

---

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

MAMMALS

NAME	STATUS
Gray Bat *Myotis grisescens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6329	Endangered
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Whooping Crane *Grus americana* Population: U.S.A. (AL, AR, CO, FL, GA, ID, IL, IN, IA, KY, LA, MI, MN, MS, MO, NC, NM, OH, SC, TN, UT, VA, WI, WV, western half of WY) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/758	Experimental Population, Non-Essential

REPTILES

NAME	STATUS
Alligator Snapping Turtle *Macrochelys temminckii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4658	Proposed Threatened
Flattened Musk Turtle *Sternotherus depressus* Population: Black Warrior R. system upstream from Bankhead Dam No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6961	Threatened

AMPHIBIANS

NAME	STATUS
Black Warrior (=sipsey Fork) Waterdog *Necturus alabamensis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5426	Endangered

FISHES

NAME	STATUS
Rush Darter *Etheostoma phytophilum* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2779	Endangered

NAME	STATUS
Watercress Darter *Etheostoma nuchale* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1838	Endangered

CLAMS

NAME	STATUS
Ovate Clubshell *Pleurobema perovatum* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5430	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

CRITICAL HABITATS

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

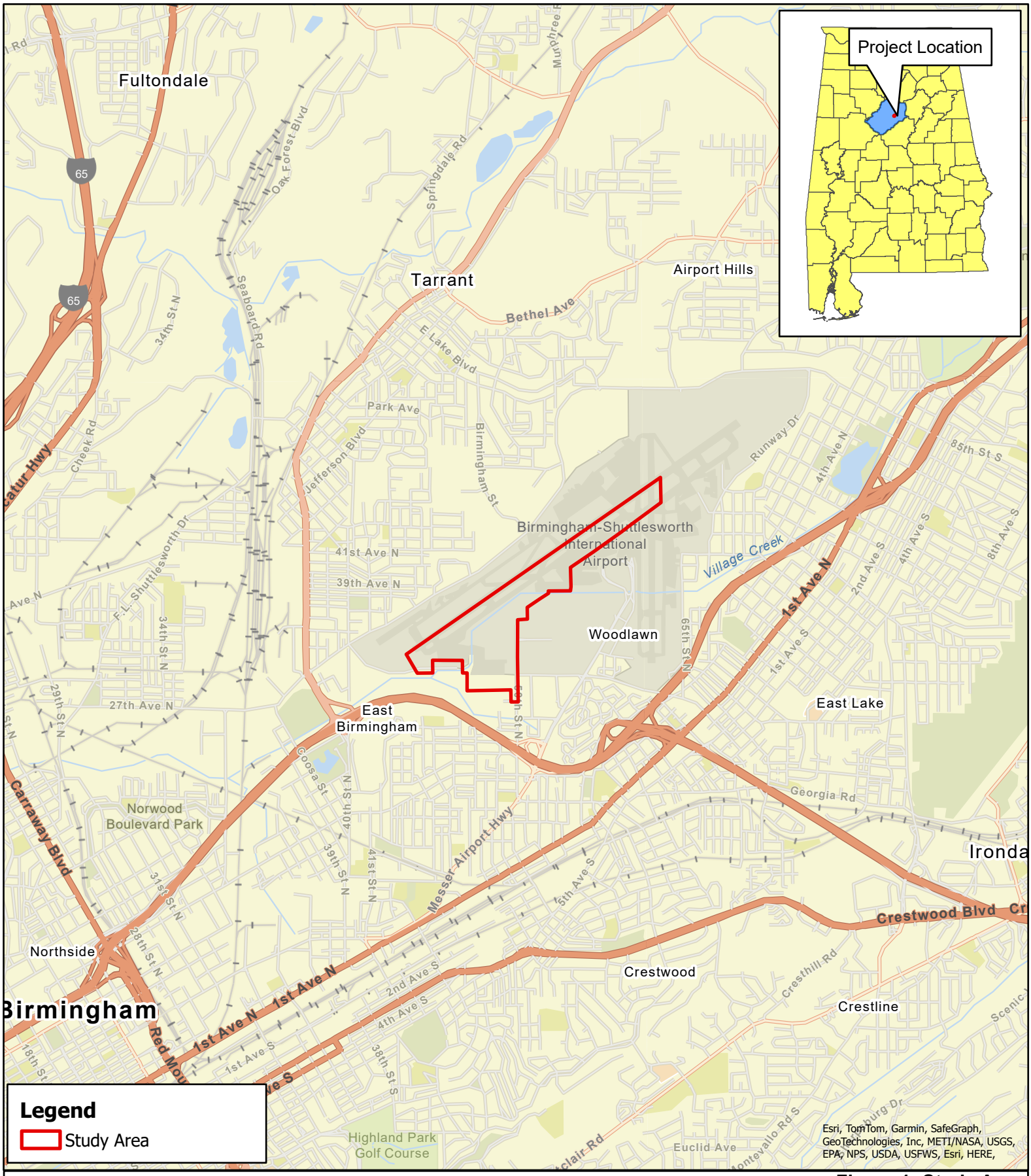
YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Birmingham city
Name: Casey Nowell
Address: 3535 grandview parkway, suite 600
City: Birmingham
State: AL
Zip: 35243
Email casey.nowell@volkert.com
Phone: 2055155755

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Aviation Administration



VOLKERT

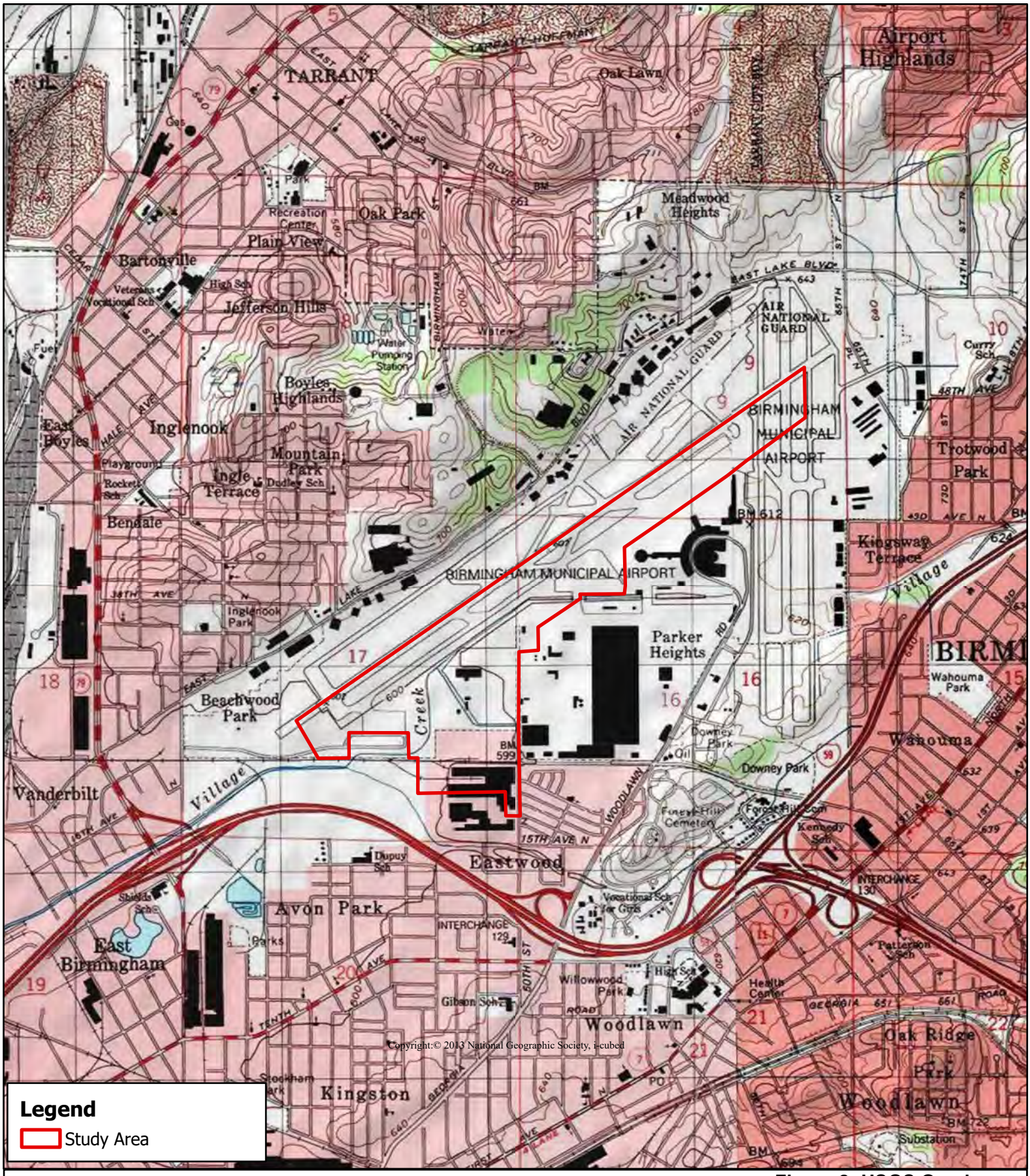
0 4,000 8,000 Feet

1 inch = 4,000 feet

Note: This map is not intended for construction.

N

Figure 1: Study Area
BAA Taxiway A Relocation
Birmingham, Jefferson County, Alabama



Legend

Study Area

VOLKERT

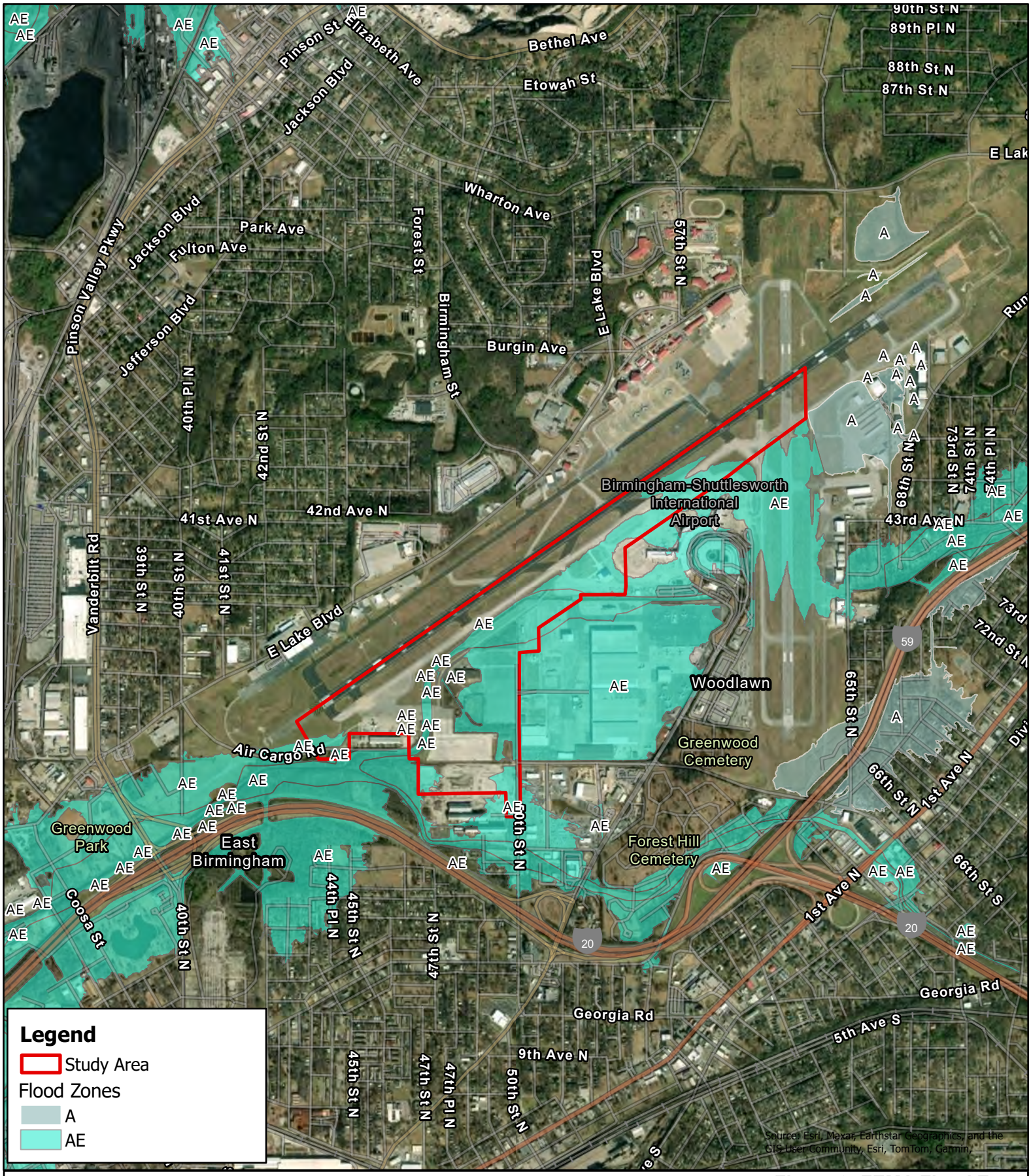
0 2,000 4,000 Feet

1 inch = 2,000 feet

Note: This map is not intended for construction.

N

Figure 2: USGS Quadrange
BAA Taxiway A Relocation
Birmingham, Jefferson County, Alabama



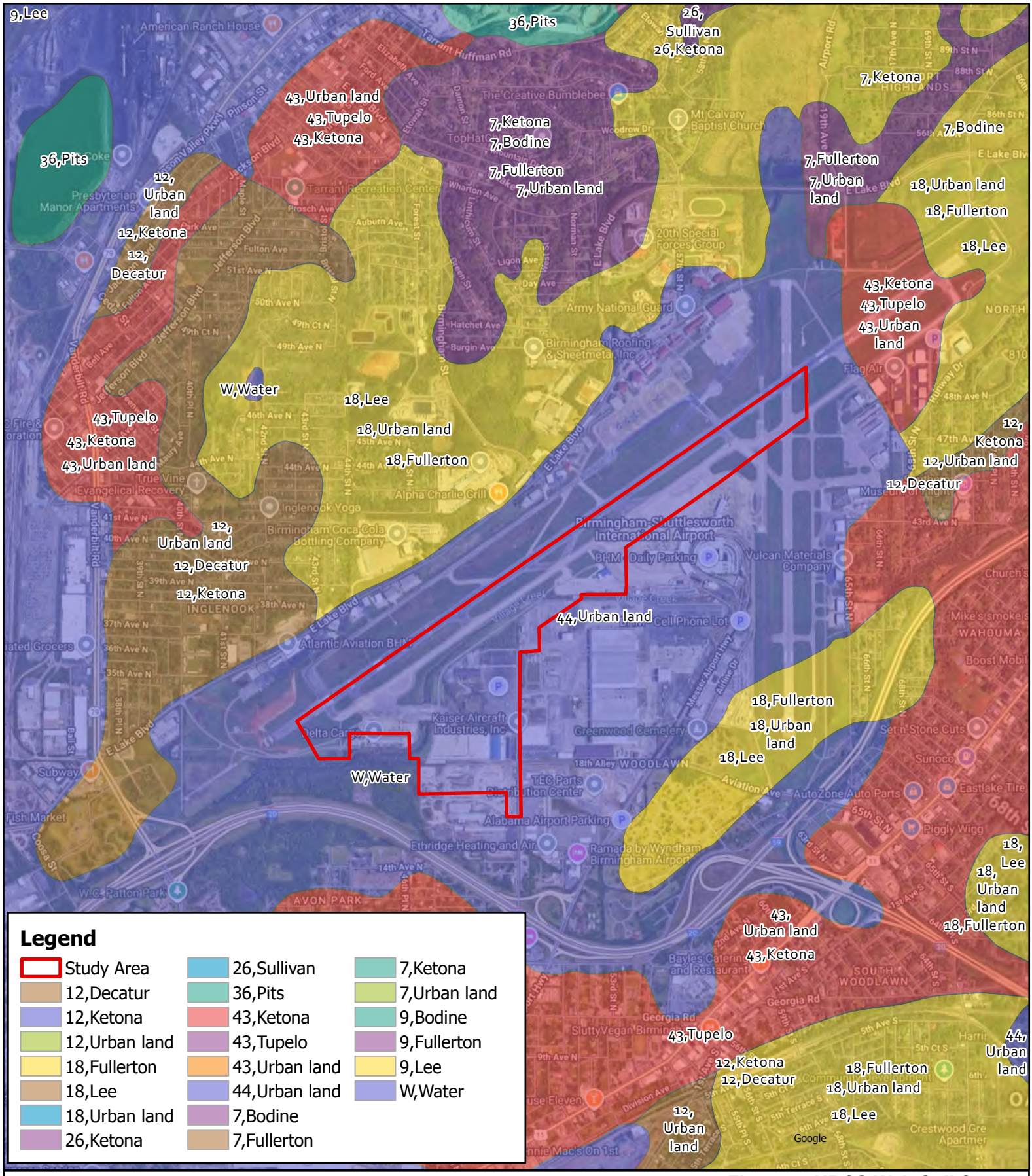
0 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet

Note: This map is not intended for construction.

N

Figure 3: FEMA Flood Zone
BAA Taxiway A Relocation
Birmingham, Jefferson County, Alabama



Legend

- Study Area
- 12,Decatur
- 12,Ketona
- 12,Urban land
- 18,Fullerton
- 18,Lee
- 18,Urban land
- 26,Ketona
- 26,Sullivan
- 36,Pits
- 43,Ketona
- 43,Tupelo
- 43,Urban land
- 44,Urban land
- 7,Bodine
- 7,Fullerton
- 7,Ketona
- 7,Urban land
- 9,Bodine
- 9,Fullerton
- 9,Lee
- W,Water

VOLKERT

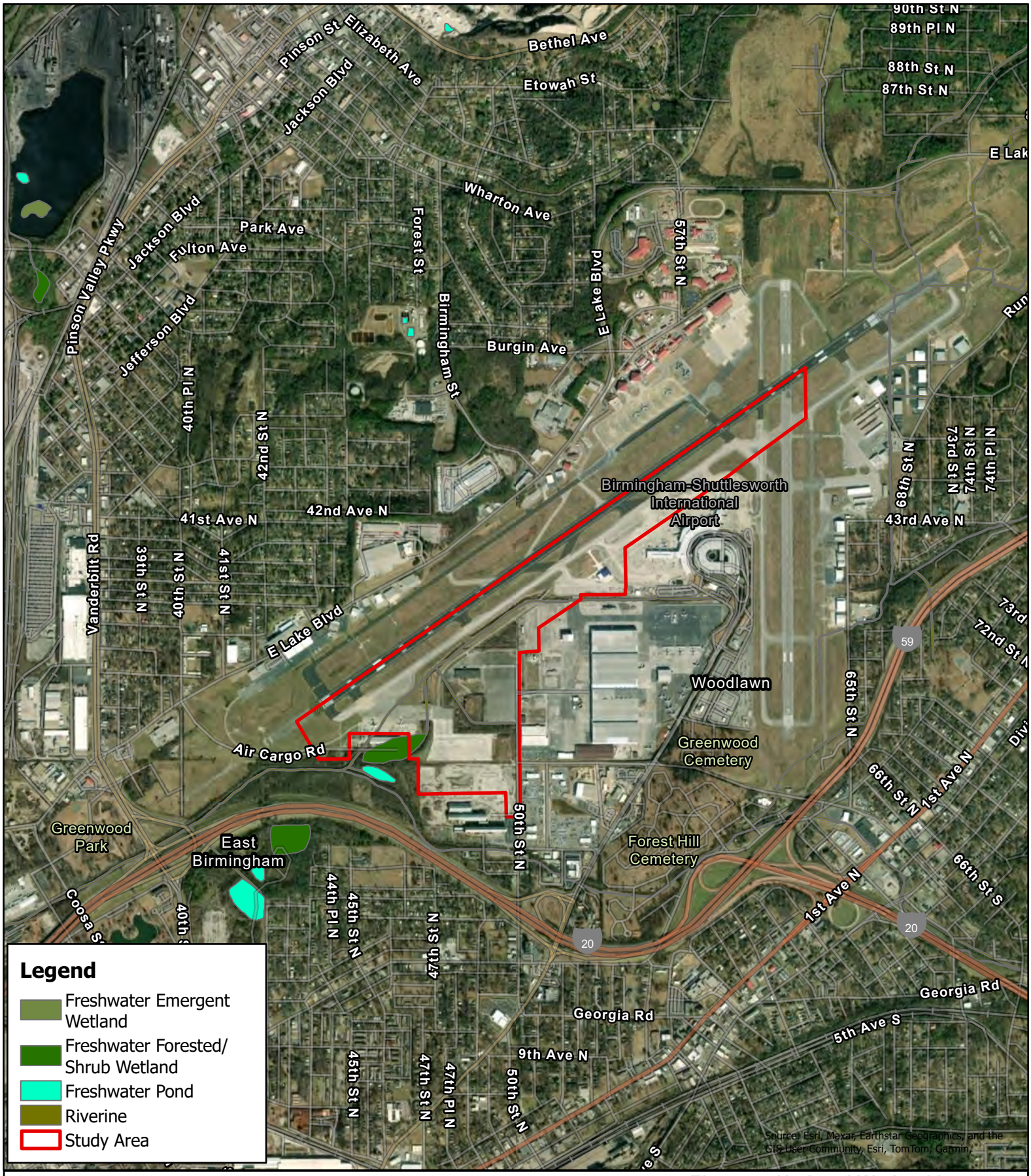
0 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet

Note: This map is not intended for construction.

N

Figure 4: NRCS Web Soil Survey
BAA Taxiway A Relocation
Birmingham, Jefferson County, Alabama



VOLKERT

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

1 inch = 2,000 feet

Note: This map is not intended for construction.

N

Figure 5: National Wetland Inventory
BAA Taxiway A Relocation
Birmingham, Jefferson County, Alabama

AST Environmental

July 15, 2025 JS25-109

TO: Volkert, Inc.
1110 Montlimar Drive
Mobile, AL 36609

ATTN: Paige Felts

RE: Protected Species Survey
Birmingham Airport (BAA) – Village Creek
Jefferson County, Alabama
USFWS IPaC Project Code: 2025-0084556

Ms. Felts:

This report of findings is in response to a request for a protected species survey and a habitat assessment in Village Creek located within the boundary of the Birmingham Airport in Jefferson County, Alabama. AST Environmental (AST) understands the project involves rerouting an approximately 2,600 feet long reach of Village Creek. See Site Map.

In June, AST conducted a protected species survey and habitat assessment in Village Creek for the following protected freshwater species:

Mussel		
Ovate Clubshell	*Pleurobema perovatum*	Endangered
Fish		
Watercress Darter	*Etheostoma nuchale*	Endangered
Rush Darter	*Etheostoma phytophilum*	Endangered
Amphibian		
Black Warrior Waterdog	*Necturus alabamensis*	Endangered
Reptile		
Flattened Musk Turtle	*Sternotherus depressus*	Threatened

Specifically, AST surveyed the proposed project area within Village Creek for presence or absence of federally protected mussel and fish species and for the presence or absence of suitable habitat for the listed Black Warrior Waterdog and Flattened Musk Turtle. The final methodology for the survey was approved by the USFWS. See Appendix A. The survey was

led by Jeff Selby (USFWS Federal Collection Permit ES100626) following USFWS protocol. The stream survey included the 2,600 feet long reach with buffers extending 50 meters upstream and 100 meters downstream from the proposed construction boundaries. See Site Map and Survey Boundaries Map.

SITE

Box culverts were located near the upstream and downstream survey boundaries on Village Creek, and the channel in between appears to have been historically channelized. A small islanded was present just upstream of the downstream box culvert, and the channel braids around the island were covered with American Water-willow, *Justicia americana*. Patches of American Water-willow were sparsely distributed along the margins of the survey reach. Water-willow was the only rooted aquatic plant of noticeable significance within the survey reach.

The maximum depth of the survey reach of Village Creek was three feet and the estimated average depth was 1.5 feet. Wetted width ranged from 20 feet to 55 feet and averaged approximately 40 feet. Width at top-of-bank ranged from 30 feet to 70 feet and averaged about 55 feet. The substratum was comprised of approximately 20% boulder, 20% cobble, 20% gravel, 20% sand, 10% bedrock, and 10% mud. Flow within the survey reach was moderate to swift. Riffle-run-pool sequences were present within the survey reach. See Photographs.

METHODS

AST conducted a mussel survey within the survey reach for the presence or absence of protected mussel species. The mussel survey was completed using a combination of visual and tactile examination of the substrate throughout the survey reach. SCUBA diving was utilized by divers in order to complete the survey. All diving operations were conducted in accordance with the AST Dive Standards and Safety Manual protocol following the American Academy of Underwater Scientists. Clear-bottom viewing devices, wading, and hand grubbing were utilized in shallower areas.

AST also conducted a fish survey within the survey reach for the presence or absence of protected fish species. A fine-meshed seine net and dip nets were utilized to complete the survey. Fish sampling efforts focused on habitat types preferred by the target species. Additionally, all habitat types present on site were sampled in order to compile an exhaustive fish taxa list for this location. All representative species collected were documented and photographed. Fish identifications were verified by Dr. Jeff Ray (University of North Alabama).

AST completed a habitat assessment for the presence or absence of suitable habitat for the Flattened Musk Turtle (*Sternotherus depressus*) and Black Warrior (=Sipsey Fork) Waterdog (*Necturus alabamensis*). Habitat characteristics were visually estimated based on experience and focused on substrata composition, flow regime, presence of riffle-run-pool complexes, and physical stream dimensions.

WATER QUALITY

Water quality data were collected on-site using standard methods. Water quality parameters were: temperature, dissolved oxygen, pH, conductivity and turbidity. A YSI DO200a unit was used to measure dissolved oxygen and temperature. An Oakton PCSTestr50 meter was used to assess pH and conductivity. An Oakton T-110 meter was used to take turbidity readings. Water parameter measurements were:

Date	**6-17-25**	**6-25-25**
temperature	22.9 °C	25.1 °C
dissolved oxygen	122.0% / 10.36 ppm	145.3% / 12.09 ppm
pH	8.08	8.21
conductivity	386.0 µS	406.0 µS
turbidity	5.50 FTU	1.67 FTU

RESULTS

Mussels

No protected mussel species were collected during the survey. No live or relic mussels were collected during the survey in Village Creek. The Asian Clam, *Corbicula fluminea*, was present. Appropriate habitat for the Ovate Clubshell was marginally present throughout the survey reach and limited to a few silty sand patches along the stream margins.

Fish

No protected fish species were collected during the survey. A total of six fish species were collected during the survey, including *Campostoma oligolepis*, *Gambusia affinis*, *Hypentelium etowanum*, *Lepomis macrochirus*, *Micropterus nigricans*, and *Semotilus atromaculatus*. The majority of fish species collected throughout the whole survey reach was the Largescale Stoneroller, *Campostoma oligolepis*.

Appropriate habitat for the Watercress Darter was not present within the survey reach. Flow within the survey reach was generally too swift lacked pools or runs choked with aquatic vegetation like watercress. Appropriate habitat for the Rush Darter was marginally present within the survey reach. The primary aquatic macrophyte present within the survey reach was American Water Willow, and its distribution was limited. Root wads were not present in any significance within the survey reach. The Rush Darter is closely associated with root wads and macrophytes such as rushes and sedges more so than water willow. Stream size was appropriate for the Rush Darter; however flow was generally too swift and lacking sluggish margins supportive of rushes and sedges.

Amphibian

Appropriate habitat for the Black Warrior Waterdog was not present within the survey reach. This amphibian has been historically known from the Black Warrior Basin with a distribution range restricted to above the Fall Line. The Black Warrior Waterdog inhabits clean flowing water with hard stable substrate with an abundance of rocky crevices and submerged logs for refuge. They are reliably found in submerged leaf beds, as they used them for both shelter and foraging habitat. Village Creek is within the Black Warrior Basin and the location of the survey

area is above the Fall Line. The areas of hard stable substrate with rocky crevices could potentially provide suitable refugia for the Black Warrior Waterdog; however, the survey area lacked suitable leaf pack forage areas. There were no incidental observations of *Necturus* species including *Necturus alabamensis*, the Black Warrior Waterdog.

Turtle

Appropriate habitat for the Flattened Musk Turtle was present within the survey reach. This turtle has been historically known from the Black Warrior Basin with a distribution range restricted to above the Fall Line. The Flattened Musk Turtle is typically known to inhabit medium-sized to larger streams with clean water, riffle-pool complexes, an abundance of invertebrates for a food source and adequate large rock and submerged logs for refuge.

Village Creek is within the Black Warrior Basin and the location of the survey area is above the Fall Line. Stream size, large boulder and bedrock substrata, and the presence of riffle-run-pool complexes provide suitable habitat for the Flattened Musk Turtle. Two turtle species were incidentally observed in Village Creek during the survey represented by a Yellow-bellied Pond Slider, *Trachemys scripta scripta*, and Eastern Musk Turtle, *Sternotherus odoratus*. See Photographs.

CONCLUSIONS

We believe that the proposed action is not likely to adversely affect Ovate Clubshell, Watercress Darter, Rush Darter, and Black Warrior Waterdog individuals or populations. With the presence of suitable habitat and other turtle species, we believe that the proposed action may affect the Flattened Musk Turtle. Written concurrence should be obtained from the United States Fish and Wildlife Service prior to implementation of the proposed project. If you need any additional information, please contact me at (256) 476-7355 or Elaina Browder at (256) 278-5117.

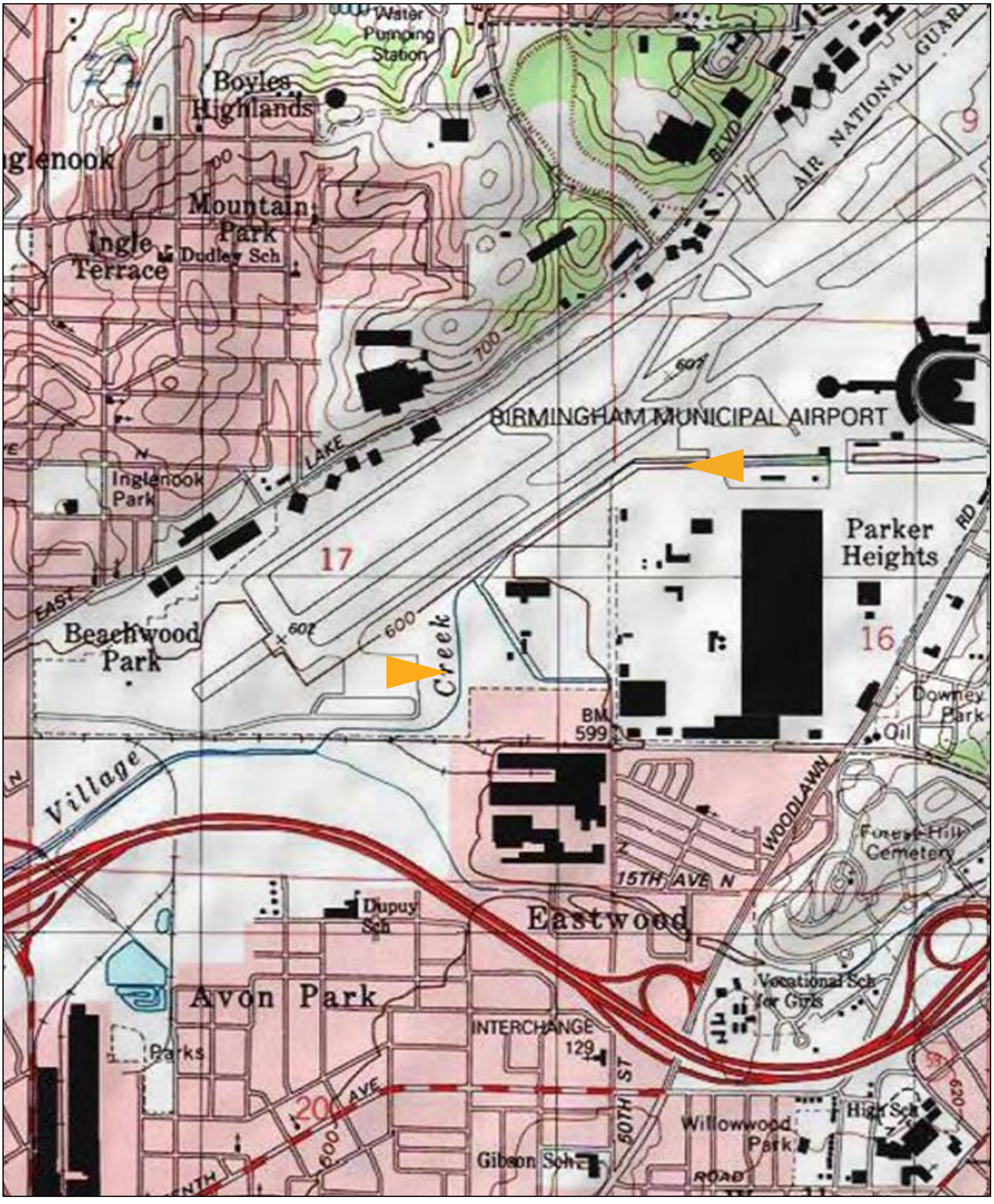
Sincerely,

Jeff Selby, M.S.
Member / Senior Biologist
AST Environmental

Elaina Browder, M.S.
Environmental Scientist
AST Environmental

Attachments:

Site Map
Survey Boundaries Map
Site Photographs
Appendix A. USFWS approved Sampling Protocol



SITE MAP
JS25-109

Village Creek
Birmingham-Shuttlesworth Airport
Jefferson County, AL

Survey Boundaries:

N33.55805, W-86.76313

2,600 feet project limits

Scale = 1:12,000

0 0.1 0.2 0.4 mi
0 0.17 0.35 0.7 km

Source: USA Topo Map.
Copyright:© 2013 National Geographic Society, i-cubed

AST Environmental



SURVEY BOUNDARIES MAP
JS25-109

Village Creek
Birmingham-Shuttlesworth Airport
Jefferson County, AL

Survey Boundaries:

50 meters upstream to 100 meters downstream and the 2,600 feet Project Limits

Scale = 1:9,000

0 0.07 0.15 0.3 mi
0 0.13 0.25 0.5 km

Source: NAIP Imagery and Maxar

AST Environmental

PHOTOGRAPH 1



Village Creek facing downstream / south from a location near the downstream survey boundary. Taken by Jeff Selby, 6-17-2025.

PHOTOGRAPH 2



Village Creek facing upstream / north from a location near the downstream project limits. Taken by Jeff Ray, 6-25-2025.

PHOTOGRAPH 3



Village Creek facing downstream / south from a location near the downstream project limits. Taken by Mike McConnell, 6-25-2025.

PHOTOGRAPH 4



Village Creek facing upstream / northeast from a location within the downstream portion of the survey reach. Taken by Mike McConnell, 6-25-2025.

PHOTOGRAPH 5



Tributary #1 to Village Creek. Located in the downstream portion of the survey reach. Taken by Jeff Selby, 6-17-2025.

PHOTOGRAPH 6



Tributary #2 to Village Creek. Located near the middle portion of the survey reach. Taken by Jeff Selby, 6-18-2025.

PHOTOGRAPH 7



Village Creek facing downstream / southwest from a location within the downstream portion of the survey reach. Taken by Mike McConnell, 6-25-2025.

PHOTOGRAPH 8



Village Creek facing upstream / northeast from a location within the downstream portion of the survey reach. Taken by Mike McConnell, 6-25-2025.

PHOTOGRAPH 9



Culvert within Village Creek. Located near the middle portion of the survey reach. Taken by Jeff Selby, 6-18-2025.

PHOTOGRAPH 10



Village Creek facing north / upstream from a location near the middle portion of the survey reach. Taken by Mike McConnell, 6-26-2025.

PHOTOGRAPH 11



Village Creek facing west / downstream from a location near the middle portion of the survey reach. Taken by Mike McConnell, 6-26-2025.

PHOTOGRAPH 12



Village Creek facing west / downstream from a location within the upstream portion of the survey reach. Taken by Mike McConnell, 6-26-2025.

PHOTOGRAPH 13



Village Creek facing east / upstream from a location within the upstream portion of the survey reach. Taken by Mike McConnell, 6-26-2025.

PHOTOGRAPH 14



Village Creek facing east / upstream from a location near the upstream project limits. Taken by Mike McConnell, 6-26-2025.

PHOTOGRAPH 15



Village Creek facing west / downstream from a location near the upstream project limits. Taken by Mike McConnell, 6-26-2025.

PHOTOGRAPH 16



Bedrock and boulder substrata within the downstream portion of the survey reach. Taken by Mike McConnell, 6-25-2025.

PHOTOGRAPH 17



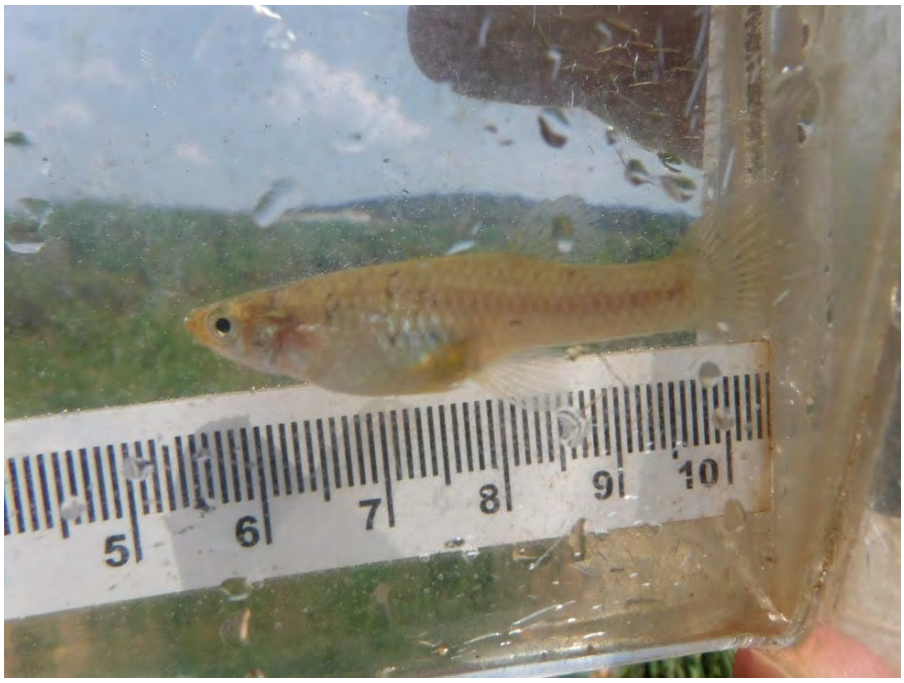
Bedrock and boulder substrata within the downstream portion of the survey reach. Taken by Jeff Selby, 6-18-2025.

PHOTOGRAPH 18



Largescale stoneroller (*Campostoma oligolepis*) collected during the survey. Taken by Mike McConnell, 6-25-2025.

PHOTOGRAPH 19



Mosquitofish (*Gambusia affinis*) collected during the survey. Taken by Mike McConnell, 6-25-2025.

PHOTOGRAPH 20



Alabama hogsucker (*Hypentelium etowanum*) collected during the survey. Taken by Mike McConnell, 6-25-25.

PHOTOGRAPH 21



Bluegill (*Lepomis macrochirus*) collected during the survey. Taken by Jeff Ray, 6-26-2025.

PHOTOGRAPH 22



Largemouth bass (*Micropterus nigricans*) collected during the survey. Taken by Jeff Ray, 6-25-2025.

PHOTOGRAPH 23



Creek chub (*Semotilus atromaculatus*) collected during the survey. Taken by Mike McConnell, 6-25-2025.

PHOTOGRAPH 24



Yellow-bellied pond slider (*Trachemys scripta scripta*) collected during the survey. Taken by Mike McConnell, 6-26-2025.

PHOTOGRAPH 25



Eastern musk turtle (*Sternotherus odoratus*) collected during the survey. Taken by Mike McConnell, 6-26-2025.

Sampling Protocol

AST Environmental

98 Mark Selby Pvt. Dr.
Decatur, AL 35603
Phone: (256) 476-7355

JG

RECEIVED
MAY 05 2025
BY:

May 5, 2025
JS25-109

TO: Field Supervisor
Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419

ATTENTION: Bill Pearson

RE: Protected Species Survey
Birmingham Airport (BAA) – Village Creek
Jefferson County, Alabama
USFWS IPaC Project Code: 2025-0084556

Mr. Pearson:

AST Environmental has been contracted by Volkert to perform presence / absence surveys for protected species for the above referenced project. Our proposed sampling protocol and schedule are detailed below:

PROJECT INFORMATION

AST Environmental understands that the proposed project referenced above consists of rerouting an approximately 2,600 feet long reach of Village Creek located within the boundary of the Birmingham Airport.

The United States Fish and Wildlife Service (USFWS) IPaC data base report lists the following aquatic species for the project site:

Mussel		
Ovate Clubshell	*Pleurobema perovatum*	Endangered
Fish		
Watercress Darter	*Etheostoma nuchale*	Endangered
Rush Darter	*Etheostoma phytophilum*	Endangered
Amphibian		
Black Warrior Waterdog	*Necturus alabamensis*	Endangered
Reptile		
Flattened Musk Turtle	*Sternotherus depressus*	Threatened

No critical habitat was listed.

In keeping with USFWS protocols, AST Environmental intends to survey the 2,600 feet long reach of Village Creek proposed for relocation for the presence of protected fish, and mussels. In addition to the Fish and mussel surveys, AST will complete habitat assessments for the Black Warrior Waterdog (BWD) and Flattened Musk Turtle (FMT). If habitat is determined to be present for the Black Warrior Waterdog or Flattened Musk Turtle, AST will initiate consultation with the USFWS for additional survey protocol approval. Our anticipated survey parameters are detailed below.

SCOPE OF SERVICES

AST Environmental will complete a protected species survey in accordance with the typical USFWS protocols. Surveys will be conducted under the terms and conditions of our USFWS Federal Collection Permit TE100626.

Fish and mussel surveys will include the 2,600 feet long relocation reach. Mollusk surveys will include intense examination of the stream substrate for the presence of freshwater mussels within the survey limits. Fish sampling will include netting and seining focusing on habitat types preferred by the Watercress Darter and the Rush Darter within the survey area. Additionally, all habitat types present on site will be sampled in order to compile an exhaustive fish taxa list for this location.

A detailed habitat assessments for the Black Warrior Waterdog (BWD) and Flattened Musk Turtle (FMT) will be completed at the time of the fish and mollusk surveys. If habitat is determined to be present for the Black Warrior Waterdog or Flattened Musk Turtle, AST will further initiate consultation with the USFWS for survey protocol approval. Should it be determined to be required, the Flattened Musk Turtle survey will be conducted during times with appropriate seasonal water temperatures for the target species. A trapline will be run for Flattened Musk Turtles for up to three consecutive nights. Traps will include a series soft mesh traps. Flattened Musk Turtle Survey reach lengths will be determined through consultation with the USFWS. Traps and sampling equipment required to complete the surveys will be provided by AST Environmental.

Should it be determined to be required, the Black Warrior Waterdog survey will be conducted during times with appropriate seasonal water temperatures for the target species. A trapline will be run for the Black Warrior Waterdog for up to three consecutive nights. Traps will include a series soft mesh traps and modified minnow traps. Black Warrior Waterdog Survey reach lengths will be determined through consultation with the USFWS. Traps and sampling equipment required to complete the surveys will be provided by AST Environmental.

Surveys will be completed in accordance with USFWS protocol and the terms and conditions of USFWS Federal Collection Permit ES100626-10. The survey will be completed pursuant to Section 7 of the Endangered Species Act with a report of findings to be submitted to the client.

- A combination of visual and tactile examination will be used to complete the mollusk survey. SCUBA or surface-supplied-air diving will be implemented during the survey, if necessary.

- A fish inventory will be completed within the survey reach. Fish will be collected with dipnets and or a fine-meshed seine.

- A detailed habitat description will be completed for the survey reach and habitat assessed in comparison to target species.

- The surveys will be completed in accordance with the USFWS guidance.
- The surveys will be completed pursuant to Section 7 of the Endangered Species Act with a report of findings to be submitted to the client for further distribution.
- The mollusk and fish surveys and the FMT and BWD habitat assessments will include the 2,600 feet long survey reach.

SCHEDULE:
AST Environmental expects that the above scope of work can be completed within 90 days of receiving approval of our sampling protocol.

AUTHORIZATION:
We are requesting your approval of our sampling protocol. Please feel free to call should you have further questions. I can be reached at **(256) 476-7355.**

Sincerely,

AST Environmental

Jeff Selby, M.S.
Member / Senior Biologist

U.S. Fish and Wildlife Service
1208-B – Daphne, Alabama 36526
Phone: 251-441-5181 Fax: 251-441-6222

The Alabama Ecological Services Field Office has reviewed and agrees with your proposed survey plan(s). Please ensure that you maintain a copy of this letter in your possession when conducting the survey(s). We look forward to receiving the report of your survey results, as conditioned by your section 10(a)(1)(A) permit issued under the U.S. Endangered Species Act.

William J. Pearson
Field Supervisor
Alabama Ecological Services Field Office

MAY 14 2025
Date

11



Picture 1: View of floodplain habitat



Picture 2: View of forested habitat



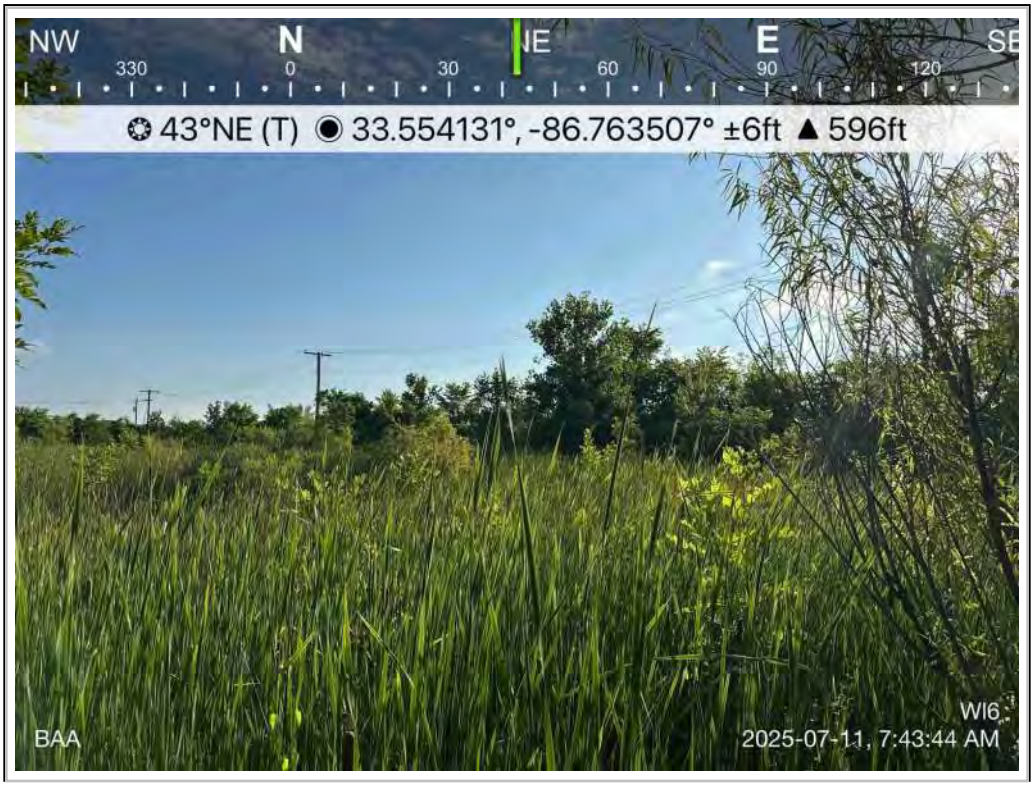
Picture 3: View of aquatic habitat



Picture 4: View of maintained turfgrass habitat



Picture 5: View of forested habitat



Picture 6: View of wetland habitat

USFWS Correspondence Letter

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1208-B Main Street
Daphne, AL 36526

2025-0084556

SEP 23 2025

Ms. Paige Felts
Asst. Vice President, East Gulf Region
Environmental Permitting and Compliance Manager
Volkert, Inc.
1680 West 2nd Street, Suite B
Gulf Shores, Alabama 36542

Dear Ms. Felts,

Thank you for your Biological Assessment dated August 18, 2025, requesting our review on threatened or endangered species within the action area of the proposed relocation of Taxiway A at the Birmingham-Shuttlesworth Internation Airport, in cooperation with the Federal Aviation Administration (FAA), in Birmingham, Jefferson County, Alabama. We have reviewed the information and are providing the following comments in accordance with the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Threatened and Endangered Species

Our review indicates that the following listed species occur within or near the proposed project area:

Watercress darter (*Etheostoma nuchale*) – Endangered
Tricolored bat (*Perimyotis subflavus*) – Proposed Endangered

An aquatic survey report was received by AST Environmental on May 5, 2025, and a bat habitat assessment for the site was received by Volkert, Inc. on August 28, 2025. No federally listed species were documented in the aquatic species survey. The bat habitat assessment found potential tricolored bat roosting habitat within the action area. We accept the results of the aquatic and bat habitat surveys.

Our records include watercress darter occurrence information in Village Creek in the winter season within the proposed action area. As we discussed on our call on August 5, 2025, multiple surveys in the vicinity of the proposed project demonstrate that watercress darters seasonally migrate between Roebuck Spring/spring run and Village Creek. You have provided the conservation measure of no in-stream activities between November 1 through March 31. We accept and appreciate this conservation measure. If this timing is not achievable, please contact our office for further consultation.

We recommend adherence to the tree clearing window of July 16 to March 14 to be most protective of tricolored bats. On September 14, 2022, the U.S. Fish and Wildlife Service (Service) published a proposal in the Federal Register to list the tricolored bat as endangered under the ESA. Species proposed for listing are not afforded protection under the ESA; however, as soon as a listing becomes effective (typically 30 days after publication of the final rule in the Federal Register), the prohibitions against jeopardizing its continued existence and "take" will apply. In order to avoid the disruption to

ongoing or planned actions, conferencing procedures for this species are being followed. The conference can be adopted as concurrence if a final rule for this species becomes effective during the life of the project. Based on the information provided and commitment to conservation measures, we have determined that the proposed project will not jeopardize the continued existence of tricolored bat.

Best Management Practices

We recommend project designs that incorporate the best management practices protect water quality and aquatic habitat during and after construction:

- Implement best management practices to minimize erosion and prevent sedimentation into the river, both during and after construction.

- Develop an erosion control plan tailored to the site. All erosion controls should be inspected routinely, especially during and immediately following significant rain events, to ensure no impacts to nearby surface waters and aquatic habitat. Immediate corrective action should be taken if erosion or sedimentation is observed.

- Retain as much natural vegetation as possible by clearing and grubbing only necessary areas.

- Immediately revegetate any disturbed areas with a native species or an annual grass.

To the extent feasible, complete any work that results in exposed earth during periods when significant rainfall is not predicted. For specific techniques, see "The Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas" (2022), available from the Alabama Soil and Water Conservation Committee or on-line at: https://alabamasoilandwater.gov/wp-content/uploads/2022/07/2022_HandBook_Vol_2.pdf

As long as the above BMPs and the conservation measures provided in your proposed plan are adhered to, no further endangered species consultation will be required for this portion of the project unless: 1) the identified action is subsequently modified in a manner that causes an effect on a listed species or on proposed or designated critical habitat; 2) new information reveals the identified action may affect federally protected species or designated critical habitat in a manner or to an extent not previously considered; or 3) a new species is listed or a critical habitat is designated under the ESA that may be affected by the identified action.

If you have any questions or need additional information, please contact Ms. Jennifer Grunewald of my staff at jennifer_grunewald@fws.gov. Please refer to the reference number located at the top of this letter in future phone calls or written correspondence.

Sincerely,

William J. Pearson
Field Supervisor
Alabama Ecological Services Field Office

Asbestos Materials Pre-Demolition Survey Report

Asbestos Materials Testing 1943 50th Street North
Birmingham Alabama 35212

Birmingham-Shuttlesworth International Airport

Contract Number: 25-Kaiser-002 Task Order: 0002

Date: April 11,2025

Prepared for:

Mead & Hunt, Inc.

SLADE
ENVIRONMENTAL CONSULTING | GENERAL CONTRACTING
Slade
1500 First Avenue North, Unit 54
Birmingham, AL 35203
866-925-5742

ENVIRONMENTAL CONSULTING | GENERAL CONTRACTING

1500 First Avenue North, Unit 54,
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Lslade@sladellc.com
P 205-413-4685 F 800-618-8602

April 11, 2025

Mead & Hunt, Inc.
999 18th Street
Suite 23000S
Denver, CO 80202

Subject: Asbestos-Containing Materials Testing, Birmingham-Shuttlesworth International Airport 1943 50th Street North Birmingham Alabama 35212

Dear City of Birmingham:

Slade is pleased to submit the following report of the Asbestos-Containing Materials Testing, conducted at 1943 50th Street North Birmingham Alabama 35212. The sampling event was conducted in accordance with Slade's Contract 25-Kaiser-002, dated April 11, 2025.

Slade appreciates the opportunity to work with you on this project. If you have any questions regarding the information contained in this report, or if we can be of further service, please do not hesitate to call.

Respectfully Submitted by,
Slade

L'Tryce M Slade

L'Tryce Slade
Certified Inspector

Asbestos-Containing Materials Testing
1943 50th Street North Birmingham Alabama 35212
Slade Project No. 25-Kaiser-002

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A. Building Details
B. Asbestos-Containing Material Laboratory Analytical Results
C. Photographs
D. Diagrams indicating locations of asbestos sample numbers and some special site conditions.

1 PURPOSE AND SCOPE OF SERVICES

This asbestos survey sampling event (not comprehensive) was intended for the sole purpose of identifying suspect asbestos materials that may be present at the site that would be impacted by future demotion and/or renovation activities. The subject building was reportedly identified as building 201 and located at 1943 50th Street North, Birmingham, Alabama 35212.

The services of the asbestos survey were limited since the building was occupied with a tenant having their company materials and supplies throughout the inspected areas. SLADE could not fully demolish various interior and/or exterior building components to fully ascertain and address the presence of inaccessible suspect asbestos materials.

The following information indicates the scope of services that were performed in the execution of the asbestos survey:

1. Documented readily apparent and accessible friable and non-friable asbestos-containing materials (ACMs) within the subject site;
2. Conducted a visual inspection of the interior and exterior of the site to identify suspect asbestos-containing materials (ACMSs);
3. Sampled interior and exterior collected suspect asbestos materials, as required;
4. Analyse those materials suspected of containing asbestos material or asbestos by Polarized Light Microscopy (PLM) and dispersion staining techniques in accordance with the Environmental Protection Agency's (EPA) Bulk Analysis Method 600/R-93/116;
5. Provided a description in the laboratory results table of those materials identified as containing asbestos;
6. Prepared a written report documenting the following information:

- Confirmation of the presence of ACMs in the buildings at specific sampling locations
- Estimated quantities in the laboratory results table of identified ACMs
- Options and recommendations for remediation alternatives related to existing regulated asbestos-containing materials (RACMs). (RACM is defined as a material determined by laboratory analysis to contain greater than 1% asbestos that is friable or may become friable. As a note, OSHA regulates any concentration or percentage of asbestos in a material.

It should be noted that, if any renovation work has been performed at the subject site, suspect ACMs including floor tile, ceiling tile, pipe insulation, plaster, various mastics, and miscellaneous other materials may have been concealed under carpet, above suspended ceilings, or in numerous other locations. It is also not uncommon to find multiple layers of floor tiles and multiple layers of roofing materials that were not visible during this sampling event. Slade recommends that if concealed suspect ACMs are discovered they be sampled and analyzed for asbestos content prior to any renovation or demolition activities.

2 PROJECT CHARACTERISTICS

The subject site consists of land consisting of a parcel developed with a commercial 1 story building. The building currently has a tenant that stores materials and supplies necessary for their business. The building was constructed on a concrete slab with exterior walls consisting of concrete and a cementitious plaster-like material. The built-up roof was predominately multi-layered felt paper and mastic and the roof

parapet wall covered with a variety of materials such as black coating, black mastic and multiple layers of felt paper covered with silver paint. The flashing of exhaust vents, mechanical equipment and exhaust fans had the flashing of the component covered with felt paper, silver paint and black mastic.

There were limited interior walls, and those walls were wallboard and masonry block. Other observed interior features were sprayed-on decorative texture ceiling, floor tiles over black mastic, other types of flooring materials, tile ceiling squares on walls and concrete columns, cove base and cove base mastic, wallboard ceiling, glue dots, miscellaneous caulking and mastics.

A mechanical room in the warehouse was located on the south side of the building, and it consisted of multiple mechanical air handling units, a chiller unit, a boiler and the main electrical system panels. Straight pipe sections were fiberglass enclosed with a canvas covering. A white, friable material with a canvas covering was observed enclosing pipe elbows, tee joints, valve edges, the space between two pipes that are close together. The same white insulation was observed covering the chiller with damage areas to the canvas covering the white, friable insulation.

Visible pipes suspended in the ceiling of the main warehouse area had straight pipe sections covered with fiberglass. The pipe elbows and joints had a white, friable insulation enclosed with a canvas covering. Damage pipe elbow insulation was noted in selected areas.

3 SAMPLING METHODOLOGIES

A visual inspection was performed at the parcel on April 7-11, 2025. Suspect materials were sampled by removing a section from the area of concern for analysis. Bulk samples were then placed into individual sample containers for transport to a qualified laboratory for analysis. All samples were individually identified by a sample number. The suspect ACMs were numbered and correspond to the sample number listed in the Laboratory Analytical Results located in Appendix B. PLM and dispersion staining techniques were performed according to the EPA's Bulk Analysis Method EPA 600/R-93/116 in an attempt to ascertain asbestos content in those samples analyzed.

4 HOMOGENES MATERIAL ASSESSMENT FACTOR

4.1 HOMOGENEOUS AREAS

Before collecting samples, distinct homogeneous sampling areas and specific sampling sites were determined. A homogeneous sampling area can be described as any material of the same type. In other words, a homogeneous sampling area is uniform throughout in structure or makeup and appearance (color, texture, and/or date of construction/application). Homogeneous areas related to asbestos can be further classified as surfacing material, thermal system insulation, and miscellaneous materials. Samples were collected of each specific homogeneous material identified.

4.2 ASBESTOS-CONTAINING MATERIAL ASSESSMENT FACTOR

Friability was determined each time a suspect ACM was sampled. Friable means that the material can be crumbled, pulverized, or reduced to powder by hand pressure when dry. Also, materials thought to be and typically classified as non-friable may receive a reclassification of friable if the material is damaged. Friable ACM has been determined by the EPA and Occupational Safety & Health Administration (OSHA) to be more an exposure risk to airborne asbestos fibers than non-friable ACM. Friable material can create

a situation of airborne asbestos fibers more readily than non-friable materials. In assessing the fiber release potential, the current conditions of all ACM identified were noted.

Only materials readily accessible within the specific project area were evaluated. Materials that were hidden and/or not accessible were not evaluated as part of this sampling event. These hidden and/or not inaccessible materials should be analyzed if they are located during any renovation or demolition activities. Materials visibly identified as asbestos material or non-asbestos (fiberglass, foam rubber wood, etc.) were not sampled.

5 LABORATORY ANALYSIS

All bulk suspect asbestos samples were analyzed by a qualified laboratory using Polarized Light Microscopy with dispersion staining techniques. PLM and dispersion staining techniques were performed according to the EPA's Bulk Analysis Method EPA 600/R-93/116 in attempt to ascertain asbestos content in those samples analyzed. These techniques require that a part of the bulk sample be subjected to a number of optical tests. Each type of asbestos displays unique characteristics when subjected to these tests. Percentages of asbestos content are then determined by visual estimation.

Any material containing greater than one percent of any type of asbestos that is friable or may become friable by the forces expected to act on the material during certain activities, is classified as RACM by the EPA. It should be noted that OSHA defines as asbestos-containing material (ACM) to be a material containing any amount of asbestos. According to the EPA, OSHA, United States Department of Transportation (USDOT), and other federal, state, and/or local government agencies, any material classified as ACM must be handled accordingly.

6 ASBESTOS MATERIALSAMPLING RESULTS

The laboratory table describes the sample number, sample location, type of material, asbestos content, friability, and condition for each of the samples collected during the period April 7-11, 2025. Friability is described based on the current condition of the material of those designated asbestos materials. A copy of the laboratory testing and analysis data reports are included in Appendix B behind the laboratory table. During sample preparation, the laboratory separated multiple layered samples prior to analysis.

The sampling locations are provided in the Laboratory Analytical Results table located in Appendix B.

It should be noted that EPA defines RACM as any material having greater than 1% asbestos content that is friable or may become friable by the forces expected to act on the material during certain activities. **The condition listed for each asbestos material was based on observations at the time of the sampling event. The condition of the asbestos material may change over time due to various factors such as environmental condition (such as moisture), vibration and disturbance.**

7 CURRENT REGULATIONS

7.1 ASBESTOS-CONTAINING MATERIALS

It is our understanding that the subject structure is planned for demolition. Based on the laboratory reports greater than 1% asbestos was identified in various collected bulk samples.

Current regulations require removal of ACMs from facilities prior to conducting activities that can damage or disturb ACMs. These activities include renovation or demolition work. When disturbing in-place asbestos, OSHA asbestos regulations (NESHAPS) asbestos regulations (40 CFR Part 61, Subpart M), should be followed.

NESHAPS (40 CFR Part M, Amended 20 November 1990) regulates the removal and disposal of an identified Regulated Asbestos Containing Materials from a property being demolished or renovated, before any activity begins that would break up, dislodge, or similarity disturb the material or preclude access to the material for subsequent removal. This regulation separates ACM into three categories based on the material's friability and/or physical condition.

- Regulated ACM (RACM)
- Category I non-friable ACM
- Category II non-friable ACM
- Category I non-friable ACM includes gaskets, valve packings, resilient vinyl floor covering (floor tile and linoleum), and asphalt roofing material containing more than one percent asbestos by volume. Category II non-friable ACM is any other non-friable material with more than one percent asbestos by volume. An example of a Category II non-friable material would be asbestos-cement board (transite). Regulated ACM includes:
- Friable ACM
- Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading
- Category II non-friable ACM that has a high probability of becoming friable or can be rendered friable by the forces to act on the material during certain activities.

By EPA definition, RACMS must be abated by a licensed abatement contractor prior to any activities which will disturb the materials (such as renovation or demolition) are to occur.

8 CONCLUSIONS AND RECOMMENDATIONS

This limited asbestos sampling event revealed that asbestos was detected in accessible areas that were available at the time of the survey. Further, the sampling event was limited to sampling homogeneous areas in readily accessible areas. If, during demolition or further investigation, materials are uncovered that were not a part of this sampling event, further evaluation and testing would be required to validate these conclusions.

8.1 ASBESTOS-CONTAINING MATERIALS

It is Slade's understanding that the subject structure is planned for demolition.

Slade recommends that since there were asbestos-containing materials identified in this report, the asbestos materials do have to be removed by appropriately trained and Alabama accredited asbestos abatement contractors prior to demolition/renovation activities. In compliance with OSHA regulations, maintenance on pipes, mechanical equipment, roofing materials, etc. must be notified of the locations of asbestos materials prior to performing any work in the building. There is no need for an operations and maintenance plan if the renovations and/or demolition is expected in the immediate future.

At the time of the sampling event, the commercial building was occupied and the remaining areas of the structure was unoccupied.

There were identified ACMs. Current regulations require removal of ACMs from facilities where activities that can damage or disturb ACMs may occur. These activities include renovation or demolition work. When disturbing in-place asbestos, OSHA asbestos regulations (29 CFR Parts 1910 and 1926) and NESHAPS asbestos regulations (40 CFR Part 61, Subpart M), should be followed.

Slade recommends that if suspect materials that were hidden and/or not accessible during this sampling event are discovered during any demolition activities at the subject site, the suspect materials should be analyzed for asbestos material content.

9 ASSUMPTIONS AND LIMITATIONS

Slade notes that this Asbestos Survey Sampling Event was limited to the collection of bulk samples from readily accessible locations within the subject site. Laboratory analysis utilizing PLM along with dispersion staining techniques was used to determine percentage of asbestos in those samples taken.

The results, findings, observations, and recommendations expressed in this report are based only on conditions that were observed during inspection of the site, conducted on April 7-11, 2025. Although care has been taken by Slade in compiling and checking the information contained in the report to verify that it is current and accurate, we disclaim any and all liability for any errors or omissions or inaccuracies. The recommendations provided in this report do not constitute legal and/or medical advice. It is further understood that Slade makes no representations or warranties of any kind, including but not limited to, the warranties to be implied with respect to the data furnished. We assume no responsibility with respect to customers, its employees, clients' or customers' use thereof. Slade, their representative, and this report make no representation and/or assumptions as to past conditions or future occurrences at this site. The information provided herein applies only to the subject property, as it existed during our site visit. Should the site's use and/or conditions change, information, observations and recommendations found herein would no longer apply. This report is intended to be used in its entirety. No excerpts may be taken to be representative of the findings of this sampling event. We shall not be liable for any special, consequential and/or exemplary damages resulting, in whole or in part, from the customer's use of the data provided.

The purpose of this limited sampling event is to identify suspect materials in specific accessible locations. This limited sampling event, due to its scope and nature, is not intended to function as a construction and/or asbestos material abatement document. A limited asbestos material sampling event is typically not sufficient to estimate costs of abatement or to obtain access to areas that may not be exposed until work

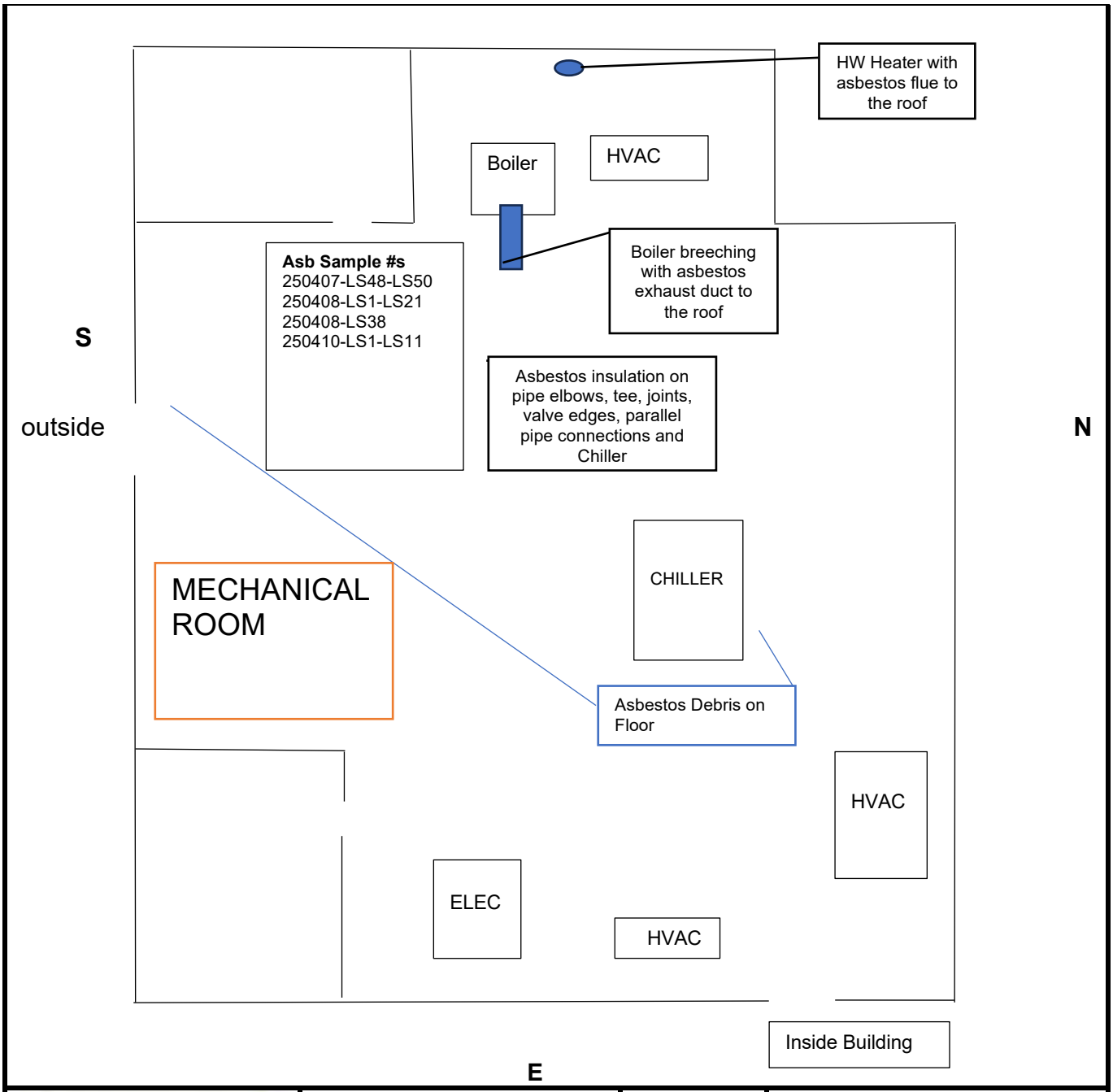
begins. Further, the limited sampling event includes sampling of homogenous areas and not specific sampling at each individual location subject to renovation and/or demolition activities.

The services described in the included final report are consistent with generally accepted professional consulting principles and practices. No other warranty, expressed or implied is made. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk. No portion of this documentation can be segregated to misrepresent the sole intent of the intended scope of work.

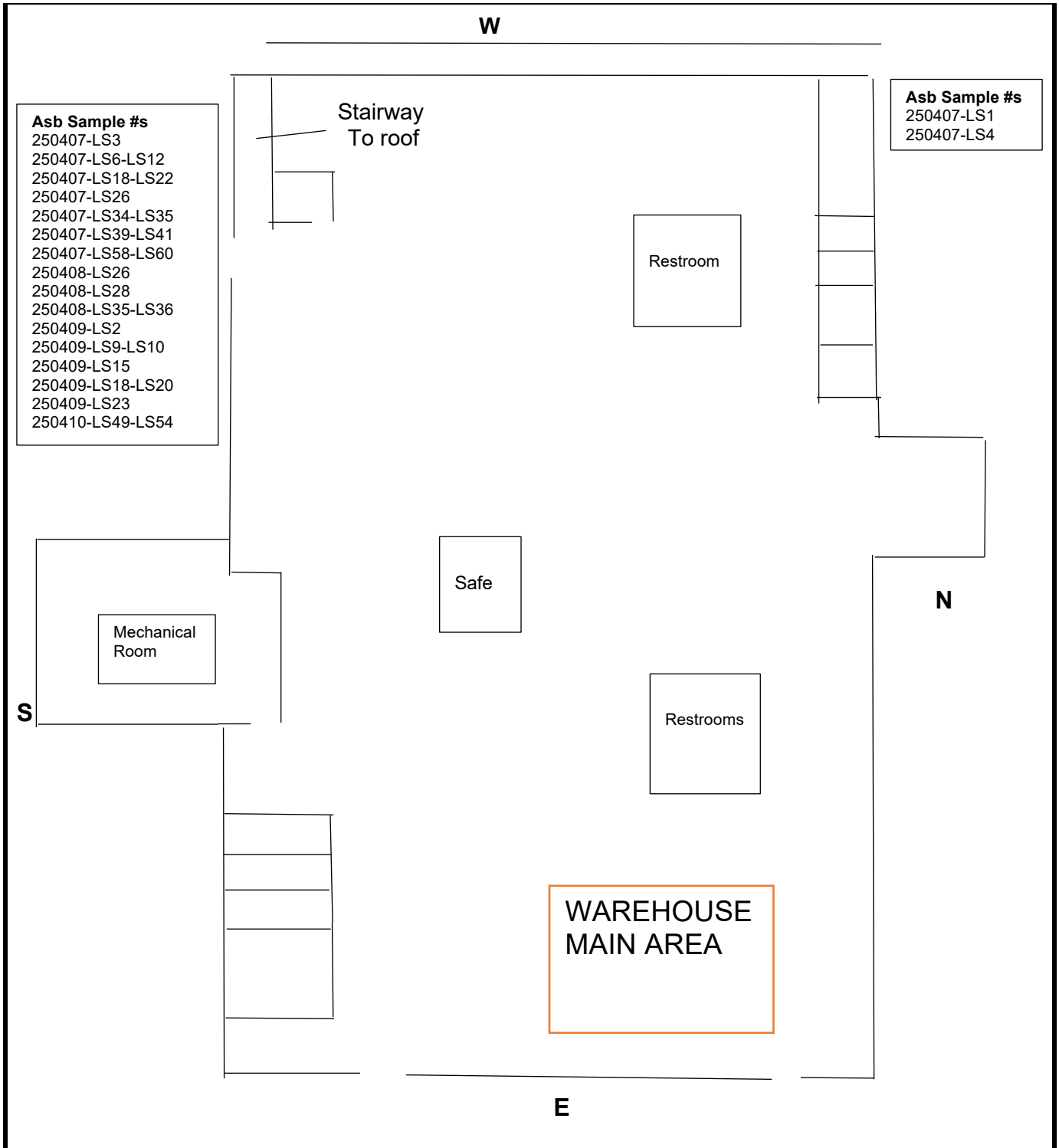
Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client's purposes, location, time frames, and project parameters indicated. We are not responsible for the impact of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

We are unable to report on or accurately predict events, which may impact the site following performance of the described services, whether occurring naturally or caused by external forces. We assume no responsibility for conditions we are not authorized to investigate, on conditions nor generally recognized as predictable at the time services were performed. Information provided in this report should not be segregated in any such manner or form. Slade is not responsible for any misinterpretation or misinterpretation of segregated materials included in the report during or after the conclusion of the well defined scope of work.

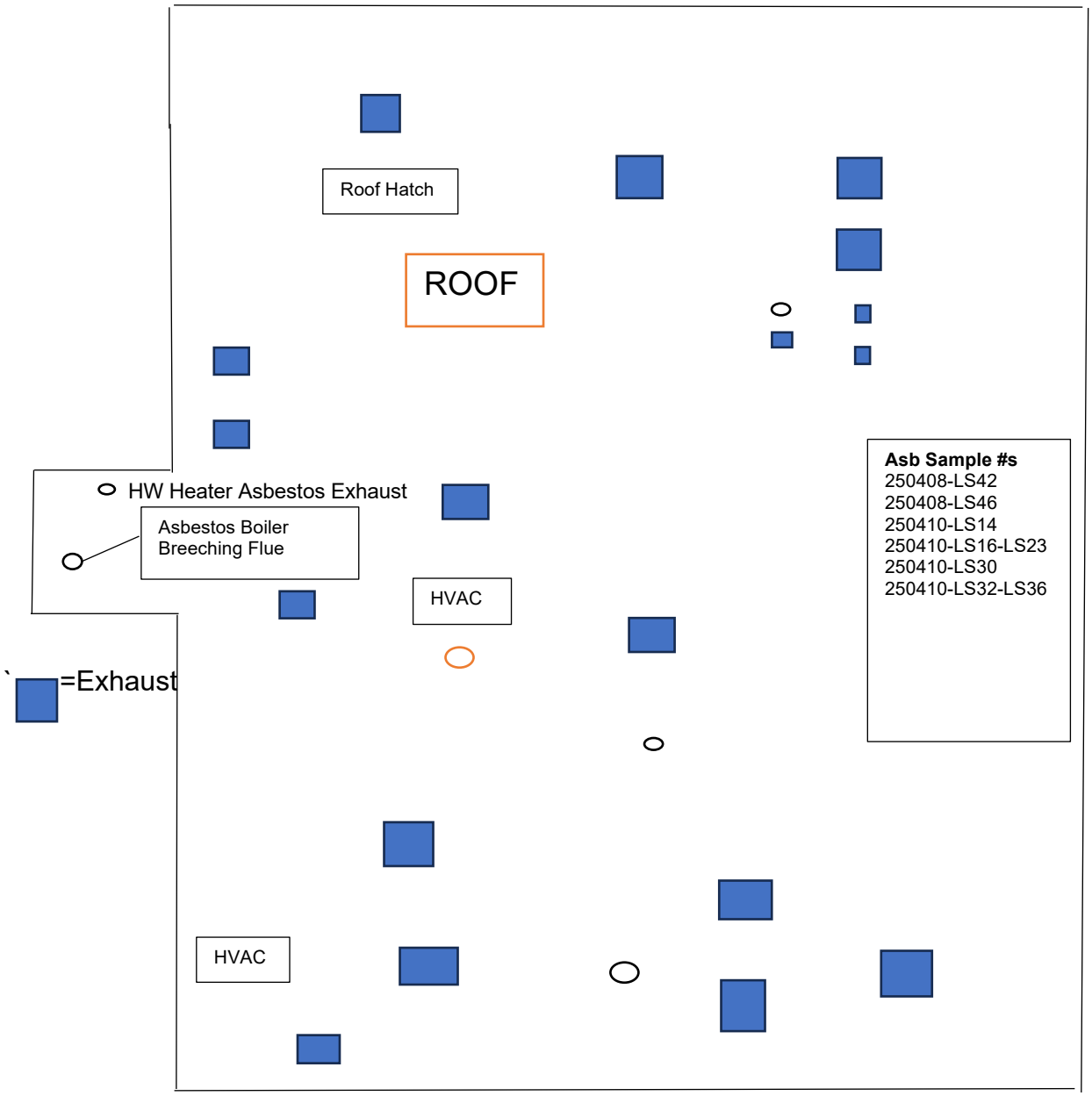
We are not responsible for changes in applicable regulatory standards, practices, or regulations following performance of services.



SLADE ENVIRONMENTAL CONSULTING | GENERAL CONTRACTING	**Slade Land Use, Environmental & Transportation, LLC** **1500 1st Avenue North, Unit 54** **Birmingham, Alabama** **Phone: (205) 413-4685**	**Supplemental Drawing** **Date: 4-8-2025** **Drawn by:** **Jose Garcia** **Scale: N/A**	**Address: 1943 50th Street North** **Location: Birmingham, Alabama** **Project: Kaiser**



SLADE ENVIRONMENTAL CONSULTING | GENERAL CONTRACTING	**Slade Land Use, Environmental & Transportation, LLC** **1500 1st Avenue North, Unit 54** **Birmingham, Alabama** **Phone: (205) 413-4685**	**Supplemental Drawing** **Date: 4-9-2025** **Drawn by:** **Jose Garcia** **Scale: N/A**	**1943 50th Street North Development** **Location: Birmingham, Alabama** **Project: Kaiser**



SLADE ENVIRONMENTAL CONSULTING | GENERAL CONTRACTING	**Slade Land Use, Environmental & Transportation, LLC** **1500 1st Avenue North, Unit 54** **Birmingham, Alabama** **Phone: (205) 413-4685**	**Supplemental Drawing** **Date: 4-10-2025** **Drawn by: Jose Garcia** **Scale: N/A**	**Address: 1943 50th Street North** **Location: Birmingham, Alabama** **Project: Kaiser**

BUILDING 1943 50th Street North Birmingham, Alabama 35212

Code Description			
SUMMARY OF FINDINGS			
ACM Present?	**Yes**		
BUILDING OBSERVATIONS			
Building Size:	57,400 SF	Number of Floors:	1
Basement Present:	No		
Framing:	CMU	Power Status:	On
Foundation Type:	Slab	Most Recent Use:	Storage
Roof Style:	Flat	Occupancy Status:	Occupied
Exterior Wall Composition:	Brick/Metal/CMU	General Building Condition:	Fair
NOTES			

April 7, 2025
ACM Sample Inventory 1943 50th Street North, Birmingham, Alabama 35212

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250407-LS1	Interior caulking at block wall joint	NW Corner	Chrysotile 5%	200 LF	G	RACM-CAT II
250407-LS2	Brown Cove Base (CB) mastic	West Wall	NONE-DETECTED (ND)			
250407-Ls3	Grey 9”x9” Floor Tile (FT)/black mastic	SW Corner	Tile - Chrysotile 5% Mastic - Chrysotile 5%	TILE/MASTIC - 326 SF	G	RACM-CAT II
250407-Ls4	Interior caulking at block wall joint	NW Corner	Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250407-Ls5	Wall board (WB)/Joint Compound (JC)	SW Wall	WB- NONE DETECTED JC- NONE DETECTED			
250407-Ls6	Mud at pipe penetration	SW Corner	Chrysotile 1% Amosite 5%	10 SF	G	RACM-CAT II
250407-Ls7	Mud at pipe penetration	SW Corner	Chrysotile 3% Amosite 2%	NOTE ABOVE	G	RACM-CAT II
250407-Ls8	Mud at pipe penetration	SW Corner	Chrysotile 3% Amosite 2%	NOTED ABOVE	G	RACM-CAT II
250407-Ls9	Black mastic on pipe elbow	SW Center	Chrysotile 10%	62 LF	G	RACM-CAT II
250407-Ls10	Thermal System Insulation (TSI) on 3” pipe	SW Center	Chrysotile 3% Amosite 2%	60 LF	G	RACM-CAT II
250407-Ls11	Grey 9”x9” FT//mastic	SW Corner	Tile - Chrysotile 5% Mastic- Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250407-Ls12	WB Ceiling	SW Corner	WB-ND JC-Chrysotile 2%	200 SF	G	RACM-CAT II
250407-Ls13	Ceiling Texture	Men’s Restroom, NW side	NONE-DETECTED			
250407-Ls14	Ceiling Texture	Women’s Restroom, NW side	NONE-DETECTED			
250407-Ls15	Expansion Joint Caulk	NW	NONE-DETECTED			
250407-Ls16	Expansion Joint Caulk	NW	NONE-DETECTED			
250407-Ls17	Black Mastic on Concrete Floor	NW	NONE-DETECTED			
250407-Ls18	Off-white 12”x12” FT/Black Mastic	SW	Tile-ND Mastic-Chrysotile 3%	MASTIC- 250 SF	G	RACM-CAT II
250407-Ls19	Off-white 12”x12” FT/Black Mastic	SW	Tile-ND Mastic-Chrysotile 3%	NOTED ABOVE	G	RACM-CAT II
250407-Ls20	Grey 9”x9” FT/Black Mastic	SW	Tile - Chrysotile 5% Mastic - Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250407-Ls21	Grey 9”x9” FT/Black Mastic	SW	Tile - Chrysotile 5% Mastic - Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250407-Ls-22	Black Mastic on Concrete in Closet	Room W-4	Mastic - Chrysotile 2%	400 SF	G	RACM-CAT II
250407-Ls23	Cove basement	Room closets NW W-4	NONE- DETECTED			

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Stop

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

April 7, 2025
ACM Sample Inventory 1943 50th Street North, Birmingham, Alabama 35212

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250407-Ls24	Yellow Mastic on Concrete Floor	Room NW W-4	NONE-DETECTED			
250407-Ls25	Yellow Mastic on Concrete Floor	Room W-4	NONE-DETECTED			
250407-Ls26	½" pipe TSI	SW Center	Chrysotile 2% Amosite 3%	120 LF	G	RACM-CAT II
250407-Ls27	Glue Dots	South Center Column	NONE-DETECTED			
250407-Ls28	Glue Dots	South Center Column	NONE-DETECTED			
250407-Ls29	Glue Dots	South Center Column	NONE-DETECTED			
250407-Ls30	Tile over glue dots	South center column	NONE-DETECTED			
250407-Ls31	Tile over glue dots	South Center Column	NONE-DETECTED			
250407-Ls32	Tile over glue dots	South Center Column	NONE-DETECTED			
250407-LS33	Brown Cove Base Mastic	South	NONE-DETECTED			
250407-LS34	Black Mastic on FG pipe	South Center	Mastic - Chrysotile 10%	NOTED ABOVE	G	RACM-CAT II
250407-LS35	Black Mastic on FG pipe	South Center	Mastic - Chrysotile 10%	NOTED ABOVE	G	RACM-CAT II
250407-LS36	Wall mastic brown/tan	South Center Vault	NONE-DETECTED			
250407-LS37	Wall mastic brown/tan	South Center Vault	NONE-DETECTED			
250407-LS38	Wall mastic brown/tan	South Center Vault	NONE-DETECTED			
250407-LS39	Soft caulking on wall at vault (safe)	South Center Vault	Chrysotile 5%	24 FT	G	RACM-CAT II
250407-LS40	Soft caulking on wall at vault (safe)	South Center Vault	Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250407-LS41	Soft caulking on wall at vault (safe)	South Center Vault	Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250407-LS42	Ceramic title mastic	South Center Vault	NONE-DETECTED			
250407-LS43	Ceramic tile mastic	South Center Vault	NONE-DETECTED			
250407-LS44	Ceramic tile mastic	South Center Vault	NONE-DETECTED			
250407-LS45	Brittle white mastic	South Center Vault	NONE- DETECTED			
250407-LS46	Brittle White Mastic	South Center Vault	NONE-DETECTED			

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Stop

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

April 7, 2025
ACM Sample Inventory 1943 50th Street North, Birmingham, Alabama 35212

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250407-LS47	Brittle white mastic	South North Center	NONE-DETECTED			
S250407-LS48	White TSI on Concrete Floor (at Chiller)	Mech Room South	CHRYSOTILE 5%	3 SF	SD	RACM-CAT I
250407-LS49	White TSI on Concrete Floor (at Chiller)	Mech Room South	CHRYSOTILE 5%	NOTED ABOVE	SD	RACM-CAT I
250407-LS50	Chiller TSI on the Floor	Mech Room South	CHRYSOTILE 5%	160 SF	G	RACM-CAT II
250407-LS51	2'x4' Ceiling Tile	W-5	NONE-DETECTED			
250407-LS52	2'x4' Ceiling Tile	W-5	NONE-DETECTED			
250407-LS53	2'x4' Ceiling Tile	W-4	NONE-DETECTED			
250407-LS54	½" x ½" Ceramic Tile	North At Glass Entrance	NONE-DETECTED			
250407-LS55	½" x ½" Ceramic Tile	North At Glass Entrance	NONE-DETECTED			
250407-LS56	WB/JC at glass entrance	North Glass Entrance	NONE-DETECTED			
250407-LS57	WB/JC at glass entrance	North Glass Entrance	NONE-DETECTED			
250407-LS58	TSI on 1' pipe elbow	North Center	CHRYSOTILE 2% AMOSITE 2%	110 LF	G	RACM-CAT II
250407-LS59	Grey 9"x9" FT/Mastic	North Center	Tile - Chrysotile 5% Mastic - Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250407-LS60	Grey 9"x9" FT/Mastic	North Center	Tile - Chrysotile 5% Mastic - Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250407-LS61	Ceiling Tile	North Center	NONE-DETECTED			
250407-LS62	Expansion caulking over cork	North Center	Caulk - NONE-DETECTED Tar – NONE DETECTED			
250407-LS63	Expansion caulking over cork	North Center	NONE-DETECTED			

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PS = Positive Stop

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SD = Significantly Damaged

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April 21, 2025

Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203

CLIENT PROJECT: Misc. PLM Asbestos Sampling
LAB CODE: 651480-1

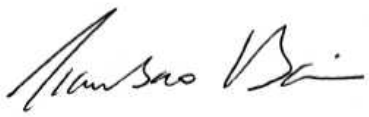
Dear Customer,

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on April 15, 2025. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials and EPA 40 CFR Appendix E to Subpart E of Part 763: Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% by calibrated visual estimate.

Thank you for your business and we look forward to continuing good relations.

Kind Regards,



Tianbao Bai, Ph.D., CIH
Laboratory Director

NVLAP 101768-0

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ASBESTOS ANALYTICAL REPORT
By: Polarized Light Microscopy

Prepared for

Slade Land USE Environmental and Transportation Planning

CLIENT PROJECT:	Misc. PLM Asbestos Sampling
LAB CODE:	651480-1
TEST METHOD:	EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763
REPORT DATE:	04/21/25

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Asbestos Report Summary
By: Polarized Light Microscopy

Project: Misc. PLM Asbestos Sampling **Lab Code:** 651480-1

Method: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

Client ID	Lab ID	Layer	Sample Description	Asbestos %
250407-1LS	3308003		Off-white caulk	Chrysotile 5%
250407-2LS	3308004		Brown mastic	None Detected
250407-3LS	3308005		Gray floor tile	Chrysotile 5%
250407-3LS (2)	3320051		Black mastic	Chrysotile 5%
250407-4LS	3308006		Off-white caulk	Chrysotile 5%
250407-5LS	3308007	Layer A	White joint compound	None Detected
		Layer B	Off-white/tan drywall	None Detected
		Composite		0%
250407-6LS	3308008		Off-white insulation	Chrysotile <1%
				Amosite 2%
250407-7	3308009		Off-white insulation	Chrysotile 3%
				Amosite 2%
250407-8	3308010		Off-white insulation	Chrysotile 3%
				Amosite 2%
250407-9	3308011	Layer A	Black mastic	Chrysotile 10%
		Layer B	Silver/off-white wrap	None Detected
250407-10	3308012		Off-white insulation	Chrysotile 3%
				Amosite 2%
250407-11	3308013		Gray floor tile	Chrysotile 5%
250407-11 (2)	3320113		Black mastic	Chrysotile 5%
250407-12	3308014	Layer A	Off-white joint compound	Chrysotile 2%
		Layer B	Off-white/tan drywall	None Detected
		Composite		0.1%
250407-13	3308015		White texture	None Detected
250407-14	3308016		White texture	None Detected
250407-15	3308017		Off-white joint material	None Detected

Asbestos Report Summary
By: Polarized Light Microscopy

Project: Misc. PLM Asbestos Sampling **Lab Code:** 651480-1

Method: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

Client ID	Lab ID	Layer	Sample Description	Asbestos %
250407-16	3308018		Off-white joint material	None Detected
250407-17	3308019		Off-white/yellow mastic	None Detected
250407-18	3308020		Off-white floor tile	None Detected
250407-18 (2)	3320148		Black mastic	Chrysotile 3%
250407-19	3308021		Off-white floor tile	None Detected
250407-19 (2)	3320287		Black mastic	Chrysotile 3%
250407-20	3308022		Gray floor tile	Chrysotile 5%
250407-20 (2)	3320284		Black mastic	Chrysotile 5%
250407-21	3308023		Gray floor tile	Chrysotile 5%
250407-21 (2)	3320289		Black mastic	Chrysotile 5%
250407-22	3308024		Black mastic	Chrysotile 2%
250407-23	3308025		Brown mastic	None Detected
250407-24	3308026		Yellow mastic	None Detected
250407-25	3308027		Yellow mastic	None Detected
250407-26	3308028		Off-white insulation	Chrysotile 2% Amosite 3%
250407-27	3308029		Black/brown mastic	None Detected
250407-28	3308030		Black/brown mastic	None Detected
250407-29	3308031		White ceiling tile	None Detected
250407-29 (2)	3320423		Black/brown mastic	None Detected
250407-30	3308032		White ceiling tile	None Detected
250407-31	3308033		White ceiling tile	None Detected
250407-32	3308034		White ceiling tile	None Detected
250407-33	3308035		Tan mastic	None Detected
250407-34	3308036	Layer A	Black mastic	Chrysotile 10%
		Layer B	Yellow insulation	None Detected

Asbestos Report Summary
By: Polarized Light Microscopy

Project: Misc. PLM Asbestos Sampling **Lab Code:** 651480-1

Method: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

Client ID	Lab ID	Layer	Sample Description	Asbestos %
250407-35	3308037	Layer A	Black mastic	Chrysotile 10%
		Layer B	Yellow insulation	None Detected
250407-36	3308038		Brown mastic	None Detected
250407-37	3308039		Brown mastic	None Detected
250407-38	3308040		Brown mastic	None Detected
250407-39	3308041		Black/off-white caulk	Chrysotile 5%
250407-40	3308042		Off-white caulk	Chrysotile 5%
250407-41	3308043		Off-white caulk	Chrysotile 5%
250407-42	3308044		Gray leveling compound	None Detected
250407-43	3308045		Gray leveling compound	None Detected
250407-44	3308046		Gray leveling compound	None Detected
250407-45	3308047	Layer A	Yellow mastic	None Detected
		Layer B	White leveling compound	None Detected
250407-46	3308048	Layer A	Yellow mastic	None Detected
		Layer B	White leveling compound	None Detected
250407-47	3308049	Layer A	Yellow mastic	None Detected
		Layer B	White leveling compound	None Detected
250407-48	3308050		Off-white insulation	Chrysotile 5%
250407-49	3308051		Off-white insulation	Chrysotile 5%
250407-50	3308052		Off-white insulation	Chrysotile 5%
250407-51	3308053		Off-white ceiling tile	None Detected
250407-52	3308054		Off-white ceiling tile	None Detected
250407-53	3308055		Off-white/white ceiling tile	None Detected
250407-54	3308056	Layer A	Green ceramic tile	None Detected
		Layer B	Gray grout	None Detected
		Layer C	Off-white mortar	None Detected

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Asbestos Report Summary
By: Polarized Light Microscopy

Project: Misc. PLM Asbestos Sampling **Lab Code:** 651480-1

Method: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

Client ID	Lab ID	Layer	Sample Description	Asbestos %
250407-55	3308057	Layer A	Green ceramic tile	None Detected
		Layer B	Gray grout	None Detected
		Layer C	Off-white mortar	None Detected
250407-56	3308058		White joint compound	None Detected
250407-57	3308059	Layer A	White joint compound	None Detected
		Layer B	Off-white/tan drywall	None Detected
		Composite		**0%**
250407-58	3308060		Off-white/gray insulation	Chrysotile 2% Amosite 2%
250407-59	3308061		Grayish-green floor tile	Chrysotile 5%
250407-59 (2)	3321362		Black mastic	Chrysotile 10%
250407-60	3308062		Grayish-green floor tile	Chrysotile 5%
250407-60 (2)	3321369		Black mastic	Chrysotile 5%
250407-61	3308063		White/off-white ceiling tile	None Detected
250407-62	3308064	Layer A	Off-white caulk	None Detected
		Layer B	Black tar	None Detected
250407-63	3308065		Off-white caulk	None Detected

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651480-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250407-1LS 3308003	Caulk	Homogeneous Off-white Non-Fibrous Bound			95%	Caulk	**Chrysotile 5%**
250407-2LS 3308004	Mastic	Homogeneous Brown Non-Fibrous Bound			100%	Mastic	**None Detected**
250407-3LS 3308005	Floor Tile	Homogeneous Gray Non-Fibrous Bound			95%	Vinyl	**Chrysotile 5%**
250407-3LS (2) 3320051	Mastic	Homogeneous Black Non-Fibrous Bound			95%	Tar	**Chrysotile 5%**
250407-4LS 3308006	Caulk	Homogeneous Off-white Non-Fibrous Bound			95%	Caulk	**Chrysotile 5%**
250407-5LS Layer A 3308007	Joint Compound	Heterogeneous White Non-Fibrous Bound			<1% 60% 40%	Paint Binder Calc Carb	**None Detected**
Layer B 3308007	Drywall	Heterogeneous Off-white/tan Fibrous Bound	20%	Cellulose	80%	Gypsum	**None Detected**

Composite: 0%

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651480-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250407-6LS 3308008	Insulation	Homogeneous Off-white Non-Fibrous Loosely Bound	3%	Glass	65% 30%	Binder Calc Carb	Chrysotile <1% Amosite 2%
250407-7 3308009	Insulation	Homogeneous Off-white Non-Fibrous Loosely Bound	5%	Glass	30% 60%	Calc Carb Binder	Chrysotile 3% Amosite 2%
250407-8 3308010	Insulation	Homogeneous Off-white Non-Fibrous Loosely Bound	5%	Glass	30% 60%	Calc Carb Binder	Chrysotile 3% Amosite 2%
250407-9 Layer A 3308011	Mastic	Homogeneous Black Non-Fibrous Bound			90%	Tar	Chrysotile 10%
Layer B 3308011	Wrap	Heterogeneous Silver/off-white Fibrous Bound	65%	Cellulose	15% 20%	Foil Binder	None Detected
250407-10 3308012	Insulation	Homogeneous Off-white Non-Fibrous Loosely Bound	5%	Glass	30% 60%	Calc Carb Binder	Chrysotile 3% Amosite 2%
250407-11 3308013	Floor Tile	Homogeneous Gray Non-Fibrous Bound			95%	Vinyl	Chrysotile 5%

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651480-1
Date Received: 04/15/25
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Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250407-11 (2) 3320113	Mastic	Homogeneous Black Non-Fibrous Bound			95%	Tar	**Chrysotile 5%**
250407-12 Layer A 3308014	Joint Compound	Heterogeneous Off-white Non-Fibrous Bound			<1% 65% 33%	Paint Binder Calc Carb	**Chrysotile 2%**
Layer B 3308014	Drywall	Heterogeneous Off-white/tan Fibrous Bound	20%	Cellulose	80%	Gypsum	**None Detected** **Composite: 0.1%**
250407-13 3308015	Texture	Heterogeneous White Non-Fibrous Bound	2%	Cellulose	<1% 15% 45% 38%	Paint Calc Carb Perlite Binder	**None Detected**
250407-14 3308016	Texture	Heterogeneous White Non-Fibrous Bound	2%	Cellulose	<1% 15% 45% 38%	Paint Calc Carb Perlite Binder	**None Detected**
250407-15 3308017	Joint Material	Homogeneous Off-white Non-Fibrous Bound			70% 30%	Binder Calc Carb	**None Detected**
250407-16 3308018	Joint Material	Heterogeneous Off-white Non-Fibrous Bound			70% 30%	Binder Calc Carb	**None Detected**

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651480-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250407-17 3308019	Mastic	Homogeneous Off-white/yellow Non-Fibrous Bound			100%	Mastic	**None Detected**
250407-18 3308020	Floor Tile	Homogeneous Off-white Non-Fibrous Bound			100%	Vinyl	**None Detected**
250407-18 (2) 3320148	Mastic	Homogeneous Black Non-Fibrous Bound	2%	Cellulose	95%	Tar	**Chrysotile 3%**
250407-19 3308021	Floor Tile	Homogeneous Off-white Non-Fibrous Bound			100%	Vinyl	**None Detected**
250407-19 (2) 3320287	Mastic	Homogeneous Black Non-Fibrous Bound	2%	Cellulose	95%	Tar	**Chrysotile 3%**
250407-20 3308022	Floor Tile	Homogeneous Gray Non-Fibrous Bound			95%	Vinyl	**Chrysotile 5%**
250407-20 (2) 3320284	Mastic	Homogeneous Black Non-Fibrous Bound			95%	Tar	**Chrysotile 5%**

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651480-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250407-21 3308023	Floor Tile	Homogeneous Gray Non-Fibrous Bound			95%	Vinyl	**Chrysotile 5%**
250407-21 (2) 3320289	Mastic	Homogeneous Black Non-Fibrous Bound			95%	Tar	**Chrysotile 5%**
250407-22 3308024	Mastic	Homogeneous Black Non-Fibrous Bound	3% <1%	Cellulose Synthetics	95%	Tar	**Chrysotile 2%**
250407-23 3308025	Mastic	Homogeneous Brown Non-Fibrous Bound			100%	Mastic	**None Detected**
250407-24 3308026	Mastic	Homogeneous Yellow Non-Fibrous Bound			100%	Mastic	**None Detected**
250407-25 3308027	Mastic	Homogeneous Yellow Non-Fibrous Bound			100%	Mastic	**None Detected**
250407-26 3308028	Insulation	Homogeneous Off-white Non-Fibrous Loosely Bound	5%	Glass	30% 60%	Calc Carb Binder	**Chrysotile 2%** **Amosite 3%**

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651480-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250407-27 3308029	Mastic	Homogeneous Black/brown Non-Fibrous Bound			100%	Mastic	None Detected
250407-28 3308030	Mastic	Homogeneous Black/brown Non-Fibrous Bound			100%	Mastic	None Detected
250407-29 3308031	Ceiling Tile	Heterogeneous White Fibrous Loosely Bound	90%	Glass	5% 5%	Paint Binder	None Detected
250407-29 (2) 3320423	Mastic	Homogeneous Black/brown Non-Fibrous Bound			100%	Mastic	None Detected
250407-30 3308032	Ceiling Tile	Heterogeneous White Fibrous Loosely Bound	90%	Glass	5% 5%	Paint Binder	None Detected
250407-31 3308033	Ceiling Tile	Heterogeneous White Fibrous Loosely Bound	90%	Glass	5% 5%	Paint Binder	None Detected
250407-32 3308034	Ceiling Tile	Heterogeneous White Fibrous Loosely Bound	90%	Glass	5% 5%	Paint Binder	None Detected

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651480-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250407-33 3308035	Mastic	Homogeneous Tan Non-Fibrous Bound			100%	Mastic	**None Detected**
250407-34 Layer A 3308036	Mastic	Homogeneous Black Non-Fibrous Bound			90%	Tar	**Chrysotile 10%**
Layer B 3308036	Insulation	Homogeneous Yellow Fibrous Loose	100%	Glass			**None Detected**
250407-35 Layer A 3308037	Mastic	Homogeneous Black Non-Fibrous Bound			90%	Tar	**Chrysotile 10%**
Layer B 3308037	Insulation	Homogeneous Yellow Fibrous Loose	100%	Glass			**None Detected**
250407-36 3308038	Mastic	Homogeneous Brown Non-Fibrous Bound			100%	Mastic	**None Detected**
250407-37 3308039	Mastic	Homogeneous Brown Non-Fibrous Bound			100%	Mastic	**None Detected**

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651480-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous	Non-Fibrous	ASBESTOS %
250407-38 3308040	Mastic	Homogeneous Brown Non-Fibrous Bound	100%	Mastic	**None Detected**
250407-39 3308041	Caulk	Heterogeneous Black/off-white Non-Fibrous Bound	<1% 95%	Paint Caulk	**Chrysotile 5%**
250407-40 3308042	Caulk	Homogeneous Off-white Non-Fibrous Bound	95%	Caulk	**Chrysotile 5%**
250407-41 3308043	Caulk	Homogeneous Off-white Non-Fibrous Bound	95%	Caulk	**Chrysotile 5%**
250407-42 3308044	Leveling Compound	Homogeneous Gray Non-Fibrous Bound	65% 15% 20%	Silica Calc Carb Binder	**None Detected**
No mastic present, sample appears to be leveling compound.					
250407-43 3308045	Leveling Compound	Homogeneous Gray Non-Fibrous Bound	65% 15% 20%	Silica Calc Carb Binder	**None Detected**
No mastic present, sample appears to be leveling compound.					

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651480-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous	Non-Fibrous		ASBESTOS %
250407-44 3308046	Leveling Compound	Homogeneous Gray Non-Fibrous Bound		65% 15% 20%	Silica Calc Carb Binder	**None Detected**
No mastic present, sample appears to be leveling compound.						
250407-45 Layer A 3308047	Mastic	Homogeneous Yellow Non-Fibrous Bound		100%	Mastic	**None Detected**
Layer B 3308047	Leveling Compound	Homogeneous White Non-Fibrous Bound		65% 35%	Binder Calc Carb	**None Detected**
250407-46 Layer A 3308048	Mastic	Homogeneous Yellow Non-Fibrous Bound		100%	Mastic	**None Detected**
Layer B 3308048	Leveling Compound	Homogeneous White Non-Fibrous Bound		65% 35%	Binder Calc Carb	**None Detected**
250407-47 Layer A 3308049	Mastic	Homogeneous Yellow Non-Fibrous Bound		100%	Mastic	**None Detected**
Layer B 3308049	Leveling Compound	Homogeneous White Non-Fibrous Bound		65% 35%	Binder Calc Carb	**None Detected**

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651480-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250407-48 3308050	Insulation	Homogeneous Off-white Fibrous Loose	10%	Glass	60% 25%	Binder Calc Carb	**Chrysotile 5%**
250407-49 3308051	Insulation	Homogeneous Off-white Fibrous Loose	10%	Glass	60% 25%	Binder Calc Carb	**Chrysotile 5%**
250407-50 3308052	Insulation	Homogeneous Off-white Fibrous Loose	10%	Glass	60% 25%	Binder Calc Carb	**Chrysotile 5%**
250407-51 3308053	Ceiling Tile	Homogeneous Off-white Fibrous Loosely Bound	<1% 85%	Cellulose Glass	15%	Binder	**None Detected**
250407-52 3308054	Ceiling Tile	Homogeneous Off-white Fibrous Loosely Bound	<1% 85%	Cellulose Glass	15%	Binder	**None Detected**
250407-53 3308055	Ceiling Tile	Homogeneous Off-white/white Fibrous Loosely Bound	<1% 85%	Cellulose Glass	5% 10%	Paint Binder	**None Detected**

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651480-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous	Non-Fibrous		ASBESTOS %
250407-54	Ceramic Tile	Homogeneous		85%	Binder	**None Detected**
Layer A		Green		15%	Silica	
3308056		Non-Fibrous				
		Bound				
Layer B	Grout	Homogeneous		70%	Silica	**None Detected**
3308056		Gray		15%	Binder	
		Non-Fibrous		15%	Calc Carb	
		Bound				
Layer C	Mortar	Homogeneous		65%	Silica	**None Detected**
3308056		Off-white		20%	Binder	
		Non-Fibrous		15%	Calc Carb	
		Bound				
250407-55	Ceramic Tile	Homogeneous		85%	Binder	**None Detected**
Layer A		Green		15%	Silica	
3308057		Non-Fibrous				
		Bound				
Layer B	Grout	Homogeneous		70%	Silica	**None Detected**
3308057		Gray		15%	Binder	
		Non-Fibrous		15%	Calc Carb	
		Bound				
Layer C	Mortar	Homogeneous		65%	Silica	**None Detected**
3308057		Off-white		20%	Binder	
		Non-Fibrous		15%	Calc Carb	
		Bound				
250407-56	Joint Compound	Heterogeneous		<1%	Paint	**None Detected**
3308058		White		60%	Binder	
		Non-Fibrous		40%	Calc Carb	
		Bound				

No drywall present.

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651480-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250407-57 Layer A 3308059	Joint Compound	Heterogeneous White Non-Fibrous Bound			<1% 60% 40%	Paint Binder Calc Carb	**None Detected**
Layer B 3308059	Drywall	Heterogeneous Off-white/tan Fibrous Bound	20%	Cellulose	80%	Gypsum	**None Detected**
							Composite: 0%
250407-58 3308060	Insulation	Homogeneous Off-white/gray Fibrous Loosely Bound	11%	Glass	60% 25%	Binder Calc Carb	**Chrysotile 2%** **Amosite 2%**
250407-59 3308061	Floor Tile	Homogeneous Grayish-green Non-Fibrous Bound			95%	Vinyl	**Chrysotile 5%**
250407-59 (2) 3321362	Mastic	Homogeneous Black Non-Fibrous Bound			90%	Tar	**Chrysotile 10%**
250407-60 3308062	Floor Tile	Homogeneous Grayish-green Non-Fibrous Bound			95%	Vinyl	**Chrysotile 5%**
250407-60 (2) 3321369	Mastic	Homogeneous Black Non-Fibrous Bound			95%	Tar	**Chrysotile 5%**

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651480-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250407-61	Ceiling Tile	Heterogeneous	<1%	Cellulose	2%	Paint	**None Detected**
3308063		White/off-white	90%	Glass	8%	Binder	
		Fibrous					
		Bound					
250407-62	Caulk	Homogeneous	3%	Wollastonite	65%	Binder	**None Detected**
Layer A		Off-white	2%	Talc	30%	Calc Carb	
3308064		Non-Fibrous					
		Bound					
Layer B	Tar	Homogeneous			100%	Tar	**None Detected**
3308064		Black					
		Non-Fibrous					
		Bound					
250407-63	Caulk	Homogeneous	3%	Wollastonite	65%	Binder	**None Detected**
3308065		Off-white	2%	Talc	30%	Calc Carb	
		Non-Fibrous					
		Bound					

LEGEND:

Non-Anth = Non-Asbestiform Anthophyllite
Non-Trem = Non-Asbestiform Tremolite
Calc Carb = Calcium Carbonate

METHOD: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

REPORTING LIMIT: 1% by calibrated visual estimation

REGULATORY LIMIT: 1%

Due to the limitations of the EPA 600 / R93 / 116 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. Estimated measurement of uncertainty is available on request.

Eurofins Built Environment Testing East, LLC makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins Built Environment Testing East, LLC. Samples were received in acceptable condition unless otherwise noted. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Information provided by customer includes customer sample ID and sample description.

Lewis Winfield
Analyst

DATA QA:

Samantha Webster
4/21/2025

APPROVED BY:

Tianbao Bai, Ph.D., CIH
Laboratory Director

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RES Job #: 651480

SUBMITTED BY		INVOICE TO		CONTACT INFORMATION	SERIES
Company:	Slade Land USE Environmental and Transportat ...	Company:	Slade Land USE Environmental and Transportat ...	Contact:	-1 PLM Standard
Address:	1500 1st Avenue North, Unit 54	Address:	1500 1st Avenue North, Unit 54	Phone:	
				Fax:	
	Birmingham, AL 35203		Birmingham, AL 35203	Cell:	
Project Number and/or P.O. #:	None Given	Project Zip Code:		Final Data Deliverable Email Address:	
Project Description/Location:	Misc. PLM Asbestos Sampling			lslade@sladellc.com (+ 1 ADDNL. CONTACTS)	

ASBESTOS LABORATORY

PLM / PCM / TEM — DTL RUSH PRIORITY STANDARD

CHEMISTRY LABORATORY

Dust — RUSH PRIORITY STANDARD

Metals — RUSH PRIORITY STANDARD *PRIOR NOTICE REQUIRED FOR SAME DAY TAT

Organics* — SAME DAY RUSH PRIORITY STANDARD

MICROBIOLOGY LABORATORY

Viable Analysis** — PRIORITY STANDARD

Medical Device Analysis — RUSH STANDARD **TAT DEPENDENT ON SPEED OF MICROBIAL GROWTH

Mold Analysis — RUSH PRIORITY STANDARD

****Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.****

Special Instructions:

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Food = F
Paint = P	Soil = S
Surface = SU	Swab = SW
Tape = T	Wipe = W
Drinking Water = DW	
Waste Water = WW	
ASTM E1792 approved wipe media only	

Client Sample ID Number (Sample ID's must be unique)	REQUESTED ANALYSIS: ASBESTOS — PLM - PLM Short Report (EPA/600/R-93/116)	TEM	PCM	CHEMISTRY — DUST	METALS	ORGANICS	MICROBIOLOGY — VIABLES	MEDICAL	MOLD	ICO	Sample Volume (L) / Area	Sample Temperature (°C)	Length(or Aliquots) x Width(or Area/Aliquot)	Matrix Code	# of Containers	Date Collected mm/dd/yy	Time Collected hh:mm	Laboratory Analysis Instructions
1 250407-1LS	X													B				
2 250407-2LS	X													B				
3 250407-3LS	X													B				
4 250407-4LS	X													B				
5 250407-5LS	X													B				
6 250407-6LS	X													B				
7 250407-7	X													B				
8 250407-8	X													B				
9 250407-9	X													B				
10 250407-10	X													B				
11 250407-11	X													B				
12 250407-12	X													B				
13 250407-13	X													B				

Eurofins Built Environment Testing East, LLC establishes a unique Lab Sample ID, for each sample, by preceding each unique Client Sample ID with the laboratory RES Job Number.

Eurofins Built Environment Testing East, LLC will analyze incoming samples based on information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing, client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall consitute an analytical services agreement with payment terms of NET 30 days. Failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By:		Date/Time: 04/15/2025 16:30:56	Sample Condition: Acceptable
Received By:	Carlos Romero	Date/Time: 04/15/2025 16:30:56	Carrier: Fed-Ex

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RES Job #: **651480**

Submitted By: **Slade Land USE Environmental and Transportation Planning**

		REQUESTED ANALYSIS										VALID MATRIX CODES							LAB NOTES
												Air = A			Bulk = B				
												Dust = D			Food = F				
												Paint = P			Soil = S				
												Surface = SU			Swab = SW				
												Tape = T			Wipe = W				
												Drinking Water = DW							
												Waste Water = WW							
												ASTM E1792 approved wipe media only							
		PLM - PLM Short Report (EPA/600/R-93/116)	TEM	PCM	DUST	METALS	ORGANICS	VIABLES	MEDICAL	MOLD	ICO	Sample Volume (L) / Area	Sample Temperature (°C)	Length(or Aliquots) x Width(or Area/Aliquot)	Matrix Code	# of Containers	Date Collected mm/dd/yy	Time Collected hh:mm	Laboratory Analysis Instructions
	Client Sample ID Number (Sample ID's must be unique)	ASBESTOS			CHEMISTRY			MICROBIOLOGY			ICO								
14	250407-14	X													B				
15	250407-15	X													B				
16	250407-16	X													B				
17	250407-17	X													B				
18	250407-18	X													B				
19	250407-19	X													B				
20	250407-20	X													B				
21	250407-21	X													B				
22	250407-22	X													B				
23	250407-23	X													B				
24	250407-24	X													B				
25	250407-25	X													B				
26	250407-26	X													B				
27	250407-27	X													B				
28	250407-28	X													B				
29	250407-29	X													B				
30	250407-30	X													B				
31	250407-31	X													B				
32	250407-32	X													B				
33	250407-33	X													B				
34	250407-34	X													B				
35	250407-35	X													B				
36	250407-36	X													B				
37	250407-37	X													B				
38	250407-38	X													B				
39	250407-39	X													B				
40	250407-40	X													B				
41	250407-41	X													B				
42	250407-42	X													B				
43	250407-43	X													B				

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RES Job #: **651480**

Submitted By: **Slade Land USE Environmental and Transportation Planning**

		REQUESTED ANALYSIS										VALID MATRIX CODES							LAB NOTES
												Air = A			Bulk = B				
												Dust = D			Food = F				
												Paint = P			Soil = S				
												Surface = SU			Swab = SW				
												Tape = T			Wipe = W				
												Drinking Water = DW							
												Waste Water = WW							
												ASTM E1792 approved wipe media only							
		PLM - PLM Short Report (EPA/600/R-93/116)	TEM	PCM	DUST	METALS	ORGANICS	VIABLES	MEDICAL	MOLD	ICO	Sample Volume (L) / Area	Sample Temperature (°C)	Length(or Aliquots) x Width(or Area/Aliquot)	Matrix Code	# of Containers	Date Collected mm/dd/yy	Time Collected hh:mm	Laboratory Analysis Instructions
	Client Sample ID Number (Sample ID's must be unique)	ASBESTOS			CHEMISTRY			MICROBIOLOGY			ICO								
44	250407-44	X													B				
45	250407-45	X													B				
46	250407-46	X													B				
47	250407-47	X													B				
48	250407-48	X													B				
49	250407-49	X													B				
50	250407-50	X													B				
51	250407-51	X													B				
52	250407-52	X													B				
53	250407-53	X													B				
54	250407-54	X													B				
55	250407-55	X													B				
56	250407-56	X													B				
57	250407-57	X													B				
58	250407-58	X													B				
59	250407-59	X													B				
60	250407-60	X													B				
61	250407-61	X													B				
62	250407-62	X													B				
63	250407-63	X													B				

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CHAIN OF CUSTODY

730 SE Maynard Road, Cary, NC 27511
Tel: 866-481-1412; Fax: 919-481-1442

LAB USE ONLY:
CEI Lab Code: 6518480
CEI Lab I.D. Range:

COMPANY INFORMATION	PROJECT INFORMATION
CEI CLIENT #:	Job Contact:
Company: Slade Land Use	Email / Tel:
Address: 1500 First Ave North	Project Name:
Unit 54 Birmingham AL 35203	Project ID#:
Email: LSlade@SladeLLC.com	PO #:
Tel: 2054134685 Fax:	STATE SAMPLES COLLECTED IN:

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

ASBESTOS	METHOD	TURN AROUND TIME					
		4 HR	8 HR	1 DAY	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	☐	☐	☐	☐	☐	☑
PLM POINT COUNT (400)	EPA 600	☐	☐	☐	☐	☐	☐
PLM POINT COUNT (1000)	EPA 600	☐	☐	☐	☐	☐	☐
PLM GRAV w POINT COUNT	EPA 600		☐	☐	☐	☐	☐
PLM BULK	CARB 435		☐	☐	☐	☐	☐
PCM AIR	NIOSH 7400	☐	☐	☐	☐	☐	☐
TEM AIR	EPA AHERA	☐	☐	☐	☐	☐	☐
TEM AIR	NIOSH 7402	☐	☐	☐	☐	☐	☐
TEM AIR (PCME)	ISO 10312	☐	☐	☐	☐	☐	☐
TEM AIR	ASTM 6281-15	☐	☐	☐	☐	☐	☐
TEM BULK	CHATFIELD		☐	☐	☐	☐	☐
TEM DUST WIPE	ASTM D6480-05 (2010)	☐	☐	☐	☐	☐	☐
TEM DUST MICROVAC	ASTM D5755-09 (2014)	☐	☐	☐	☐	☐	☐
TEM SOIL	ASTM D7521-16			☐	☐	☐	☐
TEM VERMICULITE	CINCINNATI METHOD			☐	☐	☐	☐
TEM QUALITTATIVE	IN-HOUSE METHOD		☐	☐	☐	☐	☐
OTHER		☐	☐	☐	☐	☐	☐

REMARKS / SPECIAL INSTRUCTIONS:

☑ Accept Samples
☐ Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
Trace Slade			4-14-25 10:00

Samples will be disposed of 30 days after analysis

April 7, 2025

April 7, 2025

Building_____– ACM Sample Inventory

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250407-1LS	INTERIOR CAULK JOINT & BLOCK WALL	N W CORNER				
2LS	BROWN COVE BASE MASTIC	WEST WALL				
3LS	9x9" FT/MASTIC GREY COLOR	SW CORNER				
4LS	CAULK & BLACK WALL JOINT	NW CORNER				
5LS	WALL BOARD & JC	SOUTH WEST CORNER				
6LS	MUD & PIPE PENETRATION	SW CORNER				
7	"	"				
8	"	"				
9	BLK MASTIC ON PIPE ELBOW	SW CORNER				
10	TST ON 3" PIPE	SW CORNER				
11	9"x9" GREY FT/MAST	SW CORNER				
12	WB CEILING	SW CORNER				
13	CEILING TEXTURE	MENS NW SIDE				
14	" "	WOMENS NW SIDE				
15	EXPANSION JOINT	NW				
16	" "	"				
17	BLACK MASTIC ON COVE FLOOR	NW				
18	OFF WHITE FLOOR TILE 12"x12"	SW				
19	" "	"				
20	" "	"				
21	9"x9" GREY FT	"				
22	BLACK MASTIC IN CLOSET NW	ROOM CLOSET NW W-4				
23	COVE BASE MASTIC	ROOM CLOSET NW -W4				
--	**Electrical Wire**	--	**ASSUMED**	**Contractor to Determine**	**G**	**NF2**

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Sto

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

Building_____– ACM Sample Inventory

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250407-24	Yellow mastic on cork floor	Room NW				
25	" "	Room NW				
26	4" Pipe TSI	SW center				
27	Glue dots	South @ vault center				
28	" "	" @ vault				
29	" "	"				
30	Tile over glue dots column	"				
31	" " " "	"				
32	" " " "	"				
33	Brown glue base mastic	South center				
34	Silk mastic on F.G Pipe	South center				
35	" " " "	@ vault				
36	Wall mastic brown/tan	South center @ vault				
37	" " "	"				
38	" " "	"				
39	soft caulk on windledge @ vault	"				
40	" " "	"				
41	" " "	"				
42	Ceramic Tile mastic	"				
43	" " "	"				
44	" " "	"				
45	Brittle white mastic	North center				
46	" " "	"				
--	Electrical Wire	--	ASSUMED	Contractor to Determine	G	NF2

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Stop

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

Building_____– ACM Sample Inventory

Sample Number		Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250407	47	Brittle white mastic	~~South~~ North center				
	48	White TSI on Floor	Mech Room South				
	49	" " " "	" " "				
	50	Chiller TSI	" "				
	51	2x4 C.T	W-5				
	52	2x4 C.T	W-5				
	53	2x4 C.T	W-5				
	54	4"x4" cermicite	North ⑤ glass entrance				
	55	4"x4" ceramic Tile	"				
	56	WB/JC ⑤ Glass entrance	"				
	57	" " "	"				
	58	TSI on 1" dia Pipe elbow	North Center				
	59	9"x9" Grey Fl/mastic	North closet				
	60	" " "	"				
	61	Ceiling Tile closet	"				
	62	Expansion caulk over cork closet	"				
	63	Expansion caulk over cork	"				
--		Electrical Wire	--	ASSUMED	Contractor to Determine	G	NF2

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Stop

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

April 8, 2025
ACM Sample Inventory 1943 50th Street North, Birmingham, Alabama 35212

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250408-LS1	Chiller southwest TSI	Mech Room	Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250408-LS2	Chiller southwest TSI	Mech Room	Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250408-LS3	Chiller northwest TSI	Mech Room	Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250408-LS4	TSI on T joint	Mech Room	Chrysotile 5%	14 LF	G	RACM-CAT II
250408-LS5	TSI on 6' Pipe elbow	Mech Room	Mastic- Chrysotile 3%	150 LF (3"TO 6")	G	RACM-CAT II
250408-LS6	TSI on 1' pipe elbow	Mech Room	Chrysotile 65%	NOTED ABOVE	G	RACM-CAT II
250408-LS7	TSI on T joint	Mech Room	Chrysotile 15%	NOTED ABOVE	G	RACM-CAT II
250408-LS8	TSI on ½ 'pipe elbow	Mech Room	Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250408-LS9	TSI on 6' pipe elbow	Mech Room Boiler	Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250408-LS10	TSI 1' pipe elbow	Mech Room	Chrysotile 15%	NOTED ABOVE	G	RACM-CAT II
250408-LS11	TSI in valve	Mech Room	Chrysotile 5%	500 SF	G	RACM-CAT II
250408-LS12	TSI on 6" pipe elbow	Mech Room	White/Black - Chrysotile 3% Tan – Chrysotile 5% White – Chrysotile 15%	NOTED ABOVE	G	RACM-CAT II
250408-LS13	TSI on 3" pipe elbow	Mech Room	Chrysotile 15%	NOTED ABOVE	G	RACM-CAT II
250408-LS14	TSI on pipe valve	Mech Room	Chrysotile 15%	NOTED ABOVE	G	RACM-CAT II
250408-LS15	TSI on 3" pipe elbow	Mech Room	White - Chrysotile 5% White Mastic - Chrysotile 3%	NOTED ABOVE	G	RACM-CAT II
250408-LS16	TSI on 1" pipe elbow	Mech Room	Tan - Chrysotile 5% White - Chrysotile 10%	NOTED ABOVE	G	RACM-CAT II
250408-LS17	TSI on 1/2" pipe elbow	Mech Room	Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250408-LS18	TSI on T joint	Mech Room	Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250408-LS19	TSI on ½' pipe elbow	Mech Room	Chrysotile 10%	NOTED ABOVE	G	RACM-CAT II
250408-LS20	TSI on pipe valve	Mech Room	Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250408-LS21	TSI on 3" pipe elbow	Mech Room	Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250408-LS22	WB/JC	Mech Room	WB-NONE- DETECTED JC – NONE DETECTED			
250408-LS23	JC	Mech Room	NONE-DETECTED			

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Stop

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

April 8, 2025
ACM Sample Inventory 1943 50th Street North, Birmingham, Alabama 35212

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250408-LS24	Concrete Yellow Coating	NE Center	NONE-DETECTED			
250408-LS25	Caulk at Corner of Wall	Closet, NE	NONE-DETECTED			
250408-LS26	12”x12” Off-White FT/Black Mastic	NE Center	FT - Chrysotile 3% Mastic – Chrysotile 3%	100 SF	G	RACM-CAT II
250408-LS27	Texture Ceiling	NE Bathroom	NONE-DECTEDED			
250408-LS28	12”x12” Off-White FT/Black Mastic	NE Center	FT- Chrysotile 3% Mastic – Chrysotile 3%	NOTED ABOVE	G	RACM-CAT II
250408-LS29	Texture Ceiling	NE Bathroom	NONE-DETECTED			
250408-LS30	Concrete Yellow Coating On Column	NE	NONE-DETECTED			
250408-LS31	Joint Compound	NE	NONE-DETECTED			
250408-LS32	Concrete Yellow Coating	East Center	NONE-DETECTED			
250408-LS33	Joint Compound	NE Center	NONE-DETECTED			
250408-LS34	Joint Compound	NE	NONE-DETECTED			
250408-LS35	9”x9” Off-White FT/Black Mastic	NE Center	FT - Chrysotile 3% Mastic – Chrysotile 3%	120 SF	G	RACM-CAT II
250408-LS36	9”x9” Off-White FT/Black Mastic	NE Center	FT - Chrysotile 3% Mastic – Chrysotile 3%	NOTED ABOVE	G	RACM-CAT II
250408-LS37	Grey 9”x9” FT/Black Mastic	NE Center	FT - NONE-DETECTED Mastic – NONE DETECTED			
250408-LS38	TSI on Floor by Pipe Valve	Mech Room	Chrysotile 5%	10 SF	SD	RACM-CAT I
250408-LS39	1’x1’ Ceiling Tile SE corner	Room by Elec Room	NONE-DETECTED			
250408-LS40	1’x1’ Ceiling Tile SE corner	Room by Elec Room	NONE-DETECTED			
250408-LS41	1’x1’ Ceiling Tile SE corner	Room by Elec Room	NONE-DETECTED			
250408-LS42	Black Mastic on Parapet Wall	Roof, West	Black - Chrysotile 10%	1000 SF	G	RACM-CAT II
250408-LS43	Caulking on Parapet Wall Seam	Roof, West	NONE-DETECTED			
250408-LS44	Tar paper	Roof, West	NONE- DETECTED			
250408LS45	White Coating on Parapet Wall	Roof, Southwest	NONE-DETECTED			
250408-LS46	Grey Felt Paper	Roof, SW Corner	CHRYSOTILE 5%	3500SF		
--		--				

SF = Square Feet
LF = Linear Feet
AM = Amosite
CH = Chrysotile
G = Good
D = Damaged
F = Friable ACM
NF1 = Category I Non-Friable ACM

April 8, 2025
ACM Sample Inventory 1943 50th Street North, Birmingham, Alabama 35212

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250408-LS47	Concrete coating on parapet	Roof NW Corner	NONE-DETECTED			
250408-LS48	Cementitious Pipe from Hot Water Tank	Roof, South above Mech Room	Crocidolite 3% Chrysotile 15%	19 SF	G	RACM-CAT II
250408-LS49	White cocking on vent cap	Roof, NW	NONE-DETECTED			
250408-LS50	Black Mastic metal flashing	Roof, West	Chrysotile 10%	1900 SF	G	RACM-CAT II
250408-LS51	Boiler Exhaust Cementitious Pipe	Roof, South above Mech Room	Crocidolite 3% Chrysotile 15%	108 SF	G	RACM-CAT II

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May 07, 2025

Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203

CLIENT PROJECT: PLM Misc. Asbestos Sampling
LAB CODE: 656127-1

Dear Customer,

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on May 6, 2025. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials and EPA 40 CFR Appendix E to Subpart E of Part 763: Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% by calibrated visual estimate.

Thank you for your business and we look forward to continuing good relations.

Kind Regards,

Tianbao Bai, Ph.D., CIH
Laboratory Director

NVLAP 101768-0

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ASBESTOS ANALYTICAL REPORT
By: Polarized Light Microscopy

Prepared for

Slade Land USE Environmental and Transportation Planning

CLIENT PROJECT:	PLM Misc. Asbestos Sampling
LAB CODE:	656127-1
TEST METHOD:	EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763
REPORT DATE:	05/07/25

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Asbestos Report Summary
By: Polarized Light Microscopy

Project: PLM Misc. Asbestos Sampling **Lab Code:** 656127-1

Method: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

Client ID	Lab ID	Layer	Sample Description	Asbestos %
250408-1LS	3358818	Layer A	White thermal systems insulation (tsi)	None Detected
		Layer B	Tan thermal systems insulation (tsi)	Chrysotile 5%
250408-2LS	3358819		Tan thermal systems insulation (tsi)	Chrysotile 5%
250408-3LS	3358820	Layer A	White thermal systems insulation (tsi)	None Detected
		Layer B	Tan thermal systems insulation (tsi)	Chrysotile 5%
250408-4LS	3358821		Tan thermal systems insulation (tsi)	Chrysotile 5%
250408-5LS	3358822	Layer A	Gray thermal systems insulation (tsi) wrap	None Detected
		Layer B	White thermal systems insulation (tsi) mastic	Chrysotile 3%
		Layer C	Yellow thermal systems insulation (tsi)	None Detected
250408-6LS	3358823		White thermal systems insulation (tsi)	Chrysotile 65%
250408-7LS	3358824		White thermal systems insulation (tsi)	Chrysotile 15%
250408-8LS	3358825		Tan thermal systems insulation (tsi)	Chrysotile 5%
250408-9LS	3358826		Tan thermal systems insulation (tsi)	Chrysotile 5%
250408-10LS	3358827		White thermal systems insulation (tsi)	Chrysotile 15%
250408-11LS	3358828		Tan thermal systems insulation (tsi)	Chrysotile 5%

Asbestos Report Summary
By: Polarized Light Microscopy

Project: PLM Misc. Asbestos Sampling **Lab Code:** 656127-1

Method: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

Client ID	Lab ID	Layer	Sample Description	Asbestos %
250408-12LS	3358829	Layer A	White/black thermal systems insulation (tsi) mastic	Chrysotile 3%
		Layer B	Tan thermal systems insulation (tsi)	Chrysotile 5%
		Layer C	White thermal systems insulation (tsi)	Chrysotile 15%
250408-13LS	3358830		White thermal systems insulation (tsi)	Chrysotile 15%
250408-14LS	3358831	Layer A	White thermal systems insulation (tsi)	Chrysotile 15%
		Layer B	White thermal systems insulation (tsi)	None Detected
250408-15LS	3358832	Layer A	White thermal systems insulation (tsi)	Chrysotile 5%
		Layer B	White thermal systems insulation (tsi) mastic	Chrysotile 3%
		Layer C	Yellow thermal systems insulation (tsi)	None Detected
250408-16LS	3358833	Layer A	Tan thermal systems insulation (tsi)	Chrysotile 5%
		Layer B	White thermal systems insulation (tsi)	Chrysotile 10%
250408-17LS	3358834		Tan thermal systems insulation (tsi)	Chrysotile 5%
250408-18LS	3358835		Tan thermal systems insulation (tsi)	Chrysotile 5%
250408-19LS	3358836		White thermal systems insulation (tsi)	Chrysotile 10%
250408-20LS	3358837		Tan thermal systems insulation (tsi)	Chrysotile 5%
250408-21LS	3358838		Tan thermal systems insulation (tsi)	Chrysotile 5%

Asbestos Report Summary
By: Polarized Light Microscopy

Project: PLM Misc. Asbestos Sampling **Lab Code:** 656127-1

Method: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

Client ID	Lab ID	Layer	Sample Description	Asbestos %
250408-22LS	3358839	Layer A	White joint compound	None Detected
		Layer B	Gray wall board	None Detected
		Composite		**0%**
250408-23LS	3358840		White joint compound	None Detected
250408-24LS	3358841		Yellow concrete coating	None Detected
250408-25LS	3358842		White caulk	None Detected
250408-26LS	3358843		Off-white floor tile	Chrysotile 3%
250408-26LS (2)	3361799		Black mastic	Chrysotile 3%
250408-27LS	3358844		White ceiling texture	None Detected
250408-28LS	3358845		Off-white floor tile	Chrysotile 3%
250408-28LS (2)	3361800		Black mastic	Chrysotile 3%
250408-29LS	3358846		White ceiling texture	None Detected
250408-30LS	3358847		Yellow concrete coating	None Detected
250408-31LS	3358848		White joint compound	None Detected
250408-32LS	3358849		Yellow concrete coating	None Detected
250408-33LS	3358850		White joint compound	None Detected
250408-34LS	3358851		White joint compound	None Detected
250408-35LS	3358852		Off-white floor tile	Chrysotile 3%
250408-35LS (2)	3361813		Black mastic	Chrysotile 3%
250408-36LS	3358853		Off-white floor tile	Chrysotile 3%
250408-36LS (2)	3361814		Black mastic	Chrysotile 3%
250408-37LS	3358854		Gray floor tile	None Detected
250408-37LS (2)	3361815		Black mastic	None Detected
250408-38LS	3358855	Layer A	White thermal systems insulation (tsi)	None Detected
		Layer B	Tan thermal systems insulation (tsi)	Chrysotile 5%

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Asbestos Report Summary
By: Polarized Light Microscopy

Project: PLM Misc. Asbestos Sampling **Lab Code:** 656127-1

Method: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

Client ID	Lab ID	Layer	Sample Description	Asbestos %
250408-39LS	3358856		Gray ceiling tile	None Detected
250408-40LS	3358857		Gray ceiling tile	None Detected
250408-41LS	3358858		Gray ceiling tile	None Detected
250408-42LS	3358859		Black mastic	Chrysotile 10%
250408-43LS	3358860		White caulk	None Detected
250408-44LS	3358861		Black tar paper	None Detected
250408-45LS	3358862		White coating	None Detected
250408-46LS	3358863		Gray felt paper	Chrysotile 5%
250408-47LS	3358864		White concrete coating	None Detected
250408-48LS	3358865		Gray siding	Crocidolite 3% Chrysotile 15%
250408-49LS	3358866		White caulk	None Detected
250408-50LS	3358867		Black mastic	Chrysotile 10%
250408-51LS	3358868		Gray siding	Crocidolite 3% Chrysotile 15%

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: PLM Misc. Asbestos Sampling

Lab Code: 656127-1
Date Received: 05/06/25
Date Analyzed: 05/07/25
Date Reported: 05/07/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		NON-ASBESTOS COMPONENTS Non-Fibrous		ASBESTOS %
250408-1LS Layer A 3358818	Thermal Systems Insulation (Tsi)	Homogeneous White Fibrous Loosely Bound	100%	Cellulose			**None Detected**
Layer B 3358818	Thermal Systems Insulation (Tsi)	Homogeneous Tan Fibrous Loose	10%	Glass	85%	Binder	**Chrysotile 5%**
250408-2LS 3358819	Thermal Systems Insulation (Tsi)	Homogeneous Tan Fibrous Loose	10%	Glass	85%	Binder	**Chrysotile 5%**
250408-3LS Layer A 3358820	Thermal Systems Insulation (Tsi)	Homogeneous White Fibrous Loosely Bound	100%	Cellulose			**None Detected**
Layer B 3358820	Thermal Systems Insulation (Tsi)	Homogeneous Tan Fibrous Loose	10%	Glass	85%	Binder	**Chrysotile 5%**
250408-4LS 3358821	Thermal Systems Insulation (Tsi)	Homogeneous Tan Fibrous Loose	10%	Glass	85%	Binder	**Chrysotile 5%**

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: PLM Misc. Asbestos Sampling

Lab Code: 656127-1
Date Received: 05/06/25
Date Analyzed: 05/07/25
Date Reported: 05/07/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250408-5LS Layer A 3358822	Thermal Systems Insulation (Tsi) Wrap	Homogeneous Gray Fibrous Bound	100%	Cellulose			**None Detected**
Layer B 3358822	Thermal Systems Insulation (Tsi) Mastic	Homogeneous White Non-Fibrous Bound			97%	Mastic	**Chrysotile 3%**
Layer C 3358822	Thermal Systems Insulation (Tsi)	Homogeneous Yellow Fibrous Loose	100%	Glass			**None Detected**
250408-6LS 3358823	Thermal Systems Insulation (Tsi)	Homogeneous White Fibrous Loose	5%	Cellulose	30%	Binder	**Chrysotile 65%**
250408-7LS 3358824	Thermal Systems Insulation (Tsi)	Homogeneous White Fibrous Loose	10%	Glass	75%	Binder	**Chrysotile 15%**
250408-8LS 3358825	Thermal Systems Insulation (Tsi)	Homogeneous Tan Fibrous Loose	10%	Glass	85%	Binder	**Chrysotile 5%**
250408-9LS 3358826	Thermal Systems Insulation (Tsi)	Homogeneous Tan Fibrous Loose	10%	Glass	85%	Binder	**Chrysotile 5%**

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: PLM Misc. Asbestos Sampling

Lab Code: 656127-1
Date Received: 05/06/25
Date Analyzed: 05/07/25
Date Reported: 05/07/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250408-10LS 3358827	Thermal Systems Insulation (Tsi)	Homogeneous White Fibrous Loose	10%	Glass	75%	Binder	Chrysotile 15%
250408-11LS 3358828	Thermal Systems Insulation (Tsi)	Homogeneous Tan Fibrous Loose	10%	Glass	85%	Binder	Chrysotile 5%
250408-12LS Layer A 3358829	Thermal Systems Insulation (Tsi) Mastic	Homogeneous White/black Non-Fibrous Bound			97%	Mastic	Chrysotile 3%
Layer B 3358829	Thermal Systems Insulation (Tsi)	Homogeneous Tan Fibrous Loose	10%	Glass	85%	Binder	Chrysotile 5%
Layer C 3358829	Thermal Systems Insulation (Tsi)	Homogeneous White Fibrous Loose	10%	Glass	75%	Binder	Chrysotile 15%
250408-13LS 3358830	Thermal Systems Insulation (Tsi)	Homogeneous White Fibrous Loose	10%	Glass	75%	Binder	Chrysotile 15%

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: PLM Misc. Asbestos Sampling

Lab Code: 656127-1
Date Received: 05/06/25
Date Analyzed: 05/07/25
Date Reported: 05/07/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250408-14LS Layer A 3358831	Thermal Systems Insulation (Tsi)	Homogeneous White Fibrous Loose	10%	Glass	75%	Binder	**Chrysotile 15%**
Layer B 3358831	Thermal Systems Insulation (Tsi)	Homogeneous White Fibrous Loosely Bound	100%	Cellulose			**None Detected**
250408-15LS Layer A 3358832	Thermal Systems Insulation (Tsi)	Homogeneous White Fibrous Loose	10%	Glass	85%	Binder	**Chrysotile 5%**
Layer B 3358832	Thermal Systems Insulation (Tsi) Mastic	Homogeneous White Non-Fibrous Bound			97%	Mastic	**Chrysotile 3%**
Layer C 3358832	Thermal Systems Insulation (Tsi)	Homogeneous Yellow Fibrous Loose	100%	Glass			**None Detected**
250408-16LS Layer A 3358833	Thermal Systems Insulation (Tsi)	Homogeneous Tan Fibrous Loose	10%	Glass	85%	Binder	**Chrysotile 5%**
Layer B 3358833	Thermal Systems Insulation (Tsi)	Homogeneous White Fibrous Loose	10%	Glass	80%	Binder	**Chrysotile 10%**

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: PLM Misc. Asbestos Sampling

Lab Code: 656127-1
Date Received: 05/06/25
Date Analyzed: 05/07/25
Date Reported: 05/07/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250408-17LS 3358834	Thermal Systems Insulation (Tsi)	Homogeneous Tan Fibrous Loose	10%	Glass	85%	Binder	Chrysotile 5%
250408-18LS 3358835	Thermal Systems Insulation (Tsi)	Homogeneous Tan Fibrous Loose	10%	Glass	85%	Binder	Chrysotile 5%
250408-19LS 3358836	Thermal Systems Insulation (Tsi)	Homogeneous White Fibrous Loose	10%	Glass	80%	Binder	Chrysotile 10%
250408-20LS 3358837	Thermal Systems Insulation (Tsi)	Homogeneous Tan Fibrous Loose	10%	Glass	85%	Binder	Chrysotile 5%
250408-21LS 3358838	Thermal Systems Insulation (Tsi)	Homogeneous Tan Fibrous Loose	10%	Glass	85%	Binder	Chrysotile 5%
250408-22LS Layer A 3358839	Joint Compound	Homogeneous White Non-Fibrous Bound			60% 40%	Binder Calc Carb	None Detected
Layer B 3358839	Wall Board	Heterogeneous Gray Fibrous Bound	15%	Cellulose	85%	Gypsum	None Detected

Composite: 0%

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: PLM Misc. Asbestos Sampling

Lab Code: 656127-1
Date Received: 05/06/25
Date Analyzed: 05/07/25
Date Reported: 05/07/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous	Non-Fibrous		ASBESTOS %
250408-23LS 3358840	Joint Compound	Homogeneous White Non-Fibrous Bound		60% 40%	Binder Calc Carb	**None Detected**
No wall board present.						
250408-24LS 3358841	Concrete Coating	Homogeneous Yellow Non-Fibrous Bound		68% 30% 2%	Silica Binder Paint	**None Detected**
250408-25LS 3358842	Caulk	Homogeneous White Non-Fibrous Bound		60% 40%	Binder Calc Carb	**None Detected**
250408-26LS 3358843	Floor Tile	Homogeneous Off-white Non-Fibrous Tightly Bound		97%	Vinyl	**Chrysotile 3%**
250408-26LS (2) 3361799	Mastic	Homogeneous Black Non-Fibrous Bound		97%	Mastic	**Chrysotile 3%**
250408-27LS 3358844	Ceiling Texture	Homogeneous White Non-Fibrous Bound		70% 30%	Binder Perlite	**None Detected**
250408-28LS 3358845	Floor Tile	Homogeneous Off-white Non-Fibrous Tightly Bound		97%	Vinyl	**Chrysotile 3%**

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: PLM Misc. Asbestos Sampling

Lab Code: 656127-1
Date Received: 05/06/25
Date Analyzed: 05/07/25
Date Reported: 05/07/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous	Non-Fibrous	ASBESTOS %
250408-28LS **(2)** 3361800	Mastic	Homogeneous Black Non-Fibrous Bound	97%	Mastic	**Chrysotile 3%**
250408-29LS 3358846	Ceiling Texture	Homogeneous White Non-Fibrous Bound	70% 30%	Binder Perlite	**None Detected**
250408-30LS 3358847	Concrete Coating	Homogeneous Yellow Non-Fibrous Bound	68% 30% 2%	Silica Binder Paint	**None Detected**
250408-31LS 3358848	Joint Compound	Homogeneous White Non-Fibrous Bound	60% 40%	Binder Calc Carb	**None Detected**
No wall board present.					
250408-32LS 3358849	Concrete Coating	Homogeneous Yellow Non-Fibrous Bound	68% 30% 2%	Silica Binder Paint	**None Detected**
250408-33LS 3358850	Joint Compound	Homogeneous White Non-Fibrous Bound	60% 40%	Binder Calc Carb	**None Detected**
No wall board present.					

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: PLM Misc. Asbestos Sampling

Lab Code: 656127-1
Date Received: 05/06/25
Date Analyzed: 05/07/25
Date Reported: 05/07/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250408-34LS 3358851	Joint Compound	Homogeneous White Non-Fibrous Bound			60% 40%	Binder Calc Carb	**None Detected**
No wall board present.							
250408-35LS 3358852	Floor Tile	Homogeneous Off-white Non-Fibrous Tightly Bound			97%	Vinyl	**Chrysotile 3%**
250408-35LS (2) 3361813	Mastic	Homogeneous Black Non-Fibrous Bound			97%	Mastic	**Chrysotile 3%**
250408-36LS 3358853	Floor Tile	Homogeneous Off-white Non-Fibrous Tightly Bound			97%	Vinyl	**Chrysotile 3%**
250408-36LS (2) 3361814	Mastic	Homogeneous Black Non-Fibrous Bound			97%	Mastic	**Chrysotile 3%**
250408-37LS 3358854	Floor Tile	Homogeneous Gray Non-Fibrous Tightly Bound			100%	Vinyl	**None Detected**
250408-37LS (2) 3361815	Mastic	Homogeneous Black Non-Fibrous Bound	3%	Cellulose	97%	Mastic	**None Detected**

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: PLM Misc. Asbestos Sampling

Lab Code: 656127-1
Date Received: 05/06/25
Date Analyzed: 05/07/25
Date Reported: 05/07/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250408-38LS Layer A 3358855	Thermal Systems Insulation (Tsi)	Homogeneous White Fibrous Loosely Bound	100%	Cellulose			**None Detected**
Layer B 3358855	Thermal Systems Insulation (Tsi)	Homogeneous Tan Fibrous Loose	10%	Glass	85%	Binder	**Chrysotile 5%**
250408-39LS 3358856	Ceiling Tile	Heterogeneous Gray Fibrous Loosely Bound	45% 15%	Cellulose Glass	5% 35%	Paint Binder	**None Detected**
250408-40LS 3358857	Ceiling Tile	Heterogeneous Gray Fibrous Loosely Bound	45% 15%	Cellulose Glass	5% 35%	Paint Binder	**None Detected**
250408-41LS 3358858	Ceiling Tile	Heterogeneous Gray Fibrous Loosely Bound	45% 15%	Cellulose Glass	5% 35%	Paint Binder	**None Detected**
250408-42LS 3358859	Mastic	Homogeneous Black Non-Fibrous Bound			90%	Tar	**Chrysotile 10%**
250408-43LS 3358860	Caulk	Homogeneous White Non-Fibrous Bound			100%	Caulk	**None Detected**

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: PLM Misc. Asbestos Sampling

Lab Code: 656127-1
Date Received: 05/06/25
Date Analyzed: 05/07/25
Date Reported: 05/07/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250408-44LS 3358861	Tar Paper	Homogeneous Black Fibrous Bound	30%	Synthetics	70%	Tar	**None Detected**
250408-45LS 3358862	Coating	Heterogeneous White Non-Fibrous Bound			68% 30% 2%	Silica Binder Paint	**None Detected**
250408-46LS 3358863	Felt Paper	Homogeneous Gray Fibrous Bound	30%	Glass	65%	Tar	**Chrysotile 5%**
250408-47LS 3358864	Concrete Coating	Heterogeneous White Non-Fibrous Bound			68% 30% 2%	Silica Binder Paint	**None Detected**
250408-48LS 3358865	Siding	Homogeneous Gray Fibrous Bound			82%	Binder	**Crocidolite 3%** **Chrysotile 15%**
250408-49LS 3358866	Caulk	Homogeneous White Non-Fibrous Bound			100%	Caulk	**None Detected**
250408-50LS 3358867	Mastic	Homogeneous Black Non-Fibrous Bound			90%	Tar	**Chrysotile 10%**

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: PLM Misc. Asbestos Sampling

Lab Code: 656127-1
Date Received: 05/06/25
Date Analyzed: 05/07/25
Date Reported: 05/07/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous	Non-Fibrous		ASBESTOS %
250408-51LS 3358868	Siding	Homogeneous Gray Fibrous Bound		82%	Binder	Crocidolite 3% Chrysotile 15%

LEGEND:

Non-Anth = Non-Asbestiform Anthophyllite
Non-Trem = Non-Asbestiform Tremolite
Calc Carb = Calcium Carbonate

METHOD: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

REPORTING LIMIT: 1% by calibrated visual estimation

REGULATORY LIMIT: 1%

Due to the limitations of the EPA 600 / R93 / 116 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. Estimated measurement of uncertainty is available on request.

Eurofins Built Environment Testing East, LLC makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins Built Environment Testing East, LLC. Samples were received in acceptable condition unless otherwise noted. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Information provided by customer includes customer sample ID and sample description.

Ryan Steele
Analyst

DATA QA:

Kathryn Wescott
5/7/2025

APPROVED BY:

Tianbao Bai, Ph.D., CIH
Laboratory Director

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RES Job #: 656127

SUBMITTED BY		INVOICE TO		CONTACT INFORMATION	SERIES
Company:	Slade Land USE Environmental and Transportat ...	Company:	Slade Land USE Environmental and Transportat ...	Contact:	-1 PLM Priority
Address:	1500 1st Avenue North, Unit 54	Address:	1500 1st Avenue North, Unit 54	Phone:	
				Fax:	
	Birmingham, AL 35203		Birmingham, AL 35203	Cell:	
Project Number and/or P.O. #:	None Given	Project Zip Code:		**Final Data Deliverable Email Address:**	
Project Description/Location:	PLM Misc. Asbestos Sampling			slade@sladellc.com (+ 1 ADDNL. CONTACTS)	

ASBESTOS LABORATORY

PLM / PCM / TEM DTL RUSH PRIORITY STANDARD

CHEMISTRY LABORATORY

Dust RUSH PRIORITY STANDARD

Metals RUSH PRIORITY STANDARD *PRIOR NOTICE REQUIRED FOR SAME DAY TAT

Organics* SAME DAY RUSH PRIORITY STANDARD

MICROBIOLOGY LABORATORY

Viable Analysis** PRIORITY STANDARD

**TAT DEPENDENT ON SPEED OF MICROBIAL GROWTH

Medical Device Analysis RUSH STANDARD

Mold Analysis RUSH PRIORITY STANDARD

****Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.****

Special Instructions:

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Food = F
Paint = P	Soil = S
Surface = SU	Swab = SW
Tape = T	Wipe = W
Drinking Water = DW	
Waste Water = WW	
ASTM E1792 approved wipe media only	

Client Sample ID Number (Sample ID's must be unique)	REQUESTED ANALYSIS: ASBESTOS — PLM - PLM Short Report (EPA/600/R-93/116)	TEM	PCM	CHEMISTRY — DUST	METALS	ORGANICS	MICROBIOLOGY — VIABLES	MEDICAL	MOLD	ICO	Sample Volume (L) / Area	Sample Temperature (°C)	Length(or Aliquots) x Width(or Area/Aliquot)	Matrix Code	# of Containers	Date Collected mm/dd/yy	Time Collected hh:mm	Laboratory Analysis Instructions
1 250408-1LS	X													B				
2 250408-2LS	X													B				
3 250408-3LS	X													B				
4 250408-4LS	X													B				
5 250408-5LS	X													B				
6 250408-6LS	X													B				
7 250408-7LS	X													B				
8 250408-8LS	X													B				
9 250408-9LS	X													B				
10 250408-10LS	X													B				
11 250408-11LS	X													B				
12 250408-12LS	X													B				
13 250408-13LS	X													B				

Eurofins Built Environment Testing East, LLC establishes a unique Lab Sample ID, for each sample, by preceding each unique Client Sample ID with the laboratory RES Job Number.

Eurofins Built Environment Testing East, LLC will analyze incoming samples based on information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing, client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall consitute an analytical services agreement with payment terms of NET 30 days. Failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By:		Date/Time: 05/06/2025 9:50:55	Sample Condition: Acceptable
Received By:	Carlos Romero	Date/Time: 05/06/2025 11:00:47	Carrier: Fed-Ex

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RES Job #: **656127**

Submitted By: **Slade Land USE Environmental and Transportation Planning**

		REQUESTED ANALYSIS										VALID MATRIX CODES							LAB NOTES
												Air = A			Bulk = B				
												Dust = D			Food = F				
												Paint = P			Soil = S				
												Surface = SU			Swab = SW				
												Tape = T			Wipe = W				
												Drinking Water = DW							
												Waste Water = WW							
												ASTM E1792 approved wipe media only							
		PLM - PLM Short Report (EPA/600/R-93/116)	TEM	PCM	DUST	METALS	ORGANICS	VIABLES	MEDICAL	MOLD	ICO	Sample Volume (L) / Area	Sample Temperature (°C)	Length(or Aliquots) x Width(or Area/Aliquot)	Matrix Code	# of Containers	Date Collected mm/dd/yy	Time Collected hh:mm	Laboratory Analysis Instructions
	Client Sample ID Number (Sample ID's must be unique)	ASBESTOS			CHEMISTRY			MICROBIOLOGY			ICO								
14	250408-14LS	X													B				
15	250408-15LS	X													B				
16	250408-16LS	X													B				
17	250408-17LS	X													B				
18	250408-18LS	X													B				
19	250408-19LS	X													B				
20	250408-20LS	X													B				
21	250408-21LS	X													B				
22	250408-22LS	X													B				
23	250408-23LS	X													B				
24	250408-24LS	X													B				
25	250408-25LS	X													B				
26	250408-26LS	X													B				
27	250408-27LS	X													B				
28	250408-28LS	X													B				
29	250408-29LS	X													B				
30	250408-30LS	X													B				
31	250408-31LS	X													B				
32	250408-32LS	X													B				
33	250408-33LS	X													B				
34	250408-34LS	X													B				
35	250408-35LS	X													B				
36	250408-36LS	X													B				
37	250408-37LS	X													B				
38	250408-38LS	X													B				
39	250408-39LS	X													B				
40	250408-40LS	X													B				
41	250408-41LS	X													B				
42	250408-42LS	X													B				
43	250408-43LS	X													B				

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RES Job #: **656127**

Submitted By: **Slade Land USE Environmental and Transportation Planning**

		REQUESTED ANALYSIS										VALID MATRIX CODES							LAB NOTES
												Air = A			Bulk = B				
												Dust = D			Food = F				
												Paint = P			Soil = S				
												Surface = SU			Swab = SW				
												Tape = T			Wipe = W				
												Drinking Water = DW							
												Waste Water = WW							
												ASTM E1792 approved wipe media only							
		PLM - PLM Short Report (EPA/600/R-93/116)	TEM	PCM	DUST	METALS	ORGANICS	VIABLES	MEDICAL	MOLD	ICO	Sample Volume (L) / Area	Sample Temperature (°C)	Length(or Aliquots) x Width(or Area/Aliquot)	Matrix Code	# of Containers	Date Collected mm/dd/yy	Time Collected hh:mm	Laboratory Analysis Instructions
Client Sample ID Number	(Sample ID's must be unique)	**ASBESTOS**			**CHEMISTRY**			**MICROBIOLOGY**			**ICO**								
44	250408-44LS	X													B				
45	250408-45LS	X													B				
46	250408-46LS	X													B				
47	250408-47LS	X													B				
48	250408-48LS	X													B				
49	250408-49LS	X													B				
50	250408-50LS	X													B				
51	250408-51LS	X													B				

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CEI

CHAIN OF CUSTODY

51

730 SE Maynard Road, Cary, NC 27511
Tel: 866-481-1412 Fax: 919-481-1442

LAB USE ONLY:
CEI Lab Code: 656127
CEI Lab I.D. Range:

COMPANY INFORMATION	PROJECT INFORMATION
CEI CLIENT #:	Job Contact:
Company: Slade Land USE	Email / Tel:
Address: 1500 First Ave North	Project Name:
Unit 54, Birmingham Alabama	Project ID#:
Email: LSlade@SladeLLC.com	PO #:
Tel: 2054134685 Fax:	STATE SAMPLES COLLECTED IN:

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

ASBESTOS	METHOD	TURN AROUND TIME					
		4 HR	8 HR	1 DAY	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	☐	☐	☒ Yes	☐	☐	☒ No
PLM POINT COUNT (400)	EPA 600	☐	☐	☐	☐	☐	☐
PLM POINT COUNT (1000)	EPA 600	☐	☐	☐	☐	☐	☐
PLM GRAV w POINT COUNT	EPA 600		☐	☐	☐	☐	☐
PLM BULK	CARB 435		☐	☐	☐	☐	☐
PCM AIR	NIOSH 7400	☐	☐	☐	☐	☐	☐
TEM AIR	EPA AHERA	☐	☐	☐	☐	☐	☐
TEM AIR	NIOSH 7402	☐	☐	☐	☐	☐	☐
TEM AIR (PCME)	ISO 10312	☐	☐	☐	☐	☐	☐
TEM AIR	ASTM 6281-15	☐	☐	☐	☐	☐	☐
TEM BULK	CHATFIELD		☐	☐	☐	☐	☐
TEM DUST WIPE	ASTM D6480-05 (2010)	☐	☐	☐	☐	☐	☐
TEM DUST MICROVAC	ASTM D5755-09 (2014)	☐	☐	☐	☐	☐	☐
TEM SOIL	ASTM D7521-16			☐	☐	☐	☐
TEM VERMICULITE	CINCINNATI METHOD			☐	☐	☐	☐
TEM QUALITTATIVE	IN-HOUSE METHOD		☐	☐	☐	☐	☐
OTHER		☐	☐	☐	☐	☐	☐

REMARKS / SPECIAL INSTRUCTIONS:	☑ Accept Samples ☐ Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
Trace Slade		ME	05/06/25 9:50AM

Samples will be disposed of 30 days after analysis

April 8, 2025

Building_____ – ACM Sample Inventory Sample April 8, 2025

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250408-LS	Chiller Southwest TSI	MECH Room				
-2	Chiller South TSI	"				
-3	Chiller Northwest TSI	"				
-4	TSI on T-JOINT	"				
-5	TSI on 6" Pipe Elbow	"				
-6	TSI on 1" Pipe Elbow	"				
-7	TSI on T-JOINT	"				
-8	TSI on ½" Pipe Elbow	"				
-9	TSI on 6" Pipe Elbow	Mech Rm by Boiler				
-10	TSI on 1" Pipe Elbow	MECH Rm				
-11	TSI on Valve Pipe	" "				
-12	TSI on 6" Pipe Elbow	" "				
-13	TSI on 3" Pipe Elbow	" "				
-14	TSI on Pipe Valve Elbow	" "				
-15	TSI on 3" Pipe Elbow	" "				
-16	TSI on 1" Pipe Elbow	" "				
-17	TSI on ½" Pipe Elbow	" "				
-18	TSI on T-JOINT	" "				
-19	TSI on ½" Pipe Elbow	" "				
-20	TSI on Pipe VALVE	" "				
-21	TSI on 3" Pipe Elbow	" "				
-22	WB/JC	NE Center ceiling				
23	WB/JC	NE column				
--	Electrical Wire	--	ASSUMED	Contractor to Determine	G	NF2

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Sto

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

Apr. 18, 2023
Stimpler

Building_____– ACM Sample Inventory

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250408-24LS	Conc Yellow coating	NE center				
-25LS	Caulk @ wall corner	Closet NE				
-26LS	12"x12" off white FT	NE center				
-27LS	Texture ceiling	NE Bathroom				
-28LS	12"x12" off white FT	NE Center				
-29LS	Texture ceiling	NE Bathroom				
-30LS	Concrete Yellow coating on column	NE				
-31LS	WB/JC	NE				
-32LS	Concrete Yellow coating	EAST Center				
-33LS	WB/JC	NE center				
34LS	WB/JC	NE				
35LS	9"x9" off white FT	NE CENTER				
36LS	9"x9" off white FT	NE center				
37LS	9"x9" gray FT	NE center				
38LS	TSI on Floor by Pipe Valve South	MECH Room				
39LS	1'x1' C.T SOUTHEAST CORNER	Ram by Elec. Equip				
40LS	" "	"				
41LS	" "	"				
-42LS	BLACK MASTIC on PARAPET WALL	Roof WEST				
-43LS	CAULK on PARAPET SEAM	Roof WEST				
-44LS	TAR PAPER	Roof SW corner				
-45LS	White coating on PARAPET	Roof SW				
-46LS	Grey Felt paper	Roof SW corner				
--	Electrical Wire	--	ASSUMED	Contractor to Determine	G	NF2

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Stop

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

Apr 18, 2025
samples

Building_____– ACM Sample Inventory

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
47LS	Concrete coating on parapet	Roof NW corner				
48LS	Transite pipe, HW tank	Roof South Above Mech Room				
49LS	White caulk on exh vent cap	Roof NW				
50LS	Black mastic on metal flashing	Roof West				
51LS	Boiler exh duct transite -	Roof - South Above Mech Room				
--	Electrical Wire	--	ASSUMED	Contractor to Determine	G	NF2

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Stop

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

April 9, 2025
ACM Sample Inventory-Building 1943 50th Street North, Birmingham, Alabama 35212

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250409-1LS	Cove Base (CB) Mastic	SE Room	NONE-DETECTED			
250409-LS2	Grey 9"x9" FT/Black Mastic	SE Room	Tile - Chrysotile 2% Mastic – Chrysotile 3%	NOTED ABOVE	G	RACM-CAT II
250409-LS3	1'x1' Wall Ceiling Tile	SE, Computer Room	NONE-DETECTED			
250409-LS4	1'x1' Wall Ceiling Tile	SE, Computer Room	NONE-DETECTED			
250409-LS5	Brown CB Mastic	SE, Computer Room	NONE-DETECTED			
250409-LS6	Brown CB Mastic	SE, Computer Room	NONE-DETECTED			
250409-LS7	Brown CB Mastic	SE, Computer Taper Storage Room	NONE-DETECTED			
250409-LS8	Brown CB Mastic	SE, Computer Tape Storage Room	NONE-DETECTED			
250409-LS9	Grey 9"x9" FT/Black Mastic	SE, Computer Tape Storage Room	Tile - Chrysotile 2% Mastic - Chrysotile 3%	NOTED ABOVE	G	RACM-CAT II
250409-LS10	Grey 9"x9" FT/Black Mastic	SE, Computer Tape Storage Room	Tile - Chrysotile 2% Mastic - Chrysotile 3%	NOTED ABOVE	G	RACM-CAT II
250409-LS11	White Material Inside Door Frame	SE, Computer Tape Storage Room	NONE-DETECTED			
250409-LS12	White Material Inside Door Frame	SE, Computer Tape Storage Room	NONE-DETECTED			
250409-LS13	Joint Compound (JC)	SE	NONE-DETECTED			
250409-LS14	Wall Board (WB) outside of Computer Tape Room	SE Corner	NONE-DETECTED			
250409-LS15	Expansion Joint Caulk between Concrete sections	NE Center	Mastic - Chrysotile 3%	7920 LF	G	RACM-CAT II
250409-LS16	Exterior Caulk at Exterior Roll-up Door	SW Exterior	NONE-DETECTED			
250409-LS17	Exterior Caulk at Exterior Roll-up Door	SW Exterior	NONE-DETECTED			
250409-LS18	Caulk at Block Wall Joint and Column	SW Stairwell (to Roof)	Chrysotile 3%	NOTED ABOVE	G	RACM-CAT II
250409-LS19	Caulk Between Stair Treads and Wall	SW Stairwell (to Roof)	Chrysotile 3%	70 LF	G	RACM-CAT II
250409-LS20	Caulk Between Stair Treads and Wall	SW Stairwell (to Roof)	Chrysotile 3%	NOTED ABOVE	G	RACM-CAT II
250409-LS21	Roof Main Field	Roof, SW	TAR AND INSULATION - NONE-DETECTED			
250409-LS22	Roof Main Field	Roof, SW	TAR AND INSULATION - NONE-DETECTED			
250409-LS23	Interior Caulk on Wall (near open area of grey and white floor)	SW, 20' from roll up door	Chrysotile 2%	NOTED ABOVE	G	RACM-CAT II

SF = Square Feet **AM** = Amosite **G** = Good **F** = Friable ACM

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April 21, 2025

Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203

CLIENT PROJECT: Misc. PLM Asbestos Sampling
LAB CODE: 651475-1

Dear Customer,

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on April 15, 2025. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials and EPA 40 CFR Appendix E to Subpart E of Part 763: Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% by calibrated visual estimate.

Thank you for your business and we look forward to continuing good relations.

Kind Regards,

Dana Till,
QA Manager

NVLAP 102082-0

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ASBESTOS ANALYTICAL REPORT
By: Polarized Light Microscopy

Prepared for

Slade Land USE Environmental and Transportation Planning

CLIENT PROJECT:	Misc. PLM Asbestos Sampling
LAB CODE:	651475-1
TEST METHOD:	EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763
REPORT DATE:	04/21/25

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Asbestos Report Summary
By: Polarized Light Microscopy

Project: Misc. PLM Asbestos Sampling **Lab Code:** 651475-1

Method: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

Client ID	Lab ID	Layer	Sample Description	Asbestos %
250409-1LS	3307955		Brown adhesive	None Detected
250409-2LS	3307956	Layer A	Gray floor tile	Chrysotile 2%
		Layer B	Black mastic	Chrysotile 3%
250409-3LS	3307957		Gray ceiling tile w/ white paint	None Detected
250409-4LS	3307958		Gray ceiling tile w/ white paint	None Detected
250409-5LS	3307959		Brown adhesive	None Detected
250409-6LS	3307960		Brown adhesive	None Detected
250409-7LS	3307961		Brown adhesive	None Detected
250409-8LS	3307962		Brown adhesive	None Detected
250409-9LS	3307963	Layer A	Gray floor tile	Chrysotile 2%
		Layer B	Black mastic	Chrysotile 3%
250409-10LS	3307964	Layer A	Gray floor tile	Chrysotile 2%
		Layer B	Black mastic	Chrysotile 3%
250409-11LS	3307965		White compound	None Detected
250409-12LS	3307966		White compound	None Detected
250409-13LS	3307967		White joint compound	None Detected
250409-14LS	3307968		Gray drywall	None Detected
250409-15LS	3307969		Black mastic w/ white paint	Chrysotile 3%
250409-16LS	3307970		Gray caulk	None Detected
250409-17LS	3307971		Gray caulk	None Detected
250409-18LS	3307972		Tan glazing	Chrysotile 3%
250409-19LS	3307973		Tan glazing	Chrysotile 3%
250409-20LS	3307974		Tan glazing	Chrysotile 3%
250409-21LS	3307975	Layer A	Black tar	None Detected
		Layer B	Gray insulation	None Detected

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Asbestos Report Summary
By: Polarized Light Microscopy

Project: Misc. PLM Asbestos Sampling **Lab Code:** 651475-1

Method: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

Client ID	Lab ID	Layer	Sample Description	Asbestos %
250409-22LS	3307976	Layer A	Black tar	None Detected
		Layer B	Gray insulation	None Detected
250409-23LS	3307977		Gray glazing w/ dark-gray paint	Chrysotile 2%

eurofins | Built Environment Testing

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651475-1
Date Received: 04/15/25
Date Analyzed: 04/19/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250409-1LS 3307955	Adhesive	Homogeneous Brown Non-Fibrous Bound			100%	Mastic	**None Detected**
250409-2LS Layer A 3307956	Floor Tile	Homogeneous Gray Non-Fibrous Tightly Bound			53% 45%	Binder Gravel	**Chrysotile 2%**
Layer B 3307956	Mastic	Homogeneous Black Non-Fibrous Bound			97%	Mastic	**Chrysotile 3%**
250409-3LS 3307957	Ceiling Tile W/ White Paint	Homogeneous Gray Fibrous Bound	60% 20%	Cellulose Glass	10% 10%	Binder Paint	**None Detected**
250409-4LS 3307958	Ceiling Tile W/ White Paint	Homogeneous Gray Fibrous Bound	70% 15%	Cellulose Glass	10% 5%	Binder Paint	**None Detected**
250409-5LS 3307959	Adhesive	Homogeneous Brown Non-Fibrous Bound			100%	Mastic	**None Detected**
250409-6LS 3307960	Adhesive	Homogeneous Brown Non-Fibrous Bound			100%	Mastic	**None Detected**

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651475-1
Date Received: 04/15/25
Date Analyzed: 04/19/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous	Non-Fibrous	ASBESTOS %
250409-7LS 3307961	Adhesive	Homogeneous Brown Non-Fibrous Bound	100%	Mastic	**None Detected**
250409-8LS 3307962	Adhesive	Homogeneous Brown Non-Fibrous Bound	100%	Mastic	**None Detected**
250409-9LS Layer A 3307963	Floor Tile	Homogeneous Gray Non-Fibrous Tightly Bound	53% 45%	Binder Gravel	**Chrysotile 2%**
Layer B 3307963	Mastic	Homogeneous Black Non-Fibrous Bound	97%	Mastic	**Chrysotile 3%**
250409-10LS Layer A 3307964	Floor Tile	Homogeneous Gray Non-Fibrous Tightly Bound	53% 45%	Binder Gravel	**Chrysotile 2%**
Layer B 3307964	Mastic	Homogeneous Black Non-Fibrous Bound	97%	Mastic	**Chrysotile 3%**
250409-11LS 3307965	Compound	Homogeneous White Non-Fibrous Bound	15% 85%	Gravel Binder	**None Detected**

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651475-1
Date Received: 04/15/25
Date Analyzed: 04/19/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250409-12LS 3307966	Compound	Homogeneous White Non-Fibrous Bound			85% 15%	Binder Gravel	**None Detected**
250409-13LS 3307967	Joint Compound	Homogeneous White Non-Fibrous Bound			1% 99%	Mica Binder	**None Detected**
250409-14LS 3307968	Drywall	Homogeneous Gray Non-Fibrous Bound	3%	Cellulose	97%	Binder	**None Detected**
250409-15LS 3307969	Mastic W/ White Paint	Homogeneous Black Fibrous Bound	10%	Cellulose	80% 5% 2%	Mastic Paint Binder	**Chrysotile 3%**
250409-16LS 3307970	Caulk	Homogeneous Gray Non-Fibrous Bound			100%	Caulk	**None Detected**
250409-17LS 3307971	Caulk	Homogeneous Gray Non-Fibrous Bound			100%	Caulk	**None Detected**
250409-18LS 3307972	Glazing	Homogeneous Tan Non-Fibrous Bound			97%	Binder	**Chrysotile 3%**

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651475-1
Date Received: 04/15/25
Date Analyzed: 04/19/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250409-19LS 3307973	Glazing	Homogeneous Tan Non-Fibrous Bound			97%	Binder	**Chrysotile 3%**
250409-20LS 3307974	Glazing	Homogeneous Tan Non-Fibrous Bound			97%	Binder	**Chrysotile 3%**
250409-21LS Layer A 3307975	Tar	Homogeneous Black Fibrous Bound	25%	Glass	75%	Tar	**None Detected**
Layer B 3307975	Insulation	Homogeneous Gray Fibrous Loosely Bound	80%	Cellulose	20%	Perlite	**None Detected**
250409-22LS Layer A 3307976	Tar	Homogeneous Black Fibrous Bound	25%	Glass	75%	Tar	**None Detected**
Layer B 3307976	Insulation	Homogeneous Gray Fibrous Bound	80%	Cellulose	20%	Perlite	**None Detected**
250409-23LS 3307977	Glazing W/ Dark-Gray Paint	Homogeneous Gray Non-Fibrous Bound			5% 93%	Paint Binder	**Chrysotile 2%**

LEGEND:

Non-Anth = Non-Asbestiform Anthophyllite
Non-Trem = Non-Asbestiform Tremolite
Calc Carb = Calcium Carbonate

METHOD: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

REPORTING LIMIT: 1% by calibrated visual estimation

REGULATORY LIMIT: 1%

Due to the limitations of the EPA 600 / R93 / 116 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. Estimated measurement of uncertainty is available on request.

Eurofins Built Environment Testing East, LLC makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins Built Environment Testing East, LLC. Samples were received in acceptable condition unless otherwise noted. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Information provided by customer includes customer sample ID and sample description.

Elena Ivanova
Analyst

DATA QA:

Raeana Allen
4/21/2025

APPROVED BY:

Dana Till,
QA Manager

eurofins | Built Environment Testing

RES Job #: 651475

SUBMITTED BY		INVOICE TO		CONTACT INFORMATION	SERIES
Company:	Slade Land USE Environmental and Transportat ...	Company:	Slade Land USE Environmental and Transportat ...	Contact:	-1 PLM Standard
Address:	1500 1st Avenue North, Unit 54	Address:	1500 1st Avenue North, Unit 54	Phone:	
				Fax:	
	Birmingham, AL 35203		Birmingham, AL 35203	Cell:	
Project Number and/or P.O. #:	None Given	Project Zip Code:		**Final Data Deliverable Email Address:**	
Project Description/Location:	Misc. PLM Asbestos Sampling			slade@sladellc.com (+ 1 ADDNL. CONTACTS)	

ASBESTOS LABORATORY

PLM / PCM / TEM DTL RUSH PRIORITY STANDARD

CHEMISTRY LABORATORY

Dust RUSH PRIORITY STANDARD

Metals RUSH PRIORITY STANDARD *PRIOR NOTICE REQUIRED FOR SAME DAY TAT

Organics* SAME DAY RUSH PRIORITY STANDARD

MICROBIOLOGY LABORATORY

Viable Analysis** PRIORITY STANDARD **TAT DEPENDENT ON SPEED OF MICROBIAL GROWTH

Medical Device Analysis RUSH STANDARD

Mold Analysis RUSH PRIORITY STANDARD

****Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.****

Special Instructions:

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Food = F
Paint = P	Soil = S
Surface = SU	Swab = SW
Tape = T	Wipe = W
Drinking Water = DW	
Waste Water = WW	
ASTM E1792 approved wipe media only	

Client Sample ID Number (Sample ID's must be unique)	REQUESTED ANALYSIS: ASBESTOS — PLM - PLM Short Report (EPA/600/R-93/116)	TEM	PCM	CHEMISTRY — DUST	METALS	ORGANICS	MICROBIOLOGY — VIABLES	MEDICAL	MOLD	ICO	Sample Volume (L) / Area	Sample Temperature (°C)	Length(or Aliquots) x Width(or Area/Aliquot)	Matrix Code	# of Containers	Date Collected mm/dd/yy	Time Collected hh:mm	Laboratory Analysis Instructions
1 250409-1LS	X													B				
2 250409-2LS	X													B				
3 250409-3LS	X													B				
4 250409-4LS	X													B				
5 250409-5LS	X													B				
6 250409-6LS	X													B				
7 250409-7LS	X													B				
8 250409-8LS	X													B				
9 250409-9LS	X													B				
10 250409-10LS	X													B				
11 250409-11LS	X													B				
12 250409-12LS	X													B				
13 250409-13LS	X													B				

Eurofins Built Environment Testing East, LLC establishes a unique Lab Sample ID, for each sample, by preceding each unique Client Sample ID with the laboratory RES Job Number.

Eurofins Built Environment Testing East, LLC will analyze incoming samples based on information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing, client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall consitute an analytical services agreement with payment terms of NET 30 days. Failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By:		Date/Time: 04/15/2025 16:26:00	Sample Condition: Acceptable
Received By:	Carlos Romero	Date/Time: 04/15/2025 16:26:00	Carrier: Fed-Ex

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RES Job #: **651475**

Submitted By: **Slade Land USE Environmental and Transportation Planning**

		REQUESTED ANALYSIS										VALID MATRIX CODES							LAB NOTES
												Air = A			Bulk = B				
												Dust = D			Food = F				
												Paint = P			Soil = S				
												Surface = SU			Swab = SW				
												Tape = T			Wipe = W				
												Drinking Water = DW							
												Waste Water = WW							
												ASTM E1792 approved wipe media only							
		PLM - PLM Short Report (EPA/600/R-93/116)	TEM	PCM	DUST	METALS	ORGANICS	VIABLES	MEDICAL	MOLD	ICO	Sample Volume (L) / Area	Sample Temperature (°C)	Length(or Aliquots) x Width(or Area/Aliquot)	Matrix Code	# of Containers	Date Collected mm/dd/yy	Time Collected hh:mm	Laboratory Analysis Instructions
	Client Sample ID Number (Sample ID's must be unique)	ASBESTOS			CHEMISTRY			MICROBIOLOGY			ICO								
14	250409-14LS	X													B				
15	250409-15LS	X													B				
16	250409-16LS	X													B				
17	250409-17LS	X													B				
18	250409-18LS	X													B				
19	250409-19LS	X													B				
20	250409-20LS	X													B				
21	250409-21LS	X													B				
22	250409-22LS	X													B				
23	250409-23LS	X													B				

23

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CHAIN OF CUSTODY

CEI

730 SE Maynard Road Cary NC 27511
Tel: 866-481-1412 Fax: 919-481-1442

LAB USE ONLY:
CEI Lab Code: 651475
CEI Lab I.D. Range:

COMPANY INFORMATION	PROJECT INFORMATION
CEI CLIENT #:	Job Contact:
Company: Slade land use	Email / Tel:
Address: 1500 First Ave North	Project Name:
Unit 54 Birmingham AL	Project ID#
Email: LSlade@SladeLLC.com	PO #
Tel: 2054134685 Fax:	STATE SAMPLES COLLECTED IN:

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

ASBESTOS	METHOD	TURN AROUND TIME					
		4 HR	8 HR	1 DAY	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	☐	☐	☐	☐	☐	☑
PLM POINT COUNT (400)	EPA 600	☐	☐	☐	☐	☐	☐
PLM POINT COUNT (1000)	EPA 600	☐	☐	☐	☐	☐	☐
PLM GRAV w POINT COUNT	EPA 600		☐	☐	☐	☐	☐
PLM BULK	CARB 435		☐	☐	☐	☐	☐
PCM AIR	NIOSH 7400	☐	☐	☐	☐	☐	☐
TEM AIR	EPA AHERA	☐	☐	☐	☐	☐	☐
TEM AIR	NIOSH 7402	☐	☐	☐	☐	☐	☐
TEM AIR (PCME)	ISO 10312	☐	☐	☐	☐	☐	☐
TEM AIR	ASTM 6281-15	☐	☐	☐	☐	☐	☐
TEM BULK	CHATFIELD		☐	☐	☐	☐	☐
TEM DUST WIPE	ASTM D6480-05 (2010)	☐	☐	☐	☐	☐	☐
TEM DUST MICROVAC	ASTM D5755-09 (2014)	☐	☐	☐	☐	☐	☐
TEM SOIL	ASTM D7521-16			☐	☐	☐	☐
TEM VERMICULITE	CINCINNATI METHOD			☐	☐	☐	☐
TEM QUALITTATIVE	IN-HOUSE METHOD		☐	☐	☐	☐	☐
OTHER		☐	☐	☐	☐	☐	☐

REMARKS / SPECIAL INSTRUCTIONS:

☑ Accept Samples
☐ Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
L Trace Slade		[signature]	4-14-25 10:00

Samples will be disposed of 30 days after analysis

April 9, 2025

4-9-25. Kaiser - bldg 201

Building_____– ACM Sample Inventory

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250409-1LS	9"x9" BLACK MASTIC	SOUTH EAST ROOM				
-2LS	9"x9" Grey F.T.	" "				
-3LS	1'x1' WALL CT in computer Rm	" "				
-4LS	" " "	" "				
-5LS	BROWN CB MASTIC in Computer Rm	" "				
-6LS	" " " "	" "				
-7LS	BROWN CB MASTIC COMP TAPE STORAGE Rm	" "				
-8LS	" " " "	" "				
9LS	9"x9" FT COMP TAPE STORAGE	" "				
10LS	" " "					
11LS	White material in door FRAME @ computer TAPE	"				
12LS	" " "					
13LS	W/B/JC @ COLUMN wall to computer TAPE	SE				
14LS	W/B outside computer tape RM	SE CORNER				
15LS	EXPANSION CAULK between 2 CONC SECTIONS	NE CENTER		BLACK		
16LS	BLK CAULK @ roll up DOOR	SW				
17LS	" " "	SW				
18LS	CAULK @ BASE of COLUMN SW STAIRWELL	SW STAIRWELL				
19LS	CAULK between STAIR and WALL	SW STAIRWELL				
20LS	" "	SW STAIRWELL NEAR HATCH				
21LS	ROOF - MAIN field	ROOF - SW 3' from SOUTH WALL NEAR HATCH				
22LS	ROOF - MAIN field 3' from METAL COVER	SW - ROOF				
23LS	CAULK ON WALL	SW - 20' from roll up door				
--	**Electrical Wire**	--	**ASSUMED**	**Contractor to Determine**	**G**	**NF2**

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Sto

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

ENVIRONMENTAL CONSULTING · GENERAL CONTRACTING

April 10, 2025
ACM Sample Inventory 1943 50th Street North, Birmingham, Alabama 35212

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250410-LS1	TSI on Pipe T Connection	Mech Room	Chrysotile 15%	14 LF	G	RACM-CAT II
250410-LS2	Caulk on Pipe at HVAC	Mech Room	Chrysotile 3%	20 LF	G	RACM-CAT II
250410-LS3	TSI, Pipe Valve Edge near Ceiling	Mech Room	Chrysotile 20%	120 LF	G	RACM-CAT II
250410-LS4	TSI On Valve Edge near Ext. Door	Mech Room	Chrysotile 30%	NOTED ABOVE	G	RACM-CAT II
250410-LS5	TSI, 6" Pipe Elbow	Mech Room	Chrysotile 10%	NOTED ABOVE	G	RACM-CAT II
250410-LS6	Grey Caulking on Chiller Pipe	Mech Room	Chrysotile 2%	30 LF	G	RACM-CAT II
250410-LS7	TSI, 6' Pipe Elbow to Chiller	Mech Room	Chrysotile 20%	NOTED ABOVE	G	RACM-CAT II
250410-LS8	Grey Caulk on Chiller	Mech Room	Chrysotile 3%	10 LF	G	RACM-CAT II
250410-LS9	Grey Caulk on Chiller	Mech Room	Chrysotile 3%	NOTED ABOVE	G	RACM-CAT II
250410-LS10	Caulk On Pipe at HVAC	Mech Room	Chrysotile 2%	NOTED ABOVE	G	RACM-CAT II
250410-LS11	TSI At Pipe T Connection HVAC	Mech Rom	Chrysotile 20%	NOTED ABOVE	G	RACM-CAT II
250410-LS12	White Layer Inside Canvas	Mech Room	NONE DETECTED			
250410-LS13	White Layer Inside Canvas	Mech Room	NONE DETECTED			
250410-LS 14	Flashing	Roof	Chrysotile 3%	2000 LF	G	RACM-CAT II
250410-LS15	Flashing	Roof	NONE DETECTED			
250410-LS16	Flashing	Roof	Silver Paint – NONE DECTECTED Flashing – Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250410-LS17	Flashing	Roof	Silver Paint - Chrysotile <1% Flashing - NONE DETECTED	3500 SF		
250410-LS18	Flashing	Roof	Chrysotile 8%	NOTED ABOVE	G	RACM-CAT II
250410-LS19	Parapet Wall Mastic	Roof	Tar Mastic - Chrysotile 3% Silver Paint -Chrysotile 2%	3500 SF	D	RACM-CAT II
250410-LS20	Parapet Wall Mastic	Roof	Mastic - Chrysotile 3%	NOTED ABOVE	G	RACM-CAT II
250410-LS21	Parapet Wall Mastic	Roof	Mastic - Chrysotile 8%	NOTED ABOVE	G	RACM-CAT II
250410-LS22	Parapet Wall Mastic	Roof	Mastic - Chrysotile 2%	NOTED ABOVE	G	RACM-CAT II
250410-LS23	Parapet Wall Mastic	Roof	Mastic-Chrysotile 2%	NOTED ABOVE	G	RACM-CAT II

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Stop

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

April 10, 2025
ACM Sample Inventory 1943 50th Street North, Birmingham, Alabama 35212

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250410-LS24	Parapet Wall Caulking and Foam	Roof	NONE DETECTED			
250410-LS25	Parapet Wall Caulking/Foam	Roof	NONE DETECTED			
250410-LS26	Parapet Wall Caulking	Roof	NONE DETECTED			
250410-LS27	Parapet Wall Caulking	Roof	NONE DETECTED			
250410-LS28	Parapet Wall Caulking/Foam	Roof	NONE DETECTED			
250410-LS29	Exhaust Hood Cap Flashing	Roof	NONE DETECTED			
250410-LS30	Exhaust Hood Cap Flashing/Silver Paint	Roof	Flashing -NONE DETECTED Silver Paint – Chrysotile <1%	NOTED ABOVE	G	RACM-CAT II
250410-LS31	Exhaust Hood Cap Flashing and Silver Paint	Roof	NONE DETECTED			
250410-LS32	Exhaust Hood Cap Flashing	Roof	Flashing and Tar - NONE DETECTED Caulk - Chrysotile 2%	500 LF	G	RACM-CAT II
250410-LS33	Exhaust Hood Cap Flashing	Roof	Flashing - Chrysotile 8%	1000 LF	G	RACM-CAT II
250410-LS34	Exhaust Hood Cap Flashing/Silver Paint	Roof	Silver Paint -NONE DETECTED Flashing - Chrysotile 5%	NOTED ABOVE	G	RACM-CAT II
250410-LS35	Exhaust Hood Cap Flashing/Silver Paint	Roof	Silver Paint-Chrysotile <1% Flashing - NONE DETECTED	1000 LF	G	RACM-CAT II
250410-LS36	Exhaust Hood Cap Flashing/Silver Paint	Roof	Silver Paint-Chrysotile <1% Flashing - NONE DETECTED	NOTED ABOVE	G	RACM-CAT II
250410-LS37	Exhaust Hood Cap Flashing	Roof	NONE DETECTED			
250410-LS38	Exhaust Hood Cap Flashing	Roof	NONE DETECTED			
250410-LS39	Main Field	Roof	NONE DETECTED			
250410-LS40	Main Field and Tar	Roof	NONE DETECTED			
250410-LS41	Main Field/Tar/Insulation	Roof	NONE DETECTED			
250410-LS42	Main Field and Tar	Roof	NONE DETECTED			
250410-LS43	Main Field and Tar	Roof	NONE DETECTED			
250410-LS44	Main Field and Tar	Roof	NONE DETECTED			
250410-LS45	Main Field and Tar	Roof	NONE DETECTED			
250410-LS46	Main Field/Tar/Insulation	Roof	NONE DETECTED			

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April 10, 2025
ACM Sample Inventory 1943 50th Street North, Birmingham, Alabama 35212

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250410-LS47	Main Field and Tar	Roof	NONE DETECTED			
250410-LS48	Main Field and Tar	Roof	NONE DETECTED			
250410-LS49	TSI Pipe 1' Elbow	SE Center	Amosite 2%	55 LF	G	RACM-CAT II
250410-LS50	TSI Pipe ½ Columns	SE Center	Amosite 2%	NOTED ABOVE	G	RACM-CAT II
250410-LS51	Damaged TSI Pipe Elbow	NE Center Behind Bathroom	Chrysotile 20%	NOTED ABOVE	SD	RACM-CAT I
250410-LS52	TSI Debris on Ductwork	NE Center Behind Bathroom	Chrysotile 30%	3 SF	SD	RACM-CAT I
250410-LS53	Black Mastic on Pipe	South Center	Mastic -Chrysotile 7%	62 LF	G	RACM-CAT II
250410-LS54	Black Mastic on Pipe	South Center	Mastic - Chrysotile 7%	NOTED ABOVE	G	RACM-CAT II
250410-LS55	Wall Board	South Center	NONE DETECTED			
250410-LS56	Wall Board	South Center	NONE DETECTED			
250410-LS57	Wall Board	South Center	NONE DETECTED			
250410-LS58	Wall Board/Joint Compound (J C)	South Center	NONE DETECTED			
250410-LS59	Wall Board	South Center	NONE DETECTED			
250410-LS60	Wall Board	South Center	NONE DETECTED			
250410-LS61	Wall Board	South Center	NONE DETECTED			
250410-LS62	Wall Board	South Center	NONE DETECTED			
250410-LS63	Wall Board	South Center	NONE DETECTED			
250410-LS64	Wall Board	South Center	NONE DETECTED			
250410-LS65	Wall Board	South Center	NONE DETECTED			
250410-LS66	Wall Board	South Center	NONE DETECTED			
250410-LS67	Wall Board	South Center	NONE DETECTED			
250410-LS68	Wall Board	South Center	NONE DETECTED			
250410-LS69	Wall board/Joint Compound	South Center	NONE DETECTED			

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April 10, 2025
ACM Sample Inventory 1943 50th Street North, Birmingham, Alabama 35212

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250410-LS70	Wall board	South Center	NONE DETECTED			
250410-LS71	Wall board	South Center	NONE DETECTED			
250410-LS72	Wall board	South Center	NONE DETECTED			
250410-LS73	Wall board	South Center	NONE DETECTED			
250410-LS74	Wall board	South Center	NONE DETECTED			
250410-LS75	J C	South Center	NONE DETECTED			
250410-LS76	Wall board J C	South Center	NONE DETECTED			
250410-LS77	Wall board	South Center	NONE DETECTED			
250410- LS 78	J C	South Center	NONE DETECTED			
250410- LS79	J C	South Center	NONE DETECTED			
250410-LS80	J C	South Center	NONE DETECTED			
250410-LS81	J C	South Center	NONE DETECTED			
250410-LS82	J C	South Center	NONE DETECTED			
250410-LS83	J C	South Center	NONE DETECTED			
250410-LS84	J C	South Center	NONE DETECTED			
250410-LS85	EXT door caulk	Building Exterior	NONE DETECTED			
250410-LS86	EXT door caulk	Building Exterior	NONE DETECTED			
250410-LS87	EXT door caulk	Building Exterior	NONE DETECTED			
250410-LS88	EXT door caulk	Building Exterior	NONE DETECTED			
250410-LS89	EXT door caulk	Building Exterior	NONE DETECTED			
250410-LS90	EXT door caulk	Building Exterior	NONE DETECTED			
25010-LS91	Black Pipe sleeve mastic	Mech room SE	NONE DETECTED			
250410-LS92	Black Pipe Sleeve Mastic	Mech room SE	NONE DETECTED			

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G = Good
D = Damaged
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F = Friable ACM
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April 10, 2025
ACM Sample Inventory 1943 50th Street North, Birmingham, Alabama 35212

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250410-LS93	White Wall Caulking	Mech Room SE	NONE DETECTED			
250410-LS94	White Wall Caulking	Mech Room SE	NONE DETECTED			
250410-LS95	White Wall Caulking	Mech Room SE	NONE DETECTED			
250410-LS96	White Wall Caulking	Mech Room SE	NONE DETECTED			
250410-LS97	White Wall Caulking	Mech Room SE	NONE DETECTED			

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April 21, 2025

Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203

CLIENT PROJECT: Misc. PLM Asbestos Sampling
LAB CODE: 651472-1

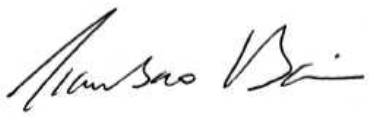
Dear Customer,

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on April 15, 2025. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials and EPA 40 CFR Appendix E to Subpart E of Part 763: Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% by calibrated visual estimate.

Thank you for your business and we look forward to continuing good relations.

Kind Regards,



Tianbao Bai, Ph.D., CIH
Laboratory Director

NVLAP 101768-0

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ASBESTOS ANALYTICAL REPORT
By: Polarized Light Microscopy

Prepared for

Slade Land USE Environmental and Transportation Planning

CLIENT PROJECT:	Misc. PLM Asbestos Sampling
LAB CODE:	651472-1
TEST METHOD:	EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763
REPORT DATE:	04/21/25

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Asbestos Report Summary
By: Polarized Light Microscopy

Project: Misc. PLM Asbestos Sampling **Lab Code:** 651472-1

Method: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

Client ID	Lab ID	Layer	Sample Description	Asbestos %
250410-1LS	3307852		Gray thermal systems insulation (tsi)	Chrysotile 15%
250410-2LS	3307853		Gray/beige caulk	Chrysotile 3%
250410-3LS	3307854		Gray thermal systems insulation (tsi)	Chrysotile 20%
250410-4LS	3307855		Gray thermal systems insulation (tsi)	Chrysotile 30%
250410-5LS	3307856		Gray thermal systems insulation (tsi)	Chrysotile 10%
250410-6LS	3307857		Gray/silver caulk/paint	Chrysotile 2%
250410-7LS	3307858		Gray thermal systems insulation (tsi)	Chrysotile 20%
250410-8LS	3307859		White/silver/gray caulk/paint	Chrysotile 3%
250410-9LS	3307860		Gray/silver caulk/paint	Chrysotile 3%
250410-10LS	3307861		Off-white/gray caulk	Chrysotile 2%
250410-11LS	3307862		Gray thermal systems insulation (tsi)	Chrysotile 20%
250410-12LS	3307863		White fibrous woven material	None Detected
250410-13LS	3307864		White fibrous woven material	None Detected
250410-14LS	3307865	Layer A	Black flashing material	None Detected
		Layer B	Black flashing material	Chrysotile 3%
250410-15LS	3307866	Layer A	Silver paint	None Detected
		Layer B	Black flashing material	None Detected
		Layer C	Black flashing material	None Detected
250410-16LS	3307867	Layer A	Silver paint	None Detected
		Layer B	Black flashing material	None Detected
		Layer C	Black flashing material	Chrysotile 5%
250410-17LS	3307868	Layer A	Silver paint	Chrysotile <1%
		Layer B	Black flashing	None Detected

Asbestos Report Summary
By: Polarized Light Microscopy

Project: Misc. PLM Asbestos Sampling **Lab Code:** 651472-1

Method: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

Client ID	Lab ID	Layer	Sample Description	Asbestos %
250410-18LS	3307869		Black flashing	Chrysotile 8%
250410-19LS	3307870	Layer A	Silver paint	Chrysotile 2%
		Layer B	Black tar mastic	Chrysotile 3%
250410-20LS	3307871		Black tar mastic	Chrysotile 3%
250410-21LS	3307872		Black tar mastic	Chrysotile 8%
250410-22LS	3307873		Black tar mastic	Chrysotile 2%
250410-23LS	3307874		Black tar mastic	Chrysotile 5%
250410-24LS	3307875	Layer A	Gray caulk	None Detected
		Layer B	Cream foam	None Detected
250410-25LS	3307876	Layer A	Gray caulk	None Detected
		Layer B	Cream foam	None Detected
250410-26LS	3307877		Gray caulk	None Detected
250410-26LS (2)	3320531		Off-white caulk	None Detected
250410-27LS	3307878		Gray caulk	None Detected
250410-28LS	3307879	Layer A	Gray caulk	None Detected
		Layer B	Cream foam	None Detected
250410-29LS	3307880		Black flashing	None Detected
250410-30LS	3307881	Layer A	Silver paint	Chrysotile <1%
		Layer B	Black flashing	None Detected
250410-31LS	3307882	Layer A	Silver paint	None Detected
		Layer B	Black flashing	None Detected
250410-32LS	3307883	Layer A	White flashing caulk	None Detected
		Layer B	Off-white flashing caulk	Chrysotile 2%
		Layer C	Black flashing tar	None Detected
250410-33LS	3307884		Black flashing	Chrysotile 8%

Asbestos Report Summary
By: Polarized Light Microscopy

Project: Misc. PLM Asbestos Sampling **Lab Code:** 651472-1

Method: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

Client ID	Lab ID	Layer	Sample Description	Asbestos %
250410-34LS	3307885	Layer A	Silver paint	None Detected
		Layer B	Black flashing	Chrysotile 5%
250410-35LS	3307886	Layer A	Silver paint	Chrysotile <1%
		Layer B	Black flashing	None Detected
250410-36LS	3307887	Layer A	Silver paint	Chrysotile <1%
		Layer B	Black flashing	None Detected
250410-37LS	3307888		Black flashing	None Detected
250410-38LS	3307889		Black flashing	None Detected
250410-39LS	3307890		Black built-up roofing felt	None Detected
250410-40LS	3307891	Layer A	Black built-up roofing felt	None Detected
		Layer B	Black tar	None Detected
250410-41LS	3307892	Layer A	Black built-up roofing felt	None Detected
		Layer B	Black tar	None Detected
		Layer C	Brown insulation	None Detected
250410-42LS	3307893	Layer A	Black built-up roofing felt	None Detected
		Layer B	Black tar	None Detected
250410-43LS	3307894	Layer A	Black built-up roofing felt	None Detected
		Layer B	Black tar	None Detected
250410-44LS	3307895	Layer A	Black built-up roofing felt	None Detected
		Layer B	Black tar	None Detected
250410-45LS	3307896	Layer A	Black built-up roofing felt	None Detected
		Layer B	Black tar	None Detected
250410-46LS	3307897	Layer A	Black built-up roofing felt	None Detected
		Layer B	Black tar	None Detected
		Layer C	Brown insulation	None Detected

Asbestos Report Summary
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Client ID	Lab ID	Layer	Sample Description	Asbestos %
250410-47LS	3307898	Layer A	Black built-up roofing felt	None Detected
		Layer B	Black tar	None Detected
250410-48LS	3307899	Layer A	Black built-up roofing felt	None Detected
		Layer B	Black tar	None Detected
250410-49LS	3307900		Gray thermal systems insulation (tsi)	Amosite 2%
250410-50LS	3307901		Gray thermal systems insulation (tsi)	Amosite 2%
250410-51LS	3307902		Gray thermal systems insulation (tsi)	Chrysotile 20%
250410-52LS	3307903		Gray thermal systems insulation (tsi)	Chrysotile 30%
250410-53LS	3307904		Black mastic	Chrysotile 7%
250410-54LS	3307905		Black mastic	Chrysotile 7%
250410-55LS	3307906		White/brown wall board	None Detected
250410-56LS	3307907		White/brown wall board	None Detected
250410-57LS	3307908		White wall board	None Detected
250410-58LS	3307909	Layer A	White joint compound	None Detected
		Layer B	White/brown wall board	None Detected
		Composite		**0%**
250410-59LS	3307910		White/brown wall board	None Detected
250410-60LS	3307911		White wall board	None Detected
250410-61LS	3307912		White/brown wall board	None Detected
250410-62LS	3307913		White/brown wall board	None Detected
250410-63LS	3307914		White/brown wall board	None Detected
250410-64LS	3307915		White/brown wall board	None Detected
250410-65LS	3307916		White/brown wall board	None Detected
250410-66LS	3307917		White/brown wall board	None Detected

Asbestos Report Summary
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Project: Misc. PLM Asbestos Sampling **Lab Code:** 651472-1

Method: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

Client ID	Lab ID	Layer	Sample Description	Asbestos %
250410-67LS	3307918		White/brown wall board	None Detected
250410-68LS	3307919		White/brown wall board	None Detected
250410-69LS	3307920	Layer A	White joint compound	None Detected
		Layer B	White/brown wall board	None Detected
		Composite		**0%**
250410-70LS	3307921		White wall board	None Detected
250410-71LS	3307922		White/brown wall board	None Detected
250410-72LS	3307923		White/brown wall board	None Detected
250410-73LS	3307924		White/brown wall board	None Detected
250410-74LS	3307925		White/brown wall board	None Detected
250410-75LS	3307926		White joint compound	None Detected
250410-76LS	3307927	Layer A	Gray/white joint compound	None Detected
		Layer B	White/brown wall board	None Detected
		Composite		**0%**
250410-77LS	3307928		White/brown wall board	None Detected
250410-78LS	3307929		White joint compound	None Detected
250410-79LS	3307930		White joint compound	None Detected
250410-80LS	3307931		White joint compound	None Detected
250410-81LS	3307932		White joint compound	None Detected
250410-82LS	3307933		White joint compound	None Detected
250410-83LS	3307934		White joint compound	None Detected
250410-84LS	3307935		White joint compound	None Detected
250410-85LS	3307936		Blue/gray caulk	None Detected
250410-86LS	3307937		Gray caulk	None Detected
250410-87LS	3307938		Blue/gray caulk	None Detected
250410-88LS	3307939		Gray granular cementitious material	None Detected

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Client ID	Lab ID	Layer	Sample Description	Asbestos %
250410-89LS	3307940		Gray granular cementitious material	None Detected
250410-90LS	3307941		Gray granular cementitious material	None Detected
250410-91LS	3307942	Layer A	Dark-gray caulk/mastic material	None Detected
		Layer B	Light-gray granular cementitious material	None Detected
250410-92LS	3307943	Layer A	Dark-gray caulk/mastic material	None Detected
		Layer B	Light-gray granular cementitious material	None Detected
250410-93LS	3307944		White mud	None Detected
250410-94LS	3307945		Gray/white mud	None Detected
250410-95LS	3307946		White mud	None Detected
250410-96LS	3307947		White mud	None Detected
250410-97LS	3307948		White mud	None Detected

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651472-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		NON-ASBESTOS COMPONENTS Non-Fibrous		ASBESTOS %
250410-1LS 3307852	Thermal Systems Insulation (Tsi)	Homogeneous Gray Fibrous Loosely Bound	10%	Glass	75%	Binder	**Chrysotile 15%**
250410-2LS 3307853	Caulk	Heterogeneous Gray/beige Non-Fibrous Bound	2%	Talc	95%	Binder	**Chrysotile 3%**
250410-3LS 3307854	Thermal Systems Insulation (Tsi)	Homogeneous Gray Fibrous Loosely Bound	10%	Glass	70%	Binder	**Chrysotile 20%**
250410-4LS 3307855	Thermal Systems Insulation (Tsi)	Homogeneous Gray Fibrous Loosely Bound	10%	Glass	60%	Binder	**Chrysotile 30%**
250410-5LS 3307856	Thermal Systems Insulation (Tsi)	Homogeneous Gray Fibrous Loosely Bound	20%	Glass	70%	Binder	**Chrysotile 10%**
250410-6LS 3307857	Caulk/Paint	Heterogeneous Gray/silver Non-Fibrous Bound			20% 78%	Paint Caulk	**Chrysotile 2%**
Unable to separate gray caulk and silver paint.							
250410-7LS 3307858	Thermal Systems Insulation (Tsi)	Homogeneous Gray Fibrous Loosely Bound	10%	Glass	70%	Binder	**Chrysotile 20%**

ASBESTOS BULK ANALYSIS
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Lab Code: 651472-1
Date Received: 04/15/25
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Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250410-8LS 3307859	Caulk/Paint	Heterogeneous White/silver/gray Non-Fibrous Bound			30% 67%	Paint Caulk	Chrysotile 3%
Unable to separate gray caulk and silver paint.							
250410-9LS 3307860	Caulk/Paint	Heterogeneous Gray/silver Non-Fibrous Bound	<1%	Cellulose	30% 67%	Paint Caulk	Chrysotile 3%
Unable to separate gray caulk and silver paint.							
250410-10LS 3307861	Caulk	Heterogeneous Off-white/gray Non-Fibrous Bound	<1% 3%	Cellulose Talc	95%	Caulk	Chrysotile 2%
250410-11LS 3307862	Thermal Systems Insulation (Tsi)	Homogeneous Gray Fibrous Loosely Bound	10%	Glass	70%	Binder	Chrysotile 20%
250410-12LS 3307863	Fibrous Woven Material	Homogeneous White Fibrous Loosely Bound	90%	Cellulose	10%	Binder	None Detected
250410-13LS 3307864	Fibrous Woven Material	Homogeneous White Fibrous Loosely Bound	90%	Cellulose	10%	Binder	None Detected

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

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1500 1st Avenue North, Unit 54
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Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250410-14LS	Flashing Material	Heterogeneous	25%	Glass	50%	Tar	**None Detected**
Layer A		Black	25%	Synthetics			
3307865		Fibrous					
		Bound					
Layer B	Flashing Material	Heterogeneous			97%	Tar	**Chrysotile 3%**
3307865		Black					
		Non-Fibrous					
		Bound					
Insufficient silver paint present.							
250410-15LS	Paint	Heterogeneous	<1%	Wollastonite	20%	Tar	**None Detected**
Layer A		Silver			80%	Paint	
3307866		Non-Fibrous					
		Bound					
Layer B	Flashing Material	Heterogeneous	25%	Glass	50%	Tar	**None Detected**
3307866		Black	25%	Synthetics			
		Fibrous					
		Bound					
Layer C	Flashing Material	Heterogeneous			100%	Tar	**None Detected**
3307866		Black					
		Non-Fibrous					
		Bound					

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651472-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250410-16LS	Paint	Heterogeneous	<1%	Wollastonite	20%	Tar	**None Detected**
Layer A		Silver			80%	Paint	
3307867		Non-Fibrous Bound					
Layer B	Flashing Material	Heterogeneous	25%	Glass	50%	Tar	**None Detected**
3307867		Black	25%	Synthetics			
		Fibrous Bound					
Layer C	Flashing Material	Heterogeneous			95%	Tar	**Chrysotile 5%**
3307867		Black Non-Fibrous Bound					
250410-17LS	Paint	Heterogeneous			80%	Paint	**Chrysotile <1%**
Layer A		Silver			20%	Tar	
3307868		Non-Fibrous Bound					
Layer B	Flashing	Heterogeneous	2%	Cellulose	98%	Tar	**None Detected**
3307868		Black Non-Fibrous Bound					
250410-18LS	Flashing	Heterogeneous	2%	Cellulose	90%	Tar	**Chrysotile 8%**
3307869		Black Non-Fibrous Bound					

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ASBESTOS BULK ANALYSIS
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Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651472-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250410-19LS	Paint	Heterogeneous	<1%	Wollastonite	20%	Tar	**Chrysotile 2%**
Layer A		Silver			78%	Paint	
3307870		Non-Fibrous					
		Bound					
Layer B	Tar Mastic	Heterogeneous			97%	Tar	**Chrysotile 3%**
3307870		Black					
		Non-Fibrous					
		Bound					
250410-20LS	Tar Mastic	Heterogeneous			97%	Tar	**Chrysotile 3%**
3307871		Black					
		Non-Fibrous					
		Bound					
250410-21LS	Tar Mastic	Heterogeneous			92%	Tar	**Chrysotile 8%**
3307872		Black					
		Non-Fibrous					
		Bound					
250410-22LS	Tar Mastic	Heterogeneous			98%	Tar	**Chrysotile 2%**
3307873		Black					
		Non-Fibrous					
		Bound					
250410-23LS	Tar Mastic	Heterogeneous			95%	Tar	**Chrysotile 5%**
3307874		Black					
		Non-Fibrous					
		Bound					

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

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Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651472-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous			Non-Fibrous		ASBESTOS %
250410-24LS Layer A 3307875	Caulk	Homogeneous Gray Non-Fibrous Bound				100%	Caulk	**None Detected**
Layer B 3307875	Foam	Homogeneous Cream Non-Fibrous Bound				100%	Foam	**None Detected**
250410-25LS Layer A 3307876	Caulk	Homogeneous Gray Non-Fibrous Bound				100%	Caulk	**None Detected**
Layer B 3307876	Foam	Homogeneous Cream Non-Fibrous Bound				100%	Foam	**None Detected**
250410-26LS 3307877	Caulk	Homogeneous Gray Non-Fibrous Bound				100%	Caulk	**None Detected**
250410-26LS (2) 3320531	Caulk	Heterogeneous Off-white Non-Fibrous Bound	2% 2%	Cellulose Talc		2% 94%	Paint Caulk	**None Detected**
250410-27LS 3307878	Caulk	Homogeneous Gray Non-Fibrous Bound				100%	Caulk	**None Detected**

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651472-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		NON-ASBESTOS COMPONENTS Non-Fibrous		ASBESTOS %
250410-28LS Layer A 3307879	Caulk	Homogeneous Gray Non-Fibrous Bound			100%	Caulk	**None Detected**
Layer B 3307879	Foam	Homogeneous Cream Non-Fibrous Bound			100%	Foam	**None Detected**
250410-29LS 3307880	Flashing	Heterogeneous Black Fibrous Bound	30% <1%	Synthetics Wollastonite	70%	Tar	**None Detected**
Insufficient silver paint present.							
250410-30LS Layer A 3307881	Paint	Heterogeneous Silver Non-Fibrous Bound	<1%	Wollastonite	20% 80%	Tar Paint	**Chrysotile <1%**
Layer B 3307881	Flashing	Heterogeneous Black Fibrous Bound	30%	Synthetics	70%	Tar	**None Detected**
250410-31LS Layer A 3307882	Paint	Heterogeneous Silver Non-Fibrous Bound	2%	Wollastonite	20% 78%	Tar Paint	**None Detected**
Layer B 3307882	Flashing	Heterogeneous Black Fibrous Bound	30%	Synthetics	70%	Tar	**None Detected**

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651472-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
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Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250410-32LS	Flashing Caulk	Homogeneous			100%	Caulk	**None Detected**
Layer A		White					
3307883		Non-Fibrous					
		Bound					
Layer B	Flashing Caulk	Heterogeneous			98%	Cork	**Chrysotile 2%**
3307883		Off-white					
		Non-Fibrous					
		Bound					
Layer C	Flashing Tar	Heterogeneous			100%	Tar	**None Detected**
3307883		Black					
		Non-Fibrous					
		Bound					
250410-33LS	Flashing	Heterogeneous			92%	Tar	**Chrysotile 8%**
3307884		Black					
		Non-Fibrous					
		Bound					
250410-34LS	Paint	Heterogeneous	2%	Wollastonite	20%	Tar	**None Detected**
Layer A		Silver			78%	Paint	
3307885		Non-Fibrous					
		Bound					
Layer B	Flashing	Heterogeneous	25%	Synthetics	70%	Tar	**Chrysotile 5%**
3307885		Black					
		Fibrous					
		Bound					

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651472-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
250410-35LS Layer A 3307886	Paint	Heterogeneous Silver Non-Fibrous Bound	2%	Wollastonite	78% 20%	Paint Tar	**Chrysotile <1%**
Layer B 3307886	Flashing	Heterogeneous Black Fibrous Bound	30%	Glass	70%	Tar	**None Detected**
250410-36LS Layer A 3307887	Paint	Heterogeneous Silver Non-Fibrous Bound	2%	Wollastonite	20% 78%	Tar Paint	**Chrysotile <1%**
Layer B 3307887	Flashing	Heterogeneous Black Fibrous Bound	30%	Synthetics	70%	Tar	**None Detected**
250410-37LS 3307888	Flashing	Heterogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**
250410-38LS 3307889	Flashing	Heterogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**
250410-39LS 3307890	Built-Up Roofing Felt	Heterogeneous Black Fibrous Bound	60%	Glass	40%	Tar	**None Detected**

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651472-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250410-40LS Layer A 3307891	Built-Up Roofing Felt	Heterogeneous Black Fibrous Bound	60%	Glass	40%	Tar	**None Detected**
Layer B 3307891	Tar	Heterogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**
250410-41LS Layer A 3307892	Built-Up Roofing Felt	Heterogeneous Black Fibrous Bound	60%	Glass	40%	Tar	**None Detected**
Layer B 3307892	Tar	Homogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**
Layer C 3307892	Insulation	Homogeneous Brown Fibrous Loosely Bound	80%	Cellulose	20%	Perlite	**None Detected**
250410-42LS Layer A 3307893	Built-Up Roofing Felt	Heterogeneous Black Fibrous Bound	60%	Glass	40%	Tar	**None Detected**
Layer B 3307893	Tar	Heterogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651472-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250410-43LS Layer A 3307894	Built-Up Roofing Felt	Heterogeneous Black Fibrous Bound	60%	Glass	40%	Tar	**None Detected**
Layer B 3307894	Tar	Heterogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**
250410-44LS Layer A 3307895	Built-Up Roofing Felt	Heterogeneous Black Fibrous Bound	60%	Glass	40%	Tar	**None Detected**
Layer B 3307895	Tar	Heterogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**
250410-45LS Layer A 3307896	Built-Up Roofing Felt	Heterogeneous Black Fibrous Bound	60%	Glass	40%	Tar	**None Detected**
Layer B 3307896	Tar	Heterogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651472-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250410-46LS Layer A 3307897	Built-Up Roofing Felt	Heterogeneous Black Fibrous Bound	60%	Glass	40%	Tar	**None Detected**
Layer B 3307897	Tar	Homogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**
Layer C 3307897	Insulation	Homogeneous Brown Fibrous Loosely Bound	80%	Cellulose	20%	Perlite	**None Detected**
250410-47LS Layer A 3307898	Built-Up Roofing Felt	Heterogeneous Black Fibrous Bound	60%	Glass	40%	Tar	**None Detected**
Layer B 3307898	Tar	Heterogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**
250410-48LS Layer A 3307899	Built-Up Roofing Felt	Heterogeneous Black Fibrous Bound	60%	Glass	40%	Tar	**None Detected**
Layer B 3307899	Tar	Heterogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651472-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250410-49LS 3307900	Thermal Systems Insulation (Tsi)	Homogeneous Gray Non-Fibrous Loosely Bound	5%	Glass	93%	Binder	Amosite 2%
250410-50LS 3307901	Thermal Systems Insulation (Tsi)	Homogeneous Gray Non-Fibrous Loosely Bound	5%	Glass	93%	Binder	Amosite 2%
250410-51LS 3307902	Thermal Systems Insulation (Tsi)	Homogeneous Gray Fibrous Loosely Bound	5%	Glass	75%	Binder	Chrysotile 20%
250410-52LS 3307903	Thermal Systems Insulation (Tsi)	Homogeneous Gray Fibrous Loosely Bound	5%	Glass	65%	Binder	Chrysotile 30%
250410-53LS 3307904	Mastic	Heterogeneous Black Non-Fibrous Bound			93%	Tar	Chrysotile 7%
250410-54LS 3307905	Mastic	Heterogeneous Black Non-Fibrous Bound			93%	Tar	Chrysotile 7%
250410-55LS 3307906	Wall Board	Heterogeneous White/brown Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Misc. PLM Asbestos Sampling

Lab Code: 651472-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250410-56LS 3307907	Wall Board	Heterogeneous White/brown Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
250410-57LS 3307908	Wall Board	Homogeneous White Non-Fibrous Bound	2%	Cellulose	98%	Gypsum	None Detected
250410-58LS Layer A 3307909	Joint Compound	Heterogeneous White Non-Fibrous Bound			35% 5% 60%	Calc Carb Paint Binder	None Detected
Layer B 3307909	Wall Board	Heterogeneous White/brown Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
							Composite: 0%
250410-59LS 3307910	Wall Board	Heterogeneous White/brown Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
250410-60LS 3307911	Wall Board	Homogeneous White Non-Fibrous Bound	2%	Cellulose	98%	Gypsum	None Detected
250410-61LS 3307912	Wall Board	Heterogeneous White/brown Fibrous Bound	20% <1%	Cellulose Glass	80%	Gypsum	None Detected

ASBESTOS BULK ANALYSIS
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Lab Code: 651472-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250410-62LS 3307913	Wall Board	Homogeneous White/brown Fibrous Bound	20% <1%	Cellulose Glass	80%	Gypsum	**None Detected**
250410-63LS 3307914	Wall Board	Heterogeneous White/brown Fibrous Bound	20% <1%	Cellulose Glass	80%	Gypsum	**None Detected**
250410-64LS 3307915	Wall Board	Heterogeneous White/brown Fibrous Bound	20% <1%	Cellulose Glass	80%	Gypsum	**None Detected**
250410-65LS 3307916	Wall Board	Heterogeneous White/brown Fibrous Bound	20%	Cellulose	80% <1%	Gypsum Paint	**None Detected**
250410-66LS 3307917	Wall Board	Heterogeneous White/brown Fibrous Bound	20%	Cellulose	80%	Gypsum	**None Detected**
250410-67LS 3307918	Wall Board	Heterogeneous White/brown Fibrous Bound	20%	Cellulose	80%	Gypsum	**None Detected**
250410-68LS 3307919	Wall Board	Heterogeneous White/brown Fibrous Bound	20%	Cellulose	80%	Gypsum	**None Detected**

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

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1500 1st Avenue North, Unit 54
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Project: Misc. PLM Asbestos Sampling

Lab Code: 651472-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
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Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250410-69LS Layer A 3307920	Joint Compound	Heterogeneous White Non-Fibrous Bound			35% 5% 60%	Calc Carb Paint Binder	**None Detected**
Layer B 3307920	Wall Board	Heterogeneous White/brown Fibrous Bound	20%	Cellulose	80%	Gypsum	**None Detected**
							Composite: 0%
250410-70LS 3307921	Wall Board	Heterogeneous White Non-Fibrous Bound	2%	Cellulose	98%	Gypsum	**None Detected**
250410-71LS 3307922	Wall Board	Heterogeneous White/brown Fibrous Bound	20%	Cellulose	80%	Gypsum	**None Detected**
250410-72LS 3307923	Wall Board	Heterogeneous White/brown Fibrous Bound	20%	Cellulose	80%	Gypsum	**None Detected**
250410-73LS 3307924	Wall Board	Heterogeneous White/brown Fibrous Bound	20%	Cellulose	80%	Gypsum	**None Detected**
250410-74LS 3307925	Wall Board	Heterogeneous White/brown Fibrous Bound	20%	Cellulose	80%	Gypsum	**None Detected**

ASBESTOS BULK ANALYSIS
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Lab Code: 651472-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250410-75LS	Joint Compound	Heterogeneous			60%	Binder	**None Detected**
3307926		White			5%	Paint	
		Non-Fibrous			35%	Calc Carb	
		Bound					
Sample appears to be joint compound only. No wallboard present.							
250410-76LS	Joint Compound	Heterogeneous			60%	Binder	**None Detected**
Layer A		Gray/white			5%	Paint	
3307927		Non-Fibrous			35%	Calc Carb	
		Bound					
Layer B	Wall Board	Heterogeneous	20%	Cellulose	80%	Gypsum	**None Detected**
3307927		White/brown					
		Fibrous					
		Bound					
							Composite: 0%
250410-77LS	Wall Board	Heterogeneous	20%	Cellulose	80%	Gypsum	**None Detected**
3307928		White/brown					
		Fibrous					
		Bound					
Sample appears to be wallboard only. No joint compound present.							
250410-78LS	Joint Compound	Heterogeneous			60%	Binder	**None Detected**
3307929		White			5%	Paint	
		Non-Fibrous			35%	Calc Carb	
		Bound					
Sample appears to be joint compound only. No wallboard present.							
250410-79LS	Joint Compound	Heterogeneous			60%	Binder	**None Detected**
3307930		White			5%	Paint	
		Non-Fibrous			35%	Calc Carb	
		Bound					
Sample appears to be joint compound only. No wallboard present.							

ASBESTOS BULK ANALYSIS
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Lab Code: 651472-1
Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous	Non-Fibrous		ASBESTOS %
250410-80LS	Joint Compound	Heterogeneous		60%	Binder	**None Detected**
3307931		White		5%	Paint	
		Non-Fibrous		35%	Calc Carb	
		Bound				
Sample appears to be joint compound only. No wallboard present.						
250410-81LS	Joint Compound	Heterogeneous		60%	Binder	**None Detected**
3307932		White		5%	Paint	
		Non-Fibrous		35%	Calc Carb	
		Bound				
Sample appears to be joint compound only. No wallboard present.						
250410-82LS	Joint Compound	Heterogeneous		60%	Binder	**None Detected**
3307933		White		5%	Paint	
		Non-Fibrous		35%	Calc Carb	
		Bound				
Sample appears to be joint compound only. No wallboard present.						
250410-83LS	Joint Compound	Heterogeneous		60%	Binder	**None Detected**
3307934		White		5%	Paint	
		Non-Fibrous		35%	Calc Carb	
		Bound				
Sample appears to be joint compound only. No wallboard present.						
250410-84LS	Joint Compound	Heterogeneous		60%	Binder	**None Detected**
3307935		White		5%	Paint	
		Non-Fibrous		35%	Calc Carb	
		Bound				
Sample appears to be joint compound only. No wallboard present.						
250410-85LS	Caulk	Heterogeneous		2%	Paint	**None Detected**
3307936		Blue/gray		98%	Caulk	
		Non-Fibrous				
		Bound				

ASBESTOS BULK ANALYSIS
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Date Received: 04/15/25
Date Analyzed: 04/21/25
Date Reported: 04/21/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous	Non-Fibrous		ASBESTOS %
250410-86LS	Caulk	Heterogeneous		2%	Paint	**None Detected**
3307937		Gray		98%	Caulk	
		Non-Fibrous				
		Bound				
250410-87LS	Caulk	Heterogeneous		2%	Paint	**None Detected**
3307938		Blue/gray		98%	Caulk	
		Non-Fibrous				
		Bound				
250410-88LS	Granular	Heterogeneous		60%	Silica	**None Detected**
3307939	Cementitious	Gray		40%	Binder	
	Material	Non-Fibrous		<1%	Paint	
		Bound				
No caulking present. Sample appears to be cementitious material only.						
250410-89LS	Granular	Heterogeneous		60%	Silica	**None Detected**
3307940	Cementitious	Gray		40%	Binder	
	Material	Non-Fibrous		<1%	Paint	
		Bound				
No caulking present. Sample appears to be cementitious material only.						
250410-90LS	Granular	Heterogeneous		60%	Silica	**None Detected**
3307941	Cementitious	Gray		40%	Binder	
	Material	Non-Fibrous		<1%	Paint	
		Bound				
No caulking present. Sample appears to be cementitious material only.						

ASBESTOS BULK ANALYSIS
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Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous	Non-Fibrous		ASBESTOS %
250410-91LS	Caulk/Mastic	Homogeneous		100%	Binder	**None Detected**
Layer A	Material	Dark-gray				
3307942		Non-Fibrous				
		Tightly Bound				
Layer B	Granular	Homogeneous		60%	Silica	**None Detected**
3307942	Cementitious	Light-gray		40%	Binder	
	Material	Non-Fibrous				
		Bound				
250410-92LS	Caulk/Mastic	Homogeneous		100%	Binder	**None Detected**
Layer A	Material	Dark-gray				
3307943		Non-Fibrous				
		Tightly Bound				
Layer B	Granular	Homogeneous		60%	Silica	**None Detected**
3307943	Cementitious	Light-gray		40%	Binder	
	Material	Non-Fibrous				
		Bound				
250410-93LS	Mud	Homogeneous		65%	Binder	**None Detected**
3307944		White		35%	Calc Carb	
		Non-Fibrous				
		Bound				
Sample appears to be mud only. No caulk present.						
250410-94LS	Mud	Heterogeneous		35%	Calc Carb	**None Detected**
3307945		Gray/white		<1%	Silica	
		Non-Fibrous		2%	Paint	
		Bound		63%	Binder	
Sample appears to be mud only. No caulk present.						
250410-95LS	Mud	Homogeneous		65%	Binder	**None Detected**
3307946		White		35%	Calc Carb	
		Non-Fibrous				
		Bound				

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

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Project: Misc. PLM Asbestos Sampling

Lab Code: 651472-1
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Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous	Non-Fibrous		ASBESTOS %
250410-96LS	Mud	Homogeneous		65%	Binder	**None Detected**
3307947		White		35%	Calc Carb	
		Non-Fibrous				
		Bound				
Sample appears to be mud only. No caulk present.						
250410-97LS	Mud	Homogeneous		65%	Binder	**None Detected**
3307948		White		35%	Calc Carb	
		Non-Fibrous				
		Bound				
Sample appears to be mud only. No caulk present.						

LEGEND:

Non-Anth = Non-Asbestiform Anthophyllite
Non-Trem = Non-Asbestiform Tremolite
Calc Carb = Calcium Carbonate

METHOD: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

REPORTING LIMIT: 1% by calibrated visual estimation

REGULATORY LIMIT: 1%

Due to the limitations of the EPA 600 / R93 / 116 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. Estimated measurement of uncertainty is available on request.

Eurofins Built Environment Testing East, LLC makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins Built Environment Testing East, LLC. Samples were received in acceptable condition unless otherwise noted. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Information provided by customer includes customer sample ID and sample description.

Nicholas Moore
Analyst

DATA QA:

Scott Minyard
4/21/2025

APPROVED BY:

Tianbao Bai, Ph.D., CIH
Laboratory Director

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RES Job #: 651472

SUBMITTED BY		INVOICE TO		CONTACT INFORMATION	SERIES
Company:	Slade Land USE Environmental and Transportat ...	Company:	Slade Land USE Environmental and Transportat ...	Contact:	-1 PLM Standard
Address:	1500 1st Avenue North, Unit 54	Address:	1500 1st Avenue North, Unit 54	Phone:	
				Fax:	
	Birmingham, AL 35203		Birmingham, AL 35203	Cell:	
Project Number and/or P.O. #:	None Given	Project Zip Code:		Final Data Deliverable Email Address:	
Project Description/Location:	Misc. PLM Asbestos Sampling			lslade@sladellc.com (+ 1 ADDNL. CONTACTS)	

ASBESTOS LABORATORY

PLM / PCM / TEM DTL RUSH PRIORITY STANDARD

CHEMISTRY LABORATORY

Dust RUSH PRIORITY STANDARD

Metals RUSH PRIORITY STANDARD *PRIOR NOTICE REQUIRED FOR SAME DAY TAT

Organics* SAME DAY RUSH PRIORITY STANDARD

MICROBIOLOGY LABORATORY

Viable Analysis** PRIORITY STANDARD

**TAT DEPENDENT ON SPEED OF MICROBIAL GROWTH

Medical Device Analysis RUSH STANDARD

Mold Analysis RUSH PRIORITY STANDARD

****Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.****

Special Instructions:

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Food = F
Paint = P	Soil = S
Surface = SU	Swab = SW
Tape = T	Wipe = W
Drinking Water = DW	
Waste Water = WW	
ASTM E1792 approved wipe media only	

Client Sample ID Number (Sample ID's must be unique)	REQUESTED ANALYSIS: ASBESTOS — PLM - PLM Short Report (EPA/600/R-93/116)	TEM	PCM	CHEMISTRY — DUST	METALS	ORGANICS	MICROBIOLOGY — VIABLES	MEDICAL	MOLD	ICO	Sample Volume (L) / Area	Sample Temperature (°C)	Length(or Aliquots) x Width(or Area/Aliquot)	Matrix Code	# of Containers	Date Collected mm/dd/yy	Time Collected hh:mm	Laboratory Analysis Instructions
1 250410-1LS	X													B				
2 250410-2LS	X													B				
3 250410-3LS	X													B				
4 250410-4LS	X													B				
5 250410-5LS	X													B				
6 250410-6LS	X													B				
7 250410-7LS	X													B				
8 250410-8LS	X													B				
9 250410-9LS	X													B				
10 250410-10LS	X													B				
11 250410-11LS	X													B				
12 250410-12LS	X													B				
13 250410-13LS	X													B				

Eurofins Built Environment Testing East, LLC establishes a unique Lab Sample ID, for each sample, by preceding each unique Client Sample ID with the laboratory RES Job Number.

Eurofins Built Environment Testing East, LLC will analyze incoming samples based on information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing, client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall consitute an analytical services agreement with payment terms of NET 30 days. Failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By:		Date/Time: 04/15/2025 16:20:13	Sample Condition: Acceptable
Received By:	Carlos Romero	Date/Time: 04/15/2025 16:20:13	Carrier: Fed-Ex

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RES Job #: **651472**

Submitted By: **Slade Land USE Environmental and Transportation Planning**

		REQUESTED ANALYSIS										VALID MATRIX CODES							LAB NOTES
												Air = A			Bulk = B				
												Dust = D			Food = F				
												Paint = P			Soil = S				
												Surface = SU			Swab = SW				
												Tape = T			Wipe = W				
												Drinking Water = DW							
												Waste Water = WW							
												ASTM E1792 approved wipe media only							
		PLM - PLM Short Report (EPA/600/R-93/116)	TEM	PCM	DUST	METALS	ORGANICS	VIABLES	MEDICAL	MOLD	ICO	Sample Volume (L) / Area	Sample Temperature (°C)	Length(or Aliquots) x Width(or Area/Aliquot)	Matrix Code	# of Containers	Date Collected mm/dd/yy	Time Collected hh:mm	Laboratory Analysis Instructions
	Client Sample ID Number (Sample ID's must be unique)	ASBESTOS			CHEMISTRY			MICROBIOLOGY			ICO								
14	250410-14LS	X													B				
15	250410-15LS	X													B				
16	250410-16LS	X													B				
17	250410-17LS	X													B				
18	250410-18LS	X													B				
19	250410-19LS	X													B				
20	250410-20LS	X													B				
21	250410-21LS	X													B				
22	250410-22LS	X													B				
23	250410-23LS	X													B				
24	250410-24LS	X													B				
25	250410-25LS	X													B				
26	250410-26LS	X													B				
27	250410-27LS	X													B				
28	250410-28LS	X													B				
29	250410-29LS	X													B				
30	250410-30LS	X													B				
31	250410-31LS	X													B				
32	250410-32LS	X													B				
33	250410-33LS	X													B				
34	250410-34LS	X													B				
35	250410-35LS	X													B				
36	250410-36LS	X													B				
37	250410-37LS	X													B				
38	250410-38LS	X													B				
39	250410-39LS	X													B				
40	250410-40LS	X													B				
41	250410-41LS	X													B				
42	250410-42LS	X													B				
43	250410-43LS	X													B				

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RES Job #: **651472**

Submitted By: **Slade Land USE Environmental and Transportation Planning**

		REQUESTED ANALYSIS										VALID MATRIX CODES							LAB NOTES
												Air = A			Bulk = B				
												Dust = D			Food = F				
												Paint = P			Soil = S				
												Surface = SU			Swab = SW				
												Tape = T			Wipe = W				
												Drinking Water = DW							
												Waste Water = WW							
												ASTM E1792 approved wipe media only							
		PLM - PLM Short Report (EPA/600/R-93/116)	TEM	PCM	DUST	METALS	ORGANICS	VIABLES	MEDICAL	MOLD	ICO	Sample Volume (L) / Area	Sample Temperature (°C)	Length(or Aliquots) x Width(or Area/Aliquot)	Matrix Code	# of Containers	Date Collected mm/dd/yy	Time Collected hh:mm	Laboratory Analysis Instructions
	Client Sample ID Number (Sample ID's must be unique)	ASBESTOS			CHEMISTRY			MICROBIOLOGY			ICO								
44	250410-44LS	X													B				
45	250410-45LS	X													B				
46	250410-46LS	X													B				
47	250410-47LS	X													B				
48	250410-48LS	X													B				
49	250410-49LS	X													B				
50	250410-50LS	X													B				
51	250410-51LS	X													B				
52	250410-52LS	X													B				
53	250410-53LS	X													B				
54	250410-54LS	X													B				
55	250410-55LS	X													B				
56	250410-56LS	X													B				
57	250410-57LS	X													B				
58	250410-58LS	X													B				
59	250410-59LS	X													B				
60	250410-60LS	X													B				
61	250410-61LS	X													B				
62	250410-62LS	X													B				
63	250410-63LS	X													B				
64	250410-64LS	X													B				
65	250410-65LS	X													B				
66	250410-66LS	X													B				
67	250410-67LS	X													B				
68	250410-68LS	X													B				
69	250410-69LS	X													B				
70	250410-70LS	X													B				
71	250410-71LS	X													B				
72	250410-72LS	X													B				
73	250410-73LS	X													B				

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RES Job #: **651472**

Submitted By: **Slade Land USE Environmental and Transportation Planning**

	REQUESTED ANALYSIS										VALID MATRIX CODES							LAB NOTES
											Air = A			Bulk = B				
											Dust = D			Food = F				
											Paint = P			Soil = S				
											Surface = SU			Swab = SW				
											Tape = T			Wipe = W				
											Drinking Water = DW							
											Waste Water = WW							
											ASTM E1792 approved wipe media only							
	PLM - PLM Short Report (EPA/600/R-93/116)	TEM	PCM	DUST	METALS	ORGANICS	VIABLES	MEDICAL	MOLD	ICO	Sample Volume (L) / Area	Sample Temperature (°C)	Length(or Aliquots) x Width(or Area/Aliquot)	Matrix Code	# of Containers	Date Collected mm/dd/yy	Time Collected hh:mm	Laboratory Analysis Instructions
Client Sample ID Number (Sample ID's must be unique)	ASBESTOS			CHEMISTRY			MICROBIOLOGY			ICO								
74 250410-74LS	X													B				
75 250410-75LS	X													B				
76 250410-76LS	X													B				
77 250410-77LS	X													B				
78 250410-78LS	X													B				
79 250410-79LS	X													B				
80 250410-80LS	X													B				
81 250410-81LS	X													B				
82 250410-82LS	X													B				
83 250410-83LS	X													B				
84 250410-84LS	X													B				
85 250410-85LS	X													B				
86 250410-86LS	X													B				
87 250410-87LS	X													B				
88 250410-88LS	X													B				
89 250410-89LS	X													B				
90 250410-90LS	X													B				
91 250410-91LS	X													B				
92 250410-92LS	X													B				
93 250410-93LS	X													B				
94 250410-94LS	X													B				
95 250410-95LS	X													B				
96 250410-96LS	X													B				
97 250410-97LS	X													B				

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CHAIN OF CUSTODY

CEI

730 SE Maynard Road, Cary, NC 27511
Tel: 866-481-1412, Fax: 919-481-1442

LAB USE ONLY:
CEI Lab Code: 651472
CEI Lab I.D. Range:

COMPANY INFORMATION	PROJECT INFORMATION
CEI CLIENT #:	Job Contact:
Company: Slade Land USE	Email / Tel:
Address: 1500 1st Ave North	Project Name:
Unit 54 Birmingham AL	Project ID#:
Email: Lslade@SladeLLC.com	PO #:
Tel: 205 413 4685 Fax:	STATE SAMPLES COLLECTED IN:

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

ASBESTOS	METHOD	TURN AROUND TIME					
		4 HR	8 HR	1 DAY	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	☐	☐	☐	☐	☐	☒
PLM POINT COUNT (400)	EPA 600	☐	☐	☐	☐	☐	☐
PLM POINT COUNT (1000)	EPA 600	☐	☐	☐	☐	☐	☐
PLM GRAV w POINT COUNT	EPA 600		☐	☐	☐	☐	☐
PLM BULK	CARB 435		☐	☐	☐	☐	☐
PCM AIR	NIOSH 7400	☐	☐	☐	☐	☐	☐
TEM AIR	EPA AHERA	☐	☐	☐	☐	☐	☐
TEM AIR	NIOSH 7402	☐	☐	☐	☐	☐	☐
TEM AIR (PCME)	ISO 10312	☐	☐	☐	☐	☐	☐
TEM AIR	ASTM 6281-15	☐	☐	☐	☐	☐	☐
TEM BULK	CHATFIELD		☐	☐	☐	☐	☐
TEM DUST WIPE	ASTM D6480-05 (2010)	☐	☐	☐	☐	☐	☐
TEM DUST MICROVAC	ASTM D5755-09 (2014)	☐	☐	☐	☐	☐	☐
TEM SOIL	ASTM D7521-16			☐	☐	☐	☐
TEM VERMICULITE	CINCINNATI METHOD			☐	☐	☐	☐
TEM QUALITTATIVE	IN-HOUSE METHOD		☐	☐	☐	☐	☐
OTHER:		☐	☐	☐	☐	☐	☐

REMARKS / SPECIAL INSTRUCTIONS:

☑ Accept Samples
☐ Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
Lance Slade		CM	4-14-25 10:00

Samples will be disposed of 30 days after analysis

April 10 2025

bldg 24
April 10, 2025
Sampler

145

Building_____ – ACM Sample Inventory

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250410-1LS	TST @ Pipe connection	MECH Rm				
2LS	caulk on pipe @ HVAC	"				
3LS	TST valve edge in ceiling					
4LS	TST on visible by ext door					
5LS	TST on 6" pipe elbow					
6LS	Gray caulk on chiller pipe					
7LS	6" pipe elbow to chiller					
8LS	Gray caulk on chiller					
9LS	gray caulk on chiller					
10LS	caulk on pipe at HVAC					
11LS	TST at pipe tee connection - HVAC					
12LS	white layer inside canvas	MECH				
13LS	" " "					
14LS	Flashing -1	Roof				
15LS	" -2					
16LS	" -3					
17LS	" -4					
18LS	" -5					
19LS	Parapet wall mastic -1					
20LS	" -2 "					
21LS	" -3 "					
22LS	-4					
23LS	-5					
--	Electrical Wire	--	ASSUMED	Contractor to Determine	G	NF2

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Stop

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

2 of 5

April 10, 2025 2 Samples

Building_____– ACM Sample Inventory

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250410-24LS	Parapet Wall Caulk -1	Roof				
-25LS	-2					
-26LS	-3					
-27LS	-4					
-28LS	-5					
-29LS	Hood Cap Flashing -1					
-30LS	-2					
-31LS	-3					
-32LS	-4					
-33LS	-5					
-34LS	-6					
-35LS	-7					
-36LS	-8					
-37LS	-9					
-38LS	-10					
-39LS	Main Field -1	Roof				
-40LS	-2					
-41LS	-3					
-42LS	-4					
-43LS	-5					
-44LS	-6					
-45LS	-7					
-46LS	-8					
--	Electrical Wire	--	ASSUMED	Contractor to Determine	G	NF2

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Stop

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

ENVIRONMENTAL CONSULTING · GENERAL CONTRACTING

Building_____– ACM Sample Inventory

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250410-47LS	MAIN Field-9	Roof				
-48LS	-10	↓				
-49LS	TSI pipe 1" elbow near column 12	SE Center				
-50LS	TSI-Pipe ½ near column 12	SE center				
-51LS	damage TSI pipe elbow	NE Center behind restroom				
-52LS	TSI debris on duct	" "				
-53LS	black MASTIC ON Pipe - Column 11	South Center				
-54LS	black mastic on pipe - column 12	South center				
-55LS	Wall board - 1					
-56LS	-2					
-57LS	-3					
-58LS	-4					
-59LS	-5					
-60LS	-6					
-61LS	-7					
-62LS	-8					
-63LS	-9					
-64LS	-10					
-65LS	-11					
-66LS	-12					
-67LS	-13					
-68LS	-14					
-69LS	-15					
--	Electrical Wire	--	ASSUMED	Contractor to Determine	G	NF2

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Sto

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

Building_____– ACM Sample Inventory

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250410-70LS	WALL board -16					
-71LS	-17					
-72LS	-18					
-73LS	-19					
-74LS	-20					
-75LS	WALL board / JC-1					
-76LS	-2					
-77LS	-3					
-78LS	-4					
-79LS	-5					
-80LS	-6					
-81LS	-7					
-82LS	-8					
-83LS	-9					
-84LS	-10					
-85LS	EXT. DOOR CAULK -1					
-86LS	-2					
-87LS	-3					
-88LS	EXT door CAULK -1					
-89LS	" " -2					
-90LS	" " -3					
-91LS	PIPE SLEEVE MASTIC CAULK	MECH Room SOUTH EAST				
-92	PIPE SLEEVE MASTIC CAULK					
--	Electrical Wire	--	ASSUMED	Contractor to Determine	G	NF2

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Stop

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

Building_____– ACM Sample Inventory

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250410-93LS	wall caulk white -1					
-94LS	-2					
-95LS	-3					
-96LS	-4					
-97LS	-5					
--	Electrical Wire	--	ASSUMED	Contractor to Determine	G	NF2

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Stop

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

ENVIRONMENTAL CONSULTING · GENERAL CONTRACTING

April 11, 2025
ACM Sample Inventory 1943 50th Street North, Birmingham, Alabama 35212

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250411-LS1	Roof Main Field and Tar	Roof	NONE DETECTED			
250411-LS2	Roof Main Field and Tar	Roof	NONE DETECTED			
250411-LS3	Roof Main Field and Tar	Roof	NONE DETECTED			
250411-LS4	Roof Main Field and Tar	Roof	NONE DETECTED			
250411_LS5	Roof Main Field/Tar/Insulation	Roof	NONE DETECTED			
250411-LS6	Roof Main Field/Tar/Insulation	Roof	NONE DETECTED			
250411-LS7	Roof Main Field/Tar/Insulation	Roof	NONE DETECTED			
250411-LS8	Roof Main Field and Tar	Roof	NONE DETECTED			
250411-LS9	Roof Main Field/Tar/Insulation	Roof	NONE DETECTED			
250411-LS10	Roof Main Field/Tar/Insulation	Roof	NONE DETECTED			
250411-LS11	Masonry Block Wall (MBW)	Center Near Vault	NONE DETECTED			
250411-LS12	MBW	NW	NONE DETECTED			
250411-LS13	MBW	SE	NONE DETECTED			
250411-LS14	Exterior Wall Caulk (EWC)	South Side	NONE DETECTED			
250411-LS15	EWC	Southeast	NONE DETECTED			
250411-LS16	EWC	Eastside	NONE DETECTED			
250411-LS17	EWC	Northeast	NONE DETECTED			
250411-LS18	EWC	Northwest	NONE DETECTED			
250411-LS19	Cove Based Mastic (CBM)	Near Column 6	NONE DETECTED			
250411-LS20	CBM	Near Column 10	NONE DETECTED			
250411-LS21	CBM	Near Column 15	NONE DETECTED			
250411-LS22	CBM	Near Column 16	NONE DETECTED			
250411-LS23	CBM	Near Column 4	NONE DETECTED			
--		--				

SF = Square Feet
LF = Linear Feet
AM = Amosite
CH = Chrysotile
G = Good
D = Damaged
F = Friable ACM
NF1 = Category I Non-Friable ACM

April 11, 2025
ACM Sample Inventory 1943 50th Street North, Birmingham, Alabama 35212

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250411-LS24	Expansion joint material	North, Outside walkway	NONE DETECTED			
250411-LS25	Expansion joint material	North, Outside walkway	NONE DETECTED			
--		--				

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Stop

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

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April 25, 2025

Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203

CLIENT PROJECT: Unit 54 Birmingham Alabama
LAB CODE: 652406-1

Dear Customer,

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on April 18, 2025. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials and EPA 40 CFR Appendix E to Subpart E of Part 763: Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% by calibrated visual estimate.

Thank you for your business and we look forward to continuing good relations.

Kind Regards,

Tianbao Bai, Ph.D., CIH
Laboratory Director

NVLAP 101768-0

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ASBESTOS ANALYTICAL REPORT
By: Polarized Light Microscopy

Prepared for

Slade Land USE Environmental and Transportation Planning

CLIENT PROJECT:	Unit 54 Birmingham Alabama
LAB CODE:	652406-1
TEST METHOD:	EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763
REPORT DATE:	04/25/25

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Asbestos Report Summary
By: Polarized Light Microscopy

Project: Unit 54 Birmingham Alabama **Lab Code:** 652406-1

Method: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

Client ID	Lab ID	Layer	Sample Description	Asbestos %
250411-1LS	3318772	Layer A	Black tar	None Detected
		Layer B	Black roofing	None Detected
250411-2LS	3318773	Layer A	Black tar	None Detected
		Layer B	Black roofing	None Detected
250411-3LS	3318774	Layer A	Black tar	None Detected
		Layer B	Black roofing	None Detected
250411-4LS	3318775	Layer A	Black tar	None Detected
		Layer B	Black roofing	None Detected
250411-5LS	3318776	Layer A	Black tar	None Detected
		Layer B	Black roofing	None Detected
		Layer C	Brown insulation	None Detected
250411-6LS	3318777	Layer A	Black tar	None Detected
		Layer B	Black roofing	None Detected
		Layer C	Brown insulation	None Detected
250411-7LS	3318778	Layer A	Black tar	None Detected
		Layer B	Black roofing	None Detected
		Layer C	Brown insulation	None Detected
250411-8LS	3318779	Layer A	Black tar	None Detected
		Layer B	Black roofing	None Detected
250411-9LS	3318780	Layer A	Black tar	None Detected
		Layer B	Black roofing	None Detected
		Layer C	Brown insulation	None Detected
250411-10LS	3318781	Layer A	Black tar	None Detected
		Layer B	Black roofing	None Detected
		Layer C	Brown insulation	None Detected
250411-11LS	3318782		Light-gray cementitious material	None Detected

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Asbestos Report Summary
By: Polarized Light Microscopy

Project: Unit 54 Birmingham Alabama **Lab Code:** 652406-1

Method: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

Client ID	Lab ID	Layer	Sample Description	Asbestos %
250411-12LS	3318783		Light-gray cementitious material	None Detected
250411-13LS	3318784		Light-gray cementitious material	None Detected
250411-14LS	3318785		White caulk	None Detected
250411-15LS	3318786		White caulk	None Detected
250411-16LS	3318787		White caulk	None Detected
250411-17LS	3318788		White caulk	None Detected
250411-18LS	3318789		White caulk	None Detected
250411-19LS	3318790		Brown roofing adhesive	None Detected
250411-20LS	3318791		Brown roofing adhesive	None Detected
250411-21LS	3318792		Brown roofing adhesive	None Detected
250411-22LS	3318793		White cementitious roofing	None Detected
250411-23LS	3318794		White cementitious roofing	None Detected
250411-24LS	3318795		Black tar	None Detected
250411-25LS	3318796		Black tar	None Detected

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Unit 54 Birmingham Alabama

Lab Code: 652406-1
Date Received: 04/18/25
Date Analyzed: 04/25/25
Date Reported: 04/25/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250411-1LS	Tar	Homogeneous			100%	Tar	**None Detected**
Layer A		Black					
3318772		Non-Fibrous					
		Bound					
Layer B	Roofing	Heterogeneous	65%	Glass	35%	Tar	**None Detected**
3318772		Black					
		Fibrous					
		Bound					
250411-2LS	Tar	Homogeneous			100%	Tar	**None Detected**
Layer A		Black					
3318773		Non-Fibrous					
		Bound					
Layer B	Roofing	Heterogeneous	65%	Glass	35%	Tar	**None Detected**
3318773		Black					
		Fibrous					
		Bound					
250411-3LS	Tar	Homogeneous			100%	Tar	**None Detected**
Layer A		Black					
3318774		Non-Fibrous					
		Bound					
Layer B	Roofing	Heterogeneous	65%	Glass	35%	Tar	**None Detected**
3318774		Black					
		Fibrous					
		Bound					

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Unit 54 Birmingham Alabama

Lab Code: 652406-1
Date Received: 04/18/25
Date Analyzed: 04/25/25
Date Reported: 04/25/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250411-4LS Layer A 3318775	Tar	Homogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**
Layer B 3318775	Roofing	Heterogeneous Black Fibrous Bound	65%	Glass	35%	Tar	**None Detected**
250411-5LS Layer A 3318776	Tar	Homogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**
Layer B 3318776	Roofing	Heterogeneous Black Fibrous Bound	65%	Glass	35%	Tar	**None Detected**
Layer C 3318776	Insulation	Heterogeneous Brown Fibrous Loose	85%	Cellulose	15%	Perlite	**None Detected**

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Unit 54 Birmingham Alabama

Lab Code: 652406-1
Date Received: 04/18/25
Date Analyzed: 04/25/25
Date Reported: 04/25/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250411-6LS Layer A 3318777	Tar	Homogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**
Layer B 3318777	Roofing	Heterogeneous Black Fibrous Bound	65%	Glass	35%	Tar	**None Detected**
Layer C 3318777	Insulation	Heterogeneous Brown Fibrous Loose	85%	Cellulose	15%	Perlite	**None Detected**
250411-7LS Layer A 3318778	Tar	Homogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**
Layer B 3318778	Roofing	Heterogeneous Black Fibrous Bound	65%	Glass	35%	Tar	**None Detected**
Layer C 3318778	Insulation	Heterogeneous Brown Fibrous Loose	85%	Cellulose	15%	Perlite	**None Detected**

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Unit 54 Birmingham Alabama

Lab Code: 652406-1
Date Received: 04/18/25
Date Analyzed: 04/25/25
Date Reported: 04/25/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250411-8LS Layer A 3318779	Tar	Homogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**
Layer B 3318779	Roofing	Heterogeneous Black Fibrous Bound	65%	Glass	35%	Tar	**None Detected**
250411-9LS Layer A 3318780	Tar	Homogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**
Layer B 3318780	Roofing	Heterogeneous Black Fibrous Bound	65%	Glass	35%	Tar	**None Detected**
Layer C 3318780	Insulation	Heterogeneous Brown Fibrous Loose	85%	Cellulose	15%	Perlite	**None Detected**

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Unit 54 Birmingham Alabama

Lab Code: 652406-1
Date Received: 04/18/25
Date Analyzed: 04/25/25
Date Reported: 04/25/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250411-10LS Layer A 3318781	Tar	Homogeneous Black Non-Fibrous Bound			100%	Tar	**None Detected**
Layer B 3318781	Roofing	Heterogeneous Black Fibrous Bound	65%	Glass	35%	Tar	**None Detected**
Layer C 3318781	Insulation	Heterogeneous Brown Fibrous Loose	85%	Cellulose	15%	Perlite	**None Detected**
250411-11LS 3318782	Cementitious Material	Heterogeneous Light-gray Non-Fibrous Bound			65% 30% 5%	Silica Binder Gravel	**None Detected**
250411-12LS 3318783	Cementitious Material	Heterogeneous Light-gray Non-Fibrous Bound			65% 30% 5%	Silica Binder Gravel	**None Detected**
250411-13LS 3318784	Cementitious Material	Heterogeneous Light-gray Non-Fibrous Bound			65% 30% 5%	Silica Binder Gravel	**None Detected**
250411-14LS 3318785	Caulk	Heterogeneous White Non-Fibrous Bound			100% <1%	Caulk Paint	**None Detected**

ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Unit 54 Birmingham Alabama

Lab Code: 652406-1
Date Received: 04/18/25
Date Analyzed: 04/25/25
Date Reported: 04/25/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous	Non-Fibrous		ASBESTOS %
250411-15LS 3318786	Caulk	Heterogeneous White Non-Fibrous Bound		100% <1%	Caulk Paint	**None Detected**
250411-16LS 3318787	Caulk	Heterogeneous White Non-Fibrous Bound		100% <1%	Caulk Paint	**None Detected**
250411-17LS 3318788	Caulk	Heterogeneous White Non-Fibrous Bound		100% <1%	Caulk Paint	**None Detected**
250411-18LS 3318789	Caulk	Heterogeneous White Non-Fibrous Bound		100% <1%	Caulk Paint	**None Detected**
250411-19LS 3318790	Roofing Adhesive	Homogeneous Brown Non-Fibrous Bound		100%	Mastic	**None Detected**
250411-20LS 3318791	Roofing Adhesive	Homogeneous Brown Non-Fibrous Bound		100%	Mastic	**None Detected**
250411-21LS 3318792	Roofing Adhesive	Homogeneous Brown Non-Fibrous Bound		100%	Mastic	**None Detected**

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ASBESTOS BULK ANALYSIS
By: Polarized Light Microscopy

Client:
Slade Land USE Environmental and Transportation Planning
1500 1st Avenue North, Unit 54
Birmingham, AL 35203
Project: Unit 54 Birmingham Alabama

Lab Code: 652406-1
Date Received: 04/18/25
Date Analyzed: 04/25/25
Date Reported: 04/25/25

Method: ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
250411-22LS 3318793	Cementitious Roofing	Heterogeneous White Non-Fibrous Bound			60% 30% 10%	Silica Binder Gravel	**None Detected**
250411-23LS 3318794	Cementitious Roofing	Heterogeneous White Non-Fibrous Bound			60% 30% 10%	Silica Binder Gravel	**None Detected**
250411-24LS 3318795	Tar	Homogeneous Black Non-Fibrous Bound	10%	Cellulose	90%	Tar	**None Detected**
250411-25LS 3318796	Tar	Homogeneous Black Non-Fibrous Bound	10%	Cellulose	90%	Tar	**None Detected**

LEGEND:

Non-Anth = Non-Asbestiform Anthophyllite
Non-Trem = Non-Asbestiform Tremolite
Calc Carb = Calcium Carbonate

METHOD: EPA 600 / R93 / 116 and EPA 40 CFR Appendix E to Subpart E of Part 763

REPORTING LIMIT: 1% by calibrated visual estimation

REGULATORY LIMIT: 1%

Due to the limitations of the EPA 600 / R93 / 116 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. Estimated measurement of uncertainty is available on request.

Eurofins Built Environment Testing East, LLC makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins Built Environment Testing East, LLC. Samples were received in acceptable condition unless otherwise noted. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Information provided by customer includes customer sample ID and sample description.

Valerie King
Analyst

DATA QA:

Scott Minyard
4/25/2025

APPROVED BY:

Tianbao Bai, Ph.D., CIH
Laboratory Director

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RES Job #: 652406

SUBMITTED BY		INVOICE TO		CONTACT INFORMATION	SERIES
Company:	Slade Land USE Environmental and Transportat ...	Company:	Slade Land USE Environmental and Transportat ...	Contact:	-1 PLM Standard
Address:	1500 1st Avenue North, Unit 54	Address:	1500 1st Avenue North, Unit 54	Phone:	
				Fax:	
	Birmingham, AL 35203		Birmingham, AL 35203	Cell:	
Project Number and/or P.O. #:	None Given	Project Zip Code:		Final Data Deliverable Email Address:	
Project Description/Location:	Unit 54 Birmingham Alabama			lslade@sladellc.com (+ 1 ADDNL. CONTACTS)	

ASBESTOS LABORATORY

PLM / PCM / TEM DTL RUSH PRIORITY STANDARD

CHEMISTRY LABORATORY

Dust RUSH PRIORITY STANDARD

Metals RUSH PRIORITY STANDARD *PRIOR NOTICE REQUIRED FOR SAME DAY TAT

Organics* SAME DAY RUSH PRIORITY STANDARD

MICROBIOLOGY LABORATORY

Viable Analysis** PRIORITY STANDARD **TAT DEPENDENT ON SPEED OF MICROBIAL GROWTH

Medical Device Analysis RUSH STANDARD

Mold Analysis RUSH PRIORITY STANDARD

****Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.****

Special Instructions:

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Food = F
Paint = P	Soil = S
Surface = SU	Swab = SW
Tape = T	Wipe = W
Drinking Water = DW	
Waste Water = WW	
ASTM E1792 approved wipe media only	

Client Sample ID Number (Sample ID's must be unique)	REQUESTED ANALYSIS: ASBESTOS — PLM - PLM Short Report (EPA/600/R-93/116)	TEM	PCM	CHEMISTRY — DUST	METALS	ORGANICS	MICROBIOLOGY — VIABLES	MEDICAL	MOLD	ICO	Sample Volume (L) / Area	Sample Temperature (°C)	Length(or Aliquots) x Width(or Area/Aliquot)	Matrix Code	# of Containers	Date Collected mm/dd/yy	Time Collected hh:mm	LAB NOTES: Laboratory Analysis Instructions
1 250411-1LS	X													B				
2 250411-2LS	X													B				
3 250411-3LS	X													B				
4 250411-4LS	X													B				
5 250411-5LS	X													B				
6 250411-6LS	X													B				
7 250411-7LS	X													B				
8 250411-8LS	X													B				
9 250411-9LS	X													B				
10 250411-10LS	X													B				
11 250411-11LS	X													B				
12 250411-12LS	X													B				
13 250411-13LS	X													B				

Eurofins Built Environment Testing East, LLC establishes a unique Lab Sample ID, for each sample, by preceding each unique Client Sample ID with the laboratory RES Job Number.

Eurofins Built Environment Testing East, LLC will analyze incoming samples based on information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing, client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall consitute an analytical services agreement with payment terms of NET 30 days. Failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By:		Date/Time: 04/18/2025 14:49:18	Sample Condition: Acceptable
Received By:	Michard Eli	Date/Time: 04/18/2025 14:49:18	Carrier: Hand

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RES Job #: **652406**

Submitted By: **Slade Land USE Environmental and Transportation Planning**

		REQUESTED ANALYSIS										VALID MATRIX CODES							LAB NOTES
												Air = A			Bulk = B				
												Dust = D			Food = F				
												Paint = P			Soil = S				
												Surface = SU			Swab = SW				
												Tape = T			Wipe = W				
												Drinking Water = DW							
												Waste Water = WW							
												ASTM E1792 approved wipe media only							
		PLM - PLM Short Report (EPA/600/R-93/116)	TEM	PCM	DUST	METALS	ORGANICS	VIABLES	MEDICAL	MOLD	ICO	Sample Volume (L) / Area	Sample Temperature (°C)	Length(or Aliquots) x Width(or Area/Aliquot)	Matrix Code	# of Containers	Date Collected mm/dd/yy	Time Collected hh:mm	Laboratory Analysis Instructions
	Client Sample ID Number (Sample ID's must be unique)	ASBESTOS			CHEMISTRY			MICROBIOLOGY			ICO								
14	250411-14LS	X													B				
15	250411-15LS	X													B				
16	250411-16LS	X													B				
17	250411-17LS	X													B				
18	250411-18LS	X													B				
19	250411-19LS	X													B				
20	250411-20LS	X													B				
21	250411-21LS	X													B				
22	250411-22LS	X													B				
23	250411-23LS	X													B				
24	250411-24LS	X													B				
25	250411-25LS	X													B				

eurofins

CHAIN OF CUSTODY 25

CEI

730 SE Maynard Road, Cary, NC 27511
Tel: 866-481-1412; Fax: 919-481-1442

LAB USE ONLY:
CEI Lab Code:
CEI Lab I.D. Range:

COMPANY INFORMATION	PROJECT INFORMATION
CEI CLIENT #:	Job Contact:
Company: Slade Land Use	Email / Tel:
Address: 1500 1st Ave North	Project Name:
Unit 54 Birmingham AL	Project ID#:
Email: LSlade@SladeLLC.com	PO #:
Tel: 205 4134685 Fax:	STATE SAMPLES COLLECTED IN:

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

ASBESTOS	METHOD	TURN AROUND TIME					
		4 HR	8 HR	1 DAY	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	☐	☐	☐	☐	☐	☐
PLM POINT COUNT (400)	EPA 600	☐	☐	☐	☐	☐	☐
PLM POINT COUNT (1000)	EPA 600	☐	☐	☐	☐	☐	☐
PLM GRAV w POINT COUNT	EPA 600		☐	☐	☐	☐	☐
PLM BULK	CARB 435		☐	☐	☐	☐	☐
PCM AIR	NIOSH 7400	☐	☐	☐	☐	☐	☐
TEM AIR	EPA AHERA	☐	☐	☐	☐	☐	☐
TEM AIR	NIOSH 7402	☐	☐	☐	☐	☐	☐
TEM AIR (PCME)	ISO 10312	☐	☐	☐	☐	☐	☐
TEM AIR	ASTM 6281-15	☐	☐	☐	☐	☐	☐
TEM BULK	CHATFIELD		☐	☐	☐	☐	☐
TEM DUST WIPE	ASTM D6480-05 (2010)	☐	☐	☐	☐	☐	☐
TEM DUST MICROVAC	ASTM D5755-09 (2014)	☐	☐	☐	☐	☐	☐
TEM SOIL	ASTM D7521-16			☐	☐	☐	☐
TEM VERMICULITE	CINCINNATI METHOD			☐	☐	☐	☐
TEM QUALITTATIVE	IN-HOUSE METHOD		☐	☐	☐	☐	☐
OTHER		☐	☐	☐	☐	☐	☐

REMARKS / SPECIAL INSTRUCTIONS:

☒ Accept Samples
☐ Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
L. Tryce Slade			

Samples will be disposed of 30 days after analysis

April 11, 2025 2874 8373 1724

April 11, 2025

Building_____– ACM Sample Inventory

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friabi
250411-1LS	Roofing	Roof				
2LS						
3LS						
4LS						
5LS						
6LS						
7LS						
8LS						
9LS						
10LS	Roofing	Roof				
11LS	MBW					
12LS	MBW					
13LS	MBW					
14LS	EWC					
15LS	1"					
16LS						
17LS						
18LS						
19LS	BCM					
20LS	"					
21LS	"					
22LS	"					
23LS	"					
--	Electrical Wire	--	ASSUMED	Contractor to Determine	G	NF2

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Stop

G = Good
D = Damaged
SD = Significantly Damaged

F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM

April 11, 2025

Building_____– ACM Sample Inventory

Sample Number	Material Description	Sample Location	Laboratory Analysis	Material Extent	Condition	Friability
250411-JH5	E Sonwall Way					
JH5						
--	Electrical Wire	--	ASSUMED	Contractor to Determine	G	NF2

SF = Square Feet
LF = Linear Feet
EA = Each
ND = None Detected

AM = Amosite
CH = Chrysotile
CR = Crocidolite
PS = Positive Sto

G = Good
D = Damaged
SD = Significantly Damaged

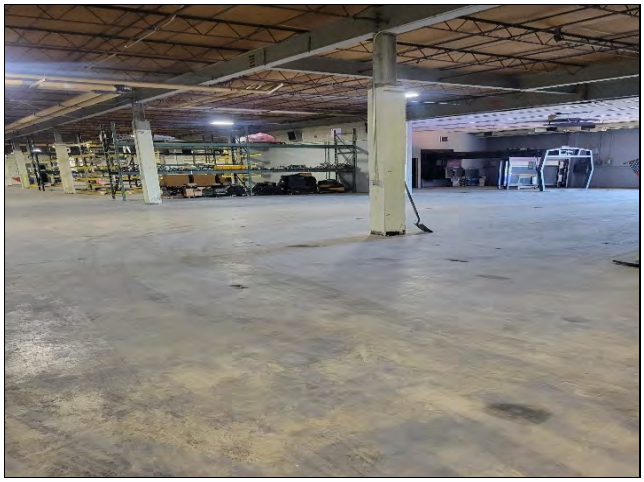
F = Friable ACM
NF1 = Category I Non-Friable ACM
NF2 = Category II Non-Friable ACM



Asbestos Caulking at Joint between Column and Wall, NW Corner



Wallboard Ceiling with Asbestos Joint Compound, SW



Interior View



Asbestos Insulation on Drainpipe Elbow, SW Corner



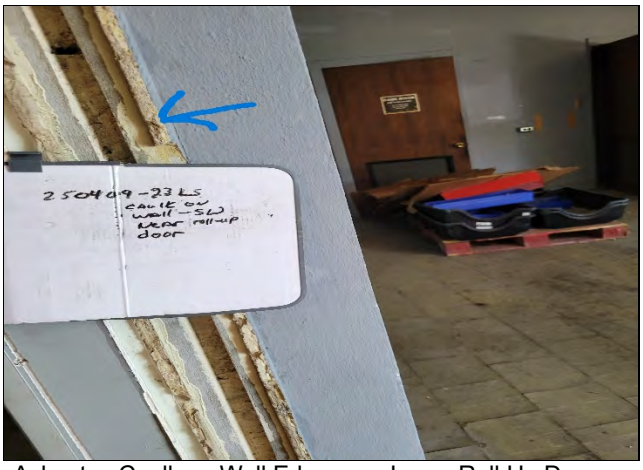
Asbestos Floor Tile and Asbestos Black Mastic, N Closet



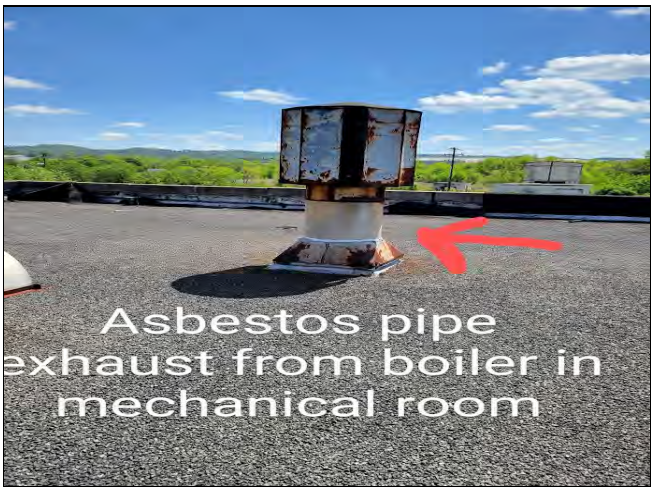
Asbestos Caulk on Wall Edge on Exterior of Vault Room



Asbestos Black Mastic on Concrete in Closet, Room W-4



Asbestos Caulk on Wall Edge near Large Roll Up Door



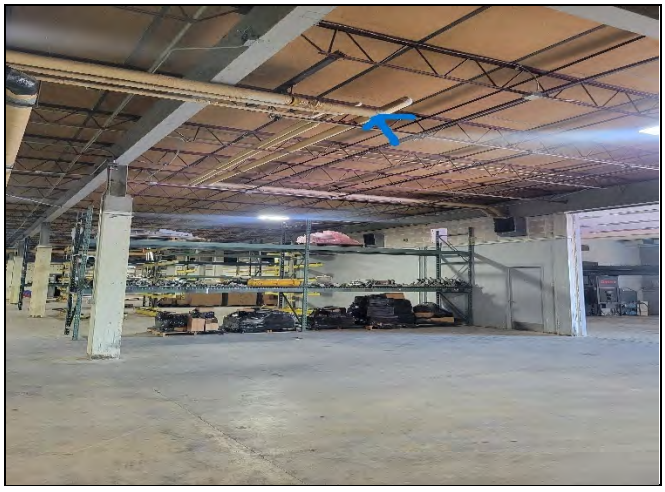
Asbestos Cementitious pipe as boiler flue, Mech Room to Roof



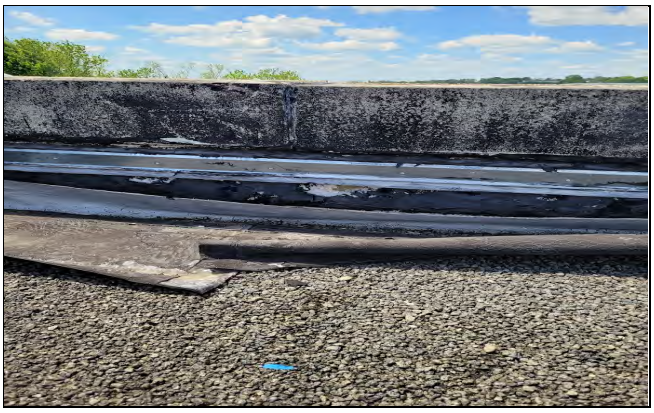
Asbestos Cementitious Hot Water Flue Pipe, Mech Room to Roof



Asbestos Insulation covering Valve, Mechanical Room



Asbestos Insulation covering Pipe Joints and Elbows at Ceiling Throughout Main Area



Asbestos Black Mastic on Parapet Wall, Roof



Asbestos Insulation on large Pipe Elbow, Mechanical Room



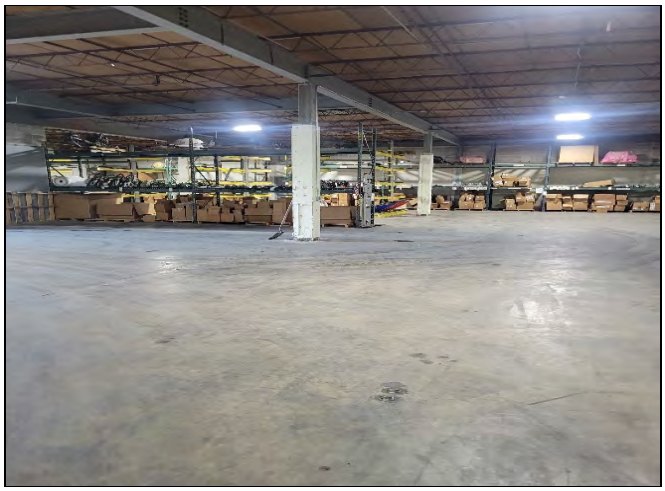
Non-Asbestos Main Roof, Asbestos Flashing and Silver Paint



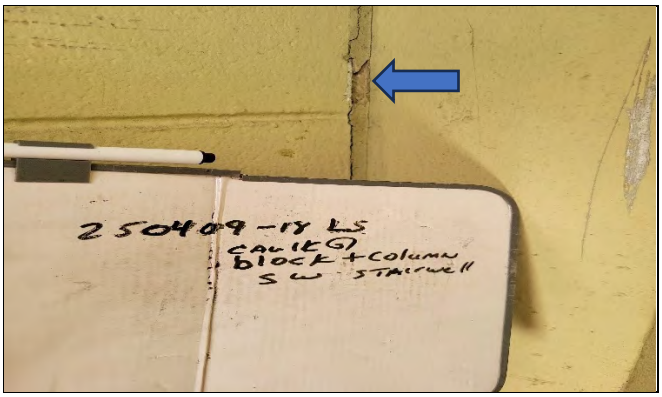
Asbestos Gray Felt Paper and Asbestos Black Mastic



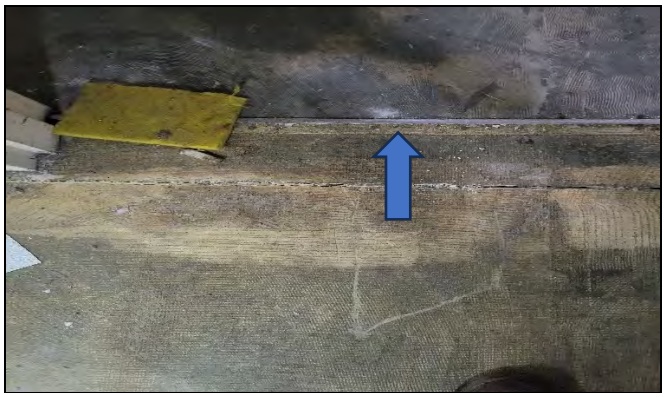
Asbestos 9”x9” gray FT and Asbestos Black Mastic, SE corner outside Computer Room



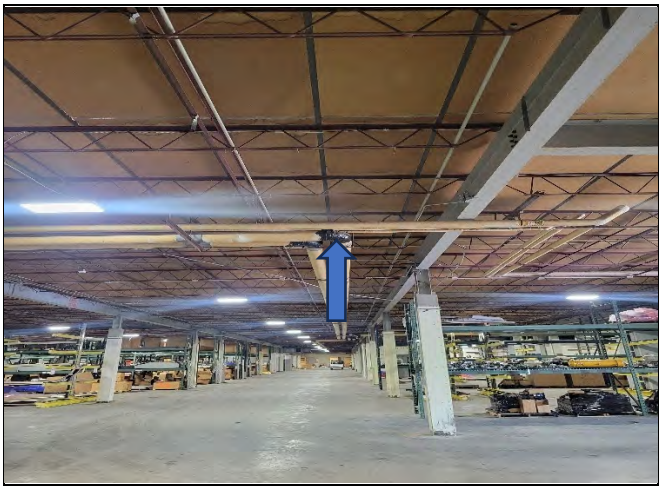
Interior View



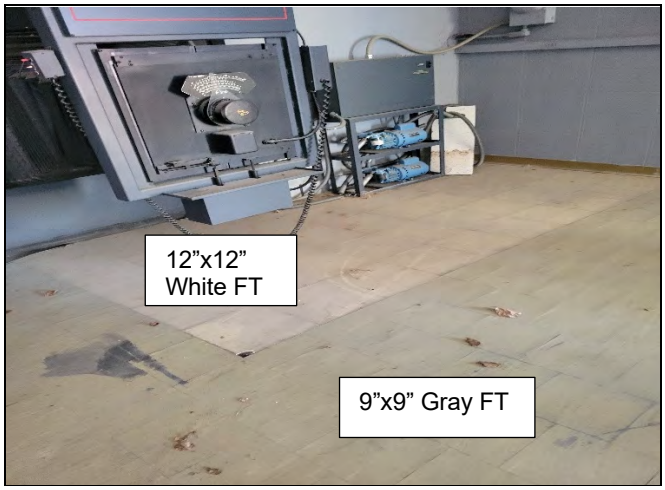
Asbestos Caulk between Column and Wall, SW Stairwell



Asbestos Expansion Joint between Concrete Floor Sections



Asbestos Black Mastic on Pipe Elbow, Main Area, SW



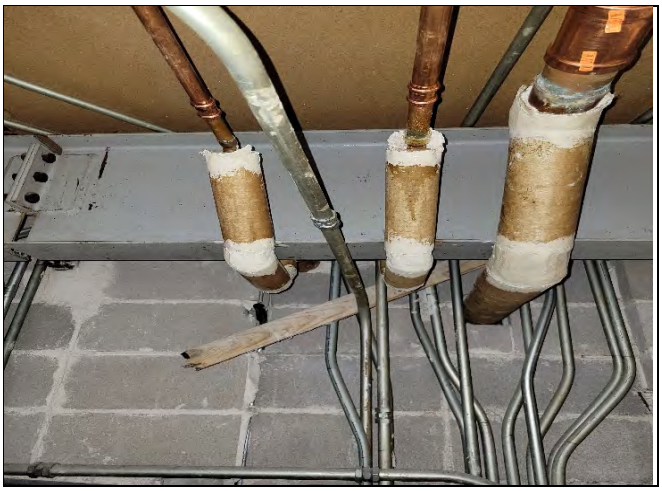
Asbestos Black Mastic beneath Asbestos 9”x9” Gray Floor Tiles and 12”x12” non-Asbestos Floor Tile, SW corner



Asbestos Insulation on Chiller in Mechanical Room



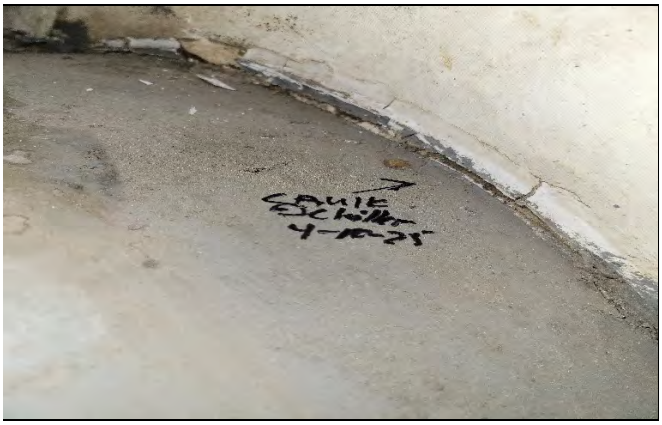
Asbestos Insulation Debris on Ductwork, NE side Behind Restroom



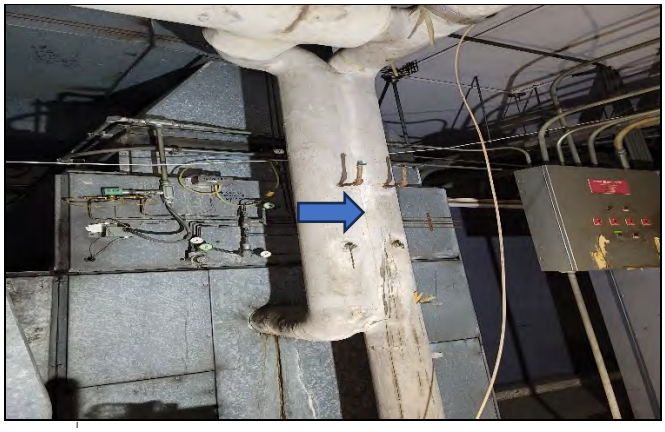
Asbestos Insulation on Pipe Elbows-Damage Areas, Main Area behind East Side Restrooms



Asbestos Caulking between Wall and Stairs



Asbestos Caulking at metal component and Chiller



Asbestos Insulation between 2 pipes at Mechanical Unit



Asbestos Insulation on Pipe Elbows at Ceiling, Mech Room



Asbestos Insulation on Valve Edge, Mech Room



Roof View



Roof View



Roof View, North



Roof View, East



Asbestos Flashing and Asbestos Black Mastic, Parapet Wall



Exterior North View



Asbestos 12”x12” Floor Tile Over Asbestos Black Mastic, NE Center, Main Area

Phase I ESA

LISA K. MORRISON
CEO
MARTIN T. BURFORD, P.E.
President
RICHARD A. RHINEHART, P.E.
Vice President

March 28, 2025

Birmingham Airport Authority
5900 Messer-Airport Highway
Birmingham, Alabama 35212
c/o Mr. Ryan Hayes
Mead & Hunt

Subject: Report of Phase I Environmental Site Assessment for
Taxiway Alpha Relocation –Birmingham-Shuttlesworth International Airport
Birmingham, Jefferson County, Alabama
BECC Job No. 225002 *(revised March 28, 2025)*

Dear Mr. Hayes:

BECC, Inc. has completed the authorized Phase I Environmental Site Assessment for the subject site. This work was conducted in accordance with our proposal number Q1-24134 dated December 13, 2024.

The purpose of our work was to perform an environmental assessment to obtain information indicating the likelihood of Recognized Environmental Conditions (RECs) in connection with the Property pursuant to ASTM E1527-21. This report outlines the assessment procedures used, exhibits the data obtained, and presents our evaluation and recommendations.

We appreciate the opportunity to work with you on this project. If you have any questions or we may be of further service to you, please call us.

Respectfully submitted,

BECC, Inc.

Jeremy Mitchell, P.E.
Environmental Services Director

Martin T. Burford, P.E.
President

MARCH 3, 2025 (REVISED MARCH 28, 2025)

REPORT OF PHASE I ENVIRONMENTAL SITE ASSESSMENT FOR

Taxiway Alpha Relocation Project
Birmingham-Shuttlesworth International Airport (BHM)
Birmingham, Jefferson County, Alabama 35212
BECC Project Number: 225002

PREPARED FOR:
Birmingham Airport Authority
5900 Messer-Airport Highway
Birmingham, Alabama 35212

GEOTECHNICAL, MATERIALS, AND ENVIRONMENTAL ENGINEERS
360 Industrial Lane, Birmingham, AL 35211 - (205) 941-1119 - www.beccinc.com

EXECUTIVE SUMMARY

At the request and authorization of The Birmingham Airport Authority, BECC, Inc. and Bullock Environmental, LLC (Bullock) performed a Phase I Environmental Site Assessment (ESA) for an approximately 20-acre section of land adjacent to Taxiway Alpha along Village Creek at the Birmingham Shuttlesworth International Airport (hereafter the Property) in Birmingham, Jefferson County, Alabama. The purpose of the Phase I ESA is to identify, to the extent feasible, *recognized environmental conditions*, *historical recognized environmental conditions*, and/or *controlled recognized environmental conditions* in connection with the Property relative to current and historical operations pursuant to the methodology set forth in the ASTM International (ASTM) Standard E1527-21.

Field personnel completed Property reconnaissance on February 11, 2025, to look for surface indications of contamination or *recognized environmental conditions* from current operations. Additionally, we surveyed the surrounding properties and reviewed federal and state environmental regulatory records to identify offsite land use(s) that could adversely affect the Property. Finally, we researched historical records to ascertain whether former Property operations constituted *recognized environmental conditions.*

The Property comprises approximately 20 acres of land located along the southern boundary of Village Creek near the southern edge of a runway known as Taxiway Alpha. Surrounding acreage includes Birmingham Shuttlesworth International Airport property in all directions. During reconnaissance, field personnel observed the Property to comprise a landscaped buffer along Village Creek, one commercial structure (near the western side of the Property area), paved parking areas, and various concrete foundations associated with former buildings and infrastructure. Field personnel also observed two apparent (former) maintenance buildings, and an out-of-use petroleum aboveground storage tank (AST) immediately south of the Property.

An environmental database search completed with this ESA (see **Section 5.0**) identified 17 listings within the search radii specified by ASTM. One listing, plotted on the Property, is related to a 40-gallon spill of jet fuel in 2004, which was subsequently addressed with no further regulatory actions required. Two other listings on an adjacent property to the south (representing one facility) are identified in numerous databases as a result of current and former hazardous waste generation and storage activities, historical regulatory violations (since resolved), and petroleum storage. As further detailed in **Section 5.1.1**, neither the listing on the Property north the listings on the property adjacent to the Property constitute *recognized environmental conditions*. However, the resolution of certain regulatory matters related to the southern adjacent building appeared to include the implementation of certain land use controls (prohibition of onsite groundwater for potable or irrigation purposes, etc.) by the Alabama Department of Environmental Management (ADEM). As the land use controls appear to cover the parcel upon which the Property lies, this represents a potential *controlled recognized environmental condition*. The remainder of the listings in the database report are either located at such a distance or location (relative to anticipated groundwater flow) as to pose no viable concern or constitute a *recognized environmental condition*.

Considering the information obtained during this investigation, the Property comprised undeveloped land in 1941 (aerial photographs) and has housed various operations related to the Birmingham Shuttlesworth International Airport since at least 1947 (aerial photographs) and aircraft maintenance and repair operations by Hayes Aircraft Corporation (or its subsequent, related entities) from at least 1951 through the late 1990s. Those operations have included fueling, storage of petroleum, equipment maintenance, painting, and generation of petroleum and hazardous waste streams (spent solvents and paint waste). Historical use of surrounding acreage has include airport operations for the same timeframe.

Limiting conditions encountered during historical research included incomplete property ownership records, poor aerial imagery (for certain years), no Sanborn® Map coverage, and no current owner interview; however, many of these gaps were filled with augmenting information obtained through other available historical sources. While these items represent data gaps (pursuant to the ASTM Standard), they appear to be minor and should not affect the overall conclusions of this Phase I ESA.

Considering the findings from this assessment, the historical use of the Property and surrounding area for aircraft maintenance and service operations constitutes a *recognized environmental condition.* Historical operations on and around the Property included aircraft maintenance and the generation of petroleum and hazardous waste streams (spent solvents and paints). Additionally, there have been documented releases of regulated compounds to the subsurface at the Kaiser Aircraft Industries, Inc. service bay facility (located immediately east of the Property and potentially upgradient relative to anticipated groundwater flow). Likewise, the facility is a current and historical generator of hazardous waste (including solvents, and paints) and petroleum products (fuels and waste oil). Finally, COC concentrations in soil and groundwater indicate a potential risk to future construction workers (based on data obtained from the adjacent service bay facility). The extent of COC-affected media (if any) beneath the Property area has not been evaluated to confirm whether regulated compounds (related to historical operations) are present in this area.

Likewise, the land use controls placed on the adjacent property to the south (located on the same parcel) constitutes a *controlled recognized environmental condition.*

***This ESA identified no historical recognized environmental conditions* in connection with the Property.**

In light of the historical aircraft maintenance and fueling operations which have occurred on and around the Property, combined with the historical generation of petroleum and hazard waste streams, further investigation appears warranted to establish the effects of these historical operations (if any) with regard to soil and groundwater quality. Likewise, should future Property improvements include the excavation and removal of soil from this area, investigation of this material in advance should provide a better understanding of the character of this material relative to its management and disposal while also accounting for potential health and safety considerations during its removal.

Subsequent sections of this report detail the findings outlined in this summary.

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SECTION 1: INTRODUCTION

This Phase I Environmental Site Assessment (ESA) was conducted for the physical property located on the southern side of Village Creek at Birmingham Shuttlesworth International Airport in Birmingham, Jefferson County, Alabama, and depicted on the United States Geological Survey (USGS) 7.5-Minute Topographic Quadrangle *Birmingham North, Alabama*, dated 2020. As indicated on Figure 1 (**Appendix A**), the Property is approximately located at north latitude 33° 33' 28.55'' and west longitude 86° 45' 13.14''. The ESA was conducted in accordance with BECC's proposal number Q1-24134 dated December 13, 2024.

According to the Jefferson County online geographic information systems (GIS) database (available at https://www.arcgis.com/apps/View/index.html), the Property is located on portions of two parcels (parcel number 23-00-17-4-000-001.000 and 23-00-17-4-000-006.000. Copies of available property records are included in **Appendix B**.

1.1 Purpose of Phase I Environmental Site Assessment (ESA) Report

The purpose of this Phase I ESA was to identify, to the extent feasible pursuant to the process outlined in this document, *recognized environmental conditions* in connection with the Property. *Recognized environmental conditions*, as defined in Section 3.2.73 of the ASTM Standard Practice E1527-21, include the following:

> *(1) the presence of hazardous substances or petroleum products in, on, or at a subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at a subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on, or at a subject property under conditions that pose a material threat of a future release to the environment. A de minimis condition is not a recognized environmental condition.*

This Phase I ESA has been prepared on behalf of the Birmingham Airport Authority. As such, they are considered the "user" of the report, as defined under ASTM E1527-21. This Phase I ESA was conducted in an effort to satisfy one of the requirements to qualify the user for the *innocent landowner, contiguous property owner, or bona fide prospective purchaser* protections (collectively, the "landowner liability protections," LLPs) on Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) liability: that is the practice that constitutes "*all appropriate inquiry* (AAI) into the previous ownership and current uses of the property consistent with good commercial and customary practice" as defined at *42 U.S.C. §9601(35)(B).*

Use of this report is not limited to user qualification for the LLPs. It can also assist the user in developing information about the property and has broad utility for persons who may have no actual or potential CERCLA liability and/or may not be seeking LLPs.

1.2 User Reliance

The resulting report is provided for the sole use of Mead & Hunt, their respective affiliates, subsidiaries, designees, successors, and/or assigns, as Client, (collectively, the "Certified Client"). Use of this report is subject to the Terms and Conditions including the Limitation of Liability as stated in BECC's proposal number Q1-24134 dated December 13, 2024. Use by any third parties will be at such party's sole risk except when granted under written permission by BECC. Any such authorized use or reliance by third parties will be subject to the same Agreement, under which the work was conducted under contract with Mead & Hunt.

Pursuant to Section 5.4 of the ASTM E1527-21 Standard, the "process of searching and evaluating land title records or judicial records (as applicable) ordinarily requires specialized expertise provided by title insurance companies or title search professionals." As described in Section 6.2, reviewing land title records for Activity and Use Limitations (AULs) and environmental liens (or judicial records where applicable) is a ***user responsibility***. As such, the scope of this Phase I ESA is limited to publicly available property records unless a title search is included in the scope of work authorized by the user.

Likewise, pursuant to Section 6.2.3.1 of the ASTM E1527-21 Standard, it is the user's responsibility to report Environmental Liens and AULs to the environmental professional. "Any environmental liens or AULs known to the user, should be reported to the environmental professional conducting the environmental site assessment." Additionally, the environmental professional shall request that the user provide the results of user-performed AUL and environmental lien searches (see **Section 6.0** of this Phase I ESA regarding user-provided information). In the absence of title records provided in connection with this Phase I ESA, such documentation shall be made available by the user to affirm compliance with AAI requirements.

1.3 Scope of Services

This Phase I ESA included the following services.

1. Reconnaissance of the Property to identify and evaluate potential sources of environmental impact, such as: storage tanks; underground storage tanks (USTs); hazardous substances and petroleum products (or containers currently/formerly containing such); odors; drums; pools of liquid; equipment containing polychlorinated biphenyls (PCBs); stressed vegetation; ponds and lagoons; stained soil or corrosion; solid waste; waste water; and septic systems.
2. Reconnaissance (to the extent possible) of the properties adjoining the Property to evaluate the potential for a *recognized environmental condition* (or conditions) from these properties.
3. Review of Property records and interviews with representatives familiar with current and former Property operations to identify known or potential environmental concerns.
4. Review of historical information to identify potential impacts from historical onsite and offsite uses. To the extent practicable under the time and budgetary conditions of the assessment, the historical information obtained included verbal information from Property and/or local agency representatives.
5. Where *publicly available* and *practically reviewable*, review of the following reference documents: construction plans, zoning maps, building permits, property record cards, topographic maps, fire insurance maps, historical city directories, historical topographic maps, and aerial photographs.
6. Review of state and federal environmental database information, supplemented by agency interviews and records review, where appropriate.

The scope of this project is limited to that identified in BECC's proposal Q1-24134 dated December 13, 2024. No additional observations, investigations, studies, or other testing not specified in this agreement were performed in connection with this ESA. As such, we shall not be held liable for the existence of any condition the discovery of which would have required the performance of services not authorized under the scope of work referenced above.

1.4 Assumptions and Limitations

Considering the varying degree of accuracy and completeness that may exist from one source to another (including government sources), neither the user nor Environmental Professional is obligated to identify insufficiencies or erroneous information provided. As such, we shall not be held responsible for instances where such information was provided and/or relevant facts were concealed, withheld, or not otherwise fully disclosed. However, during this assessment, we made every effort (based on time and budgetary constraints) to compensate for these mistakes or insufficiencies when obvious in light of other information obtained in connection with the assessment.

1.5 Limitations

We observed Property conditions at the time of the assessment only. The observations, conclusions, and opinions included in this report are representative of the discreet timeframe of this assessment and intended to provide approximations of the environmental conditions at the Property.

1.5.1 Limiting Conditions

We encountered limiting conditions during historical research, specifically, limited property ownership records, poor aerial imagery (for certain years), and no Sanborn® Map coverage; however, many of these gaps were filled with augmenting information obtained through other available historical sources. While these items represent data gaps (pursuant to the ASTM Standard), they appear to be minor and should not affect the overall conclusions of this Phase I ESA.

1.5.2 Emerging Contaminants (Including PFAS)

Perfluoroalkyl and polyfluoroalkyl substances (PFAS) are a group of thousands of man-made chemicals used in industry and consumer products worldwide since the 1950s. Due to their widespread use and environmental persistence, most people in the United States have been exposed to PFAS-related chemicals.

Because PFAS is ubiquitous in the environment (can even be present in rainwater and tap water at concentrations exceeding federally-adopted drinking water standards), the screening approach for this assessment is limited to the Environmental Protection Agency (EPA) Enforcement & Compliance History Information (ECHO) and PFAS Analytic Tools for listings identified in the environmental database report, which are specific to the following identified PFAS-related processes or operations: *leather tanning and leather goods, electroplating, cosmetics, furniture, carpet and textile, airport firefighting, paper products, and fluoropolymer chemical production*.

If no such PFAS-related operations were identified in the environmental database report (or associated with historical operations on the Property), they were ruled out as a *recognized environmental condition*.

Bullock shall not be liable for: 1) addressing the potential for such emerging contaminants (including PFAS); or 2) identifying emerging contaminant sources, if no such operations (listed above) are documented on or adjacent to the Property, based on information from reasonably ascertainable sources.

1.6 Terms and Conditions

This Phase I ESA has been conducted in overall conformance with the ASTM *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Designation E1527-21* and the Environmental Protection Agency (EPA) Code of Federal Regulations (CFR) defined in Title 312.10 of 40 Part 312 Standards and Practices for *AAI Final Rule.* The Phase I ESA presented herein may vary from "guidelines" or "standards" required by organizations other than ASTM or EPA.

We performed the professional services, obtained findings, rendered conclusions, and prepared opinions according to generally accepted practices of other environmental consultants undertaking similar assessments at the same time in the same geographical area. Historical and environmental information pertaining to the Property has been included in this report insofar as such information is *publicly available* and *practically reviewable* within *reasonable time and cost constraints*, as defined in the above-referenced standard practice.

We obtained and reviewed an environmental database search report. The conclusions and opinions rendered in this ESA, with specific reliance on the search report, are limited to the accuracy of that report. We conducted Property reconnaissance to validate the information and/or identify errors and inconsistencies in the search report with respect to the listed facilities in the immediate vicinity of the Property.

1.7 Dates of Completion for Each AAI Component

The validity date for each component presented above is listed below. In order to remain AAI-compliant and qualify for one of the threshold criteria satisfying the LLPs to CERCLA liability, no more than 180 days shall elapse before acquisition of the Property without updating the components listed below (or, for transactions not involving an acquisition, such as a lease or refinance, the date of the intended transaction).

Item	Date Conducted	Shelf Life	Expiration Date
Interviews: Owner, Operators, and Occupants	February 11, 2025	180 days	August 10, 2025
Search for Recorded Environmental Liens (Title Commitment)	Not Applicable	180 days	Not Applicable
Regulatory Review: Federal, State/Local/Tribal	January 21, 2025	180 days	July 20, 2025
Visual Inspection of Subject & Adjoining Property	February 11, 2025	180 days	August 10, 2025
Declaration of Environmental Professional	February 16, 2025	180 days	August 15, 2025

Pursuant to Section 4.6.3 of the ASTM E1527-21 Standard (Compliance with All Appropriate Inquiries), "To qualify for one of the threshold criteria for satisfying the LLPs to CERCLA liability, the all appropriate inquiries components listed in 4.6.2 must be conducted or updated within 180 days of and prior to the date of acquisition of the subject property, and all other components of all appropriate inquiries must be conducted within one year prior to the date of acquisition of the subject property."

SECTION 2: PROPERTY & AREA RECONNAISSANCE

2.1 Property Location & Vicinity General Characteristics

The Property comprises approximately 20 acres of land located along the southern boundary of Village Creek near the southern edge of a runway known as Taxiway A. Surrounding acreage includes Birmingham Shuttlesworth International Airport property in all directions. Utilities available in the Property area include electricity (Alabama Power), communications (various providers), natural gas (Spire), and city water and sewer (Birmingham Water Works and Jefferson County). A Property boundaries/tax map is included as Figure 2 (**Appendix A**).

2.5 Physical Settings

In order to establish the general geology and soil lithology of the Property and surrounding area, we utilized the USGS 7.5-Minute Topographic Quadrangle *Birmingham North, Alabama*, dated 2020 (Figure 1); the Geological Survey of Alabama (GSA) *Geologic Map of Alabama (Special Map 220), dated 1985*; and the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey.

2.5.1 Property Topography, Hydrology, and Surface Water

Property topography, which has been altered by development, is generally level. Stormwater is directed away from the Property via surface flow and infiltration. Various factors can affect groundwater flow direction. In general, for unconfined aquifers, the direction of shallow groundwater movement mirrors surface topography and generally flows from hilltops and uplands (recharge areas) to stream valleys (discharge areas). Based on the interpretation of the *Birmingham North, Alabama* topographic quadrangle, shallow groundwater beneath the Property is inferred to generally flow west-north-northwest toward Village Creek.

2.5.2 Geology, Hydrogeology, and Soil

Based the ERIS Physical Setting Report (**Appendix F**) and the United States Geological Survey (USGS), the near surface geology of the Property is composed primarily of Ketona dolomite. The Ketona Dolomite Formation consists of medium to thick-bedded dolomite and has a maximum thickness of 600 feet. Dolomite of the Ketona typically weathers to a clayey soil that may be as much as 100 feet thick and may contain fragments and boulders of dolomite. The soils developed from the Ketona have been observed to have a moderate shrink-swell potential.

According to the USDA NRCS Web Soil Survey, the Property is underlain by Urban Land. Urban land areas are covered by commercial, industrial, or high-density residential facilities. These areas have been altered to achieve large areas that are nearly level, to avoid flooding or wetness problems, or to increase load supporting capacity. The original soil was altered by cutting and filling, shaping and grading, excavating, blasting, compacting, or covering with concrete or asphalt.

The information listed in this section is combined from a variety of publicly available documents and is not intended as a substitute for Property-specific geotechnical or hydrological information.

2.3 Current Use of the Property

On February 11, 2025, field personnel conducted reconnaissance of the Property and surrounding area. Property photographs are included in **Appendix C**. At the time of reconnaissance, it comprised landscaped areas along Village Creek, paved parking areas, and a commercial structure.

2.4 Descriptions of Roads, Structures, & Other Improvements on the Property

The Property consists of approximately 20 acres of land improved with two Village Creek crossings (northeastern and southwestern sides, landscaped areas along Village Creek, a commercial building and parking lot, and concrete-paved access lanes for commercial and private aircraft. A Property plan (depicting the proposed development area) is presented as Figure 3 (**Appendix A**).

2.5 Methodology & Limiting Conditions

Field personnel could not access the vacant office building located near the western side of the Property during reconnaissance; however, this does not constitute a limiting conditions or significant data gap (as defined in Section 3.2.78 of the ASTM Standard), which affected the ability of the environmental professional to identify a *recognized environmental condition*.

2.6 Exterior Observations

The Property consists of generally open land with landscaped areas along Village Creek, paved parking and access areas, and a vacant, commercial structure near the western boundary. Field personnel also observed two apparent (former) maintenance buildings, and an out-of-use petroleum AST immediately south of the Property during reconnaissance.

2.7 Interior Observations

Not applicable. Field personnel did not access the vacant commercial building near the western boundary during reconnaissance.

SECTION 3: PROPERTY HISTORY

We evaluated past land uses for the property and surrounding area to identify potential historical *recognized environmental conditions* that may have affected the Property. Property history, aerial photographs, historical maps, fire insurance maps, city directories, historical topographic maps, and other *practically reviewable* standard historical sources were researched for this purpose. The following sections summarize our findings.

3.1 Property Ownership & History

We reviewed available property records online via Jefferson County's GIS database (available at https://www.arcgis.com/apps/View/index.html). Copies of available property records are included in **Appendix B**. The following summarizes property ownership information as reviewed in historical records.

According to available records, the Birmingham Airport Authority is the only identified owner of the Property. Transaction information before the construction of the airport was not available in connection with this ESA.

3.2 Historical Aerial Photographs

EDR provided copies of aerial photographs depicting the Property and surrounding area, dated 1941 to 2019, in *The EDR Aerial Photo Decade Package* dated January 21, 2025 (**Appendix E**). The Property and surrounding area appear undeveloped and vacant in 1941; however, all remaining photographic years show the Property and surrounding area as part of the Birmingham Airport complex. From 1947 through at least 1956, the southwestern section of the Property appears to house a series of structures related to Hayes Aircraft Corporation, which performed aircraft maintenance on or around the Property through 2011 (see Section 5.4.6). Likewise, the aerial images from 1981 through 1997 reveal what appear to be small structures aircraft staging areas ion the northeastern section of the Property; the majority of these improvements are no longer present by 2006.

3.3 City Directories

EDR provided available City Directory listings in *The EDR-City Directory Abstract*, dated January 24, 2025 (**Appendix E**). EDR reviewed city directories from 1915 to 2020 in approximate five-year intervals for the Property and surrounding addresses. No listings were available for the Property. Additionally, we identified no notable listings surrounding the property.

3.4 Sanborn® Fire Insurance Maps

EDR provided a *Certified Sanborn® Map Report*, dated January 21, 2025 (**Appendix E**), which indicated no coverage for the Property or surrounding area. While this represents a limiting condition relative to the ASTM Standard, it should not affect the overall findings of this ESA.

3.5 Historical Topographic Maps

EDR provided copies of historical topographic maps depicting the Property, dated 1889 to 2020, in the *EDR Historical Topo Map Report*, dated January 21, 2025 (**Appendix E**). The airport is present in 1959 and subsequent map years. No other historical information was gleaned from this source.

3.6 Other Historical Sources

The Birmingham Airport Authority provided "*Reference documentation for Kaiser leasehold*" as a supplement to the user questionnaire. This reference documentation summarizes the historical operations of the Hayes Aircraft Corporation (later Hayes International Corporation, Pemco Aeroplex, and Alabama Aircraft Industries, Inc.) aircraft design, maintenance and customization operations on a 200-acre facility (which included the Property acreage) at the Birmingham International Airport from 1951 to 2011. In 1965, Hayes was awarded a U.S. Air Force depot maintenance contract for its Hercules C-130 transport planes; this contract was expanded in 1968 to include KC-135 tankers to its maintenance regime. These operations continued on or around the Property through the late 1990s.

Supplemental information obtained from a summary of the criminal prosecution of Hayes Aircraft Corporation (UNITED STATES of America, Plaintiff-Appellant, v. HAYES INTERNATIONAL CORPORATION and Louis H. Beasley Defendants-Appellees. No. 84-7796. United States Court of Appeals Eleventh Circuit. April 21, 1986.) revealed operations on and around the Property included airplane refurbishing activities which generated certain waste products which jet fuel drained from the fuel tanks of the planes it serviced as well as paints and spent solvents. The location(s) of these maintenance operations is unknown; however, aerial photography from 1967 through 1997 indicates these operations may have occurred on the Property. See Appendix B for additional detail regarding each document summarized above.

We did not review additional historical sources beyond those summarized in this section and described in other sections of this ESA.

3.7 Historical Summary & Data Gaps

Considering the information obtained during this investigation, the Property comprised undeveloped land in 1941 (aerial photographs) and has housed various operations related to the Birmingham Shuttlesworth International Airport since at least 1947 (aerial photographs). Hayes Aircraft Corporation (or its subsequent, related entities) performed aircraft maintenance and repair on and around the Property from at least 1951 through the late 1990s. Those operations have included fueling, storage of petroleum, equipment maintenance, painting, and generation of petroleum and hazardous waste streams (spent solvents and paint waste).

We encountered limiting conditions during historical research, specifically, limited property ownership records, poor aerial imagery (for certain years), and no Sanborn® Map coverage; however, many of these gaps were filled with augmenting information obtained through other available historical sources. While these items represent data gaps (pursuant to the ASTM Standard), they appear to be minor and should not affect the overall conclusions of this Phase I ESA.

3.8 Historical Information Regarding Adjacent Properties

Historical use of surrounding acreage has included airport operations for the same timeframe.

SECTION 4: ADJACENT PROPERTIES

On February 11, 2025, field personnel observed adjoining properties for visible evidence of offsite land uses that might adversely affect the Property. For the purposes of this ESA, the term "adjoining property," as defined by the ASTM Standard, means properties that border or are contiguous or partially contiguous with the Property or would be so but for a street, road, or other public thoroughfare separating them. Properties adjoining the Property are listed below.

North: Airport runway areas

South: Aboveground storage tanks (jet fuel), multiple foundations of former buildings and/or infrastructure, Kaiser Aircraft Industries, and concrete-paved access roads

East: Aircraft hangars and concrete-paved access areas

West: Village Creek followed by a Delta Airlines hangar

Considering the visual observations and information obtained during the ESA, current uses of adjoining properties do not present a potential environmental concern or *recognized environmental condition.*

SECTION 5: REVIEW OF REGULATORY INFORMATION

5.1 Standard Environmental Record Sources

Information compiled by Environmental Data Resources, Inc. (EDR) in *The EDR Radius Map™ Report with Geocheck®*, dated January 21, 2025 (**Appendix D**), provided the following results regarding regulated facilities within the search radii set forth in the ASTM Standard. Descriptions of each database and associated acronyms are located on pages GR-1 through GR-30 of the EDR report.

5.1.1 Mappable Listings

The EDR report included 17 listings within the search radii specified by ASTM. One listing is plotted on the Property while two adjacent listings (comprising one facility) is located immediately south of the Property. Each are detailed further below.

1. **BIRMINGHAM, AL (EDR ID 1)**, located on the Property: This listing describes a spill incident on March 4, 2004, which resulted in the release of 40 gallons of jet fuel (JP-8) by Pemco Aeroplex. There were no impacts to water or air and the incident was formally closed on September 26, 2004, with no followup actions required. With the spill incident addressed and closed (in 2004), this listing does not appear to represent a concern or a *recognized environmental condition*.

2. **PEMCO AEROPLEX, INC./KAISER AIRCRAFT INDUSTRIES, INC. (EDR IDs A2 and A3)**, located at 1943 50th Street North: This listing, located approximately 380 feet south-southeast of the Property is identified in the following databases as a result of current and former operations:

   - **Superfund Enterprise Management System (SEMS) Archive:** This database documents properties considered for inclusion on EPA's National Priorities List (NPL) under the Superfund Program. The Pemco Aeroplex facility (current Kaiser Aircraft Industries, Inc. location) was evaluated by EPA in 1982 for possible inclusion on the NPL. After completing its Preliminary Assessment (PA) activities in 1982 and 1985, EPA concluded the facility was appropriate for *No Further Remedial Action Planned* (NFRAP) status and determined the property did not qualify for inclusion on the NPL. EPA archived the files on this property on October 24, 1988.

   - **Corrective Action Report (CORRACTS):** This database identifies hazardous waste handlers with Resource Conservation & Recovery Act (RCRA) corrective action activity: On December 21, 1998, the Alabama Department of Environmental Management (ADEM) concluded that investigation of onsite soil and groundwater was warranted due to indications of releases to the underlying soil and groundwater. Investigations commenced in 2000 and proceeded through 2007 with the installation of 36 groundwater monitoring wells within and around the service bay building (located approximately 700 feet southeast of the Property area). Regulatory closure appears to have been achieved by 2011, based on supplemental regulatory documents reviewed in connection with this ESA (See Section 5.2).

   - **RCRA Treatment Storage & Disposal Facility (RCRA TSDF)**: This database tracks facilities with reportedly treat, store, and dispose of hazardous waste. The facility is identified as storing hazardous waste; however, there are no records of enforcement or permit obligations related to this storage. Likewise, the facility is not identified as a commercial TSDF.

   - **RCRA Large Quantity Generator (LQG)**: This database tracks facilities generating more than 2,200 kilograms of hazardous waste per month. Review of historical waste generation activities indicated the facility has been an LQG of hazardous waste since at least 1990. Storage and disposal records from 2023 indicate the facility generated 100 pounds of aerosol cans, 4,000 pounds of paint waste (expired product), and 3,000 pounds of expired chemicals. 135,000 pounds of jet fuel were reportedly recycled during this year while 52,500 pounds of used oil were also reportedly recycled. Finally, the facility reported 150 pounds of batteries, 75 pounds of lamps, and 40 aerosol cans as recycled during this reporting period. Waste codes for all waste generated at the facility are listed on page 14 through 16 of the database report (**Appendix D**). Finally, numerous violations were documented in connection with regulatory inspections between 1994 and 2023, each of which were reportedly addressed and compliance subsequently achieved (or penalties paid to address identified violations).

   - **Aboveground Storage Tank (AST)**: This database, which tracks registered ASTs, documented ten ASTs on this facility. The tanks range in volume from 550 gallons (unleaded gasoline) to 100,000 gallons (aviation fuel). The tanks were installed between 1973 and 1993; all are reportedly still in operation.

   - **PCB Activity Database System (PADS)**: This database Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities. Following a 2012 inspection by EPA, certain PCB-containing equipment was identified on the property, which was no longer in operation and had not been in operation for at least one year. The PCB-containing equipment was removed and properly disposed with the violations addressed through a consent order and financial penalty paid by Kaiser Aircraft Industries, Inc. No further investigation or corrective action was required following the resolution of this matter through the consent order.

- **Integrated Compliance Information System (ICIS)**: This database tracks regulatory compliance matters relating to the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program. In this case, the facility is listed in this database for certain air emission violations documented by Jefferson County in 2001 which were addressed without subsequent enforcement or penalties.

- **Aerometric Information Retrieval System Facility Subsystem (US AIRS)**: This listing contains the same air emission violations noted above with supplemental detail associated with compliance monitoring and inspections. An administrative enforcement order is documented in 2005 with no additional detail provided regarding the resolution of the violation(s).

- **Hazardous Waste Electronic Manifest System (E-Manifest)**: This database documents the removal and disposal of hazardous waste fro the facility from 2017 through 2023 with all waste (identified as ignitable waste and methyl ethyl ketone) reportedly shipped to Clean Earth of Alabama, Inc. or Giant Resource Recovery. Likewise, 5.333 tons of waste was shipped offsite for fuel blending (manifest information provided on page 268 of the database report (**Appendix D**).

  Given the location of this facility (adjacent and upgradient relative to anticipated groundwater flow), its history of hazardous waste generation (including management of fuels, solvents, and paints), and documented releases of regulated compounds to the subsurface, this listing represents a *recognized environmental condition*.

3. **Kaiser Aircraft Industries, Inc. (EDR ID B5)**, plotted immediately south of the Property and is listed in the PFAS ECHO database as a result of airport-related operations. Five inspections are documented in the database report (last inspection on May 7, 2024) with no reported violations. In light of the inspection history of this property, combined with the absence of documented violations, this listing does not appear to represent a *recognized environmental condition*.

The remainder of the listings in the database report are either not located in an upgradient position (relative to groundwater flow) or positioned at such a distance as to pose no viable concern.

5.1.2 Unmappable Listings

Where insufficient address information or other complicating factors exist that inhibit EDR's ability to accurately locate facilities in the general Property area, "Orphan" sites are listed. EDR identified 12 regulated facilities on the "Orphan Summary" list for this Property (**Appendix D**). None of these listings were observed in the immediate Property area.

5.2 Additional Environmental Record Sources

This ESA also included a review of additional environmental sources beyond those summarized in this section (and described in other sections of this ESA).

We reviewed a *Media Clean-up Standard Report (Revision #1)* dated December 7, 2007, which details the investigation of the Kaiser Aircraft Corporation, Inc. (then PemCo Aeroplex) facility and documented the presence of 47 regulated compounds in groundwater at concentrations exceeding applicable screening levels established by the US EPA. The chemicals of concern (COCs) of primary concern included various chlorinated volatile organic compounds (including tetrachloroethylene, trichloroethylene, cis-/trans-dichloroethylene, and vinyl chloride) along with multiple petroleum VOCs. In addition to the VOCs detected in groundwater, various metals (notably arsenic, cadmium, chromium, and lead) were also detected above applicable drinking water standards.

The extent of the affected groundwater plume appeared to be limited to the area beneath and northwest of the service bay building (located approximately 700 feet southeast of the Property area). Review of the COC concentrations in soil and groundwater indicated a potential risk to future construction workers; however, the risk thresholds established by ADEM were not exceeded for a commercial worker. Likewise, the groundwater plume did not appear to extend to Village Creek (approximately 1,000 feet north-northwest). With these findings (following subsequent monitoring events completed through approximately 2011), records indicate that ADEM concluded no additional action was necessary to address the release (noting no formal document confirming regulatory closure was obtained during the preparation of this ESA).

SECTION 6: USER PROVIDED INFORMATION

6.1 Title Records

The user did not provide a chain-of-title for this Phase I ESA. Furthermore, we did not include a formal chain-of-title search in the scope of services. However, a brief history is included in Section 5.4.1, and limited (publicly available) property records are included in **Appendix B**.

The user did, however, indicate the Property is not encumbered with environmental liens or AULs (see questionnaire in **Appendix B**). Pursuant to Section 6.2.1 of the ASTM E1527-21 Standard: "The user may rely on title insurance documentation, commonly fashioned as preliminary title reports or title commitments, which are prepared in the course of offering title insurance for the Property transaction to identify environmental liens or AULs filed or recorded against the Property."

6.2 Environmental Liens Filed or Recorded Against the Property

The user stated they are not aware of any environmental liens filed or recorded against the Property.

6.3 Activity and Use Limitations

The user stated they are not aware of any AULs filed or recorded against the Property.

6.4 Specialized Knowledge

The user did not provide any specialized knowledge related to the Property.

6.5 Commonly Known or Reasonably Ascertainable Information

The user did not provide any additional information. Likewise, the user was unaware of any obvious indicators that point to the presence or likely presence of releases at the Property. The user was unaware of specific chemicals present and in use at the Property as a part of daily operations. Finally, the user had no detailed knowledge of the past uses of the Property and was unaware of any current or former chemical spills, releases, or cleanups which have occurred (or are occurring).

6.6 Valuation Reduction for Environmental Issues

This section is not applicable as the Property is not being purchased.

6.7 Owner, Property Manager, & Occupant Information

According to property records, the Property is owned by the Birmingham Airport Authority. At the time of reconnaissance, it housed structures and exterior storage space associated with ongoing Kaiser Aircraft Industries, Inc. operations.

6.8 Reason for Performing Phase I ESA

This Phase I ESA was conducted in an effort to satisfy one of the requirements to qualify the user for the LLPs on CERCLA liability.

6.9 Other

The user provided a survey and layout plan of the proposed Taxiway A improvement area and reference documentation regarding the historical use of the Property and surrounding area (included in **Appendix B**).

We received no other relevant user-provided information during the preparation of this Phase I ESA.

SECTION 7: INTERVIEWS

7.1 Key Property Manager/Owner Provided Information

Field personnel conducted an in-person interview with Mr. Ocean Boyd of the Birmingham Airport Authority on February 11, 2025, during reconnaissance. Mr. Boyd provided access to the Property area and secured an escort to accompany field personnel while onsite. Mr. Boyd provided no additional information regarding historical uses of the Property or emergency responses to the Property and surrounding area.

Field personnel were escorted by Mr. Ernest Perry of the Birmingham Airport Authority during reconnaissance. Mr. Perry had no additional information regarding the former maintenance buildings or petroleum ASTs identified in the southwestern section of the Property but stated he had no recollection of operations at either maintenance building location during his 23 years of employment with the Birmingham Airport Authority. He was further unaware of any releases or emergency responses to the Property during his employment with the Birmingham Airport Authority.

7.2 Local Authorities

We conducted an interview with Mr. Paul Searcy of ADEM via email dated January 30, 2024, regarding previous ADEM inspections at the Kaiser Aircraft Industries, Inc. facility. Mr. Searcy, who completed an inspection of the property in December 2022, indicated the majority of the violations noted were associated with record keeping and labelling of containers. Also, Mr. Searcy stated the facility had no records of weekly inspections for the central accumulation areas. He was not aware of any recent releases or responses related to the facility and noted no evidence of housekeeping practices indicative of a new or potential release during his inspection.

7.3 Regulatory Agency Information

No other interviews were completed in connection with this ESA.

SECTION 8: OVERVIEW OF ENVIRONMENTAL CONDITIONS AND THREATS

8.1 Recognized Environmental Conditions Identified During the Property Reconnaissance

The ASTM Standard divides *recognized environmental conditions* into several categories: *Pits, Ponds, and Lagoons, Stained Soil or Pavement, Stressed Vegetation, Solid Waste, Waste Water, Wells, Septic Systems, Storage Tanks, Drums, Hazardous Substance Containers, Petroleum Product Containers, Unidentified Substance Containers, Odors, Pools of Liquid, Pools of Liquid (non-water), and equipment possibly containing polychlorinated biphenyls (PCBs)*. Former fuel storage and apparent aviation and equipment maintenance work conducted within and around the two vacant structures in the southwestern section of the Property constitute *recognized environmental conditions*.

8.1.1 Findings

This Phase I ESA for the acreage located south of Taxiway A located at the Birmingham Shuttlesworth International Airport in Birmingham, Jefferson County, Alabama has revealed evidence of *recognized environmental conditions and* potential *controlled recognized environmental conditions* in connection with the Property. This Phase I ESA identified no evidence of *historical recognized environmental conditions* in connection with the Property.

The historical use of the Property and surrounding area for aircraft maintenance and service operations constitutes a r*ecognized environmental condition*. Historical operations on and around the Property included aircraft maintenance and the generation of petroleum and hazardous waste streams (spent solvents and paints). Additionally, there have been documented releases of regulated compounds to the subsurface at the Kaiser Aircraft Industries, Inc. service bay facility (located immediately east of the Property and potentially upgradient relative to anticipated groundwater flow). Likewise, the facility is a current and historical generator of hazardous waste (including solvents, and paints) and petroleum products (fuels and waste oil). Finally, COC concentrations in soil and groundwater indicate a potential risk to future construction workers (based on data obtained from the adjacent service bay facility). The extent of COC-affected media (if any) beneath the Property area has not been evaluated to confirm whether regulated compounds (related to historical operations) are present in this area.

The regulatory closure of the release incident at the Kaiser Aircraft Industries, Inc. service bay facility (located adjacent to the Property and upgradient relative to groundwater flow) and the apparent land use controls included in the final remedy constitutes a *controlled recognized environmental condition*.

8.1.2 Opinion

Considering the *recognized environmental conditions* listed above, the following opinion of the findings are presented, based on the criteria established in Section 12.6 of the ASTM Standard. This section stipulates that the *environmental professional* present the "logic and reasoning" used in the evaluation of the information collected during the course of the investigation to determine whether a Property condition is or is not a *recognized environmental condition*.

In light of the historical aircraft maintenance and fueling operations which have occurred on and around the Property, combined with the historical generation of petroleum and hazard waste streams, further investigation appears warranted to establish the effects of these historical operations (if any) with regard to soil and groundwater quality. Likewise, should future Property improvements include the excavation and removal of soil from this area, investigation of this material in advance should provide a better understanding of the character of this material relative to its management and disposal while also accounting for potential health and safety considerations during its removal.

We encountered limiting conditions during historical research, specifically, limited property ownership records, poor aerial imagery (for certain years), and no Sanborn® Map coverage; however, many of these gaps were filled with augmenting information obtained through other available historical sources. While these items represent data gaps (pursuant to the ASTM Standard), they appear to be minor and should not affect the overall conclusions of this Phase I ESA.

8.2 Discussion and Identification of Other Property Conditions (Non-Scope Services)

There are numerous non-scope considerations that persons may want to evaluate during commercial real estate transactions. No implication is intended as to the relative importance of inquiry into such non-scope considerations, and this list of non-scope considerations is not intended to be all-inclusive. Items noted during Property reconnaissance follow this listing.

- Asbestos-containing materials (ACMs),
- Radon (gas),
- Lead-Based Paint (LBP),
- Lead in Drinking Water,
- Wetlands,
- Regulatory compliance,
- Cultural and historic resources,
- Industrial hygiene,
- Ecological resources,
- Endangered species,
- Indoor air quality,
- Biological Agents, and
- Mold.

Given the Property's proximity to Village Creek, a National Wetlands Inventory (NWI) Map was reviewed in connection with this ESA. Review of the NWI Map (included in **Appendix B**) reveals potential Waters of the US to be present within and along the boundary of the Property area. Field personnel observed none of the other non-scope items during Property reconnaissance.

8.3 Additional Services

There are numerous non-scope considerations that persons may want to evaluate during commercial real estate transactions. No implication is intended as to the relative importance of inquiry into such non-scope considerations, and this list of non-scope considerations is not intended to be all-inclusive. Items noted during Property reconnaissance follow this listing.

SECTION 9: CONCLUSIONS

We have performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E1527-21 for the Taxiway A located at the intersection of Birmingham Shuttlesworth International Airport in Birmingham, Jefferson County, Alabama. Any exceptions to, or deletions from, this practice are described in **Section 10.0** of this report. This assessment has revealed evidence of *recognized environmental conditions*, *historical recognized environmental conditions*, and/or *controlled recognized environmental conditions* in connection with the Property as discussed in **Sections 8.1.1 and 8.1.2**.

SECTION 10: DEVIATIONS

We performed this Phase I ESA in overall accordance with, and with no significant deviations from, *ASTM E1527-21* and the EPA *AAI Final Rule*.

SECTION 11: CERTIFICATION STATEMENT & QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

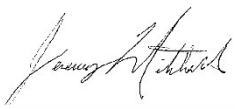
Prepared By:



Douglas A. Bullock:
Principal

_____
Signature

Reviewed By:



Jeremy Mithcell, P.E.:
Environmental Services Director

_____
Signature

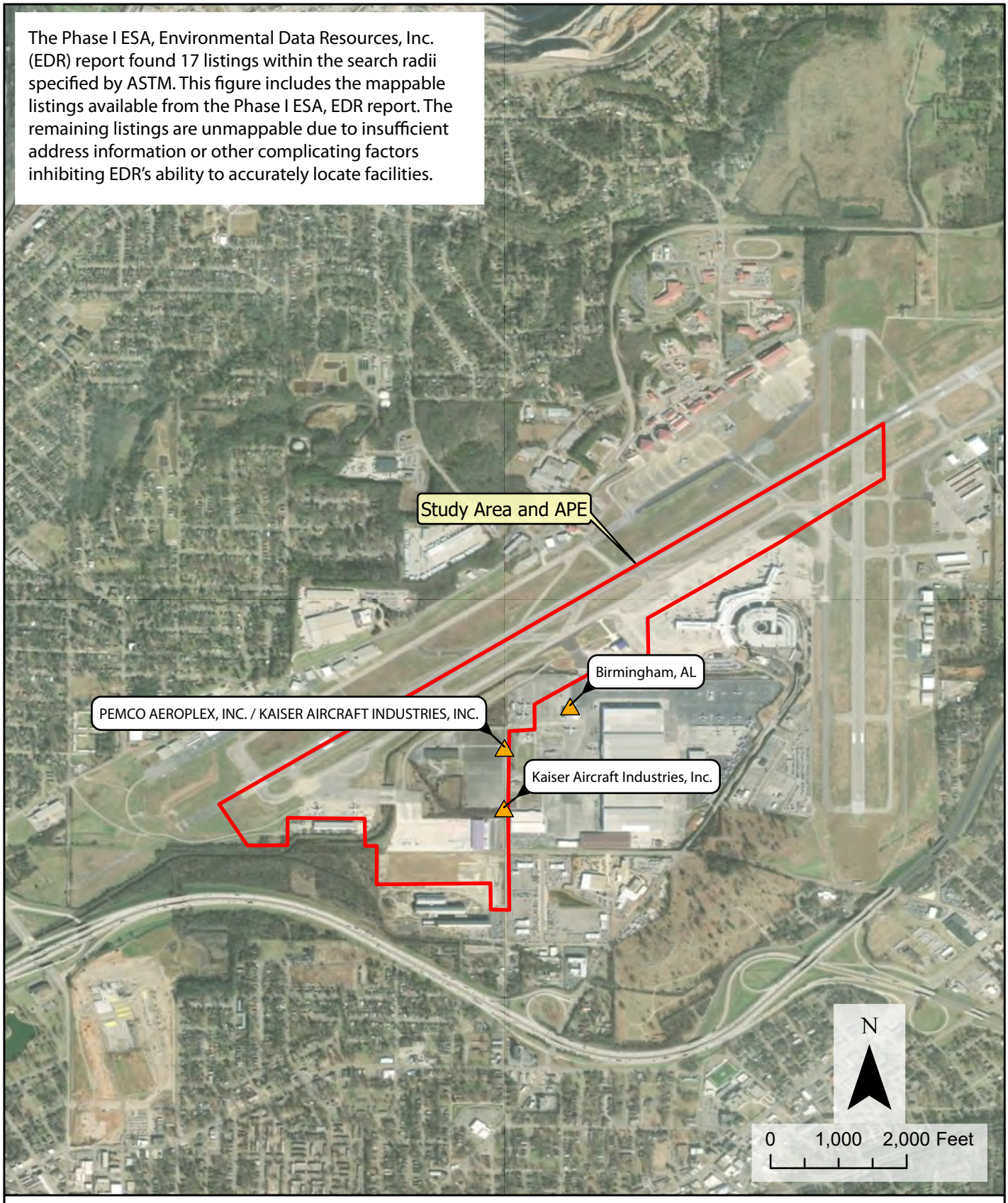
This Phase I ESA documents the research methodology used by qualified environmental professionals to identify and characterize *recognized environmental conditions* and other conditions of concern using the scope and limitations of ASTM Standard E1527-21. The qualifications for the environmental professionals involved in the preparation of this Phase I ESA are included in **Appendix G**.

SECTION 10: REFERENCES

Research and evaluation of the environmental conditions at the Property and surrounding properties included the following sources:

1. USGS 7.5-minute Topographic Quadrangle *Birmingham North, Alabama*, dated 2020.
2. GSA's *Geologic Map of Alabama (Special Map 220), dated 1985*.
3. Soil Survey Staff, NRCS, USDA. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov.
4. Historical information and property ownership records available online through Jefferson County's GIS database (available at https://www.arcgis.com/apps/View/index.html).
5. ASTM E1527-21 User Questionnaire completed by the Birmingham Airport Authority, dated February 4, 2025.
6. EDR's *The EDR Radius Map™ Report with GeoCheck®*, dated January 21, 2025.
7. EDR's *The EDR Aerial Photo Decade Package*, dated January 21, 2025.
8. EDR's *The EDR-City Directory Abstract*, dated January 24, 2025.
9. EDR's *Certified Sanborn® Map Report*, dated January 21, 2025.
10. EDR's *EDR Historical Topo Map Report*, dated January 21, 2025. .
11. National Wetlands Inventory Map provided by the US Fish & Wildlife Service.
12. Personal interview with Mr. Ocean Boyd during reconnaissance on February 11, 2025.
13. An email interview with Mr. Paul Searcy of ADEM on January 30, 2025.
14. Personal interview with Mr. Ernest Perry of the Birmingham Airport Authority during reconnaissance on February 11, 2025.
15. ASTM *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM E1527-21).

* Appendices to the Phase I ESA are not included in this document, but are available upon request from the Airport.



BIRMINGHAM SHUTTLESWORTH INTERNATIONAL AIRPORT

ENVIRONMENTAL ASSESSMENT

MAPPED HAZARDOUS MATERIALS SITES

APRIL 2025

FIGURE D3.3

Phase II ESA

LISA K. MORRISON
CEO
MARTIN T. BURFORD, P.E.
President
RICHARD A. RHINEHART, P.E.
Vice President

August 6, 2025

Birmingham Airport Authority
5900 Messer-Airport Highway
Birmingham, Alabama 35212
c/o Mr. Ryan Hayes
Mead & Hunt

Subject: Limited Phase II Environmental Site Assessment for
Taxiway Alpha Relocation –Birmingham-Shuttlesworth International Airport
Birmingham, Jefferson County, Alabama
BECC Job No. 225002

Dear Mr. Hayes:

BECC has completed the authorized Limited Phase II Environmental Site Assessment (ESA) summarizing the soil sampling activities completed at the property referenced above (hereafter the "site"). ***As detailed in subsequent sections of this report, this Phase II ESA revealed no evidence of soil contamination related to the historical operations on the site. Soil samples contained no Volatile Organic Compounds (VOCs), or Polycyclic Aromatic Hydrocarbons (PAHs) at concentrations exceeding applicable screening levels for commercial/industrial property established by the US Environmental Protection Agency (EPA) and endorsed by the Alabama Department of Environmental Management (ADEM). In light of these findings, no further investigation appears warranted at this time.***

On July 24, and 25, 2025, BECC's team mobilized to the site to install 20 soil borings in connection with the proposed expansion of Taxiway A at the Birmingham Shuttlesworth International Airport. Field personnel collected soil samples from each location for analysis of VOCs and PAHs according to EPA Methods 8260B and 8270C, respectively. BECC completed this assessment in an effort to determine the character of the material which may be disturbed during future Taxiway expansion efforts.

SITE DESCRIPTION

The subject property comprises approximately 20 acres of land located along the southern boundary of Village Creek near the southern edge of a runway known as Taxiway A. Surrounding acreage includes Birmingham Shuttlesworth International Airport property in all directions. During reconnaissance, field personnel observed the subject property to comprise a landscaped buffer along Village Creek, one commercial structure (near the western side of the subject property area), paved parking areas, and various concrete foundations associated with former buildings and infrastructure.

A Site Location Map is included as **Figure 1**. A Site Plan illustrating the layout with boring locations is included as **Figure 2**.

LIMITED PHASE II ESA: SAMPLE COLLECTION

The site investigation followed the American Society for Testing and Materials (ASTM) Standard Practice E1903-19 for Phase II ESAs and the ADEM Alabama Environmental Investigation & Remediation Guidance (AEIRG) document, revised February 2017.

On July 24, and 25, 2025, BECC's team oversaw its drilling subcontractor (Associated Topography, LLC) in the installation of 20 soil borings (E1 through E20) to 20 feet below land surface (BLS) or bedrock refusal with depths ranging from 4 feet (E1) to 20 feet (E8, E9, and E12) BLS. **Figure 2** illustrates the location of each boring installed during this investigation.

During drilling operations, field personnel used five-foot long stainless steel core samplers with five-foot acetate liners and advanced each soil boring in five-foot increments to collect continuous soil samples from the ground surface until reaching refusal. All drilling rods and sampling equipment were decontaminated between borings to prevent cross-contamination.

Following sample collection, BECC field personnel split a representative portion of each soil sample for chemical analysis, headspace screening, and lithologic classification. Each soil sample collected for chemical analysis was immediately placed in a pre-cleaned sample container supplied by the laboratory, labeled, and packed in a cooler with ice. BECC delivered soil samples from each boring location under proper chain-of-custody to Sutherland Environmental Company, Inc. in Birmingham, Alabama, for analysis for VOCs and PAHs. Soil samples collected for headspace screening were placed in re-sealable plastic bags and allowed to equilibrate for a minimum of ten to 15 minutes, permitting sufficient vapors in the sample containers to accumulate. The containers were then screened with a photoionization detector (PID) and the headspace reading recorded. PID readings for each sample interval are included on the boring logs in **Appendix A**.

ANALYTICAL RESULTS OF SOIL SAMPLING

The analytical data for the soil samples collected during this assessment were compared to the Regional Screening Levels (RSLs) for industrial soil established by EPA (November 2024). Soil samples E8 1-5FT and E14 5-10FT contained detectable concentrations of VOCs; however, none were present above their respective RSLs for industrial soil. Soil samples E1 1-4FT, E5 1-5FT, E11 1-5FT, E15 5-9FT, and E19 5- 10FT contained detectable concentrations of PAHs; however, no PAHs were detected above their respective EPA RSLs for industrial soil. None of the remaining soil samples contained COCs at concentrations exceeding laboratory reporting limits. COCs in soil are summarized in **Table 1**. A copy of the laboratory analytical report for the soil samples is included in **Appendix B**.

DISCUSSION OF CONCLUSIONS AND RECOMMENDATIONS

Considering the data collected during this investigation, BECC found no evidence to suggest onsite soil has been adversely affected by current or historical operations. In light of the findings, BECC recommends no further assessment of onsite soil at this time. We appreciate the continued opportunity to work with you on this project. If you have any questions or concerns over this matter, we will be glad to discuss with you at your convenience.

Respectfully submitted,

BECC, Inc.

Jeremy Mitchell, P.E.
Environmental Services Director

Marton T. Burford, P.E.
President

ADEM Official Response Letter

Edward F. Poolos
Director

Jeffery W. Kitchens
Deputy Director

Alabama Department of Environmental Management
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Kay Ivey
Governor

August 14, 2025

ELECTRONICALLY TRANSMITTED

Ms. Jenna Weigman
Aviation Sustainability Planner
Mead & Hunt, Inc.
1702 Lawrence Drive
De Pere, WI 54115

RE: **ADEM Review and Response:** *Birmingham-Shuttlesworth International Airport (BHM) Environmental Assessment (EA) – Taxiway A Relocation – Agency Solicitation of Views*, dated May 29, 2025
Birmingham-Shuttlesworth International Airport, Birmingham, AL
U.S. EPA I.D. No. ALD 983 168 147

Dear Ms. Weigman:

The Alabama Department of Environmental Management (ADEM or the Department) has reviewed the Birmingham Airport Authority's *Birmingham-Shuttlesworth International Airport (BHM) Environmental Assessment (EA) – Taxiway A Relocation – Agency Solicitation of Views*, dated May 29, 2025. The Department notes that, in 2019, the Air National Guard in Birmingham, AL (the 117th Air Refueling Wing) completed a Site Inspection for per- and polyfluoroalkyl substances (PFAS) at five potential release locations (PRLs) across the base property. Due to detectable levels at all five PRLs within soil and groundwater, it was determined that additional investigation is needed to determine nature and extent of PFAS contamination at the site. In addition to the PRLs on-site, several off-base areas were also recommended for soil and groundwater testing regarding PFAS, including:

- A Fire Training Area (FTA) located on Airport property (approximately 1 mile south-southwest of the Birmingham Air National Guard Base)

- Two non-FTA PRLs also located on Airport property:

    1. The Airport Parking Apron (located adjacent to the southern Air National Guard base border)

    2. A Nozzle Testing Area (located adjacent to a concrete runway)

The Site Inspection Report also mentions a 2013 aircraft crash on the northern end of the North/South runway that resulted in "a large amount" of Aqueous Film Forming Foam (AFFF) being used to combat the fires.

Given the information provided through these investigations, there is a potential for PFAS contamination to be present at the Birmingham-Shuttlesworth Airport. Additionally, considering the nature and extent of PFAS contamination at the Air National Guard (ANG) base has not been defined, off-base migration of PFAS from the ANG base toward Airport property is also possible.

Before proceeding with the relocation of Taxiway A, please consider the possibility of exposure/interaction with PFAS contamination during the project. It is recommended that any excavated soils stockpiled onsite be placed on an impermeable material and protected from wind and rainwater runoff to prevent migration of potential contamination. It is also recommended that excavated soil be analyzed for PFAS or other hazardous constituents before being transported offsite.

If you have any questions or comments concerning this matter, please contact William Duke of the Remediation Engineering Section at 334-271-7782 or via email at william.duke@adem.alabama.gov.

Sincerely,



Ashley T. Mastin, Chief
Governmental Hazardous Waste Branch
Land Division

ATM/MCM/WMD/mlw

Cc: Mary Catherine Muscha, ADEM

Architecture/History Report

PREPARED BY

Mead & Hunt



Architecture/History Survey Report

BIRMINGHAM-SHUTTLESWORTH INTERNATIONAL AIRPORT TAXIWAY A RELOCATION

JEFFERSON COUNTY, ALABAMA

Report Prepared for

BIRMINGHAM-SHUTTLESWORTH INTERNATIONAL AIRPORT

May 2025

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2. Historic Context 3
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APPENDICES

Appendix A. Preferred Alternative Plan Sheet
Appendix B. Project Area/Area of Potential Effects Map
Appendix C. Historic Building Survey Forms
Appendix D. Photographs and Photograph Key Map

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1. Introduction

Birmingham-Shuttlesworth International Airport (BHM, referred to herein as Airport) proposes a project to relocate Runway 6/24, Taxiway A, and Village Creek to accommodate the increasing demand for both passenger and cargo aircraft operations at the Airport in the city of Birmingham, Jefferson County. The project requires approval by the Federal Aviation Administration (FAA) and is therefore subject to review and consultation under Section 106 of the National Historic Preservation Act of 1966, as amended (Section 106).

A detailed project description is included in the Section 106 Project Review Consultation Form submitted along with this Architecture/History Survey Report, and the preferred alternative plan sheet is included as Appendix A to this report. The Project Area/Area of Potential Effects (APE), which is provided in Appendix B, was delineated to include buildings and structures that will fall within the footprint of the proposed project work, including those that will be demolished to construct the new taxiway and three proposed staging areas. Mead & Hunt, Inc. (Mead & Hunt) reviewed the Alabama Historic Preservation GIS Portal in November 2024 to identify previously recorded properties within the project area, including those listed in the National Register of Historic Places (National Register). No such properties were identified within the project area.

Mead & Hunt completed a field survey of the APE in November 2024 and looked for buildings, structures, and/or objects that are at least 50 years of age, or while not yet 50 years of age, may be of exceptional significance. Several non-historic-age resources are located just outside the APE: a c.2000 cargo building, a 2024 cargo building, a c.2020 fire safety building, and the 2014 concourse expansion to the 1973 terminal.[1] Two historic-age resources are in the APE: a mid-century office and industrial building built in 1968 and a mid-century storage shed built c.1965, both of which are proposed for demolition as part of the project (see Figure 1). The table below summarizes the findings. Mead & Hunt historians who meet the Secretary of the Interior Standards for History and Architectural History prepared this report and the Historic Building Survey Forms (see Appendix C), including photographs and a photograph key for each surveyed property (Appendix D).

Address	Name	Build Date	Eligibility Recommendation
4550 East Lake Blvd	Hayes Aircraft Corporation Office and Lab Building (Building #201)	1968	Not Eligible
4550 East Lake Blvd	Hayes Aircraft Corporation Storage Shed	c.1965	Not Eligible

[1] *Aerial Image of Birmingham, AL*, Photograph, black & white, 1998, Historic Aerials by NETR Online, https://www.historicaerials.com/viewer; *Aerial Image of Birmingham, AL*, Photograph, black & white, 2023, Historic Aerials by NETR Online, https://www.historicaerials.com/viewer; *Aerial Image of Birmingham, AL*, Photograph, black & white, 2021, Historic Aerials by NETR Online, https://www.historicaerials.com/viewer; *Aerial Image of Birmingham, AL*, Photograph, black & white, 2019, Historic Aerials by NETR Online, https://www.historicaerials.com/viewer; *Aerial Image of Birmingham, AL*, Photograph, black & white, 2004, Historic Aerials by NETR Online, https://www.historicaerials.com/viewer; "History of Birmingham Shuttlesworth International Airport," *Birmingham Airport Authority*, n.d., https://www.flybirmingham.com/history/.

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Figure 1. Map displaying the build dates of historic-age (red star) and non-historic (yellow pin) resources adjacent to and within the APE.

The project will take place in the southwest corner of the Airport property, near Village Creek, and within the area currently occupied by Kaiser Aircraft Industries, Inc. The project will take place entirely within existing Airport property in an industrial section of the property dedicated to aviation-related industry that has historically been occupied by the Hayes Aircraft Corporation. Sources consulted for the historic context provided in the next section include several historic newspaper records of *The Birmingham Post Herald* and *The Birmingham News*, historic maps, aerial photographs, informal interviews of airport staff, and online archives and repositories.

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2. Historic Context

Started in 1951, the Hayes Aircraft Corporation (Hayes)[2] was a privately held aircraft manufacturing company that originated in Birmingham and operated out of a facility at the Birmingham Municipal Airport (now Birmingham-Shuttlesworth International, referred to here as Airport). Hayes worked as part of the Air Force Depot System, designing and manufacturing secret national security devices, preparing technical data, authoring handbooks on the operating systems of different U.S. Air Force planes, and producing aircraft parts for the U.S. Air Force.[3] Additionally, the company worked to overhaul and modify several aircraft models following World War II, including B-52s, C-119s, and C-124s, for Air Force use by modernizing them with guided-missile capabilities and new jet engines, as needed.[4] In only two and one-half years, the company had become the second largest payroll producer in the Birmingham district with roughly 5,500 employees and $25 million in payroll in 1953.[5] Hayes had rapidly outgrown its allotted two million square feet of floor space in the repurposed emergency wartime aircraft manufacturing plant it started in, and by 1957 the company was looking for a more intentionally designed and permanent space on the Airport grounds.[6]



Figure 2. Aerial photograph of the Hayes facility warehouses c.1955 (extant).[7]

[2] Throughout its history, Hayes had many iterations of its company name including Hayes Aircraft Corps, Hayes Aircraft International, Precision Standard Incorporated, Pemco Aeroplex, and Alabama Aircraft Industries, Inc. For simplicity's sake, "Hayes" is used throughout.

[3] "Hayes Aircraft to Continue Expansion," *The Birmingham News*, December 27, 1953, sec. C, Newspapers.com.

[4] "Hayes Aircraft to Continue Expansion"; "In Four Years, Hayes Aircraft Has Climbed to Top in Its Field," *The Birmingham News*, January 1, 1956, sec. B, Newspapers.com.

[5] "Hayes Aircraft to Continue Expansion"; "In Four Years, Hayes Aircraft Has Climbed to Top in Its Field."

[6] "Hayes Aircraft to Continue Expansion"; "Mt. Brook Presses Moves to Speed Hayes Building," *The Birmingham News*, August 9, 1955, Newspapers.com.

[7] "Hayes Aircraft Corporation," *BhamWiki*, April 25, 2023, https://www.bhamwiki.com/w/Hayes_Aircraft_Corporation.

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With a need to relocate and expand the Hayes operation, in 1957 Birmingham Mayor James W. Morgan ordered a study of aircraft-related industries and the facilities they required in order to appropriately plan a new industrial park in the western portion of the Airport. Amzi Barber, chairman of the City of Birmingham's advisory board, worked with Hayes to author a report on the feasibility of converting several hundred acres at the southwest corner of the Airport property to commercial and industrial plants that would subcontract work for Hayes. While a huge expense, in 1958 Barber identified that much of the work Hayes was subcontracting out to businesses in other cities could all be done locally at the Airport with the establishment of such an industrial park.[8] However, according to aerial images and newspaper accounts, it seems the industrial park project was put on hold as the Airport instead prioritized its foremost need: improvements to the northeast-southwest runway.[9]

To keep up with increasing air traffic, the Airport undertook a project to resurface the existing northeast-southwest runway and construct a new parallel taxiway in 1964.[10] Construction of the taxiway required the removal of the Hayes plant's main office building. While the Hayes complex occupied 19 other buildings between the Airport and various regional offices, the demolition of its office building would leave the corporation without its central office and main research and design lab.[11] To remedy this, the City allotted a budget of $750,000 to the Airport for the construction of an office and lab building to house the growing Hayes corporate team and researchers. Hayes would finally get the intentionally designed office space it had requested back in 1957.[12]

In the decade or so since the City had reported out on the services and needs of aircraft-related industries, Hayes had expanded its services exponentially. Flourishing within the context of the Cold War and Space Race, Hayes had begun building Pershing Missiles for the military, constructing parts for the Saturn rocket and the Mercury Redstone and Mercury Jupiter space exploration programs, designing and installing space rocket launchpads, and producing chemical and biological warfare equipment, while still maintaining its original aircraft manufacturing business.[13] The company held contracts with the Department of Defense (DoD) and National Aeronautics and Space Administration (NASA). With such important and sensitive work, security needs were also expanding. The 254 acres of the Hayes

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[8] Irving Beiman, "Mayor Orders Studies to Attract Aircraft Industry," *The Birmingham News*, March 19, 1957, Newspapers.com.

[9] Lou Isaacson, "23 Road and Sewer Projects under Way in East and West," *The Birmingham News*, September 27, 964, sec. A, Newspapers.com; *Aerial Image of Birmingham, AL*, Photograph, black & white, 1956, Historic Aerials by NETR Online, https://www.historicaerials.com/viewer; *Aerial Image of Birmingham, AL*, Photograph, black & white, 1970, Historic Aerials by NETR Online, https://www.historicaerials.com/viewer.

[10] Isaacson, "23 Road and Sewer Projects under Way in East and West."

[11] Don Brown, "Steel, Wire, Welding Torches Put Hayes in the Middle of the Space Age," *The Birmingham News*, June 10, 1962, sec. B, Newspapers.com; "Hayes Building Talks Continue," *Birmingham Post-Herald*, March 29, 1967, Newspapers.com.

[12] "New Hayes Building Planned," *Birmingham Post-Herald*, March 25, 1967, Newspapers.com.

[13] Brown, "Steel, Wire, Welding Torches Put Hayes in the Middle of the Space Age."

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Corporation was protected by a high security fence with guarded entry gate. Visitors to the company were prohibited from viewing work bays housing classified project work.[14]

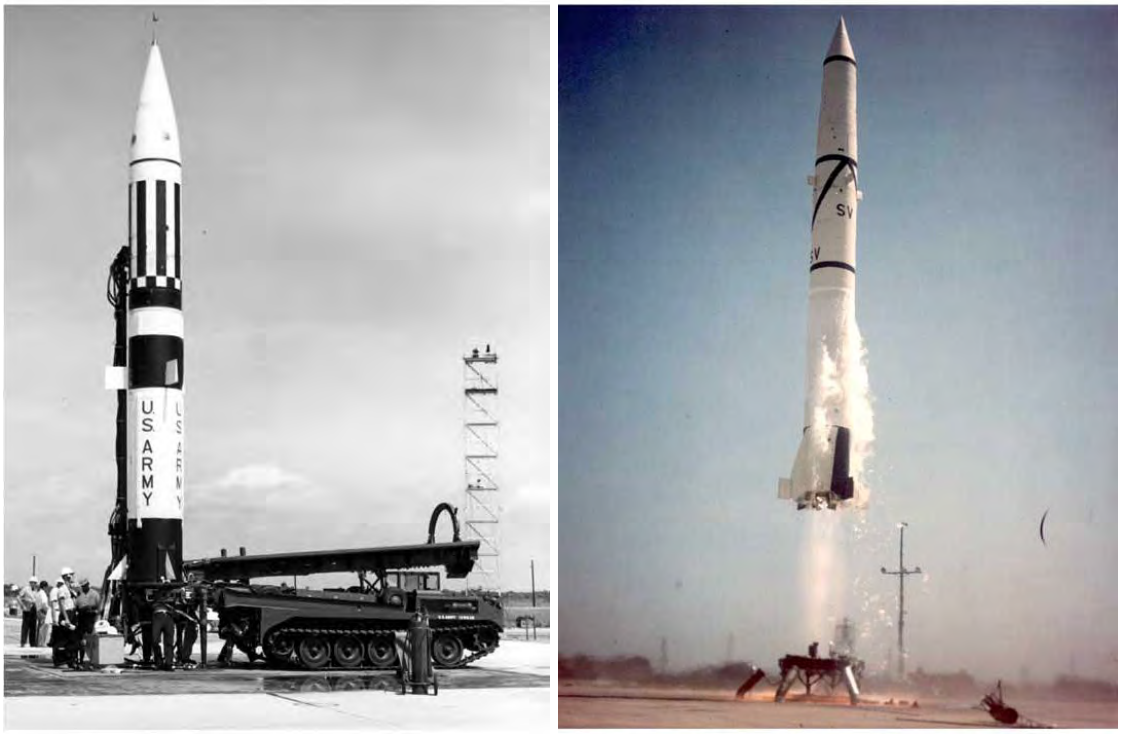


Figure 3. An example of a Pershing Missile (at left) and Saturn rocket (at right), both designed and built by Hayes in the 1960s.[15]

In 1968 the Hayes Aircraft Corporation was reincorporated as the Hayes International Corporation and began pursuing contracts to repair aircraft of other countries while maintaining its DoD and NASA contracts.[16] According to Hayes's company history, the business operated out of the Airport from 1951 to 2011, but the company headquarters shifted to Denver in 1983 after it was subsidized into several smaller companies.[17] Once in Denver, the company reorganized as Precision Standard Incorporated (PSI). While PSI maintained its buildings at the Airport, its were reorganized as a subsidiary, Pemco Aviation Group Incorporated (Pemco), and work was split between the Birmingham location and a plant in Miami, Florida.[18] By 1988 the Hayes facility at the Airport was once again renamed, this time to Pemco Aeroplex,

[14] Brown, "Steel, Wire, Welding Torches Put Hayes in the Middle of the Space Age."

[15] "The United States Army | Redstone Arsenal Historical Information," accessed February 13, 2025, https://history.redstone.army.mil/miss-pershing.html#photos; "The United States Army | Redstone Arsenal Historical Information," accessed February 13, 2025, https://history.redstone.army.mil/miss-jupiter.html.

[16] "Hayes Is Awarded $960,000 Contract," *Birmingham Post-Herald*, March 5, 1968, Newspapers.com.

[17] "Hayes Aircraft Corporation"; Frederick Ingram, "Pemco Aviation Group Inc., International Directory of Company Histories," *Encyclopedia.Com*, accessed January 23, 2025, https://www.encyclopedia.com/books/politics-and-business-magazines/pemco-aviation-group-inc.

[18] Ingram, "Pemco Aviation Group Inc., International Directory of Company Histories"; "Hayes Aircraft Corporation."

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which it operated as until vacating the Birmingham location in 2011.[19] Kaiser Aircraft Industries, another military aircraft manufacturing business, soon moved into 180 of the 240 acres that Hayes had previously occupied. However, by 2014 Kaiser put the majority of its acreage up for lease.[20]

[19] "Hayes Aircraft Corporation."

[20] Michael Tomberlin, "CFO: Kaiser to Have 'Continuing Business' at Birmingham Airport after Massive Site Is Put on the Market - al.Com," *AL*, July 2, 2014, https://www.al.com/business/2014/07/cfo_kaiser_to_have_continuing.html.

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3. Evaluations

A. Hayes Aircraft Corporation Office and Lab Building (Building #201)

Architectural Description

The Hayes Aircraft Corporation Office and Lab Building (more commonly referred to as Building #201) is a large, one-story, rectangular-plan office and warehouse building constructed in 1968. It is of concrete-block construction with a sloping, aggregate concrete paneled exterior and a brick clad foundation. The building lacks fenestration and ornamentation aside from its main entryway. The entryway is located on the front (north) facade and features a set of glass doors with large picture windows flanking either side, concrete steps, and metal railings. The doors are sheltered by an oversized, heavy concrete carport, clad in similar aggregate concrete panels and supported by two hexagonal concrete piers. Two integrated concrete planter beds flank the entrance. Each side (east and west) elevation is void of detail aside from four metal entry doors, accessed via poured concrete steps with metal railings near the front and rear (south) of the building. The rear elevation has a centrally located rectangular abutment, accessible by a rear set of double metal doors and side entry doors with concrete stairs and metal railings. Single-bay, overhead-style doors flank the abutment on either side of the rear elevation.

A large exterior HVAC system is located to the southwest and a large freestanding utility box is located to the southeast of the building.

Setting

The building is set within the southwestern quadrant of the Airport property. Several large industrial and commercial businesses occupy warehouses in the southwestern portion of the Airport property, including Building #201. Runway 6/24 is located just north of the building, separated by Taxiway A, Village Creek, an access road, and asphalt parking lot. Building #201 is located west of a string of large private hangars, isolated by large (currently unused) parking lots and 50th Street North. Four small vacant buildings sit in an overgrown, heavily foliaged area south of the building. The building itself is surrounded by concrete sidewalks with grassy terrace and little to no plantings.

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Figure 4. Map delineating the confirmed area that comprised a portion of the Hayes facility (shaded in blue) and the inferred extent of the 254-acre facility at its peak in the early 1960s (outlined in yellow).[21] *The red star marks the location of Building #201.*

History

Research did not reveal considerable information on Building #201, but relevant information is included below. Sources consulted include several historic newspaper records of *The Birmingham Post Herald* and *The Birmingham News*, historic maps, aerial photographs, information from Airport staff, and online archives and repositories.

The building located at 4550 East Lake Boulevard on Airport property was historically known as the Hayes Aircraft Corporation Office and Lab Building, though to the Airport it is currently and has historically

[21] Research did not reveal a source that delineated the boundary of the 254-acre Hayes facility. However, the current holdings of Kaiser Aircraft (shaded blue) is confirmed to be entirely part of the former Hayes facility. Further, historic aerial images allude to a large industrial area with several warehouses in the additional areas outlined in yellow between the late 1950s and early 1970s, which seem to align with the activities of Hayes and add up to the appropriate acreage. Tomberlin, "CFO: Kaiser to Have 'Continuing Business' at Birmingham Airport after Massive Site Is Put on the Market - al.Com"; *Aerial Image of Birmingham, AL*, 1956; *Aerial Image of Birmingham, AL*, 1970.

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been referred to as Building #201. The building was designed by the well-known local architectural firm, Lawrence S. Whitten & Son and constructed in 1968 by Robins Engineering Company.[22] According to local newspapers of the time, the City of Birmingham (owner of the Airport) commissioned the research and office space at the request of Hayes Aircraft Corporation, a fast-growing and lucrative tenant of the Airport, when the company found out its existing office facility would be demolished in a northeast-southwest runway improvement project.[23] When completed, the building spanned more than 55,000 square feet and cost approximately $915,000, which was more than the $750,000 the Birmingham City Council had budgeted for the project.[24]

It was Lawrence S. Whitten, locally celebrated architect known for his 1962 designs of the Bank for Savings Building and First Baptist Church in Birmingham, who was awarded the design contract for the Hayes office and lab building in early 1967.[25] Whitten proposed a very large, sprawling, one-story building with no windows and sloped concrete paneled walls. He proposed a noncombustible material, presumably to protect against the effects of any potential explosions during the weapon manufacturing process and to maintain privacy and security of military secrets, though available sources did not disclose why such design choices were made.[26] Local newspapers of the time described initial drawings of the building proposal as, “looking something like the base of a pyramid.”[27] Robins Engineering Company, another local company, was hired to construct the new space. The building was completed in 1968.[28]

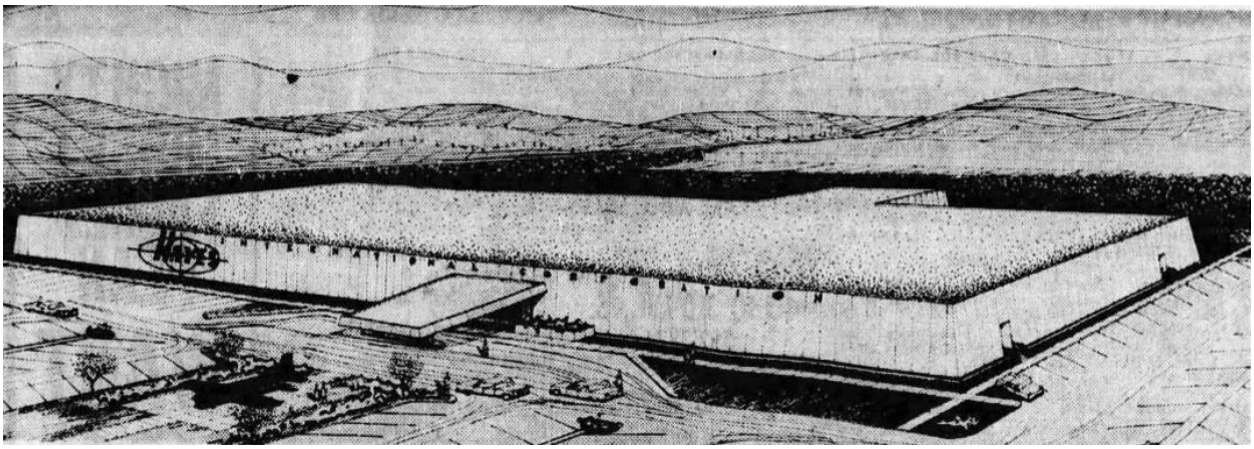


Figure 5. 1967 design sketch of the proposed office and research building.[29]

[22] “Multi-Million $ Construction Jobs Underway By Robins Engineering Co.,” *Birmingham Post-Herald*, July 31, 1967, Newspapers.com.

[23] “Hayes Building Talks Continue.”

[24] “Hayes Building Talks Continue.”

[25] “Multi-Million $ Construction Jobs Underway By Robins Engineering Co.”

[26] “Hayes Building Talks Continue.”

[27] “Hayes Building Talks Continue.”

[28] “Hayes Building Talks Continue.”

[29] “Hayes Building Talks Continue.”

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As mentioned earlier, Hayes operated out of the Airport and Building #201 until 2011. At that point Kaiser, another military aircraft manufacturing business, moved into 180 of the 240 acres that Hayes had previously occupied, including Building #201. However, by 2014 Kaiser put the majority of its acreage up for lease.[30] The building has remained vacant since 2014.

Areas of Significance

The building was evaluated for the Alabama Register of Landmarks and Heritage (State Register) and National Register under *Criterion A: History*, *Criterion B: Significant Person*, and *Criterion C: Architecture.*

Under *Criterion A,* research did confirm an association with the Hayes Aircraft Corporation, a lucrative and respected business in Birmingham that was founded at the Airport. Hayes worked on many high-profile contracts with the U.S. Air Force, DoD, and NASA, and, to an unknown extent, the company's project work contributed to the success of the nation in the Space Race and Cold War through its manufacturing of space rocket mechanisms, launchpads, and guided missile operating systems. However, much of that work took place prior to the construction of Building #201, both in the previous, nonextant office building and in the large metal hangar bays east of the subject building, beyond the extent of the proposed project. Further, while Building #201 did serve as the main office of Hayes, it was between the years of 1968 to 1983, representing 15 years of a company history that spanned seven decades and at a phase in the company where it was beginning to expand and diversify to other states and markets, and after its most significant years of innovation and growth in the late 1950s and early 1960s. Therefore, while Hayes may be significant to the city of Birmingham at the local level within the field of aviation, that history is not best represented or closely associated with Building #201, an office building that post-dates the most important years of the company's history. This significance would have been better represented by Building #201's predecessor, the original office building that was demolished in 1964.

Research did not reveal potential significance for this property under *Criterion B: Significant Person*.

The property was also evaluated under National Register *Criterion C: Architecture* as it was designed by locally lauded architect Lawrence S. Whitten. Whitten and his firm were known for their Contemporary-style designs around Birmingham, most notably the Bank for Savings Building and First Baptist Church, both representing high-style examples of the Contemporary movement. In contrast, Building #201 is a utilitarian space that was designed to serve an industrial purpose. Due to its lack of ornamentation and fenestration, with minimal features of the Contemporary style, this property does not stand out amongst Whitten's works. Further, due to its multi-use purpose as both an office and industrial research space, its nondescript appearance that does not read as an office building due to its lack of fenestration, and its location on the Airport property, Building #201 is not representative of the post-World War II office building property type. For these reasons, it does not possess significance under *Criterion C*.

[30] Tomberlin, "CFO: Kaiser to Have 'Continuing Business' at Birmingham Airport after Massive Site Is Put on the Market - al.Com."

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Integrity

Building #201 has some changes that impact its historic integrity, though the property itself is largely intact. In the 1950s and 1960s Hayes was a large corporation with over a dozen hangars, grassy airfields dedicated to parking the company's planes, and numerous outbuildings. Following the company's diversification and expansion to other states, and the evolving layout of the Birmingham Airport, much of the property's original setting has been lost. Several asphalt parking lots have been expanded, Hayes's airfields have been removed in place of taxiways and expanded runways, and a considerable number of outbuildings have been razed, causing the building to lack integrity of setting. In the absence of the airfields and ancillary buildings, severed from the remaining portions of the historic Hayes complex by a vast asphalt lot, the building has lost its integrity of feeling and association. However, the building remains in its original location and its exterior has undergone virtually no alterations; therefore, it maintains integrity of location and design. While much of the interior has been degraded by over a decade of vacancy, including the removal of large swaths of floor tiles, the core features and layout of the building remain unaltered, and it retains integrity of workmanship and materials. While the property retains a fair degree of integrity, it does not have associations to areas of significance in which it would be recommended eligible for listing in the State or National Register.

Recommendation

Building #201 of the Hayes Aircraft Corporation is recommended not eligible for the State or National Register due to a lack of significance under *Criteria A, B,* or *C.*

B. Hayes Aircraft Corporation Storage Shed

Architectural Description

The Hayes Aircraft Corporation Storage Shed is a utilitarian, one-story, rectangular-plan ancillary shed constructed c.1965.[31] It has a concrete foundation with a corrugated sheet metal clad exterior and features a side-gable metal roof. A deep shed-roof awning shelters the east elevation of the building. The regularly spaced windows are six-light, metal awning units. The east and west elevations feature original doors, each with four glass panes. Metal vents are set in the north and south gable ends. The building lacks ornamentation and does not exhibit any notable alterations

Setting

The shed is set within the southwestern quadrant of the Airport property. Runway 6/24 is located just north of the building, separated by Taxiway A, Village Creek, an access road, and asphalt lot. The shed is located northwest of a string of large private hangars, isolated by a large asphalt lot. Two large, concrete silos sit several hundred feet south of the shed, along with another side-gable, metal-roof structure east of the shed. The building itself is isolated and surrounded by the airport apron, and brush to the west.

[31] *Aerial Image of Birmingham, AL*, 1956; *Aerial Image of Birmingham, AL*, 1970.

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Figure 6. Map delineating the confirmed area that comprised a portion of the Hayes facility (shaded in blue) and the inferred extent of the 254-acre facility at its peak in the early 1960s (outlined in yellow).[32] *The red star marks the location of the storage shed.*

History

Research including newspaper records of *The Birmingham Post Herald* and *The Birmingham News*, historic maps, aerial photographs online archives and repositories, and conversations with airport staff revealed very little about the history of the shed or its use. The storage shed was historically associated with the Hayes Aircraft Corporation, as noted by a map of the current Kaiser Aircraft Industries facility, all of which was previously part of the larger Hayes Corporation.[33]

[32] Research did not reveal a source that delineated the boundary of the 254-acre Hayes facility. However, the current holdings of Kaiser Aircraft (shaded blue) is confirmed to be entirely part of the former Hayes facility. Further, historic aerial images allude to a large industrial area with several warehouses in the additional areas outlined in yellow between the late 1950s and early 1970s, which seem to align with the activities of Hayes and add up to the appropriate acreage. Tomberlin, "CFO: Kaiser to Have 'Continuing Business' at Birmingham Airport after Massive Site Is Put on the Market - al.Com"; *Aerial Image of Birmingham, AL*, 1956; *Aerial Image of Birmingham, AL*, 1970.

[33] "Hayes Aircraft Corporation."

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Areas of Significance

The building was primarily evaluated for the State and National Register under *Criterion A: History.* Research did not reveal an association under *Criterion B: Significant Persons*. Because this building represents a simple, vernacular, utilitarian shed, it was not evaluated under *Criterion C: Architecture.*

Under *Criterion A,* research did confirm an association with the Hayes Aircraft Corporation, a lucrative and respected business in Birmingham that was founded at the Airport. Hayes worked on many high-profile contracts with the U.S. Air Force, DoD, and NASA, and, to an unknown extent, the company's project work contributed to the success of the nation in the Space Race and Cold War through its manufacturing of space rocket mechanisms, launchpads, and guided missile operating systems. However, that work took place in the large metal hangar bays east of the subject building, beyond the extent of the proposed project. Further, this storage shed represents a small ancillary building belonging to a national company that occupied at least 19 buildings at the Birmingham Airport alone. Therefore, while Hayes may be significant to the city of Birmingham at the local level, that history is not best represented or closely associated with this storage shed.

Integrity

The storage shed has undergone some changes that impact its historic integrity, though it is largely intact. In the 1950s and 1960s Hayes was a large corporation with over a dozen hangars, grassy airfields dedicated to parking the company's planes, and numerous outbuildings. Following the company's diversification and expansion to other states, and the evolving layout of the Birmingham Airport, much of the property's original setting has been lost. The vast expanse of asphalt surrounding this shed bears the marks of the footprints of several nonextant buildings. In the absence of the airfields and ancillary buildings, severed from the remaining portions of the historic Hayes complex by a vast asphalt lot, the building has lost its integrity of feeling and association. However, the building remains in its original location and its exterior has undergone virtually no alterations; therefore, it maintains integrity of location and design. While the building has been vacant for over a decade, the core features and layout remain unaltered, and it retains integrity of workmanship and materials. While the property retains a fair degree of integrity, it does not have associations to areas of significance for which it would be recommended eligible for listing in the State or National Register.

Recommendation

The storage shed of the Hayes Aircraft Corporation is recommended not eligible for the National Register due to a lack of significance under *Criteria A, B,* or *C.*

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4. Results

Mead & Hunt concludes that neither resource is eligible for listing in the State or National Register. As part of the subject project, both buildings will be demolished. Because they are recommended not eligible, the Section 106 determination of effect is *No Historic Properties Affected*.

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“Multi-Million $ Construction Jobs Underway By Robins Engineering Co.” *Birmingham Post-Herald*. July 31, 1967. Newspapers.com.

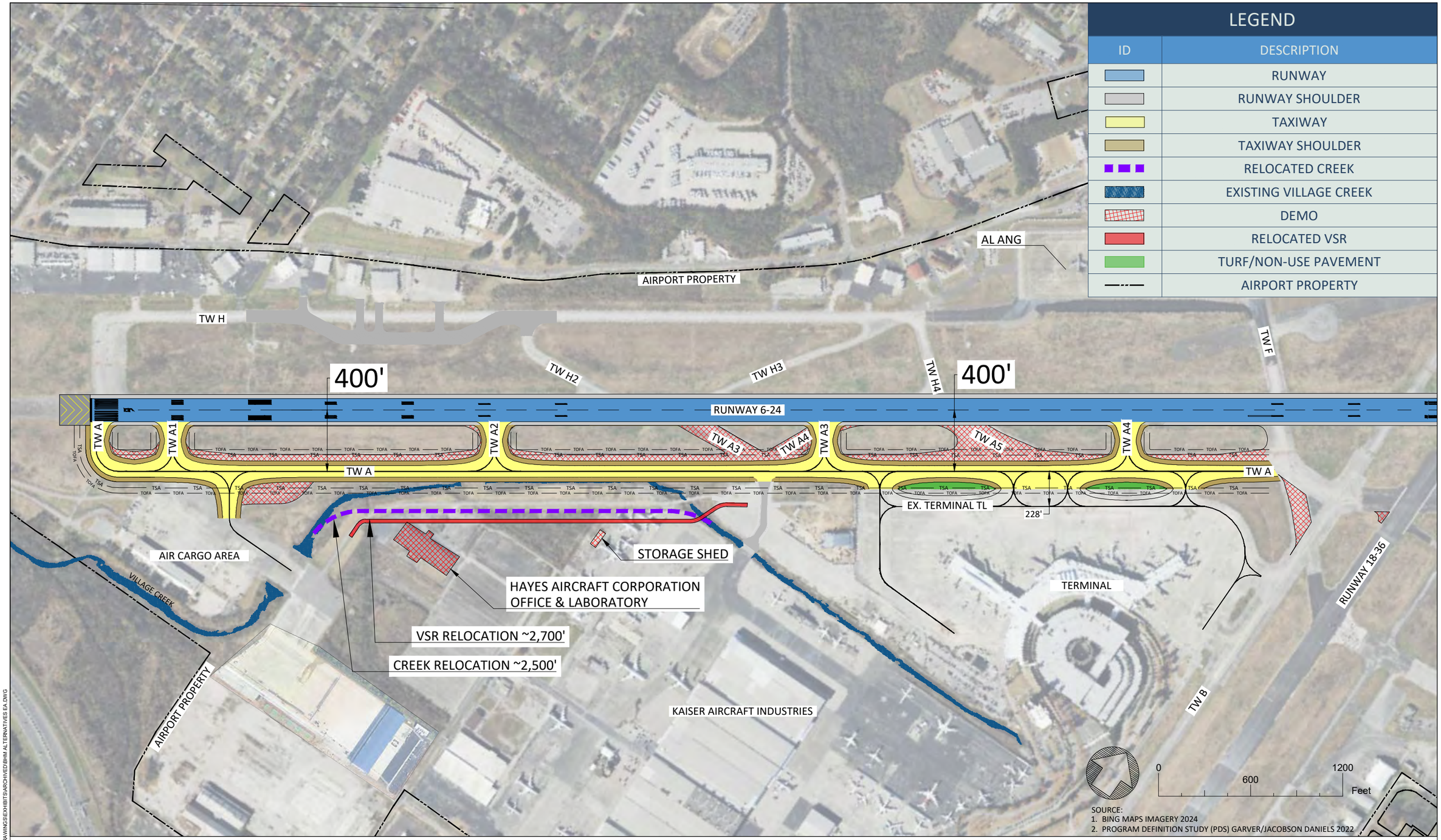
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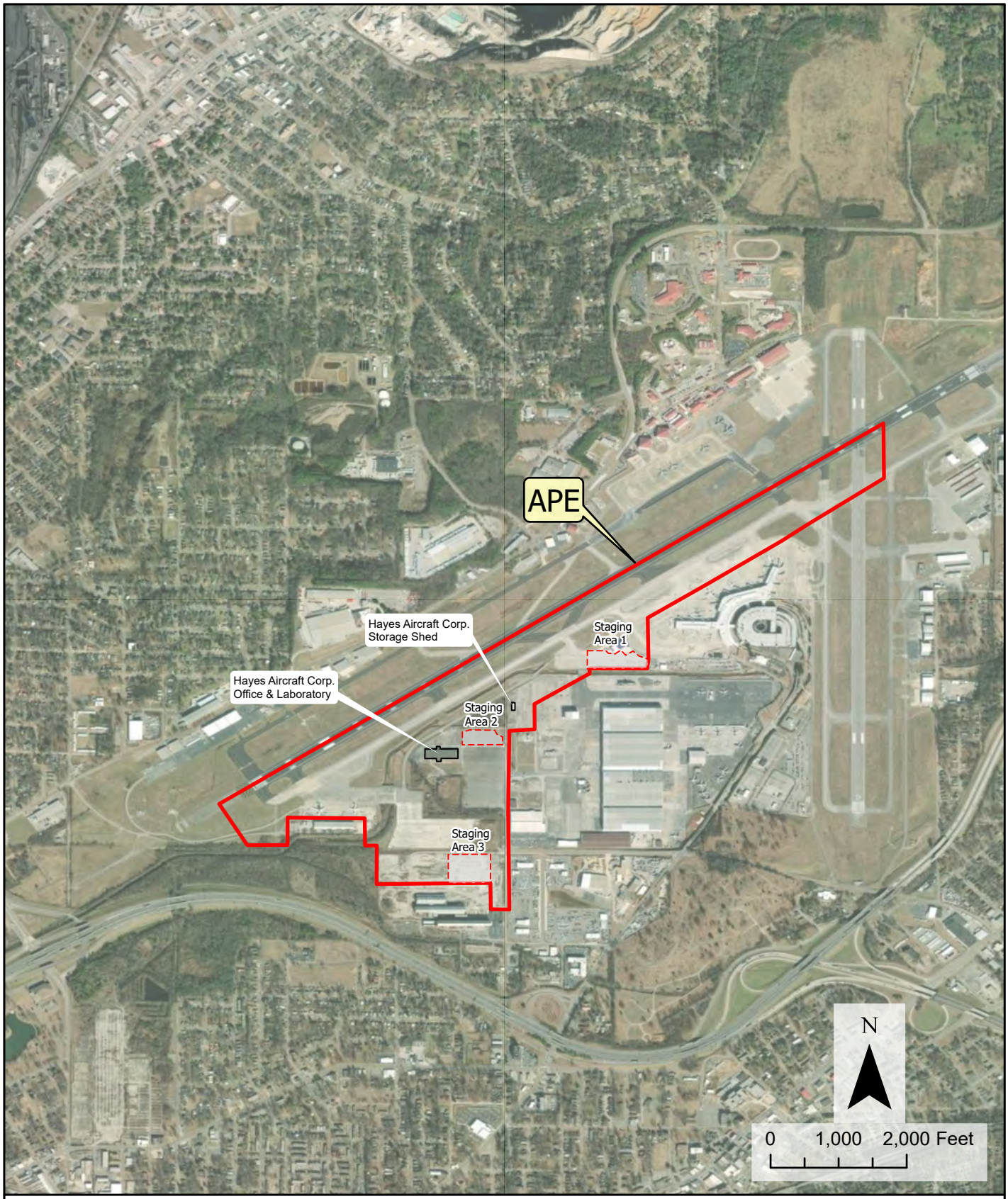
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BIRMINGHAM SHUTTLESWORTH
INTERNATIONAL AIRPORT
.
ENVIRONMENTAL ASSESSMENT
.
MAY 2025

FIGURE B2 ALTERNATIVE 2: VILLAGE CREEK RELOCATION
AND TAXIWAY A RELOCATION TO 400 FEET



BIRMINGHAM SHUTTLESWORTH
INTERNATIONAL AIRPORT

ENVIRONMENTAL ASSESSMENT

AREA OF POTENTIAL EFFECT
PROJECT AREA

APRIL 2025

EXHIBIT X.3

ALABAMA
HISTORICAL
COMMISSION
The State Historic Preservation Office

468 S. Perry Street
Montgomery, Alabama 36130-0900
Voice: (334)242-3184
Fax: (334)262-1083
www.ahc.alabama.gov

HISTORIC BUILDING SURVEY FORM

1. Location/Ownership

AHC Survey Number:		Form completed by:	Mead & Hunt, Inc.	Date:	May 15, 2025
Property Name:	Hayes Aircraft Corporation Office and Lab Building (Building #201)				
Location/Street Address:	4550 East Lake Boulevard				
City/Zip:	Birmingham, 35212		County:	Jefferson	
USGS Quad:	Birmingham North		Township/Range/Section:	T 17S R 2W Sec 17	
Current Owner's Name & Contact Info (if known):	Kaiser Aircraft Industries, Inc. Dale Mullinax, CEO and President Dale.Mullinax@kaiseraircraft.com 205-545-7635 ext. 2105				

2. Physical Description

Construction date:	1968	Source:	Birmingham Post-Herald
Alteration date:	N/A	Source:	
Architect/Builder:	Lawrence S. Whitten & Son, Architects	Contractor:	Robins Engineering
Physical condition: (Excellent, Good, Fair, Poor, Ruinous)	Excellent	Remaining historic fabric: (High, Medium, Low)	High

No. of stories:	1		
Historic use of property:	Hayes Aircraft main office, research/design lab space		
Current use of property:	Storage		
Architectural style category:	Contemporary	Architectural style sub-category:	
Basic typology:	Commercial & Industrial	Basic shape:	Rectangular
Basic floor plan:		Historic Construction material(s):	Concrete block and panels, brick
Current exterior wall material(s)	Concrete panels	Roof finish material(s):	Not visible
Main roof configuration:	Flat	Foundation material:	Brick clad concrete
Porch type:	No porch		
Window type and materials:	None		
Describe alterations:	None		
Number and type of all outbuildings: (if significant, fill out separate survey form)	None		

Exterior Architectural Description: The Hayes Aircraft Corporation Office and Lab Building (more commonly referred to as Building #201) is a large, one-story, rectangular-plan office and lab building constructed in 1968. It is of concrete-block construction with a sloping, aggregate concrete paneled exterior and a brick-clad foundation. The building lacks fenestration and ornamentation aside from its main entryway. See the Architecture/History Survey Report for full architectural description.

Description of Setting: The building is set within the southwestern quadrant of the Birmingham-Shuttlesworth International Airport (Airport) property, located in northwest Birmingham, Jefferson County, Alabama. Several large, industrial and commercial businesses occupy warehouses in the southwestern portion of the Airport property, including Building #201. Runway 6/24 is located just north of the building, separated by Taxiway A, Village Creek, an access road, and asphalt parking lot. See the Architecture/History Survey Report for a full description of setting.

Historical Notes:

The building was historically associated with Hayes Aircraft Corporation and served as the main offices and lab space for the company. See the Architecture/ History Survey Report for additional information.

3. Eligibility

Appears Eligible for Alabama Register:	☐ Yes ☒ No ☐ would contribute to a district ☐ Undetermined
Appears Eligible for National Register:	☐ Yes ☒ No ☐ would contribute to a district ☐ Undetermined
AR Criteria:	☐ A ☐ B ☐ C ☐ D ☐ Undetermined
NR Criteria:	☐ A ☐ B ☐ C ☐ D ☐ Undetermined
Level of Significance:	☐ Local ☐ State ☐ National ☐ Undetermined

Justification of Eligibility/Ineligibility:

Not eligible. See the Architecture/History Survey Report for full evaluation.

ALABAMA
HISTORICAL
COMMISSION
The State Historic Preservation Office

468 S. Perry Street
Montgomery, Alabama 36130-0900
Voice: (334)242-3184
Fax: (334)262-1083
www.ahc.alabama.gov

HISTORIC BUILDING SURVEY FORM

1. Location/Ownership

AHC Survey Number:		Form completed by:	Mead & Hunt, Inc.	Date:	May 15, 2025
Property Name:	Hayes Aircraft Corporation Storage Shed				
Location/Street Address:	4550 East Lake Boulevard				
City/Zip:	Birmingham, 35212		County:	Jefferson	
USGS Quad:	Birmingham North		Township/Range/Section:	T 17S R 2W Sec 17	
Current Owner's Name & Contact Info (if known):	Kaiser Aircraft Industries, Inc. Dale Mullinax, CEO and President Dale.Mullinax@kaiseraircraft.com 205-545-7635 ext. 2105				

2. Physical Description

Construction date:	c.1965	Source:	1956 and 1970 aerials, NETROnline
Alteration date:	N/A	Source:	
Architect/Builder:	Unknown	Contractor:	Unknown
Physical condition: (Excellent, Good, Fair, Poor, Ruinous)	Good	Remaining historic fabric: (High, Medium, Low)	High

No. of stories:	1		
Historic use of property:	Storage		
Current use of property:	Storage		
Architectural style category:	None	Architectural style sub-category:	
Basic typology:	Utilitarian	Basic shape:	Rectangular
Basic floor plan:		Historic Construction material(s):	Corrugated sheet metal
Current exterior wall material(s)	Corrugated sheet metal	Roof finish material(s):	Corrugated sheet metal
Main roof configuration:	Side gable	Foundation material:	Concrete
Porch type:	No porch		
Window type and materials:	6-light industrial, metal		
Describe alterations:	None		
Number and type of all outbuildings: (if significant, fill out separate survey form)	None		

Exterior Architectural Description: The Hayes Aircraft Corporation Storage Shed is a utilitarian, one-story, rectangular-plan ancillary shed constructed c.1965. It rests on a concrete foundation with a corrugated sheet metal clad exterior and features a side-gable metal roof. A deep shed-roof awning shelters the east elevation of the building. The regularly placed windows are six-light, metal awning units. The east and west elevations feature original doors, each with four glass panes. Metal vents are set in the north and south gable ends. The building lacks ornamentation and does not exhibit any notable alterations.

Description of Setting: The shed is set within the southwestern quadrant of the Birmingham-Shuttlesworth International Airport property. Runway 6/24 is located just north of the building, separated by Taxiway A, Village Creek, an access road, and asphalt lot. Currently leased by Kaiser Aircraft Industries, Inc., it is located northwest of the larger Kaiser complex, isolated by a large asphalt lot. Two large, concrete silos sit several hundred feet south of the shed, along with another side-gable, metal roof structure east of the shed. The building itself is isolated and surrounded by a large expanse of concrete, and brush to the west.

Historical Notes:

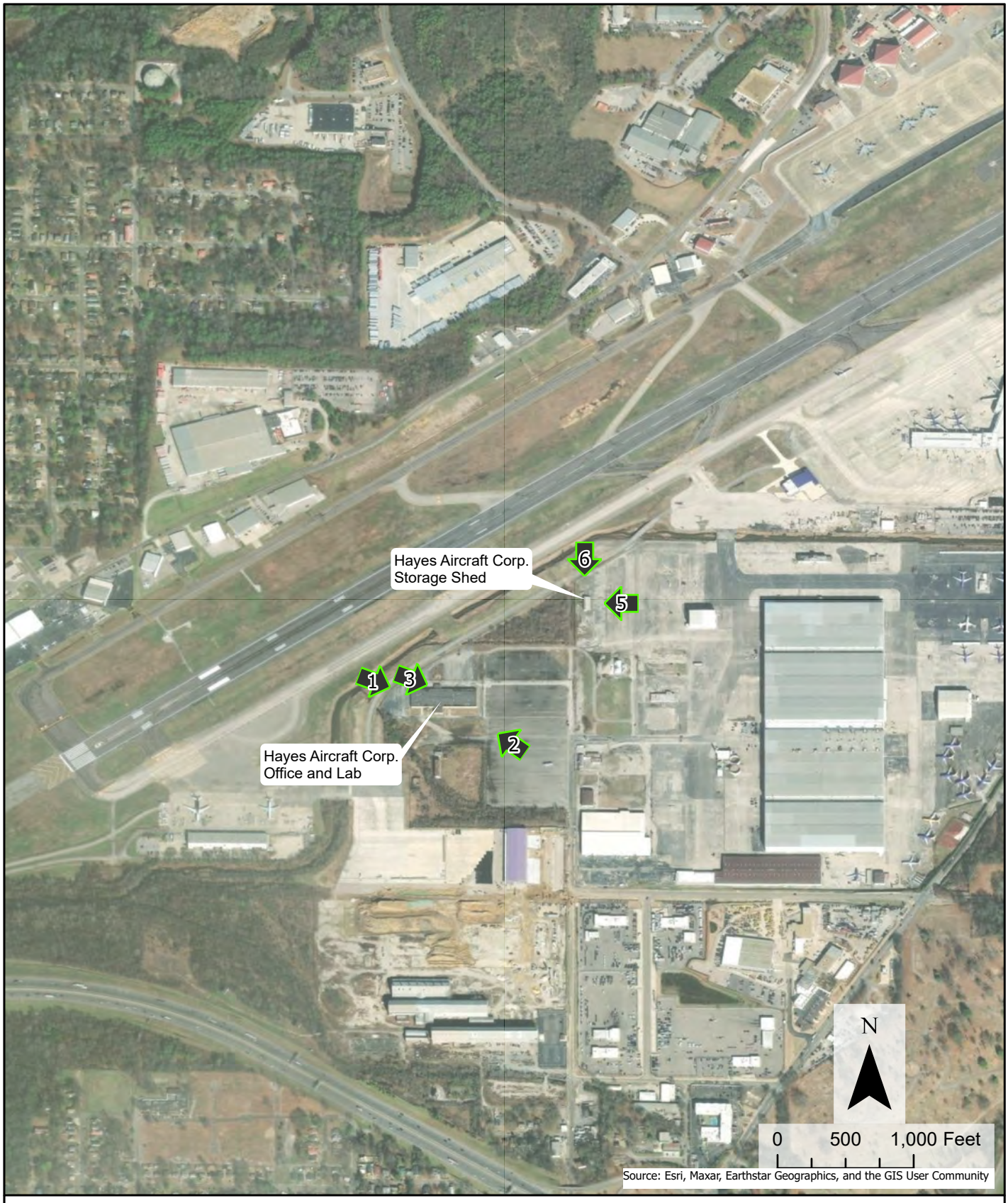
The building was historically associated with Hayes Aircraft Corporation and appears to have been used as a storage unit for the company. See the Architecture/ History Survey Report for additional information.

3. Eligibility

Appears Eligible for Alabama Register:	☐ Yes ☒ No ☐ would contribute to a district ☐ Undetermined
Appears Eligible for National Register:	☐ Yes ☒ No ☐ would contribute to a district ☐ Undetermined
AR Criteria:	☐ A ☐ B ☐ C ☐ D ☐ Undetermined
NR Criteria:	☐ A ☐ B ☐ C ☐ D ☐ Undetermined
Level of Significance:	☐ Local ☐ State ☐ National ☐ Undetermined

Justification of Eligibility/Ineligibility:

Not eligible. See the Architecture/History Survey Report for full evaluation.



BIRMINGHAM SHUTTLESWORTH INTERNATIONAL AIRPORT

ENVIRONMENTAL ASSESSMENT

PHOTO MAP

APRIL 2025

EXHIBIT X.4

Hayes Aircraft Corporation Office and Lab Building (Building #201), 4550 East Lake Boulevard



Photo 1. Building #201, oblique of front (north) facade and side (west) elevation, view facing southeast.



Photo 2. Building #201, oblique of rear (south) and side (east) elevations, view facing northwest.



Photo 3. Building #201, front (north) facade entryway and carport, view facing southwest.



Photo 4. Building #201, interior research area.

Hayes Aircraft Corporation Storage Shed, 4550 East Lake Boulevard



Photo 5. Storage shed, east elevation, view facing west.



Photo 6. Storage shed, north elevation, view facing south.



Photo 7. Storage shed, interior.

AL Historic Commission Concurrence Letter

ALABAMA HISTORICAL COMMISSION

468 South Perry Street
Montgomery, Alabama 36130-0900

Lisa D. Jones
Executive Director
State Historic Preservation Officer

Tel: 334-242-3184
Fax: 334-242-1083

June 23, 2025

Eric Tomasovic
FAA
10 Canebrake Blvd. Suite 100
Flowood, MS 39232

Re: AHC 25-0825
Birmingham-Shuttlesworth International Airport (BHM) – Environmental Assessment (EA) – Taxiway A Relocation – Agency Solicitation of Views
Jefferson County

Dear Mr. Tomasovic:

Upon review of the above referenced project, we concur that project activities will have no effect on cultural resources eligible for or listed on the National Register of Historic Places. Therefore, we concur with the determination of no effect to historic properties.

Consultation with the State Historic Preservation Office does not constitute consultation with Tribal Historic Preservation Offices, other Native American tribes, local governments, or the public. If archaeological materials are encountered during construction, the procedures codified at 36 CFR 800.13(b) will apply. Archaeological materials consist of any items, fifty years old or older, which were made or used by man. These items include but are not limited to, stone projectile points (arrowheads), ceramic sherds, bricks, worked wood, bone and stone, metal, and glass objects. The federal agency or the applicant receiving federal assistance should contact our office immediately. If human remains are encountered, the provisions of the Alabama Burial Act (*Code of Alabama* 1975, §13A-7-23.1, as amended; Alabama Historical Commission Administrative Code Chapter 460-X-10 Burials) should be followed. This stipulation shall be placed on the construction plans to ensure contractors are aware of it.

We appreciate your commitment to helping us preserve Alabama's historic archaeological and architectural resources. Should you have any questions, please contact Eric Sipes at 334.230.2667 or Eric.Sipes@ahc.alabama.gov. Have the AHC tracking number referenced above available and include it with any future correspondence.

Sincerely,

Lee Anne Hewett

Lee Anne Hewett
Deputy State Historic Preservation Officer

LAH/EDS/lah

Tribal Notification Letters

Jenna Weigman

From: Tomasovic, Eric (FAA) <Eric.Tomasovic@faa.gov>
Sent: Friday, July 18, 2025 10:33 AM
To: bbailey@pci-nsn.gov
Cc: Dianna Litvak
Subject: Birmingham-Shuttlesworth Int'l Airport (BHM) Taxiway 'A' Relocation
Attachments: BHM_TW-A_PoarchBandCreek_William.pdf; 250515_BHM Section 106 Report.pdf

You don't often get email from eric.tomasovic@faa.gov. Learn why this is important

Bill Bailey,

Please find the attached project description, designs, and Cultural Resources Assessment for the Taxiway ‘A’ Relocation project at the Birmingham-Shuttlesworth International Airport (BHM). If you have any questions or comments, please, email or call me using the information in the signature line.

Thank you,

Eric Tomasovic
Environmental Protection Specialist
FAA, Jackson ADO
10 Canebrake Blvd. Suite 100
Flowood, MS 39232
(email) Eric.Tomasovic@faa.gov
(office) 769-268-6965
(cell) 757-749-6989

U.S. Department
of Transportation
**Federal Aviation
Administration**

Airports District Office
10 Canebrake Blvd., Suite 100
Flowood, Mississippi 39232

18 July 2025

William Bailey, THPO
Poarch Band of Creek Indians
5811 Jack Springs Road
Atmore, AL 36502
bbailey@pci-nsn.gov

RE: Taxiway A Relocation Environmental Assessment
at Birmingham-Shuttlesworth International Airport, in
Birmingham, Alabama.

William Bailey:

The Birmingham Airport Authority (BAA), in cooperation with the Federal Aviation Administration (FAA), is preparing an Environmental Assessment (EA) for the relocation of Taxiway A at Birmingham-Shuttlesworth International Airport in Birmingham, Alabama. In accordance with Federal Executive Order 13175 "Consultation and Coordination with Indian Tribal Governments" and FAA Order 1210.20 "American Indian and Alaska Native Tribal Consultation Policy and Procedures," the FAA is seeking comments on the Proposed Action and concerns that uniquely or significantly affect your Tribe related to proposed Airport improvements.

The purpose of the proposed project is to enhance the airfield's ability to accommodate the increasing demand for both passenger and cargo aircraft operations in a safe and efficient manner by addressing the non-standard runway to taxiway separation distance located on the southwest portion of Runway 6-24 and Taxiway A. As a result of the existing non-standard 350-foot separation distance between Runway 6-24 and Taxiway A, the majority of the Airport's mainline traffic cannot operate in an optimal environment as the existing separation distance does not meet current FAA design standards. By relocating Taxiway A, most commercial aircraft will be able to utilize Taxiway A efficiently with minimal operational restrictions. The relocation of Taxiway A is necessary to enhance airfield safety, ensure the protection of personnel, and support the demand for the existing and future fleet mix.

The following alternatives are being carried forward for analysis (refer to the enclosed exhibits):

- **Alternative 2 – Village Creek Relocation and Taxiway A Relocation to 400' (Preferred Alternative)**
    - Involves the realignment of Taxiway A pavement to achieve a 400-foot separation distance from the runway centerline to the taxiway centerline, the relocation of ~2,500 linear feet of Village Creek by constructing an open-air creek parallel to its current alignment, and the relocation of the parallel Vehicle Service Road (VSR).

- **Alternative 4 – Village Creek Relocation and Taxiway A Relocation to 500'**
    - Involves the realignment of Taxiway A pavement to achieve a 500-foot separation distance from the runway centerline to the taxiway centerline, the relocation of ~2,500 linear feet of Village Creek by constructing an open-air creek parallel to its current alignment, and the relocation of the parallel VSR.

- **Alternative 5 - Village Creek Relocation and Hybrid 400'/500' Taxiway A Relocation**
    - Involves the realignment of Taxiway A pavement to achieve a hybrid offset distance varying from 400 feet to 500 feet from the runway centerline to the taxiway centerline, the relocation of ~2,500 linear feet of Village Creek, and the relocation of the parallel VSR.

- **Alternative 6 – No Action**
    - The No Action Alternative would result in the airfield configuration remaining the same as it is today, and the need to meet FAA design standards and enhance safety would not be addressed. Taxiway A and Village Creek would remain in the same location. The No Action Alternative includes the reconstruction of Taxiway A in place, demolition of existing non-standard taxiway connectors, and the construction of taxiway connectors that meet FAA design standards.

Purpose of Government-to-Government Consultation

The primary purpose of government-to-government consultation as described by Federal Executive Order 13175 "Consultation and Coordination with Indian Tribal Governments" and FAA Order 1210.20 "American Indian and Alaska Native Tribal Consultation Policy and Procedures" is to ensure Federally Recognized Tribes are given the opportunity to provide meaningful and timely input regarding proposed FAA actions that uniquely or significantly affect Tribes. Additionally, the U.S. Department of Transportation (DOT) Order 5301.1A "Department of Transportation Tribal Consultation Policy and Procedures" was signed on August 10, 2023.

Survey

An Architectural/History Survey Report of the Area of Potential Effect (APE) was developed in May 2025 that identified buildings, structures, and/or objects that are at least 50 years of age, or while not yet 50 years of age, may be of exceptional historical or cultural significance.

Two historic-age resources were identified within the APE, including a mid-century office/industrial structure that was erected in 1968 and a mid-century storage shed that was erected in 1965. Both of these structures are proposed for demolition as part of the proposed project.

The report concluded that neither resource is eligible for listing in the State nor National Register of Historic Places (NRHP). Because both structures are recommended not eligible, the Section 106 determination of effect is *No Historic Properties Affected.* The AL State Historic Preservation Office (SHPO) issued a letter of concurrence to these findings on June 23, 2025.

Request for Comments

The FAA is seeking comments on the Proposed Action and concerns that uniquely or significantly affect your Tribe related to proposed Airport improvements. Early identification of Tribal concerns

allows the FAA and the Airport owner and operator to consider ways to avoid and minimize potential impacts to Tribal resources and practices as project planning and alternatives are developed and refined. We would be pleased to discuss the details of the proposed project with you.

Confidentiality

It is understood that you may have concerns regarding the confidentiality of information on areas or resources of religious, traditional and cultural importance to the Tribe. In accordance with Section 9 of the Archaeological Resources Protection Act of 1979, 16 U.S.C 470hh(a), *Confidentiality of Information Concerning the Nature and Location of Archaeological Resources and Tribal Cultural Properties,* and its implementing regulations at 43 CFR 7.18, detailed information regarding specific locations of archeological and cultural resources will be withheld from any public documents.

FAA Contact Information

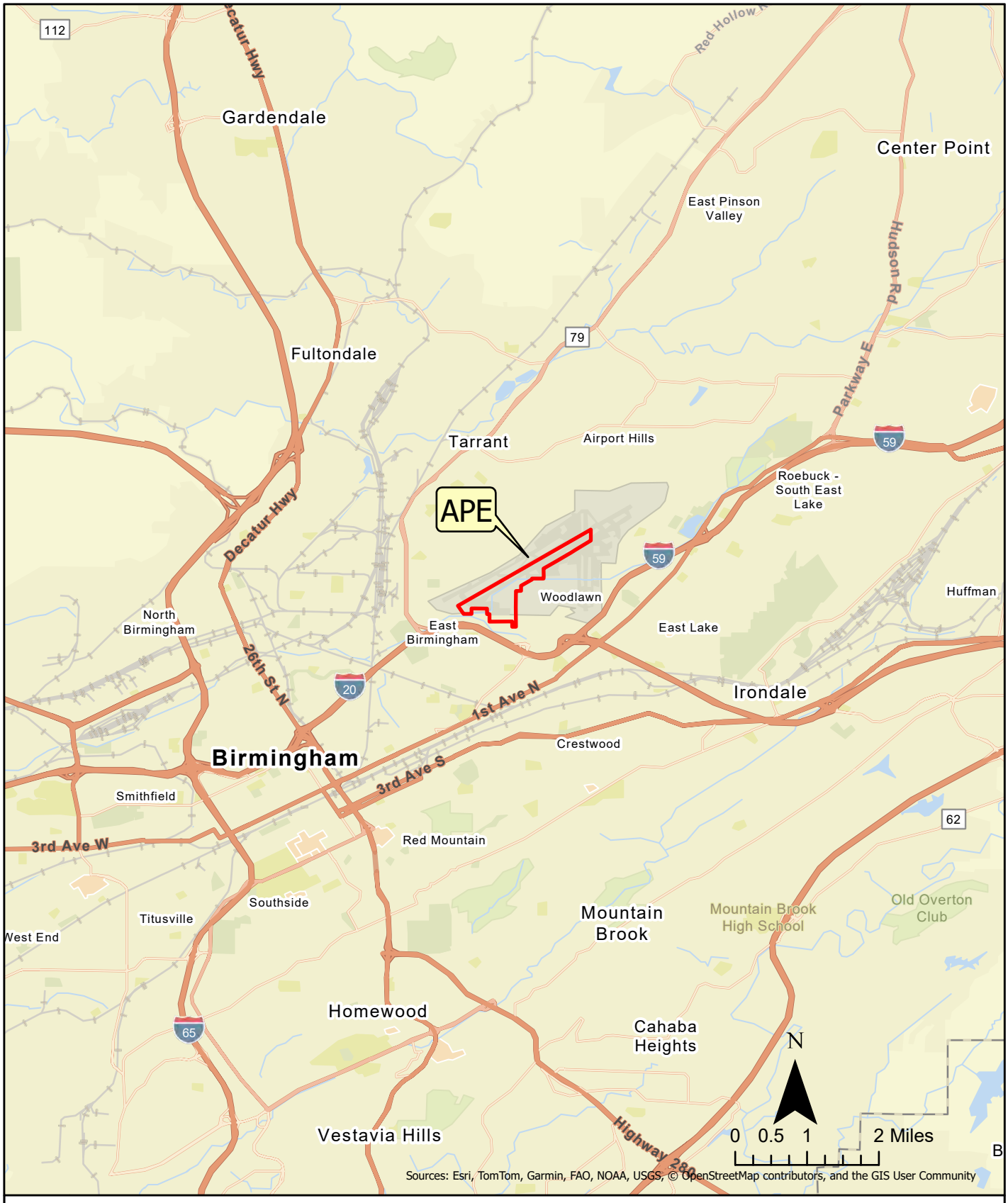
If you wish to provide comments or have questions related to this proposed project, please contact Eric Tomasovic at eric.tomasovic@faa.gov.

Sincerely,

Eric Tomasovic
Environmental Protection Specialist
Federal Aviation Administration

Enclosures:

- Exhibit of Area of Potential Effect (APE)
- Exhibit of Alternative 2, 400’ separation (Preferred Alternative)
- Exhibit of Alternative 4, 500’ separation
- Exhibit of Alternative 5, 400’/500’ hybrid separation
- Exhibit of No Action Alternative



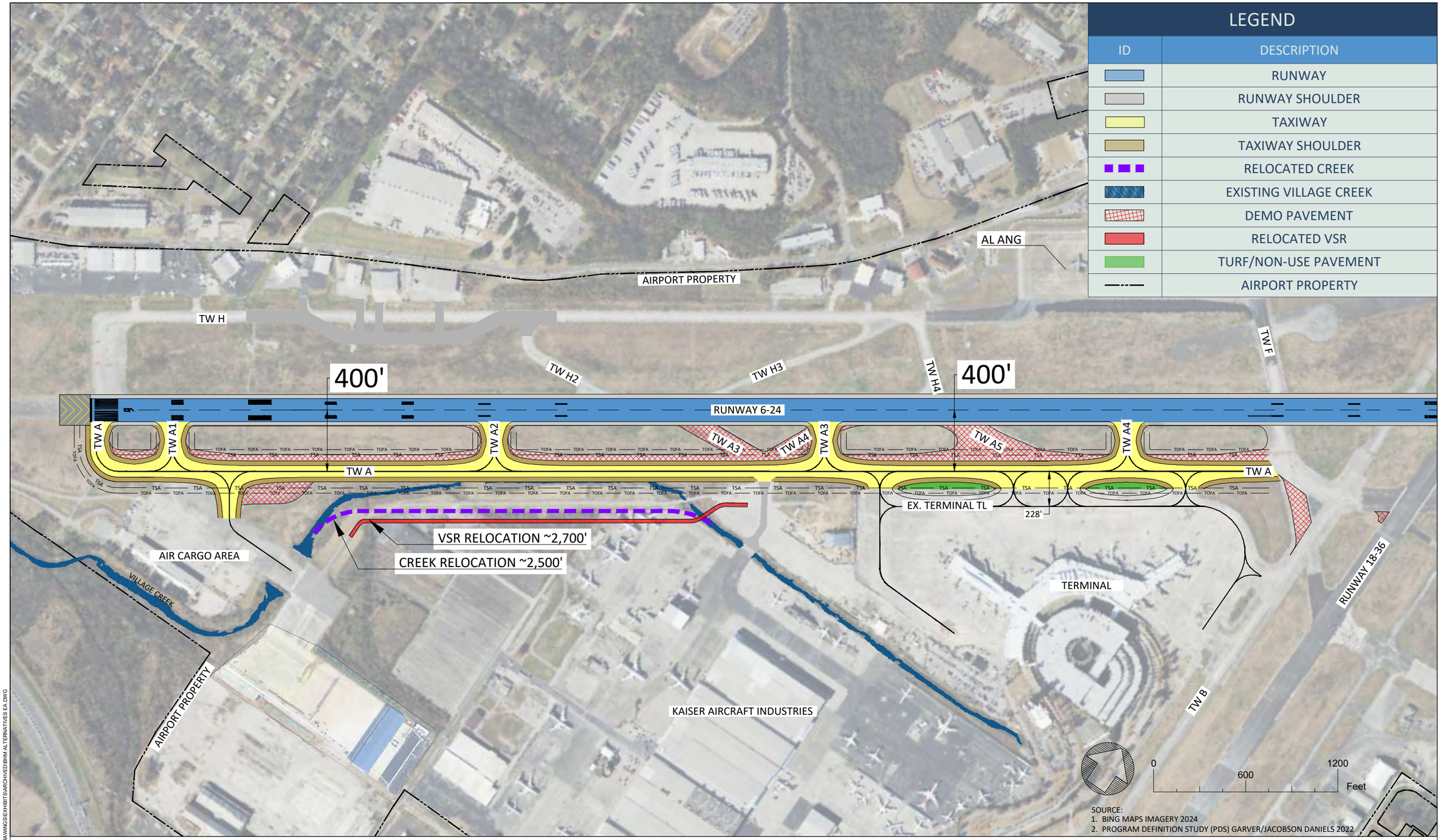
BIRMINGHAM SHUTTLESWORTH INTERNATIONAL AIRPORT

ENVIRONMENTAL ASSESSMENT

AREA OF POTENTIAL EFFECT LOCATION MAP

APRIL 2025

EXHIBIT X.1



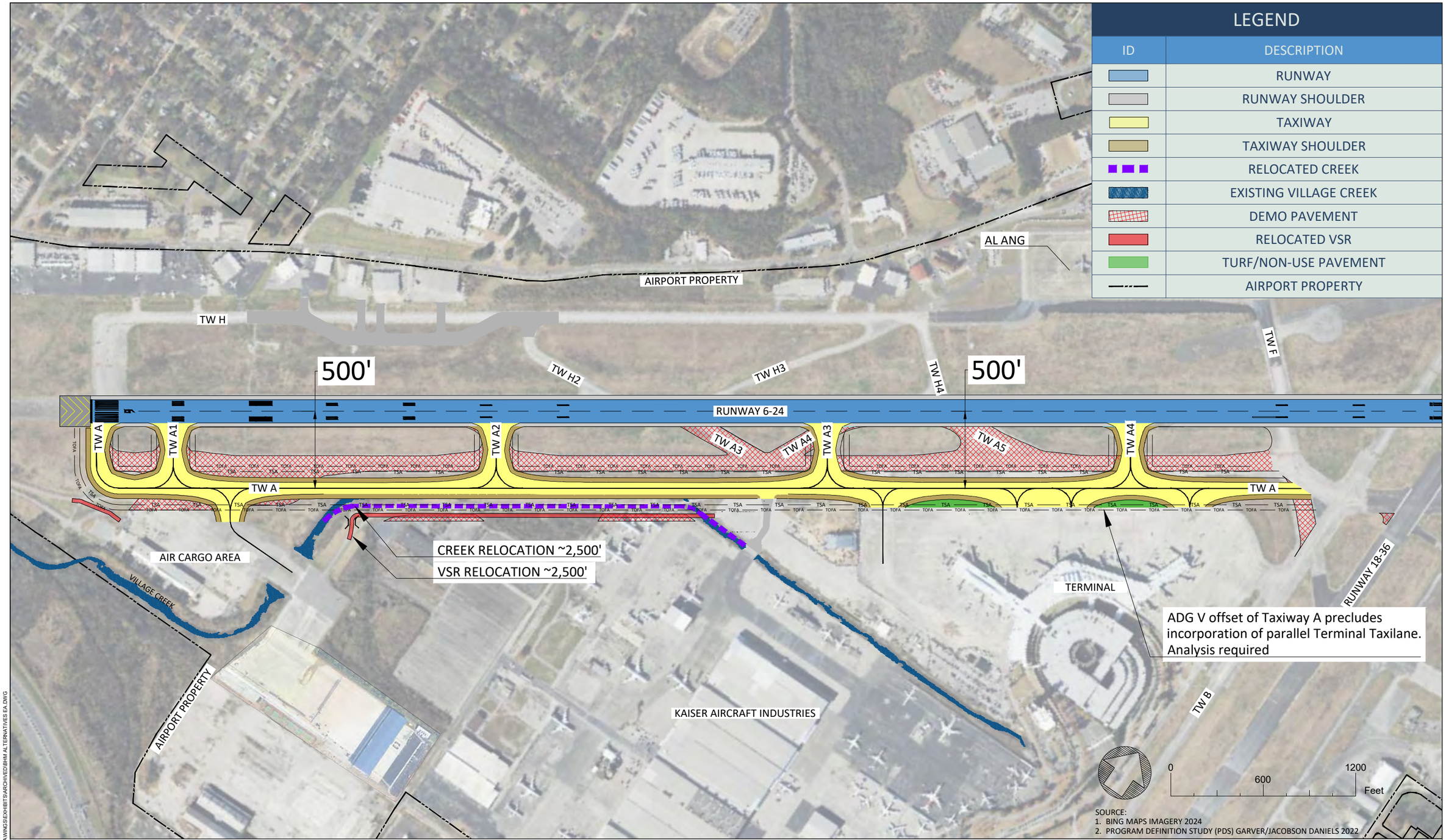
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ENVIRONMENTAL ASSESSMENT

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FIGURE B2 ALTERNATIVE 2: VILLAGE CREEK RELOCATION AND TAXIWAY A RELOCATION TO 400 FEET

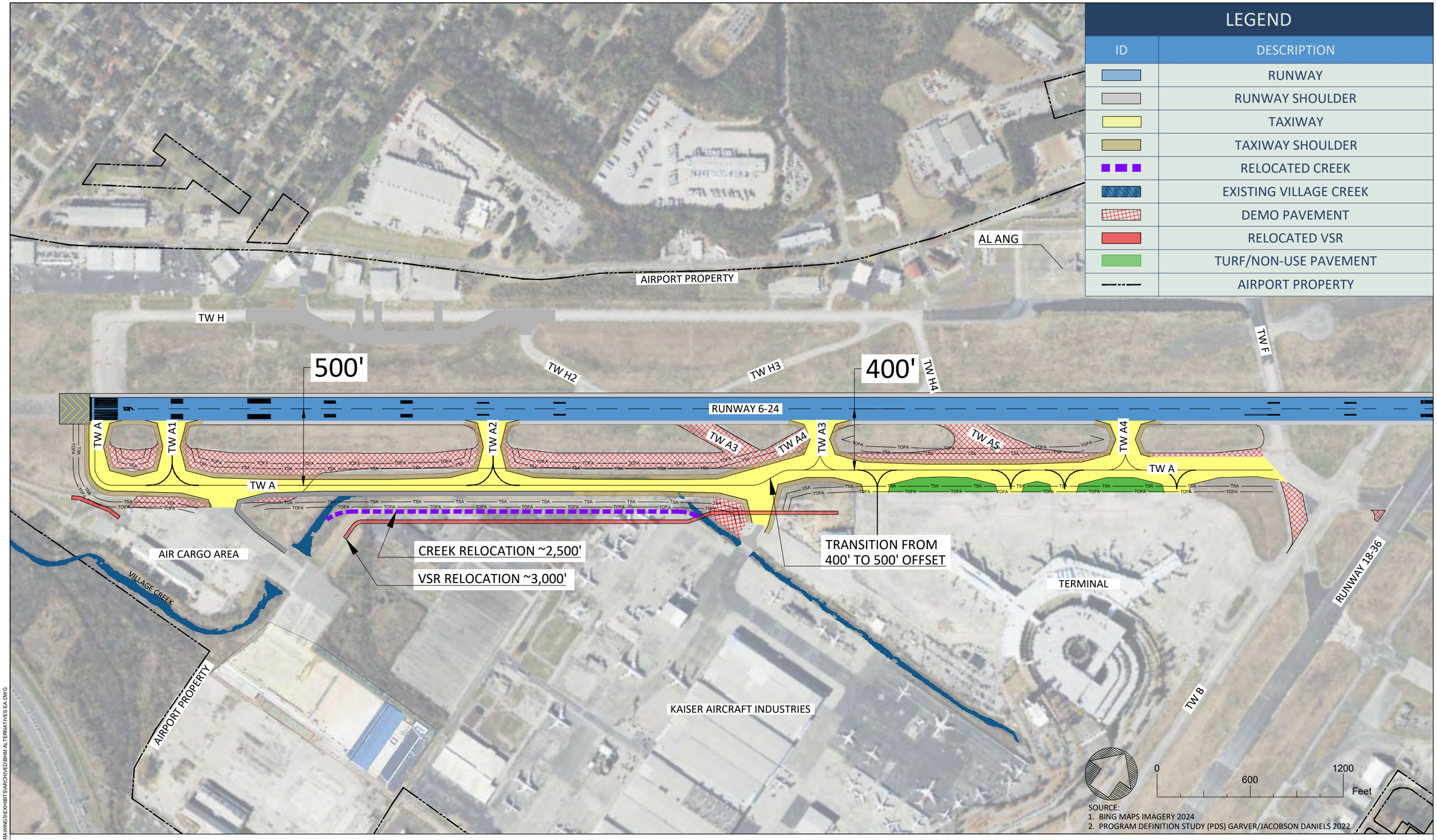
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MAY 2025

FIGURE B5 ALTERNATIVE 4: VILLAGE CREEK RELOCATION AND TAXIWAY A RELOCATION TO 500 FEET



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INTERNATIONAL AIRPORT
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FIGURE B6 ALTERNATIVE 5: VILLAGE CREEK RELOCATION
AND HYBRID 400'/500' TAXIWAY A RELOCATION

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LEGEND	
ID	DESCRIPTION
	RUNWAY
	RUNWAY SHOULDER
	TAXIWAY
	TAXIWAY SHOULDER
	EXISTING VILLAGE CREEK
	DEMO PAVEMENT
	RELOCATED VSR
	AIRPORT PROPERTY

AIRPORT PROPERTY
TW H
TW H2
350'
TW H3
TW H4
TW F
RUNWAY 6-24
TW A
TW A1
TW A2
TW A3
TW A4
TW A5
TW A4
TW A
TW A
286'
EX. TERMINAL TL
AIR CARGO AREA
VILLAGE CREEK
AIRPORT PROPERTY
KAISER AIRCRAFT INDUSTRIES
TERMINAL
RUNWAY 18-36
TW B
0
600
1200
Feet

SOURCE:
1. BING MAPS IMAGERY 2024
2. PROGRAM DEFINITION STUDY (PDS) GARVER/JACOBSON DANIELS 2022

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MAY 2025

FIGURE B7 NO ACTION - REHAB AND RECONSTRUCT IN CURRENT LOCATION

Jenna Weigman

From: Tomasovic, Eric (FAA) <Eric.Tomasovic@faa.gov>
Sent: Friday, July 18, 2025 10:34 AM
To: environmentalinfo@pci-nsn.gov
Cc: Dianna Litvak
Subject: Birmingham-Shuttlesworth Int'l Airport (BHM) Taxiway 'A' Relocation
Attachments: BHM_TW-A_PoarchBandCreek_Environ.pdf; 250515_BHM Section 106 Report.pdf

You don't often get email from eric.tomasovic@faa.gov. Learn why this is important

Poarch Band of Creek Indians,

Please find the attached project description, designs, and Cultural Resources Assessment for the Taxiway 'A' Relocation project at the Birmingham-Shuttlesworth International Airport (BHM). If you have any questions or comments, please, email or call me using the information in the signature line.

Thank you,

Eric Tomasovic
Environmental Protection Specialist
FAA, Jackson ADO
10 Canebrake Blvd. Suite 100
Flowood, MS 39232
(email) Eric.Tomasovic@faa.gov
(office) 769-268-6965
(cell) 757-749-6989

U.S. Department
of Transportation
**Federal Aviation
Administration**

Airports District Office
10 Canebrake Blvd., Suite 100
Flowood, Mississippi 39232

18 July 2025

Environmental Information
Poarch Band of Creek Indians
5811 Jack Springs Road
Atmore, AL 36502
environmentalinfo@pci-nsn.gov

RE: Taxiway A Relocation Environmental Assessment
at Birmingham-Shuttlesworth International Airport, in
Birmingham, Alabama.

Poarch Band of Creek Indians:

The Birmingham Airport Authority (BAA), in cooperation with the Federal Aviation Administration (FAA), is preparing an Environmental Assessment (EA) for the relocation of Taxiway A at Birmingham-Shuttlesworth International Airport in Birmingham, Alabama. In accordance with Federal Executive Order 13175 "Consultation and Coordination with Indian Tribal Governments" and FAA Order 1210.20 "American Indian and Alaska Native Tribal Consultation Policy and Procedures," the FAA is seeking comments on the Proposed Action and concerns that uniquely or significantly affect your Tribe related to proposed Airport improvements.

The purpose of the proposed project is to enhance the airfield's ability to accommodate the increasing demand for both passenger and cargo aircraft operations in a safe and efficient manner by addressing the non-standard runway to taxiway separation distance located on the southwest portion of Runway 6-24 and Taxiway A. As a result of the existing non-standard 350-foot separation distance between Runway 6-24 and Taxiway A, the majority of the Airport's mainline traffic cannot operate in an optimal environment as the existing separation distance does not meet current FAA design standards. By relocating Taxiway A, most commercial aircraft will be able to utilize Taxiway A efficiently with minimal operational restrictions. The relocation of Taxiway A is necessary to enhance airfield safety, ensure the protection of personnel, and support the demand for the existing and future fleet mix.

The following alternatives are being carried forward for analysis (refer to the enclosed exhibits):

- **Alternative 2 – Village Creek Relocation and Taxiway A Relocation to 400' (Preferred Alternative)**
    - Involves the realignment of Taxiway A pavement to achieve a 400-foot separation distance from the runway centerline to the taxiway centerline, the relocation of ~2,500 linear feet of Village Creek by constructing an open-air creek parallel to its current alignment, and the relocation of the parallel Vehicle Service Road (VSR).

- **Alternative 4 – Village Creek Relocation and Taxiway A Relocation to 500'**
    - Involves the realignment of Taxiway A pavement to achieve a 500-foot separation distance from the runway centerline to the taxiway centerline, the relocation of ~2,500 linear feet of Village Creek by constructing an open-air creek parallel to its current alignment, and the relocation of the parallel VSR.

- **Alternative 5 - Village Creek Relocation and Hybrid 400'/500' Taxiway A Relocation**
    - Involves the realignment of Taxiway A pavement to achieve a hybrid offset distance varying from 400 feet to 500 feet from the runway centerline to the taxiway centerline, the relocation of ~2,500 linear feet of Village Creek, and the relocation of the parallel VSR.

- **Alternative 6 – No Action**
    - The No Action Alternative would result in the airfield configuration remaining the same as it is today, and the need to meet FAA design standards and enhance safety would not be addressed. Taxiway A and Village Creek would remain in the same location. The No Action Alternative includes the reconstruction of Taxiway A in place, demolition of existing non-standard taxiway connectors, and the construction of taxiway connectors that meet FAA design standards.

Purpose of Government-to-Government Consultation

The primary purpose of government-to-government consultation as described by Federal Executive Order 13175 "Consultation and Coordination with Indian Tribal Governments" and FAA Order 1210.20 "American Indian and Alaska Native Tribal Consultation Policy and Procedures" is to ensure Federally Recognized Tribes are given the opportunity to provide meaningful and timely input regarding proposed FAA actions that uniquely or significantly affect Tribes. Additionally, the U.S. Department of Transportation (DOT) Order 5301.1A "Department of Transportation Tribal Consultation Policy and Procedures" was signed on August 10, 2023.

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Two historic-age resources were identified within the APE, including a mid-century office/industrial structure that was erected in 1968 and a mid-century storage shed that was erected in 1965. Both of these structures are proposed for demolition as part of the proposed project.

The report concluded that neither resource is eligible for listing in the State nor National Register of Historic Places (NRHP). Because both structures are recommended not eligible, the Section 106 determination of effect is *No Historic Properties Affected.* The AL State Historic Preservation Office (SHPO) issued a letter of concurrence to these findings on June 23, 2025.

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FAA Contact Information

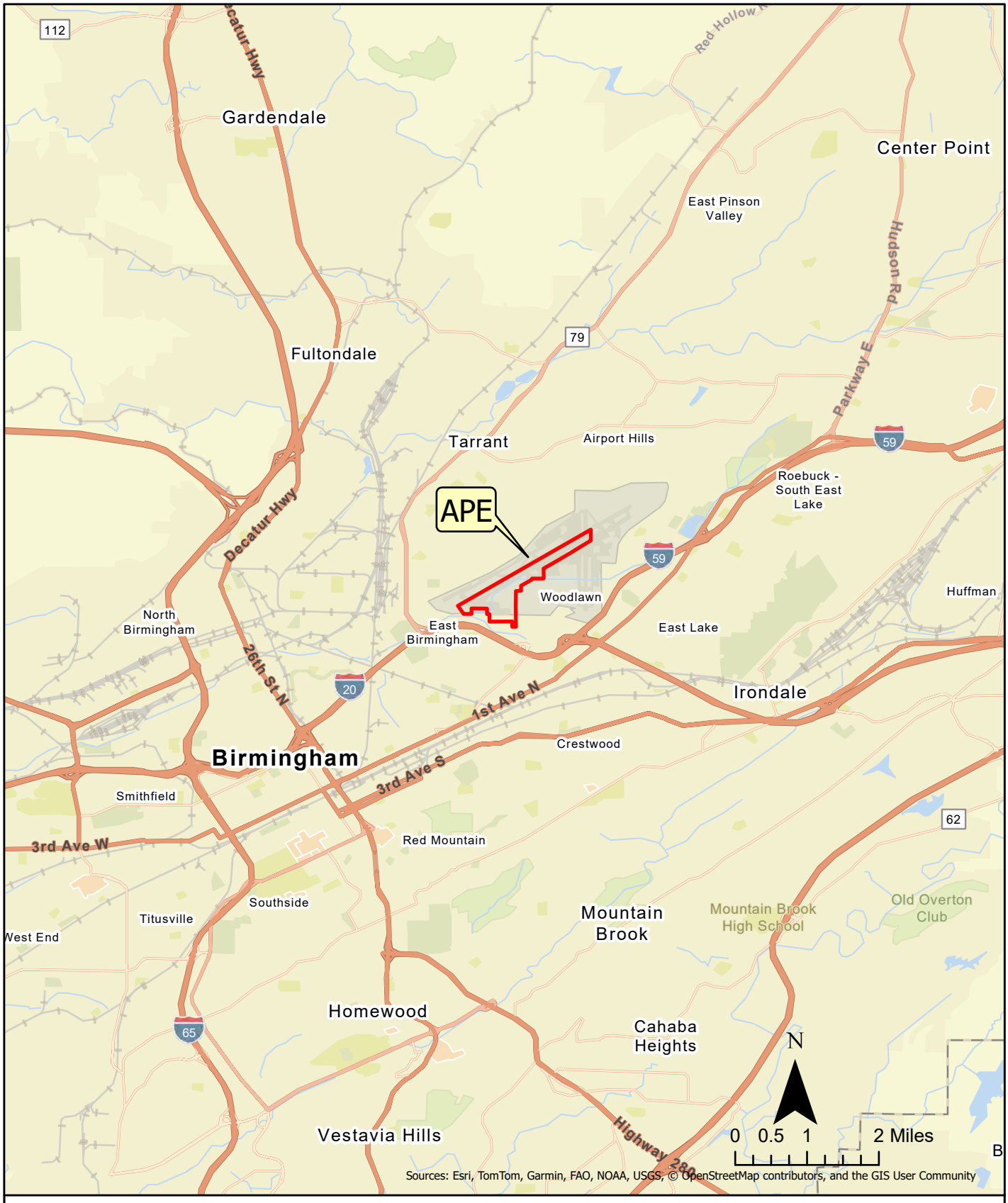
If you wish to provide comments or have questions related to this proposed project, please contact Eric Tomasovic at eric.tomasovic@faa.gov.

Sincerely,

Eric Tomasovic
Environmental Protection Specialist
Federal Aviation Administration

Enclosures:

- Exhibit of Area of Potential Effect (APE)
- Exhibit of Alternative 2, 400’ separation (Preferred Alternative)
- Exhibit of Alternative 4, 500’ separation
- Exhibit of Alternative 5, 400’/500’ hybrid separation
- Exhibit of No Action Alternative



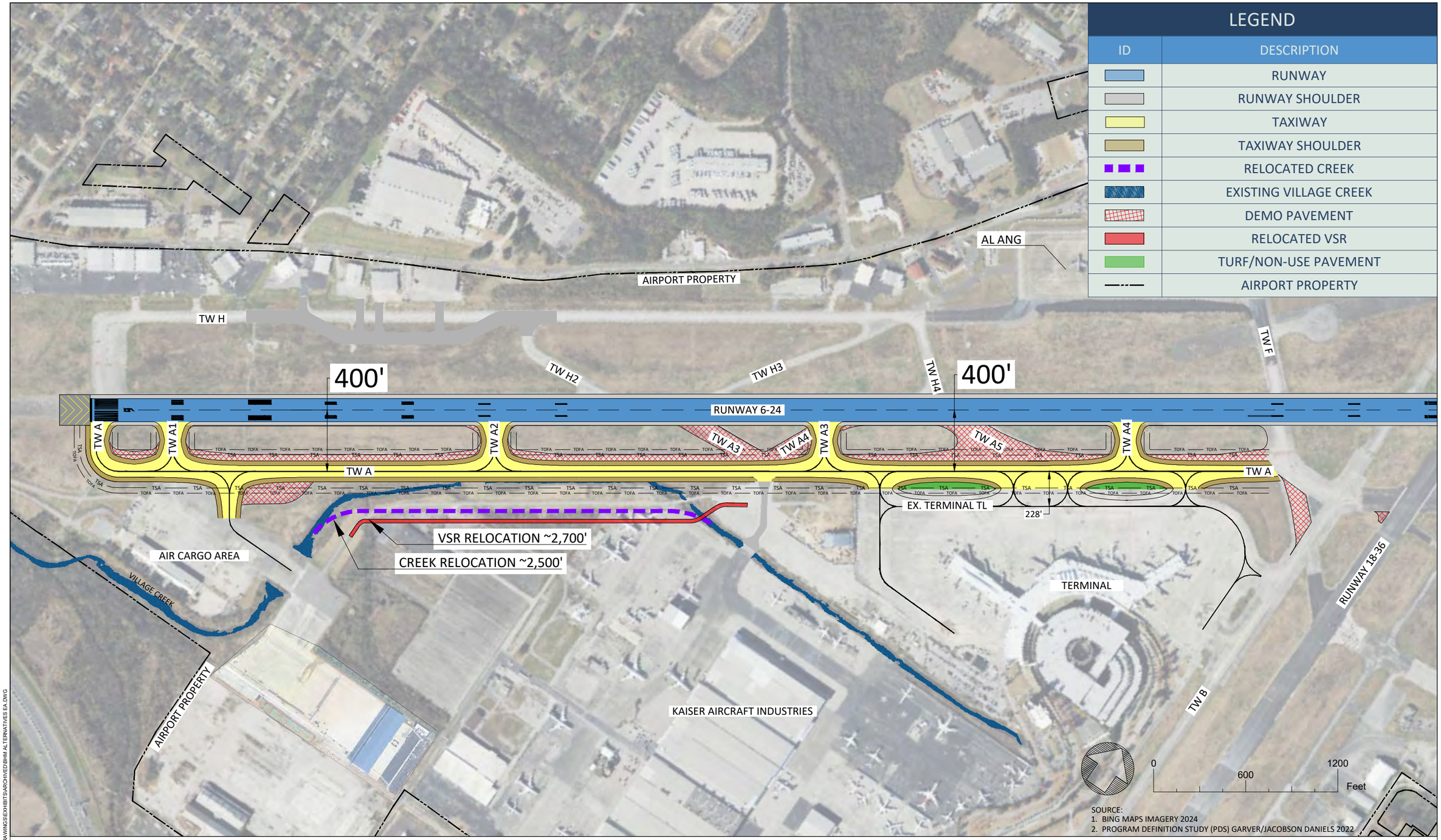
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ENVIRONMENTAL ASSESSMENT

AREA OF POTENTIAL EFFECT LOCATION MAP

APRIL 2025

EXHIBIT X.1



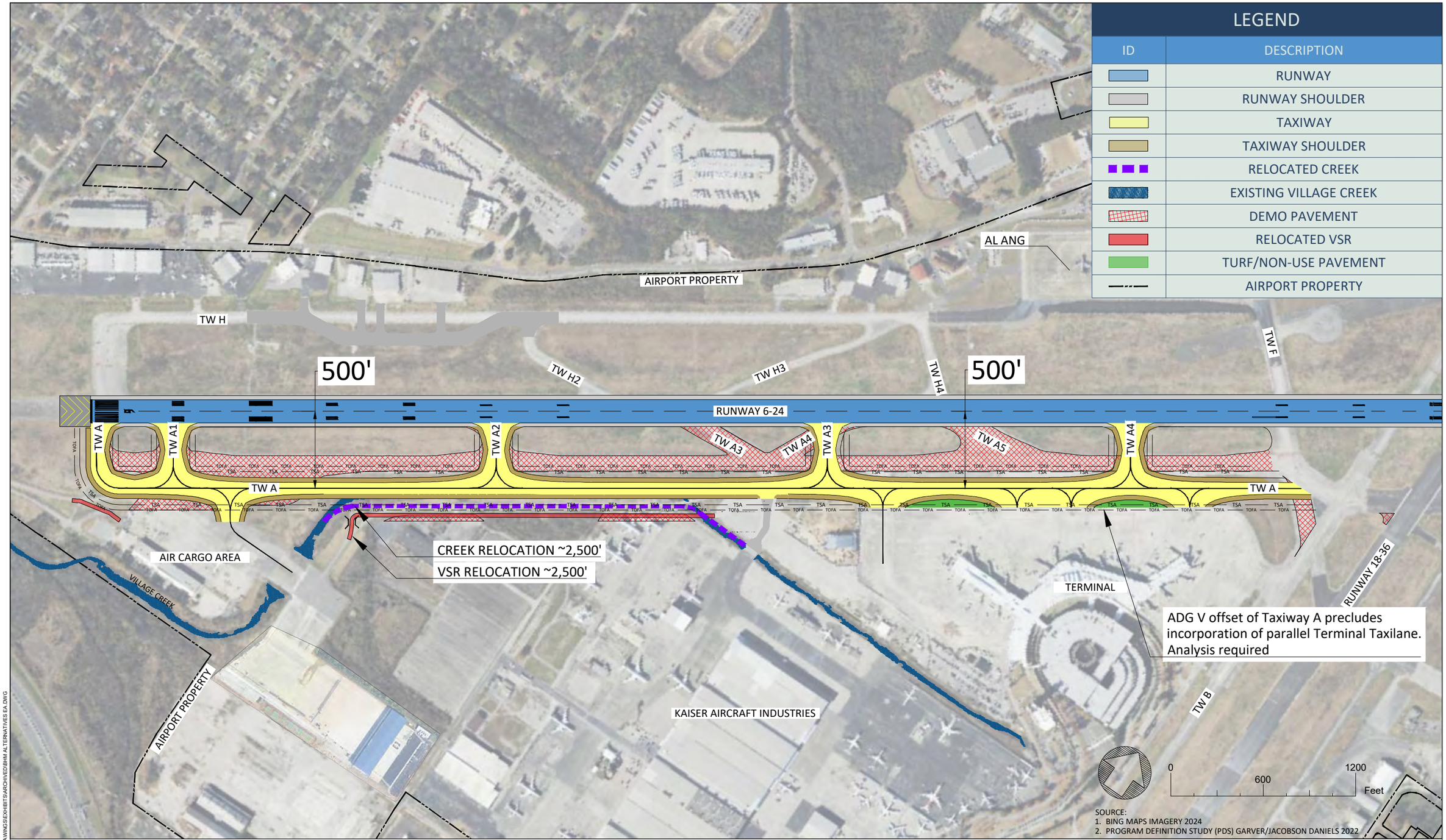
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ENVIRONMENTAL ASSESSMENT

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FIGURE B2 ALTERNATIVE 2: VILLAGE CREEK RELOCATION AND TAXIWAY A RELOCATION TO 400 FEET

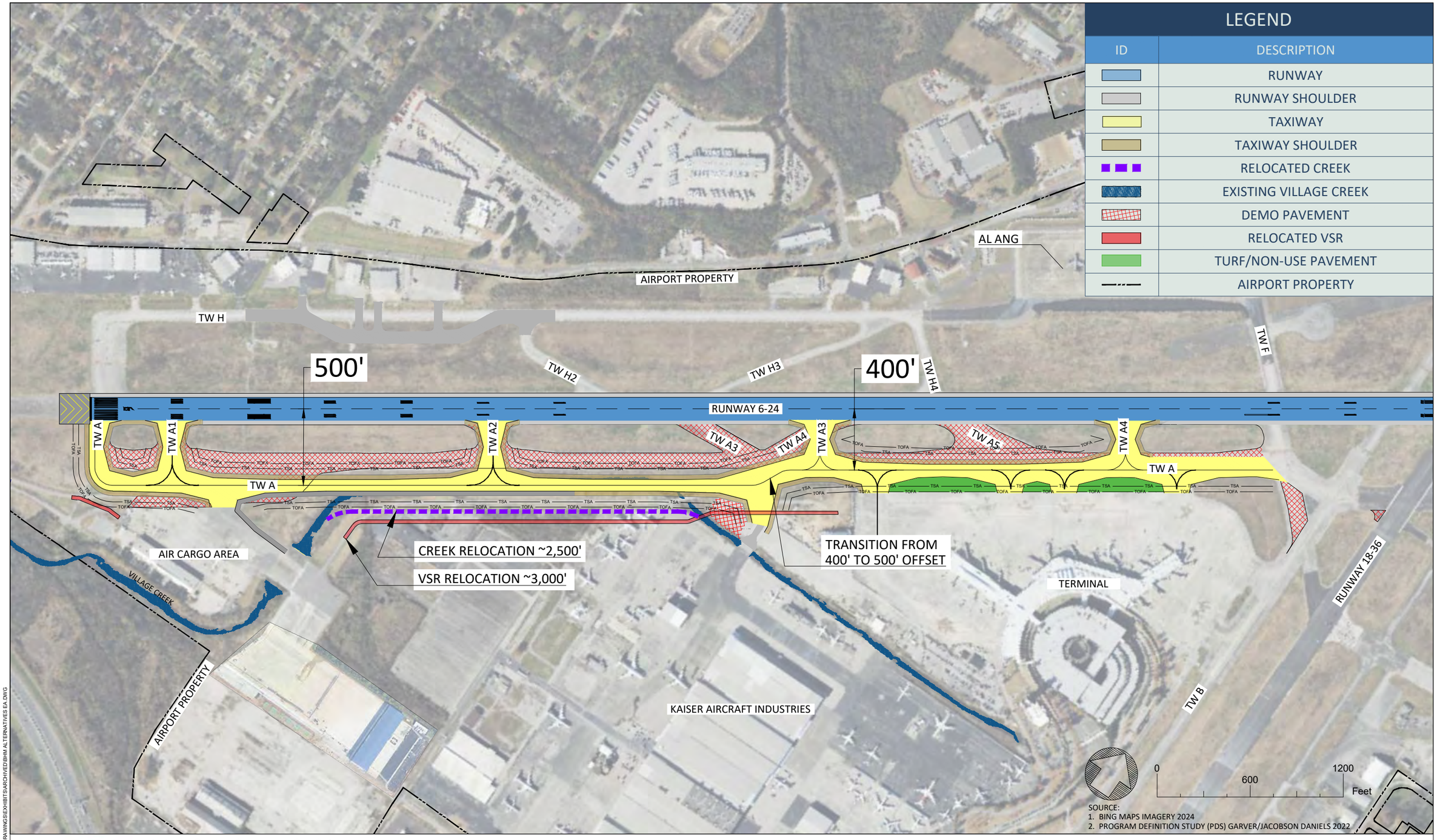
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FIGURE B5 ALTERNATIVE 4: VILLAGE CREEK RELOCATION AND TAXIWAY A RELOCATION TO 500 FEET



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INTERNATIONAL AIRPORT
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ENVIRONMENTAL ASSESSMENT
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MAY 2025

FIGURE B6 ALTERNATIVE 5: VILLAGE CREEK RELOCATION
AND HYBRID 400'/500' TAXIWAY A RELOCATION

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LEGEND	
ID	DESCRIPTION
	RUNWAY
	RUNWAY SHOULDER
	TAXIWAY
	TAXIWAY SHOULDER
	EXISTING VILLAGE CREEK
	DEMO PAVEMENT
	RELOCATED VSR
	AIRPORT PROPERTY

AIRPORT PROPERTY
TW H
TW H2
350'
TW H3
TW H4
TW F
RUNWAY 6-24
TW A
TW A1
TW A2
TW A3
TW A4
TW A5
TW A4
TW A
TW A
286'
EX. TERMINAL TL
AIR CARGO AREA
VILLAGE CREEK
AIRPORT PROPERTY
KAISER AIRCRAFT INDUSTRIES
TERMINAL
RUNWAY 18-36
TW B
0
600
1200
Feet

SOURCE:
1. BING MAPS IMAGERY 2024
2. PROGRAM DEFINITION STUDY (PDS) GARVER/JACOBSON DANIELS 2022

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BIRMINGHAM SHUTTLESWORTH INTERNATIONAL AIRPORT
.
ENVIRONMENTAL ASSESSMENT
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MAY 2025

FIGURE B7 NO ACTION - REHAB AND RECONSTRUCT IN CURRENT LOCATION

Jenna Weigman

From: Tomasovic, Eric (FAA) <Eric.Tomasovic@faa.gov>
Sent: Friday, July 18, 2025 10:33 AM
To: sbryan@pci-nsn.gov
Cc: Dianna Litvak
Subject: Birmingham-Shuttlesworth Int'l Airport (BHM) Taxiway 'A' Relocation
Attachments: BHM_TW-A_PoarchBandCreek_StephanieB.pdf; 250515_BHM Section 106 Report.pdf

You don't often get email from eric.tomasovic@faa.gov. Learn why this is important

Stephanie Bryan,

Please find the attached project description, designs, and Cultural Resources Assessment for the Taxiway 'A' Relocation project at the Birmingham-Shuttlesworth International Airport (BHM). If you have any questions or comments, please, email or call me using the information in the signature line.

Thank you,

Eric Tomasovic
Environmental Protection Specialist
FAA, Jackson ADO
10 Canebrake Blvd. Suite 100
Flowood, MS 39232
(email) Eric.Tomasovic@faa.gov
(office) 769-268-6965
(cell) 757-749-6989

U.S. Department
of Transportation
**Federal Aviation
Administration**

Airports District Office
10 Canebrake Blvd., Suite 100
Flowood, Mississippi 39232

18 July 2025

Stephanie Bryan, Chairperson
Poarch Band of Creek Indians
5811 Jack Springs Road
Atmore, AL 36502
sbryan@pci-nsn.gov

RE: Taxiway A Relocation Environmental Assessment
at Birmingham-Shuttlesworth International Airport, in
Birmingham, Alabama.

Stephanie Bryan:

The Birmingham Airport Authority (BAA), in cooperation with the Federal Aviation Administration (FAA), is preparing an Environmental Assessment (EA) for the relocation of Taxiway A at Birmingham-Shuttlesworth International Airport in Birmingham, Alabama. In accordance with Federal Executive Order 13175 "Consultation and Coordination with Indian Tribal Governments" and FAA Order 1210.20 "American Indian and Alaska Native Tribal Consultation Policy and Procedures," the FAA is seeking comments on the Proposed Action and concerns that uniquely or significantly affect your Tribe related to proposed Airport improvements.

The purpose of the proposed project is to enhance the airfield's ability to accommodate the increasing demand for both passenger and cargo aircraft operations in a safe and efficient manner by addressing the non-standard runway to taxiway separation distance located on the southwest portion of Runway 6-24 and Taxiway A. As a result of the existing non-standard 350-foot separation distance between Runway 6-24 and Taxiway A, the majority of the Airport's mainline traffic cannot operate in an optimal environment as the existing separation distance does not meet current FAA design standards. By relocating Taxiway A, most commercial aircraft will be able to utilize Taxiway A efficiently with minimal operational restrictions. The relocation of Taxiway A is necessary to enhance airfield safety, ensure the protection of personnel, and support the demand for the existing and future fleet mix.

The following alternatives are being carried forward for analysis (refer to the enclosed exhibits):

- **Alternative 2 – Village Creek Relocation and Taxiway A Relocation to 400' (Preferred Alternative)**
    - Involves the realignment of Taxiway A pavement to achieve a 400-foot separation distance from the runway centerline to the taxiway centerline, the relocation of ~2,500 linear feet of Village Creek by constructing an open-air creek parallel to its current alignment, and the relocation of the parallel Vehicle Service Road (VSR).

- **Alternative 4 – Village Creek Relocation and Taxiway A Relocation to 500'**
    - Involves the realignment of Taxiway A pavement to achieve a 500-foot separation distance from the runway centerline to the taxiway centerline, the relocation of ~2,500 linear feet of Village Creek by constructing an open-air creek parallel to its current alignment, and the relocation of the parallel VSR.

- **Alternative 5 - Village Creek Relocation and Hybrid 400'/500' Taxiway A Relocation**
    - Involves the realignment of Taxiway A pavement to achieve a hybrid offset distance varying from 400 feet to 500 feet from the runway centerline to the taxiway centerline, the relocation of ~2,500 linear feet of Village Creek, and the relocation of the parallel VSR.

- **Alternative 6 – No Action**
    - The No Action Alternative would result in the airfield configuration remaining the same as it is today, and the need to meet FAA design standards and enhance safety would not be addressed. Taxiway A and Village Creek would remain in the same location. The No Action Alternative includes the reconstruction of Taxiway A in place, demolition of existing non-standard taxiway connectors, and the construction of taxiway connectors that meet FAA design standards.

Purpose of Government-to-Government Consultation

The primary purpose of government-to-government consultation as described by Federal Executive Order 13175 "Consultation and Coordination with Indian Tribal Governments" and FAA Order 1210.20 "American Indian and Alaska Native Tribal Consultation Policy and Procedures" is to ensure Federally Recognized Tribes are given the opportunity to provide meaningful and timely input regarding proposed FAA actions that uniquely or significantly affect Tribes. Additionally, the U.S. Department of Transportation (DOT) Order 5301.1A "Department of Transportation Tribal Consultation Policy and Procedures" was signed on August 10, 2023.

Survey

An Architectural/History Survey Report of the Area of Potential Effect (APE) was developed in May 2025 that identified buildings, structures, and/or objects that are at least 50 years of age, or while not yet 50 years of age, may be of exceptional historical or cultural significance.

Two historic-age resources were identified within the APE, including a mid-century office/industrial structure that was erected in 1968 and a mid-century storage shed that was erected in 1965. Both of these structures are proposed for demolition as part of the proposed project.

The report concluded that neither resource is eligible for listing in the State nor National Register of Historic Places (NRHP). Because both structures are recommended not eligible, the Section 106 determination of effect is *No Historic Properties Affected.* The AL State Historic Preservation Office (SHPO) issued a letter of concurrence to these findings on June 23, 2025.

Request for Comments

The FAA is seeking comments on the Proposed Action and concerns that uniquely or significantly affect your Tribe related to proposed Airport improvements. Early identification of Tribal concerns

allows the FAA and the Airport owner and operator to consider ways to avoid and minimize potential impacts to Tribal resources and practices as project planning and alternatives are developed and refined. We would be pleased to discuss the details of the proposed project with you.

Confidentiality

It is understood that you may have concerns regarding the confidentiality of information on areas or resources of religious, traditional and cultural importance to the Tribe. In accordance with Section 9 of the Archaeological Resources Protection Act of 1979, 16 U.S.C 470hh(a), *Confidentiality of Information Concerning the Nature and Location of Archaeological Resources and Tribal Cultural Properties,* and its implementing regulations at 43 CFR 7.18, detailed information regarding specific locations of archeological and cultural resources will be withheld from any public documents.

FAA Contact Information

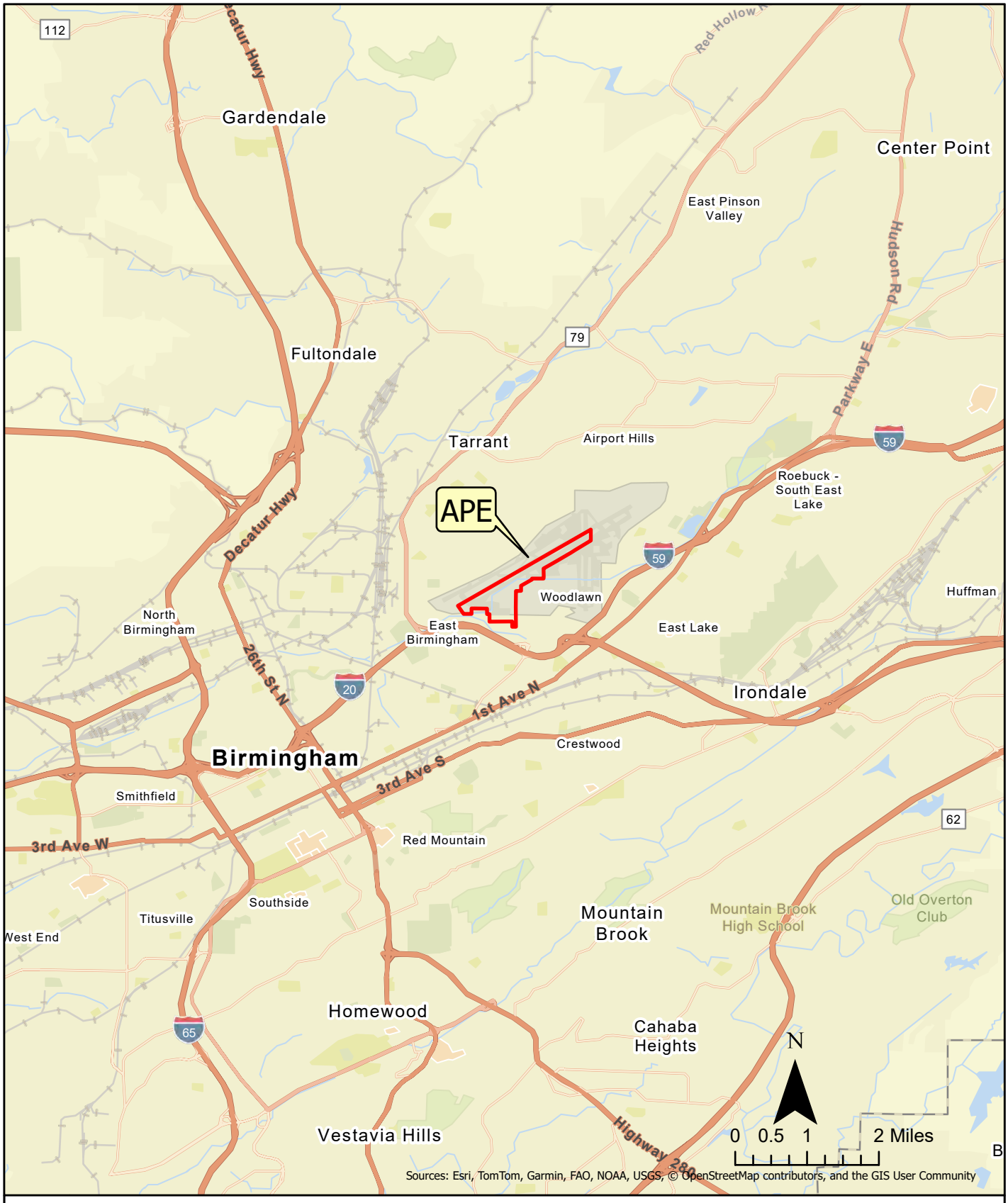
If you wish to provide comments or have questions related to this proposed project, please contact Eric Tomasovic at eric.tomasovic@faa.gov.

Sincerely,

Eric Tomasovic
Environmental Protection Specialist
Federal Aviation Administration

Enclosures:

- Exhibit of Area of Potential Effect (APE)
- Exhibit of Alternative 2, 400’ separation (Preferred Alternative)
- Exhibit of Alternative 4, 500’ separation
- Exhibit of Alternative 5, 400’/500’ hybrid separation
- Exhibit of No Action Alternative



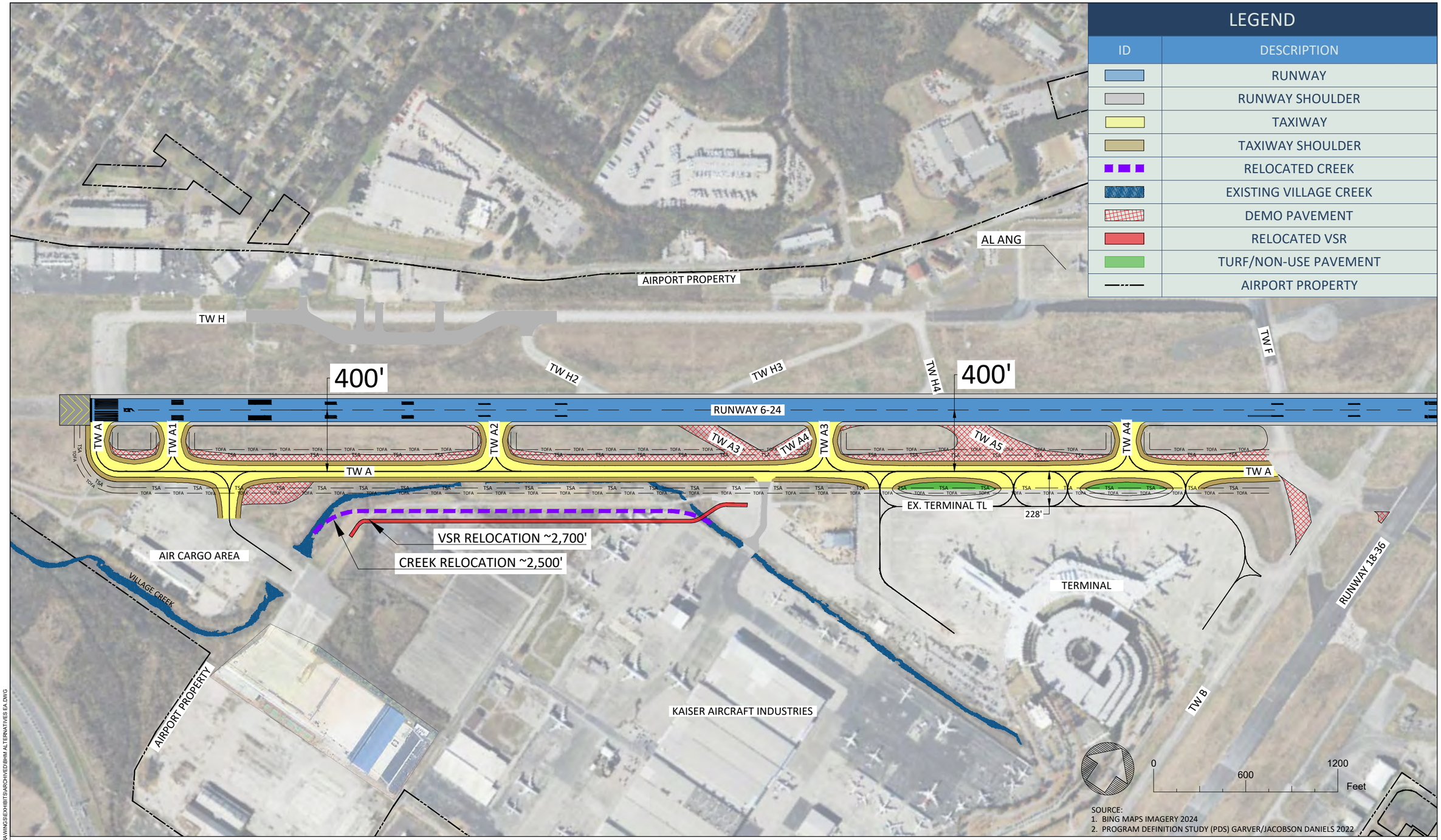
BIRMINGHAM SHUTTLESWORTH INTERNATIONAL AIRPORT

ENVIRONMENTAL ASSESSMENT

AREA OF POTENTIAL EFFECT LOCATION MAP

APRIL 2025

EXHIBIT X.1



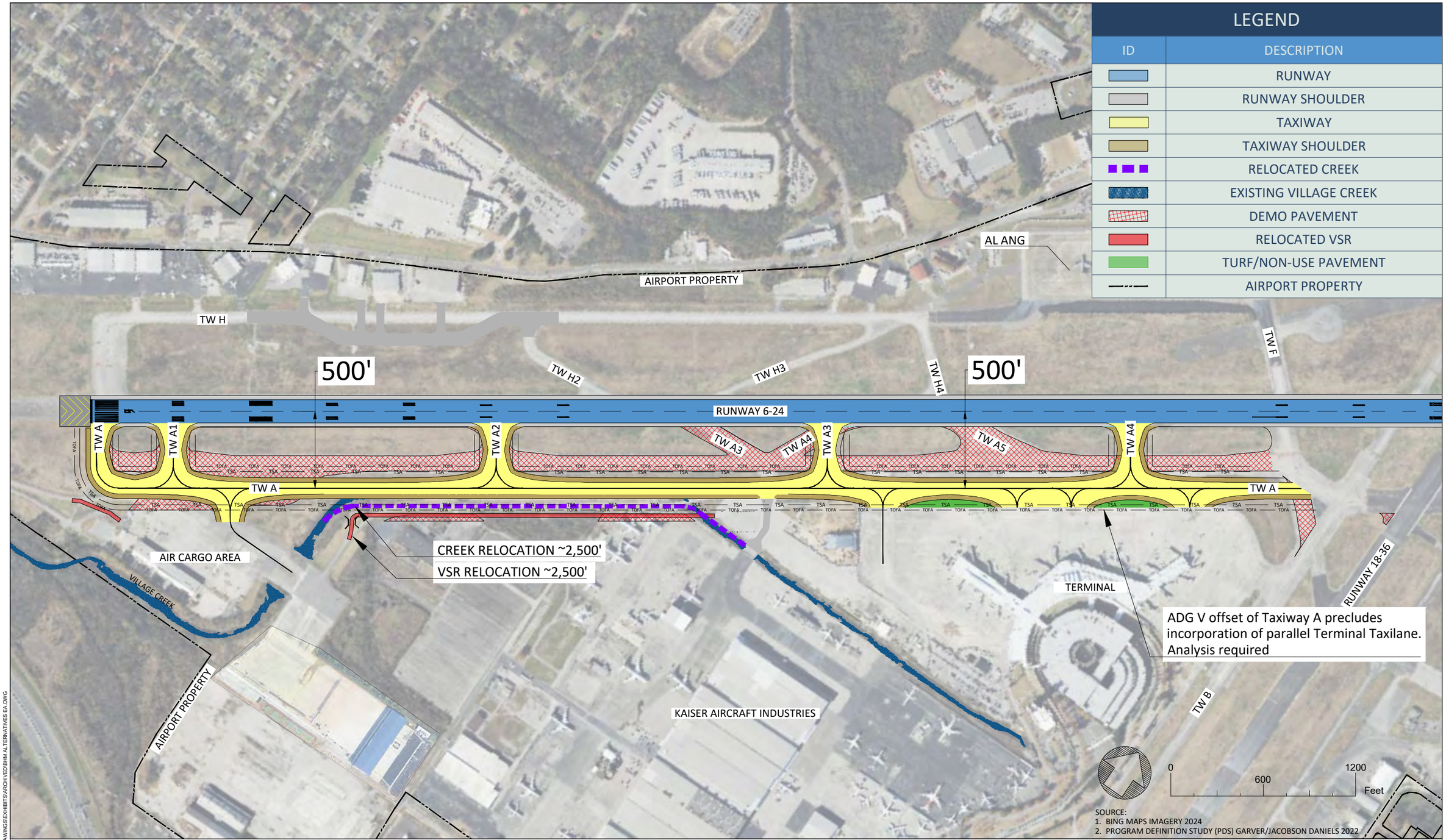
BIRMINGHAM SHUTTLESWORTH INTERNATIONAL AIRPORT

ENVIRONMENTAL ASSESSMENT

MAY 2025

FIGURE B2 ALTERNATIVE 2: VILLAGE CREEK RELOCATION AND TAXIWAY A RELOCATION TO 400 FEET

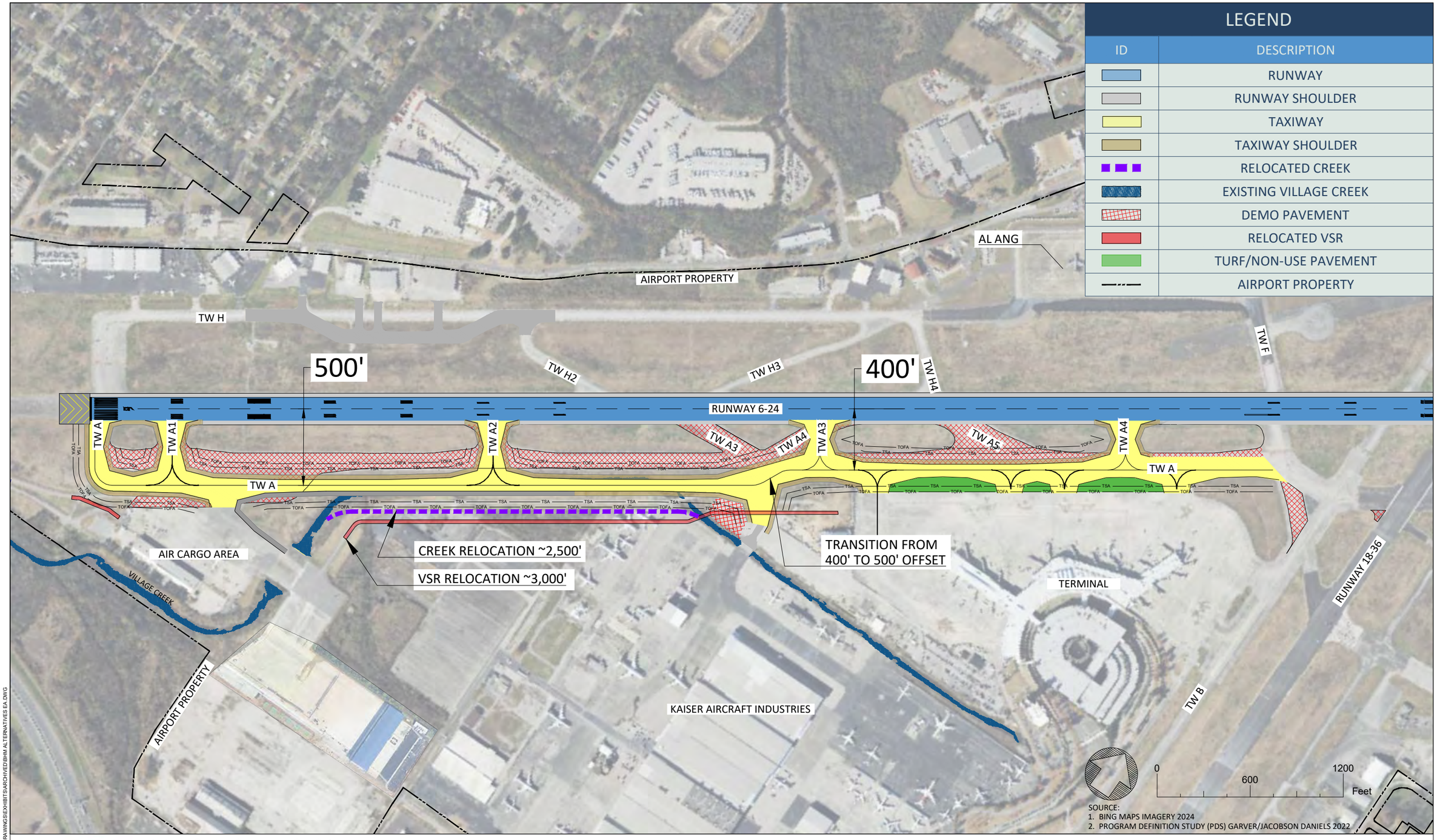
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BIRMINGHAM SHUTTLESWORTH INTERNATIONAL AIRPORT
.
ENVIRONMENTAL ASSESSMENT
.
MAY 2025

FIGURE B5 ALTERNATIVE 4: VILLAGE CREEK RELOCATION AND TAXIWAY A RELOCATION TO 500 FEET



BIRMINGHAM SHUTTLESWORTH
INTERNATIONAL AIRPORT
.
ENVIRONMENTAL ASSESSMENT
.
MAY 2025

FIGURE B6 ALTERNATIVE 5: VILLAGE CREEK RELOCATION
AND HYBRID 400'/500' TAXIWAY A RELOCATION

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LEGEND	
ID	DESCRIPTION
	RUNWAY
	RUNWAY SHOULDER
	TAXIWAY
	TAXIWAY SHOULDER
	EXISTING VILLAGE CREEK
	DEMO PAVEMENT
	RELOCATED VSR
	AIRPORT PROPERTY

AIRPORT PROPERTY
TW H
TW H2
350'
TW H3
TW H4
TW F
RUNWAY 6-24
TW A
TW A1
TW A2
TW A3
TW A4
TW A5
TW A4
TW A
TW A
286'
EX. TERMINAL TL
AIR CARGO AREA
VILLAGE CREEK
AIRPORT PROPERTY
KAISER AIRCRAFT INDUSTRIES
TERMINAL
RUNWAY 18-36
TW B
0
600
1200
Feet

SOURCE:
1. BING MAPS IMAGERY 2024
2. PROGRAM DEFINITION STUDY (PDS) GARVER/JACOBSON DANIELS 2022

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BIRMINGHAM SHUTTLESWORTH INTERNATIONAL AIRPORT
.
ENVIRONMENTAL ASSESSMENT
.
MAY 2025

FIGURE B7 NO ACTION - REHAB AND RECONSTRUCT IN CURRENT LOCATION

AQUATIC RESOURCES DELINEATION REPORT

Birmingham Shuttlesworth International Airport Taxiway A Relocation

Birmingham, Jefferson County, Alabama

Prepared for
Birmingham Airport Authority
5900 Messer Airport Highway
Birmingham, Alabama 35212

Prepared by
Casey Nowell, MS, PWS, CE-ESA
Environmental Scientist
Volkert, Inc.

August 2025

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1.0 Introduction

The Birmingham Airport Authority (BAA) is proposing to relocate existing Taxiway A to enhance airfield safety, accommodate the future aircraft fleet mix, and to meet airfield design standards as outlined in FAA AC 150/5300-13B, *Airport Design*. The purpose of the proposed project is to maximize the airfield's ability to accommodate the increasing demand for both passenger and cargo aircraft operations in a safe and efficient manner. See **Appendix A – Figure 1 and 2** for the study area map and U.S. Geological Survey (USGS) quadrangle map.

The purpose of this report is to identify and describe potentially jurisdictional aquatic resources within the study area for the purposes of regulation under Section 404 of the Clean Water Act (CWA) and/or Section 10 of the Rivers and Harbors Act of 1899 (RHA). This wetland delineation is based on a desktop review and site visit using the U.S. Army Corps of Engineers' (USACE) 1987 Wetland Delineation Manual and the 2012 Eastern Mountains and Piedmont Regional Supplement. Fieldwork was conducted on May 15 and July 11, 2025, by Casey Nowell of Volkert, Inc. A jurisdictional determination request will need to be submitted to the USACE for official verification of the wetland boundaries.

2.0 Existing Site Conditions

2.1. Project Location

The study area is found in Township 17 south, Range 2 west, Sections 19, 16, and 17 of the Birmingham North, Alabama, USGS 7.5-minute Topographic Quadrangle Map. See **Appendix A – Figure 2**. The study area includes approximately 268.3 acres within existing BAA property. The surrounding area consists of forested areas, industrial properties, commercial operations, and residential areas.

2.2. Physiography and Geology

According to the Geological Survey of Alabama (GSA), the study area is in the Cambrian system. These formations are then specified by the Ketona Dolomite formation of the Appalachian Plateaus Province.

2.3. Topography and Hydrology

Topographically, the study area ranges from 580 to 620 feet above Mean Sea Level (MSL) with gradual topographic relief towards the southwest. According to the Federal Emergency Management Agency (FEMA), the study area is within flood zone AE. See **Appendix A – Figure 3** for a FEMA flood zone map.

2.4. Soils

A review of the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey for the study area revealed one soil type, Urban Land (UdB). Of the soil types identified, no soil types were classified as hydric soil by the USDA NRCS Web Soil Survey. See **Appendix A – Figure 4** for a soil map.

2.5. Climate

According to the National Weather Service, the average winter temperature in Jefferson County is 44 degrees Fahrenheit (F) and, in the summer, the average temperature is 81 degrees F. Precipitation in this area averages approximately 56 inches per year. Most of the precipitation within this area occurs in the summer months.

3.0 Vegetation

The study area is within maintained property of the BAA. The herb stratum was dominant and consisted of common roadside grasses such as Bahia grass (*Paspalum notatum*) and dallis grass (*Paspalum dialatum*). Wetland areas were mostly composed of various sedge species (*Carex* sp.) and wetland tolerant dallis grass. Forested wetland areas contained obligate and facilitate wetland species such as cattails (*Tyhpa latifolia*), black willow (*Salix nigra*), and water hickory (*Carya aquatica*). Forested upland areas were characteristic of successional hardwood forests and consisted of hackberry (*Celtis occidentalis*), pignut hickory (*Carya glabra*) and hop-hornbeam (*Ostrya virginiana*). Various invasive species were observed throughout the study area consisting of Chinese privet (*Ligustrum sinense*), mimosa tree (*Albizia julibrissin*) and kudzu (*Pueraria montana*). Photos of the study area can be found in **Appendix B – Photo Page.**

4.0 Aquatic Resources

4.1. Methods

Prior to conducting field work, USGS quadrangle maps, FEMA flood zone maps, NRCS Web Soil Survey maps, U.S. Fish and Wildlife Service's (USFWS) National Wetland Inventory (NWI) maps, and aerial imagery of the study area were reviewed. Previously mentioned illustrations can be found in **Appendix A – Figure 2 – 6**. Once in the field, aquatic resources were identified in accordance with guidance found in the USACE Wetland Delineation Manual (1987) and the Eastern Mountains and Piedmont Regional Supplement (2012). Wetland delineation data sheets can be found in **Appendix C – Wetland Data Sheets.** An illustration of identified aquatic resources can be found in **Appendix A – Figure 7**. A detailed table of aquatic resources identified within the study area can be found in **Table 1 – Aquatic Resources Quantities.**

4.2. Jurisdictional Streams

Four jurisdictional perennial streams (PS3, PS4, PS5, and PS6) were identified within the study area and totaled approximately 2.701 acres (7,633 linear feet).

4.3. Jurisdictional Open Waters of the U.S.

No jurisdictional open waters of the U.S. were identified within the study area.

4.4. Jurisdictional Wetlands

Three jurisdictional wetlands (WL1, WL6, and WL7) were identified within the study area and totaled approximately 2.013 acres.

4.5. Non-Jurisdictional Wetlands and Streams

Four non-jurisdictional wetlands (WL2, WL3, WL4, and WL5) were identified within the study area and totaled approximately 0.85-acre. One non-jurisdictional stream, ephemeral channel (EC1), was identified within the study area and totaled approximately 0.005-acre (96 linear feet).

Table 1 - Aquatic Resources Quantities

Aquatic Resource	Quantities			
	Square Feet	Acres	Linear Feet	Average Width
WL1	6,098	0.140		
WL2	9,017	0.207		
WL3	8,538	0.196		
WL4	7,536	0.173	-	-
WL5	11,935	0.274	-	-
WL6	77,406	1.777		
WL7	4,182	0.096		
PS3	104,980	2.410	4,234	24.8
PS4	3,528	0.081	1,667	2.1
PS5	5,097	0.117	729	7.0
PS6	4,051	0.093	1,003	4.0
EC1	218	0.005	96	2.3
Total Jurisdictional Wetlands	87,686	2.013	-	-
Total Perennial Streams	117,656	2.701	7,633	37.9
Total Non Jurisdictional Wetland	37,026	0.850	-	-
Total Non Jurisdictional Streams	218	0.005	96	2.3

5.0 Conclusions

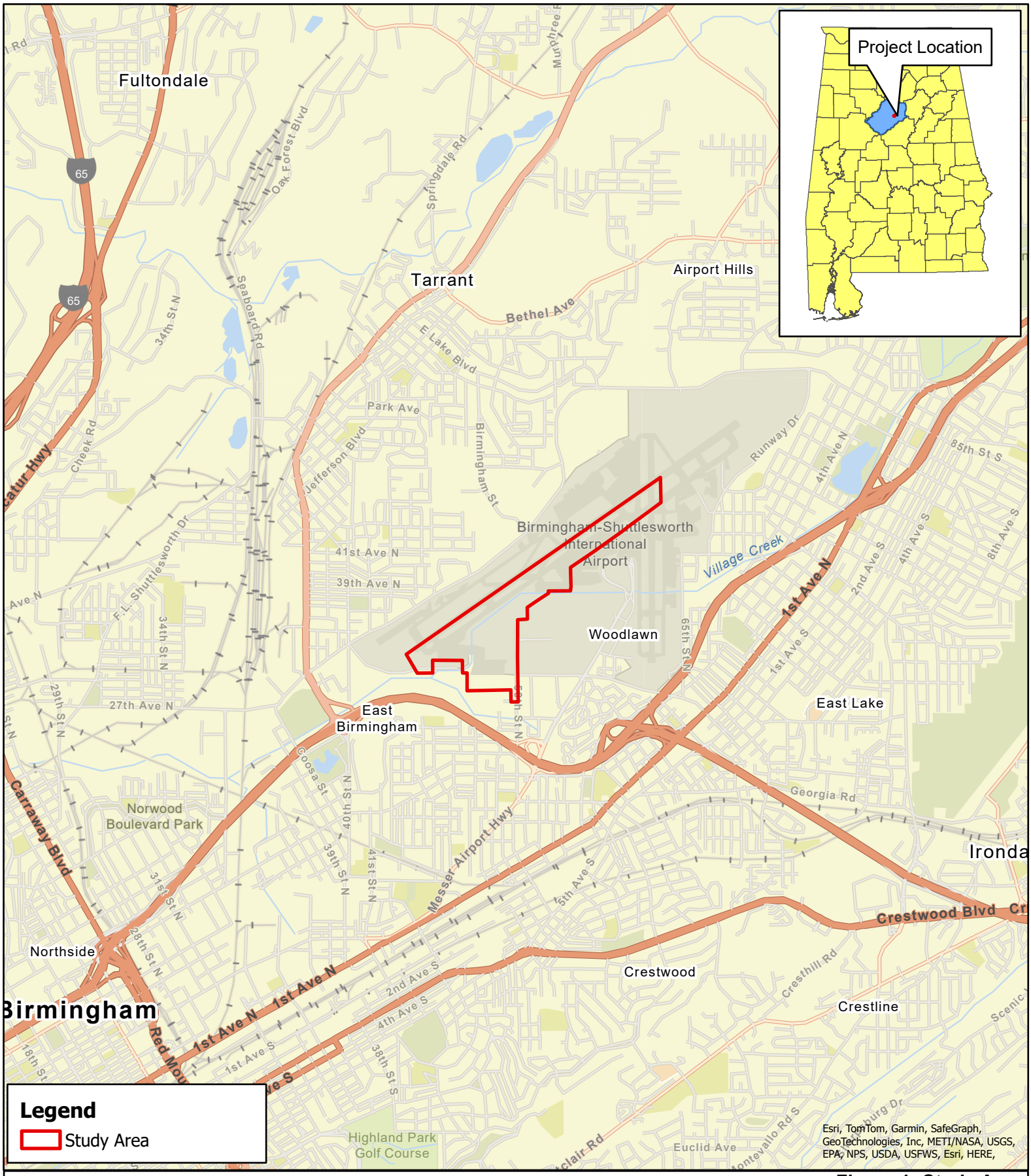
The study area consisted of no jurisdictional open waters of the U.S. Three jurisdictional wetlands (WL1, WL6, and WL7) were identified within the study area and totaled approximately 2.013 acres. Four jurisdictional perennial streams (PS3, PS4, PS5, and PS6) were identified within the study area and totaled approximately 2.701 acres (7,633 linear feet). Four non-jurisdictional wetlands (WL2, WL3, WL4, and WL5) were identified within the study area and totaled approximately 0.85-acre. One non-jurisdictional stream, ephemeral channel (EC1), was identified within the study area and totaled approximately 0.005-acre (96 linear feet).

6.0 References

Past Weather by Zip Code - Data Table." *Past Weather by Zip Code - Data Table | NOAA Climate.gov*, www.climate.gov/maps-data/dataset/past-weather-zip-code-data-table.

U.S. Army Corps of Engineers. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0), J. Berkowitz, R. Lichvar, C. Noble. ERDC/EL TR-12-9. Vicksburg, MS: U.S. Army Engineer Research and Development Center

Web Soil Survey, websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.



VOLKERT

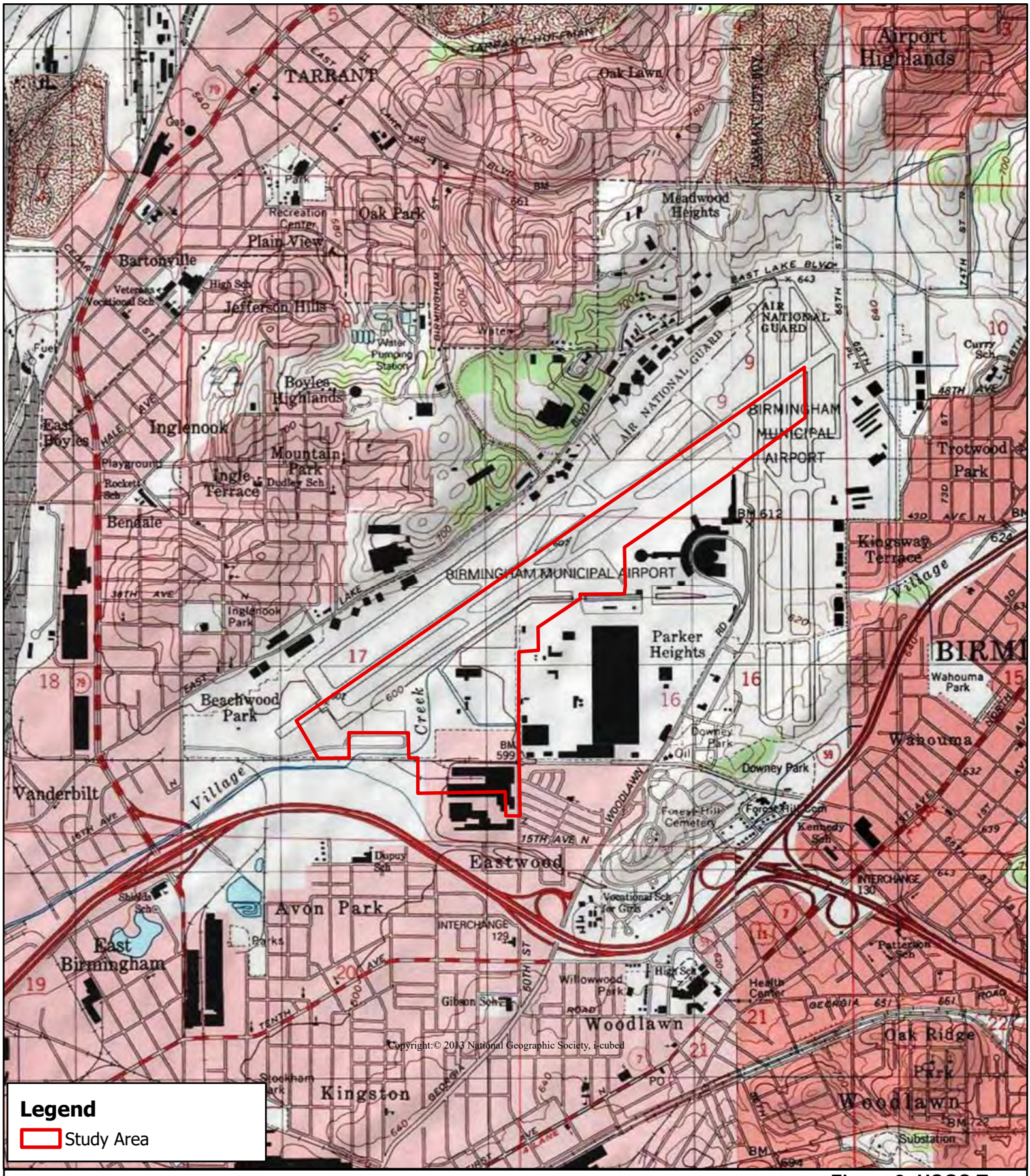
0 4,000 8,000 Feet

1 inch = 4,000 feet

Note: This map is not intended for construction.

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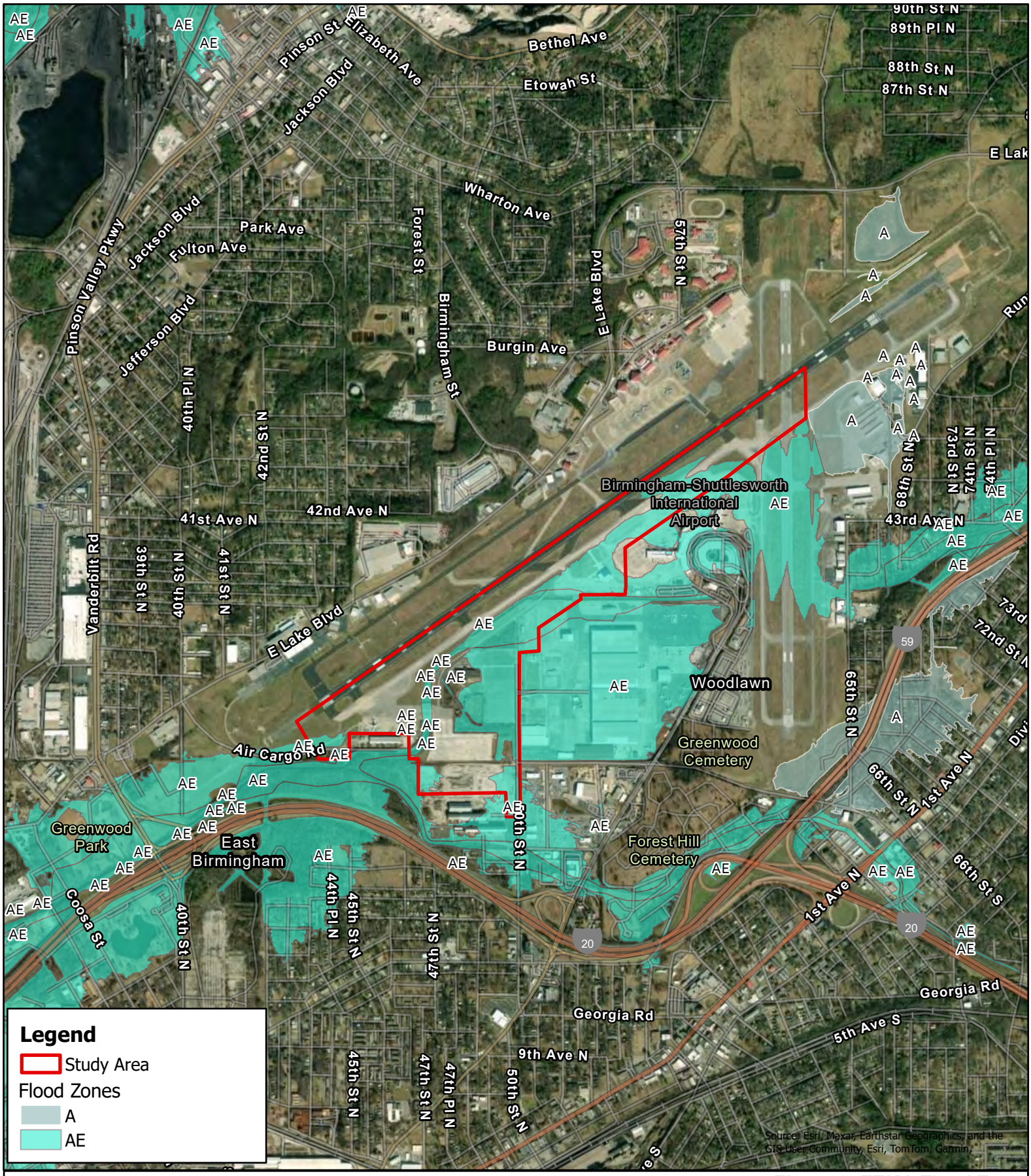
Figure 1: Study Area
BAA Taxiway A Relocation
Birmingham, Alabama
Jefferson County



Note: This map is not intended for construction.

VOLKERT

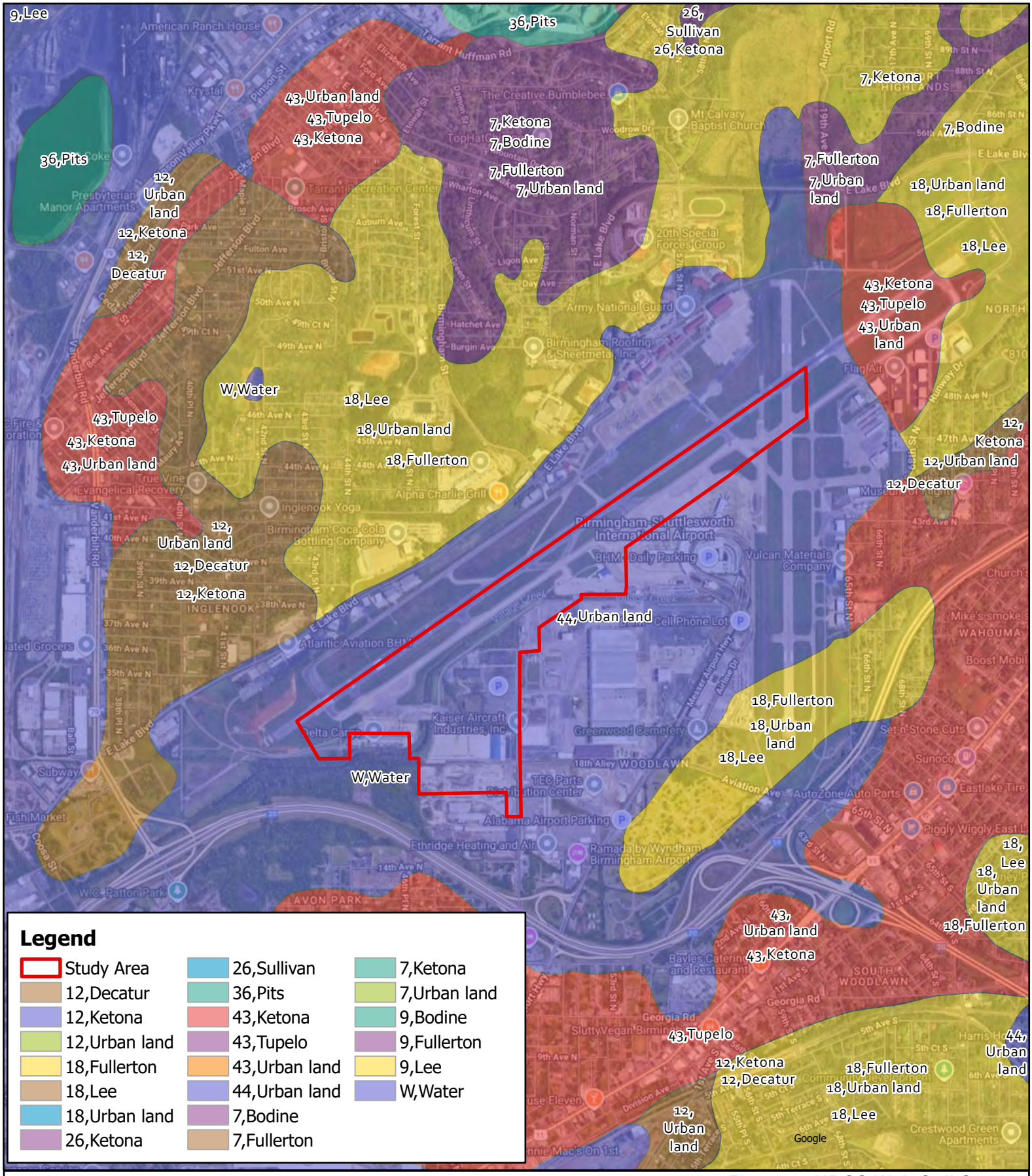
Figure 2: USGS Topo
EA for BAA Taxiway A Relocation
Birmingham, Alabama
Jefferson County



VOLKERT

Note: This map is not intended for construction.

Figure 3: FEMA Flood Zone
BAA Taxiway A Relocation
Birmingham, Alabama
Jefferson County



Legend

- Study Area
- 12,Decatur
- 12,Ketona
- 12,Urban land
- 18,Fullerton
- 18,Lee
- 18,Urban land
- 26,Ketona
- 26,Sullivan
- 36,Pits
- 43,Ketona
- 43,Tupelo
- 43,Urban land
- 44,Urban land
- 7,Bodine
- 7,Fullerton
- 7,Ketona
- 7,Urban land
- 9,Bodine
- 9,Fullerton
- 9,Lee
- W,Water

VOLKERT

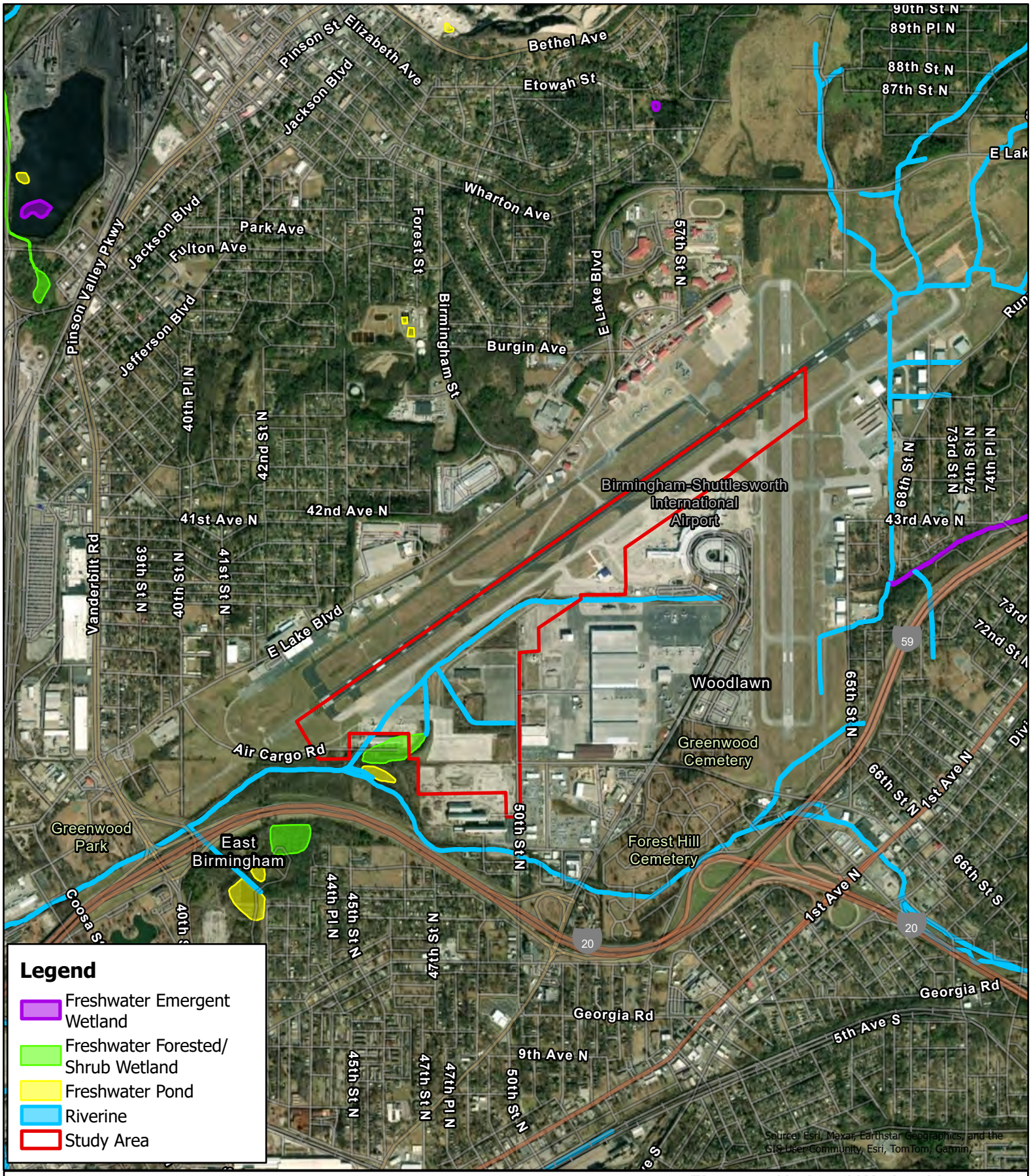
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1 inch = 2,000 feet

Note: This map is not intended for construction.

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Figure 4: NRCS Web Soil Survey
BAA Taxiway A Relocation
Birmingham, Alabama
Jefferson County



VOLKERT

Note: This map is not intended for construction.

Figure 5: National Wetland Inventory
BAA Taxiway A Relocation
Birmingham, Jefferson County, Alabama



VOLKERT

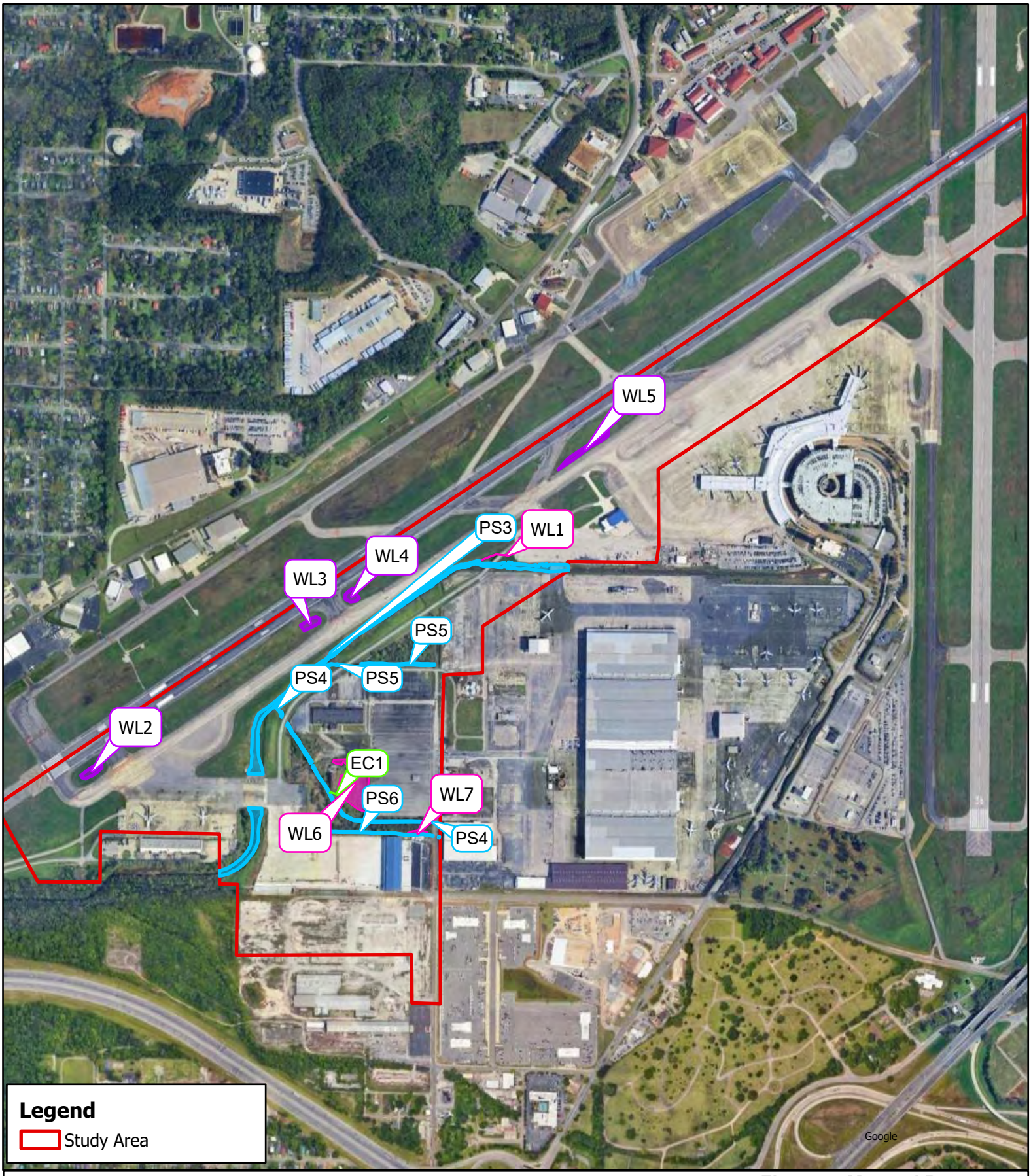
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1 inch = 2,000 feet

Note: This map is not intended for construction.

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Figure 6: Aerial Imagery
BAA Taxiway A Relocation
Birmingham, Alabama
Jefferson County



VOLKERT

0 1,000 2,000 Feet

1 inch = 1,000 feet

Note: This map is not intended for construction.

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Figure 7: Mapped Resources
BAA Taxiway A Relocation
Birmingham, Alabama
Jefferson County



Picture 1: View of WL1



Picture 2: View of WL2



Picture 2: View of WL7



Picture 3: View of PS4



Picture 5: View of hydric soils with redox concentrations in WL4



Picture 6: View of WL5



Picture 7: View of WL3



Picture 8: View of WL4



Picture 9: View of PS5



Picture 10: View of PS4



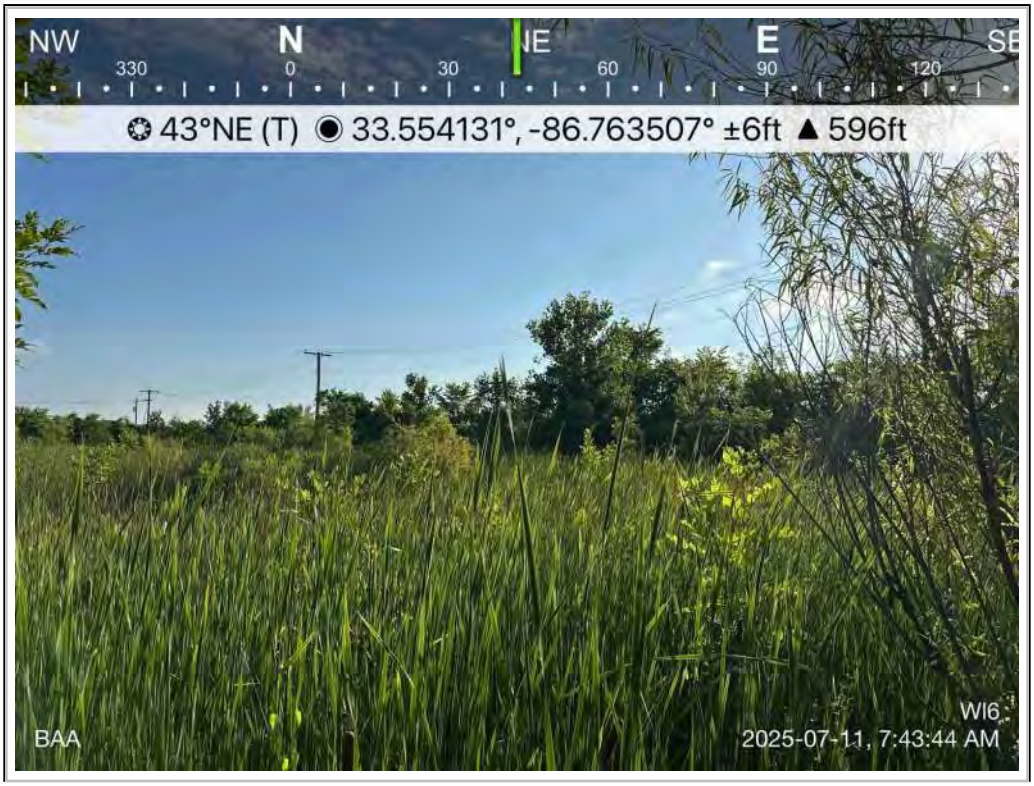
Picture 11: View of PS3



Picture 12: View of PS3



Picture 13: View of PS6



Picture 14: View of WL6

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Birmingham Airport City/County: Birmingham, Jefferson Sampling Date: May 16, 2025

Applicant/Owner: Birmingham Airport Authority State: AL Sampling Point: WL1

Investigator(s): Casey Nowell Section, Township, Range: S16, T17S, R2W

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): none Slope (%): 0-5

Subregion (LRR or MLRA): LRR N Lat: 33.55965 Long: -87.75994 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No x (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Rainfall amount for May was twice the average for the month.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ____ High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 0
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland is adjacent to Village Creek, a perennial stream. This wetland is formed from the floodplain connectivity of the adjacent river system.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WL1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 x30)			
1. *Alternanthera philoxeroides*	90	Yes	OBL
2. *Paspalum dilatatum*	30	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	120 =Total Cover		
50% of total cover: 60	20% of total cover: 24		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	90
FACW species	0	x 2 =	0
FAC species	30	x 3 =	90
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	120 (A)		180 (B)

Prevalence Index = B/A = 1.50

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WL1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/2	100					Loamy/Clayey	
10-16	10YR 4/2	80	2.5YR 3/6	20	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Birmingham Airport City/County: Birmingham, Jefferson Sampling Date: May 16, 2025

Applicant/Owner: Birmingham Airport Authority State: AL Sampling Point: WL Upl

Investigator(s): Casey Nowell Section, Township, Range: S17, T17S, R2W

Landform (hillside, terrace, etc.): upland Local relief (concave, convex, none): none Slope (%): 0-5

Subregion (LRR or MLRA): LRR N Lat: 33.55484 Long: -86.7605 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No x (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Rainfall amount for May was twice the average for the month.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No x	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
This data point is for wetlands 2 through 5 contained within the same area.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WL Upl

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 x30)			
1. *Paspalum notatum*	60	Yes	FACU
2. *Paspalum dilatatum*	30	Yes	FAC
3. *Daucus carota*	10	No	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 =Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	30	x 3 =	90
FACU species	60	x 4 =	240
UPL species	10	x 5 =	50
Column Totals:	100 (A)		380 (B)

Prevalence Index = B/A = 3.80

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WL Upl

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/3	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Birmingham Airport City/County: Birmingham, Jefferson Sampling Date: May 16, 2025

Applicant/Owner: Birmingham Airport Authority State: AL Sampling Point: WL2

Investigator(s): Casey Nowell Section, Township, Range: S17, T17S, R2W

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0-5

Subregion (LRR or MLRA): LRR N Lat: 33.55484 Long: -86.7704 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No x (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Rainfall amount for May was twice the average for the month.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland within taxiway A. This wetland is formed from poor drianage within ponding areas.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WL2

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 x30)			
1. *Juncus effusus*	60	Yes	FACW
2. *Sorghum halepense*	30	Yes	FACU
3. *Daucus carota*	10	No	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 =Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	0	x 3 =	0
FACU species	30	x 4 =	120
UPL species	10	x 5 =	50
Column Totals:	100 (A)		290 (B)
Prevalence Index = B/A =			2.90

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WL2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 5/2	70	10R 4/6	30	D	M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 6

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Restrictive layer at 6" due to airport taxiway construction.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Birmingham Airport City/County: Birmingham, Jefferson Sampling Date: May 16, 2025

Applicant/Owner: Birmingham Airport Authority State: AL Sampling Point: WL3

Investigator(s): Casey Nowell Section, Township, Range: S17, T17S, R2W

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0-5

Subregion (LRR or MLRA): LRR N Lat: 33.55812 Long: -86.76472 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No x (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Rainfall amount for May was twice the average for the month.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ____ High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 0
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland within taxiway A. This wetland is formed from poor drianage within ponding areas.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WL3

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 x30)			
1. *Juncus effusus*	70	Yes	FACW
2. *Sorghum halepense*	30	Yes	FACU
3. *Daucus carota*	5	No	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	105 =Total Cover		
50% of total cover: 53	20% of total cover: 21		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	0	x 3 =	0
FACU species	30	x 4 =	120
UPL species	5	x 5 =	25
Column Totals:	105 (A)		285 (B)
Prevalence Index = B/A =			2.71

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WL3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	70	10YR 3/4	30	D	M	Loamy/Clayey	
4-6	10YR 6/2	60	10R 4/6	40	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 6

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Restrictive layer at 6" due to airport taxiway construction.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Birmingham Airport City/County: Birmingham, Jefferson Sampling Date: May 16, 2025

Applicant/Owner: Birmingham Airport Authority State: AL Sampling Point: WL4

Investigator(s): Casey Nowell Section, Township, Range: S17, T17S, R2W

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0-5

Subregion (LRR or MLRA): LRR N Lat: 33.55872 Long: -86.76366 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No x (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Rainfall amount for May was twice the average for the month.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland within taxiway A. This wetland is formed from poor drianage within ponding areas.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WL4

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 x30)			
1. *Juncus effusus*	60	Yes	FACW
2. *Sorghum halepense*	40	Yes	FACU
3. *Daucus carota*	10	No	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	110 =Total Cover		
50% of total cover: 55	20% of total cover: 22		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	0	x 3 =	0
FACU species	40	x 4 =	160
UPL species	10	x 5 =	50
Column Totals:	110 (A)		330 (B)
Prevalence Index = B/A =			3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WL4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	70	10R 4/6	30	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 6

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Restrictive layer at 6" due to airport taxiway construction.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Birmingham Airport City/County: Birmingham, Jefferson Sampling Date: May 16, 2025

Applicant/Owner: Birmingham Airport Authority State: AL Sampling Point: WL5

Investigator(s): Casey Nowell Section, Township, Range: S16, T17S, R2W

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0-5

Subregion (LRR or MLRA): LRR N Lat: 33.56198 Long: -86.75758 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No x (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Rainfall amount for May was twice the average for the month.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland within taxiway A. This wetland is formed from poor drianage within ponding areas.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WL5

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 x30)			
1. *Juncus effusus*	60	Yes	FACW
2. *Sorghum halepense*	40	Yes	FACU
3. *Daucus carota*	10	No	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	110 =Total Cover		
50% of total cover: 55	20% of total cover: 22		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	0	x 3 =	0
FACU species	40	x 4 =	160
UPL species	10	x 5 =	50
Column Totals:	110 (A)		330 (B)
Prevalence Index = B/A =			3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WL5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 5/2	70	10R 4/6	30	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 6

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Restrictive layer at 6" due to airport taxiway construction.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Birmingham Airport City/County: Birmingham, Jefferson Sampling Date: July 11, 2025

Applicant/Owner: Birmingham Airport Authority State: AL Sampling Point: WL6

Investigator(s): Casey Nowell Section, Township, Range: S17, T17S, R2W

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): none Slope (%): 0-5

Subregion (LRR or MLRA): LRR N Lat: 33.55463 Long: -86.76353 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No x (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Wetland contains a perched water table with impervious layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- X Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 0
Water Table Present?	Yes X	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
This wetland is formed from poor drianage within ponding areas.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WL6

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Shrub Stratum (Plot size: 30x30)			
1. *Salix nigra*	10	Yes	OBL
2. *Fraxinus americana*	5	Yes	FACU
3. *Carya aquatica*	5	Yes	OBL
4.			
5.			
6.			
	20 =Total Cover		
50% of total cover: 10	20% of total cover: 4		
Herb Stratum (Plot size: 30x30)			
1. *Typha latifolia*	80	Yes	OBL
2. *Carex cherokeensis*	20	No	FACW
3. *Cyperus flavescens*	20	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	120 =Total Cover		
50% of total cover: 60	20% of total cover: 24		
Woody Vine Stratum (Plot size: 30x30)			
1. *Nekemias arborea*	5	Yes	UPL
2.			
3.			
4.			
5.			
	5 =Total Cover		
50% of total cover: 3	20% of total cover: 1		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	115	x 1 =	115
FACW species	20	x 2 =	40
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	5	x 5 =	25
Column Totals:	145 (A)		200 (B)

Prevalence Index = B/A = 1.38

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Obligate wetland species were mostly observed with large amounts of Typha

SOIL

Sampling Point: WL6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100					Mucky Loam/Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- X Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 6

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Restrictive layer at 6" due to anthropogenic influences.

HYDROLOGY Local Relief None Landform Ditch Slope 0

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ____ Depth (inches): ____

Water Table Present? Yes ____ No ____ Depth (inches): ____

Saturation Present? Yes ____ No ____ Depth (inches): ____

(includes capillary fringe)

Tree Stratum (Plot size: 30x10) — Absolute % Cover

1. ____
2. ____
3. ____
4. ____
5. ____
6. ____

Sapling Stratum

1. ____
2. ____
3. ____
4. ____
5. ____
6. ____

Shrub Stratum

1. ____
2. ____
3. ____
4. ____
5. ____
6. ____

Herb Stratum

1. Dallas grass — 80
2. Bahia grass — 20
3. ____
4. ____
5. ____
6. ____
7. ____
8. ____
9. ____
10. ____

Woody Vine Stratum

1. ____
2. ____
3. ____
4. ____
5. ____

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10yr 2/1	100					Clay	
								Impersonating s layer at 4"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8)
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 122, 136)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ☐ Very Shallow Dark Surface (F22)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Birmingham Airport City/County: Birmingham, Jefferson Sampling Date: July 11, 2025

Applicant/Owner: Birmingham Airport Authority State: AL Sampling Point: WL7

Investigator(s): Casey Nowell Section, Township, Range: S17, T17S, R2W

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): none Slope (%): 0-5

Subregion (LRR or MLRA): LRR N Lat: 33.55355 Long: -86.76189 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No x (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Wetland is adjacent to a perennial stream.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ____ Depth (inches): ____

Water Table Present? Yes ____ No ____ Depth (inches): ____

Saturation Present? Yes ____ No ____ Depth (inches): ____
(includes capillary fringe)

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
This wetland is formed from floodplain connectively after culvert.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WL7

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling Stratum (Plot size: 30x20)			
1. *Fraxinus americana*	10	Yes	FACU
2. *Morus rubra*	20	Yes	FACU
3.			
4.			
5.			
6.			
	30 =Total Cover		
50% of total cover: 15	20% of total cover: 6		
Shrub Stratum (Plot size: 30x30)			
1. *Ambrosia trifida*	5	Yes	FAC
2. *Fraxinus americana*	5	Yes	FACU
3. *Ulmus americana*	5	Yes	FACW
4. *Solidago altissima*	10	Yes	FACU
5.			
6.			
	25 =Total Cover		
50% of total cover: 13	20% of total cover: 5		
Herb Stratum (Plot size: 30x30)			
1. *Ambrosia trifida*	10	No	FAC
2. *Carex cherokeensis*	60	Yes	FACW
3. *Solidago altissima*	20	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90 =Total Cover		
50% of total cover: 45	20% of total cover: 18		
Woody Vine Stratum (Plot size: 30x30)			
1. *Smilax rotundifolia*	5	Yes	FAC
2.			
3.			
4.			
5.			
	5 =Total Cover		
50% of total cover: 3	20% of total cover: 1		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 44.4% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	65	x 2 =	130
FAC species	20	x 3 =	60
FACU species	65	x 4 =	260
UPL species	0	x 5 =	0
Column Totals:	150 (A)		450 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Obligate wetland species were mostly observed with large amounts of Typha

SOIL

Sampling Point: WL7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	100					Loamy/Clayey	
8-14	10YR 4/1	90	2.5YR 4/6	10	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Restrictive layer at 6" due to anthropogenic influences.

Appendix E

Agency and Public Involvement Letters

USDA Letter of Concurrence

United States Department of Agriculture
Natural Resources Conservation Service
1300 Meridian Street, Suite 23-F
Huntsville, AL 35801

June 2nd, 2025

MEAD & HUNT, Inc.
1702 Lawrence Dr.
De Pere, WI 54115

Subject: RE: Birmingham-Shuttlesworth International Airport (BHM) – Environmental Assessment (EA) Taxiway A Relocation-Agency Solicitation of Views

To whom it May Concern:

This letter is in response to a request for comments regarding the proposal to relocate the Taxiway at the Birmingham-Shuttlesworth International Airport located in Jefferson County, Alabama, and its impact on the environment related to soils. Based on the nature of the project, the site is exempted from the Farmland Protection Policy Act (FPPA).

Other activities that are not subject to the Farmland Protection Policy Act includes:

- Federal permitting and licensing
- Projects planned and completed without the assistance of a federal agency
- *Projects on land already in urban development or used for water storage*
- Construction within an existing right-of-way purchased on or before August 4, 1984
- Construction for national defense purposes
- Construction of on-farm structures needed for farm operations
- Surface mining, where restoration to agricultural use is planned
- Construction of new minor secondary structures such as a garage or storage shed.

In addition:

“Only assistance and actions that would convert farmland to nonagricultural uses are subject to this Act. Assistance and actions related to the purchase, maintenance, renovation, or replacement of existing structures and sites converted prior to the time of an application for assistance from a Federal Agency, including assistance and actions related to the construction of minor new ancillary structures (such as garages or sheds), are not subject to the Farmland Protection Policy Act.”

NRCS primary concern is the possible conversion of prime farmland. Erosion and sediment control measures should be implemented and maintained during the construction phase to protect natural resources. However, construction activities near and across water bodies could be a Clean Water Act violation. Therefore, contacting your local Army Corps of Engineers representative is suggested on projects where it may be applicable.

If you have any additional questions, please contact me at (256) 947-5191 or email: eddie.davis@usda.gov.

Respectfully,

Eddie E. Davis Jr.

Eddie E. Davis Jr.
Resource Soil Scientist

USEPA Letter of Concurrence

REGION 4
ATLANTA, GA 30303

June 27, 2025

Ms. Jenna Weigman
Aviation Sustainability Planner
MEAD & HUNT, Inc.
1702 Lawrence Drive
De Pere, Wisconsin 54115

Re: EPA Comments on the scoping notice for the Birmingham-Shuttlesworth International Airport (BHM) – Taxiway A Relocation Environmental Assessment

Dear Ms. Weigman:

The U.S. Environmental Protection Agency (EPA) has reviewed the Federal Aviation Administration's (FAA) scoping notice for the Birmingham-Shuttlesworth International Airport (BHM) – Taxiway A Relocation Environmental Assessment in accordance with Section 309 of the Clean Air Act and Section 102(2)(C) of the National Environmental Policy Act. The purpose of the proposed action is to enhance the airfield's ability to accommodate the increasing demand for both passenger and cargo aircraft operations in a safe and efficient manner by addressing the non-standard runway to taxiway separation distance located on the southwest portion of Runway 6 -24 and Taxiway A. The need for the proposed action seeks to enhance airfield safety, ensure the protection of personnel, and support the demand for the existing and future fleet mix.

The scoping notice evaluates four action alternatives including the preferred alternative and the no-action alternative. Under the Proposed Action (Alternative 2 – Preferred Alternative), the FAA seeks to relocate Village Creek and Taxiway A to 400 feet. This involves the realignment of Taxiway A pavement to achieve a 400 -foot separation distance from the runway centerline to the taxiway centerline, the relocation of ~2,500 linear feet of Village Creek by constructing an open-air creek parallel to its current alignment, and the relocation of the parallel Vehicle Service Road (VSR). Based on the EPA's review of the scoping notice, the EPA has not identified significant environmental concerns with the proposed project during the NEPA process.

The EPA appreciates the opportunity to review the scoping notice. If you have any questions regarding this letter, please contact Jamilha Washington-Newton of the NEPA Section at (404) 562-8693 or WashingtonNewton.Jamilha@epa.gov.

Sincerely,

NTALE KAJUMBA

Digitally signed by NTALE KAJUMBA
Date: 2025.06.27 09:56:19 -04'00'

Ntale Kajumba
NEPA Section Manager

City of Birmingham Floodplain Guidance

Jenna Weigman

From: Hayes, Tracey K. <Tracey.Hayes@birminghamal.gov>
Sent: Monday, July 14, 2025 5:25 PM
To: Jenna Weigman
Cc: Ryan Hayes; Trevor Martin; Doelman T. Andrew; Thomas, Katrina R.; Agard, Darius N.
Subject: RE: Birmingham-Shuttlesworth International Airport - Environmental Assessment (EA) - Agency Solicitation of Views

Good evening Jenna,

I hope this message finds you well and that you're having a pleasant day.

You will need to submit the analysis at least 6 months before construction; however, you must understand that you cannot start construction until you have approval from OWR and FEMA.

Please let me know if you need any other assistance.

Thank you so much!

Best,
Tracey

Tracey K. Hayes, Esq., CFM
Deputy Director, Planning, Urban Design, Watershed Management, and Hazard Mitigation Services
Dept. of Planning, Engineering & Permits
710 20th Street North | Birmingham, AL 35203
205.254.2544
205.531.4466

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From: Jenna Weigman <Jenna.Weigman@meadhunt.com>
Sent: Thursday, July 3, 2025 3:02 PM
To: Hayes, Tracey K. <Tracey.Hayes@birminghamal.gov>
Cc: Ryan Hayes <Ryan.Hayes@meadhunt.com>; Trevor Martin <Trevor.Martin@meadhunt.com>; Doelman T. Andrew <Andrew.Doelman@birminghamal.gov>; Thomas, Katrina R. <Katrina.Thomas@birminghamal.gov>; Agard, Darius N. <Darius.Agard@birminghamal.gov>
Subject: RE: Birmingham-Shuttlesworth International Airport - Environmental Assessment (EA) - Agency Solicitation of Views

Some people who received this message don't often get email from jenna.weigman@meadhunt.com. Learn why this is important

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Tracey,

We appreciate your response regarding the proposed Taxiway A Relocation project at Birmingham-Shuttlesworth International Airport.

To provide more details, the 400’ (Alt 2), 500’ (Alt 4), and hybrid (Alt 5) alternatives would relocate Village Creek in the same location – the main difference between these alternatives is the location/configuration of Taxiway A. The only alternative that would not relocate Village Creek is the No Action alternative. At this point, we are using the 400’ alternative as our Preferred Alternative.

For Section 7, B #10, can you clarify the timeframe – we’d be required to submit engineering data/analysis within six (6) months of what? 6 months before construction or 6 months after X% design?

Thank you,

Jenna Weigman, **ENV SP** (She, Her, Hers)
Aviation Sustainability Planner
Direct: 920-593-6869 | Transfer Files
Mead&Hunt
LinkedIn | Facebook | Instagram | My LinkedIn

From: Trevor Martin <Trevor.Martin@meadhunt.com>
Sent: Thursday, June 12, 2025 2:04 PM
To: Jenna Weigman <Jenna.Weigman@meadhunt.com>
Subject: Fw: Birmingham-Shuttlesworth International Airport - Environmental Assessment (EA) - Agency Solicitation of Views

Trevor Martin, **ENV SP**
Direct: 303-597-0993 | Transfer Files
meadhunt.com | 125 Years of Exceptional

From: Hayes, Tracey K. <Tracey.Hayes@birminghamal.gov>
Sent: Thursday, June 12, 2025 2:55 PM
To: Trevor Martin <Trevor.Martin@meadhunt.com>; Jenna.eigman@meadhunt.com <Jenna.eigman@meadhunt.com>
Cc: Doelman T. Andrew <Andrew.Doelman@birminghamal.gov>; Thomas, Katrina R. <Katrina.Thomas@birminghamal.gov>; Agard, Darius N. <Darius.Agard@birminghamal.gov>
Subject: RE: Birmingham-Shuttlesworth International Airport - Environmental Assessment (EA) - Agency Solicitation of Views

You don't often get email from tracey.hayes@birminghamal.gov. Learn why this is important

Good afternoon Ms. Eigman,

I hope all is well and that you're having a good day so far.

I want to sincerely apologize for the delay in my response. I mistakenly thought I had sent this message, but it was still in my inbox.

I cannot confirm that there are no environmental impacts related to your proposed projects without knowing which alternative you plan to use. However, I want to make it clear that if you intend to alter or relocate Village Creek, the following guidelines will apply.

Please let us know if you have any additional questions.

Article II, Title 1, Chapter 8, Floodplain Overlay, Section 7, B #9 and #10. Of the City of Birmingham Zoning Ordinance:

https://s3.us-east-2.amazonaws.com/assets.birminghamal.gov/s3fs-public/migrated-files/documents/2021/09/PEPZNINF_ZoningOrdinance_0921.pdf

9. Notify adjacent communities and the Alabama Department of Natural Resources prior to any alteration or relocation of a watercourse and submit evidence of such notification to the Federal Emergency Management Agency (FEMA), and the Alabama Department of Economic and Community Affairs/Office of Water Resources (OWR).

10. For any altered or relocated watercourse, submit engineering data/analysis within six (6) months to FEMA and OWR to ensure accuracy of the City's flood maps through the Letter of Map Revision process. Assure flood carrying capacity of any altered or relocated watercourse is maintained. 11. Where interpretation is needed as to the exact location of boundaries.

Tracey,

Tracey K. Hayes, Esq., CFM

Deputy Director, Planning, Urban Design, Watershed Management, and Hazard Mitigation Services

Dept. of Planning, Engineering & Permits

710 20th Street North | Birmingham, AL 35203

205.254.2544

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From: Thomas, Katrina R. <Katrina.Thomas@birminghamal.gov>
Sent: Thursday, May 29, 2025 5:23 PM

To: Hayes, Tracey K. <Tracey.Hayes@birminghamal.gov>
Cc: Doelman T. Andrew <Andrew.Doelman@birminghamal.gov>; Bell, Denise <Denise.Bell@birminghamal.gov>
Subject: FW: Birmingham-Shuttlesworth International Airport - Environmental Assessment (EA) - Agency Solicitation of Views

Good afternoon, Tracey,

Please see below and attached for review.

Best regards,

KATRINA R. THOMAS, AICP
Director
Planning, Engineering & Permits
710 20th Street North | Birmingham, AL 35203
205.254.2288
205.873.9896

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From: Trevor Martin <Trevor.Martin@meadhunt.com>
Sent: Thursday, May 29, 2025 12:26 PM
Subject: Birmingham-Shuttlesworth International Airport - Environmental Assessment (EA) - Agency Solicitation of Views

Some people who received this message don't often get email from trevor.martin@meadhunt.com. Learn why this is important

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Hello,

Attached for your review is information about an Environmental Assessment (EA) for the relocation of Taxiway A at the Birmingham-Shuttlesworth International Airport. If you have questions or comments regarding this letter, please contact Jenna Weigman at Jenna.Weigman@meadhunt.com.

Thank you,



Trevor Martin, **ENV SP**
Airport Planner | Aviation
Direct: 303-597-0993 | Transfer Files
Mead&Hunt
LinkedIn | Facebook | Instagram | My LinkedIn

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ADEM Official Response Letter

EDWARD F. POOLOS
DIRECTOR

JEFFERY W. KITCHENS
DEPUTY DIRECTOR

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2400 ▪ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ▪ FAX (334) 271-7950

KAY IVEY
GOVERNOR

August 14, 2025

ELECTRONICALLY TRANSMITTED

Ms. Jenna Weigman
Aviation Sustainability Planner
Mead & Hunt, Inc.
1702 Lawrence Drive
De Pere, WI 54115

RE: **ADEM Review and Response:** *Birmingham-Shuttlesworth International Airport (BHM) Environmental Assessment (EA) – Taxiway A Relocation – Agency Solicitation of Views*, dated May 29, 2025
Birmingham-Shuttlesworth International Airport, Birmingham, AL
U.S. EPA I.D. No. ALD 983 168 147

Dear Ms. Weigman:

The Alabama Department of Environmental Management (ADEM or the Department) has reviewed the Birmingham Airport Authority's *Birmingham-Shuttlesworth International Airport (BHM) Environmental Assessment (EA) – Taxiway A Relocation – Agency Solicitation of Views*, dated May 29, 2025. The Department notes that, in 2019, the Air National Guard in Birmingham, AL (the 117th Air Refueling Wing) completed a Site Inspection for per- and polyfluoroalkyl substances (PFAS) at five potential release locations (PRLs) across the base property. Due to detectable levels at all five PRLs within soil and groundwater, it was determined that additional investigation is needed to determine nature and extent of PFAS contamination at the site. In addition to the PRLs on-site, several off-base areas were also recommended for soil and groundwater testing regarding PFAS, including:

- A Fire Training Area (FTA) located on Airport property (approximately 1 mile south-southwest of the Birmingham Air National Guard Base)

- Two non-FTA PRLs also located on Airport property:

  1. The Airport Parking Apron (located adjacent to the southern Air National Guard base border)

  2. A Nozzle Testing Area (located adjacent to a concrete runway)

The Site Inspection Report also mentions a 2013 aircraft crash on the northern end of the North/South runway that resulted in "a large amount" of Aqueous Film Forming Foam (AFFF) being used to combat the fires.

Given the information provided through these investigations, there is a potential for PFAS contamination to be present at the Birmingham-Shuttlesworth Airport. Additionally, considering the nature and extent of PFAS contamination at the Air National Guard (ANG) base has not been defined, off-base migration of PFAS from the ANG base toward Airport property is also possible.

Before proceeding with the relocation of Taxiway A, please consider the possibility of exposure/interaction with PFAS contamination during the project. It is recommended that any excavated soils stockpiled onsite be placed on an impermeable material and protected from wind and rainwater runoff to prevent migration of potential contamination. It is also recommended that excavated soil be analyzed for PFAS or other hazardous constituents before being transported offsite.

If you have any questions or comments concerning this matter, please contact William Duke of the Remediation Engineering Section at 334-271-7782 or via email at william.duke@adem.alabama.gov.

Sincerely,



Ashley T. Mastin, Chief
Governmental Hazardous Waste Branch
Land Division

ATM/MCM/WMD/mlw

Cc: Mary Catherine Muscha, ADEM

Black Warrior Riverkeepers Letter

Black Warrior **RIVERKEEPER**®
712 37th Street South
Birmingham, AL 35222
(205) 458-0095
nbrooke@blackwarriorriver.org
BlackWarriorRiver.org

WATERKEEPER® ALLIANCE MEMBER

June 28, 2025

Attn: Jenna Weigman
MEAD & HUNT, Inc.
Jenna.Weigman@meadhunt.com
→ Via email

Re: BHM Taxiway A Relocation | Environmental Assessment

Dear Jenna:

Thank you for the opportunity to comment on the Birmingham Airport's environmental assessment regarding potential relocation of Taxiway A. We appreciate the removal of encapsulation of Village Creek as an alternative in favor of keeping the creek open-air. As you know, much of Village Creek and its tributaries at the airport have been put underground in concrete culverts – an ecologically damaging practice that impacts habitat, aquatic life, water quality, natural flow regimes, and downstream communities. Flooding in the Village Creek watershed is a serious issue which has plagued Birmingham communities for decades. Preserving, naturalizing, enhancing, and increasing Village Creek's instream, floodway, and floodplain capacity is critical to reducing the creek's flooding impacts on surrounding and downstream communities.

For any of the alternatives being considered, detrimental impacts to the creek's natural form and function exist, whether from past modifications or proposed new ones. We promote the inclusion of natural system function designs and features, where possible, that will promote ecological flows, aquatic habitat features supportive of native aquatic life, and floodwater management.

If an aquatic species survey has not been performed onsite yet, we encourage hiring an experienced ichthyologist to do a stream survey. Given the upstream existence of the endangered watercress darter (Etheostoma nuchale) at Roebuck Springs and in Village Creek, it imperative to ensure their protection before any ground is broken on this project. The same goes for any other rare or endangered species found in the area, as well as all native aquatic fauna. If the creek's footprint is to be moved as proposed, extra care will need to be taken to ensure that aquatic life is not compromised during the transition of the creek's physical path and the water flowing through it, including species capture and relocation prior to the use of heavy machinery in the creek.

Given spacial constraints at this location, we promote engineering of stormwater and floodwater detention onsite, to offset the existing contribution to flooding issues downstream. There are numerous products and technologies available today that make installation of such systems possible in locations with spacial constraints. For example, there are underground detention tanks which can hold water from rain events onsite and then allow it to discharge into groundwater, rather than flow downstream.

Utilization of detention systems could reduce the airport's contribution to reduced localized aquifer recharge as well as flooding conditions downstream in the Village Creek watershed.

Whichever alternative the airport chooses to pursue for this project, we believe this is a good opportunity for the airport to find solutions for its ongoing logistical needs as well as mitigate some longstanding impacts it has on the Village Creek watershed.

If you would like to further discuss along these lines, please do not hesitate to reach out.



For the creek,

Nelson Brooke
Riverkeeper

USFWS Initial Letter

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1208-B Main Street
Daphne, AL 36526

JUL 0 7 2025

2025-0107087

Ms. Jenna Weigman
Mead & Hunt, Inc.
1702 Lawrence Dr
De Pere, WI 54115

Dear Ms. Weigman,

Thank you for your letter dated May 29, 2025, requesting information on threatened or endangered species within the action area of the proposed relocation of Taxiway A at the Birmingham-Shuttlesworth Internation Airport, in cooperation with the Federal Aviation Administration (FAA), in Birmingham, Jefferson County, Alabama. We have reviewed the information and are providing the following comments in accordance with the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Threatened and Endangered Species

Our review indicates that the following listed species occur within or near the proposed project area:

Watercress darter (*Etheostoma nuchale*) – Endangered
Indiana Bat *(Myotis sodalis)* – Endangered
Northern long-eared bat (*M. septentrionalis*) – Endangered
Gray bat (*M. grisescens*) – Endangered

Watercress darter

The watercress darter was listed as endangered in 1970. The species' Recovery Plan was issued in 1993. The watercress darter is a small and colorful member of the taxonomic clade *Astatichthys* within the subgenus *Oligocephalus*, which was discovered in 1964 (Howell and Caldwell 1965; Near et al. 2011). The body of the species is moderately robust and slightly compressed; caudal peduncle moderately deep; snout moderately pointed to somewhat rounded; mouth subterminal; eye large, its diameter more than snout length (Boschung and Mayden 2004). The back and side of nonbreeding males and females are mottled with dark brown and black. In breeding males, the lower side is bright red orange with two large orange spots at base of caudal fin and a variety of color bands on dorsal fin in blue, red, and orange (Boschung and Mayden 2004).

Watercress darters feed on small snails, aquatic insects and crustaceans that abound within submerged vegetation (Howell and Caldwell 1965). Aquatic plants provide shelter from predators

and a substrate on which female darters lay eggs during the reproductive season, which peaks in March-July (Stiles 2004) but can occur year round (Fluker et al 2009). Watercress darters are thought to survive no more than 3 years based on discernable size classes present in most seasons (Fluker et al 2009).

The species habitat is restricted to a few areas of springs, spring-runs, spring-fed pools, and small tributaries or rivulets associated with springs in Jefferson County, Alabama. Watercress darters are associated with dense aquatic vegetation in deeper portions of spring pools and spring runs where there may be no to slow-moving to swift currents (Duncan et al 2010). The species tend to perch in the dense aquatic vegetation of coontail (*Ceratophyllium demersum*), watercress (*Nasturtium officinale*), stonewort (*Chara* sp.; *Nitella* sp.) water milfoil (*Myriophyllum spicatum*), American bur-reed (*Sparganium americanum*), alligator weed (*Alternanthera philoxeroides*), mosses (*Fontanalis*) and algae (*Spyrogyra* sp.) (Duncan et al 2016; Duncan et al 2010; Boschung and Mayden 2004; Mirarchi 2004), possibly in relation to where there are prey sources.

Gray bat

The gray bat is a medium-sized insectivorous bat with an overall length of about 3.5 inches and a wingspan of 10 to 11 inches. As the name implies, gray bats have gray fur, but the hair often bleaches to reddish-brown by early summer. The gray bat occurs in limestone karst areas, meaning a landscape marked by caves, sinkholes, springs and other features, of the southeastern and midwestern United States. It is estimated that more than 95% of the species range-wide population hibernate in only 15 caves. The gray bat was added to the U.S. List of Endangered and Threatened Wildlife and Plants on April 28, 1976.

Indiana bat

Suitable summer habitat for Indiana bat consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts including live trees and/or snags $\geq$ 5 inches (12.7 centimeters) dbh that have exfoliating bark, cracks, crevices, and/or hollows, as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested habitat.

Northern long eared bat

Suitable summer habitat for Northern long-eared bat (NLEB) consists of a wide variety of forested/wooded habitats where they roost, forage, and travel. Although they may also traverse habitat adjacent and interspersed with forest habitat, such as emergent wetlands and field edges, they are predominantly found in forest/wooded habitat. This includes forests and woodlots containing potential roosts including live trees and/or snags >3 inches (7.6 centimeters) dbh that have exfoliating bark, cracks, crevices, and/or cavities, as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. NLEB often prefer intact mixed-type forests with small gaps (i.e., forest trails, small roads, or forest-covered creeks) in

forest with sparse or medium vegetation for foraging and commuting rather than fragmented habitat or areas that have been clear cut. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested habitat.

We recommend a thorough site investigation for any karst features on the site (i.e., sinkholes, sinking streams, caves). If such topographic features are located on or near the subject property, we request that you inform our agency of their location so that we may determine if further consultation for gray bats is necessary.

For protection of potential roosting Indiana and northern long-eared bats, any tree clearing that is required should occur during the protective window of October 1 to March 14. If this timing is not achievable and no other measures to avoid adverse effects are possible, then we recommend that the project proponent proceed to acoustic and/or mist-netting surveys to determine presence or probable absence of Indiana bats, northern long-eared bats and tricolored bat at the project site in accordance with the U.S. Fish and Wildlife Service's *2024 Range-wide Indiana Bat & Northern Long-eared Bat Survey Guidelines*:

https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines

Due to the presence of the endangered watercress darter, we encourage you to coordinate with the FAA and the U.S. Army Corps of Engineers on their mandatory section 7 of the ESA responsibilities. Please reach back out to our office if you have any questions. If you have any questions or need additional information, please contact Ms. Jennifer Grunewald of my staff at jennifer_grunewald@fws.gov. Please refer to the reference number located at the top of this letter in future phone calls or written correspondence.

Sincerely,

William J. Pearson
Field Supervisor
Alabama Ecological Services Field Office

River Organizations Meeting Sign-In Sheet

Please Sign In

Taxiway A Relocation Environmental Assessment Local Organization Meeting

August 28th, 2025

NAME	EMAIL	PHONE
ERIC TOMASOVIC FAA EPS	ERIC.TOMASOVIC@FAA.GOV	7897694989
RYAN HAYES	RYAN.HAYES@MERIDIANUT.COM	303-888-1904
Ocean Boyz - BAA	Oboyz@Flybhm.com	205-599-0562
Marcelo Lima - BAA	mlima@flybhm.com	205-599-0773
Ryan Veney - BAA	RVeney@Flybhm.com	205-599-0568
Nelson Brooke Black Warrior Riverkeeper	nbrooke@blackwarriorriver.org	205-458-0095
AISHWARYA KAUSHAL Black Warrior Riverkeeper	aishk20@uab.edu	205-734-9699
LT Tryce Slade	Tslade@faa.dot.gov	2054134685 (5/7)
Matthew Nelson	mnelson@flybhm.com	205-599-0545
Paige Felts	paige.felts@volkert.com	251-504-0361

River Organizations Meeting Slides

Taxiway A Relocation Environmental Assessment (EA)

August 28, 2025

Mead&Hunt

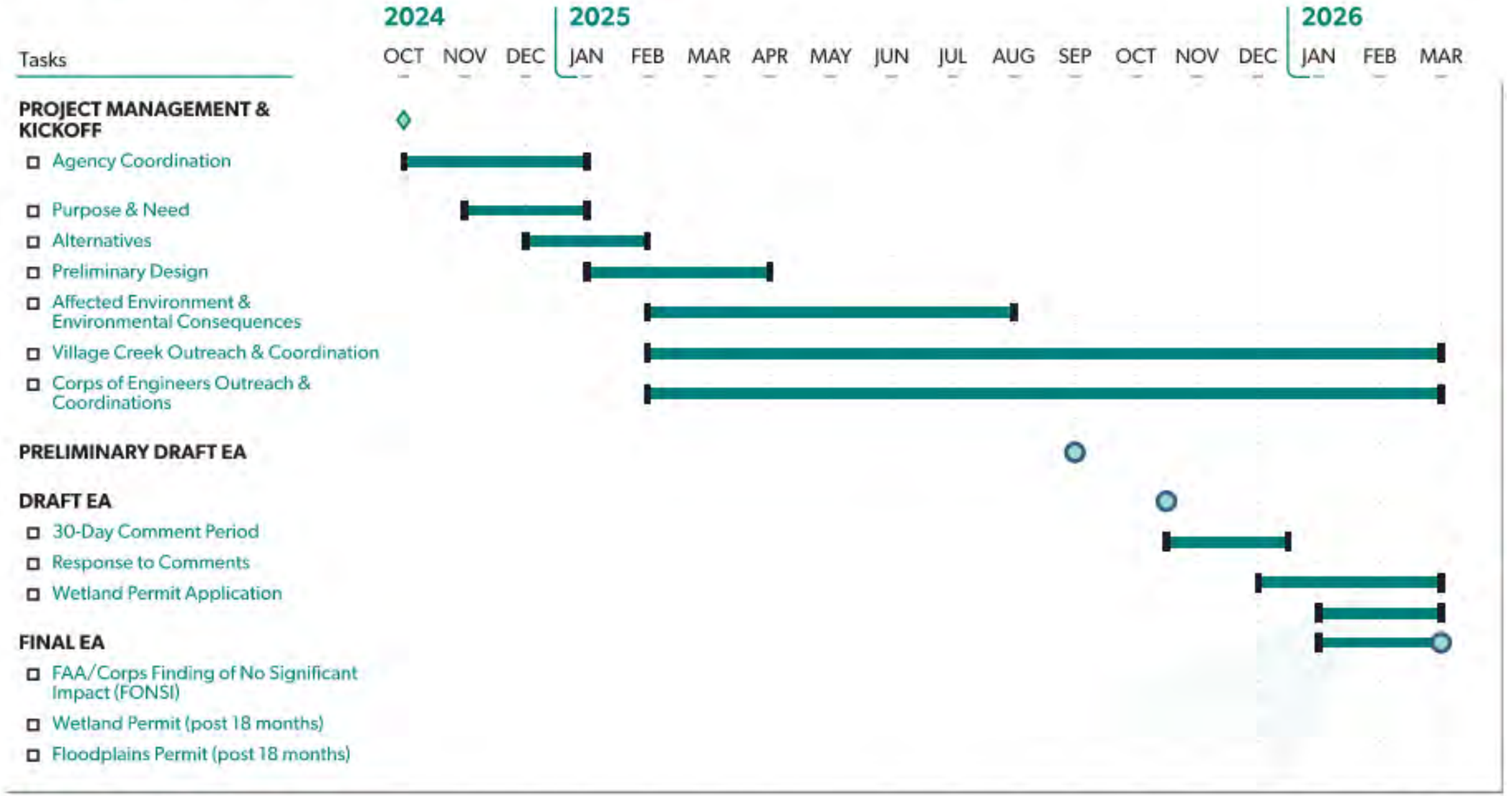
Agenda

- Introductions
- Existing Conditions
- Project Schedule
- Purpose and Need
- Alternatives Considered
- Creek Design – Volkert
- Continued Communication
- Questions

Existing Conditions



Birmingham Shuttlesworth International Airport
Taxiway A Environmental Assessment (EA)



LATEST REVISION: July, 2025.

Mead&Hunt

Anticipated Post-EA Schedule

- 2026
  - Design of creek relocation, utility relocation, and building demolition
  - Purchase creek mitigation credits
- 2027
  - Construction of creek relocation, utility relocation, and building demolition
- 2028
  - Design Taxiway A relocation
- 2029-2030
  - Construct Taxiway A relocation

Purpose

The purpose of the proposed project is to maximize the airfield's ability to accommodate the increasing demand for both passenger and cargo operations in a safe and efficient manner by addressing the non-standard runway to taxiway separation located on the southwest portion of Runway 6/24 and Taxiway A.

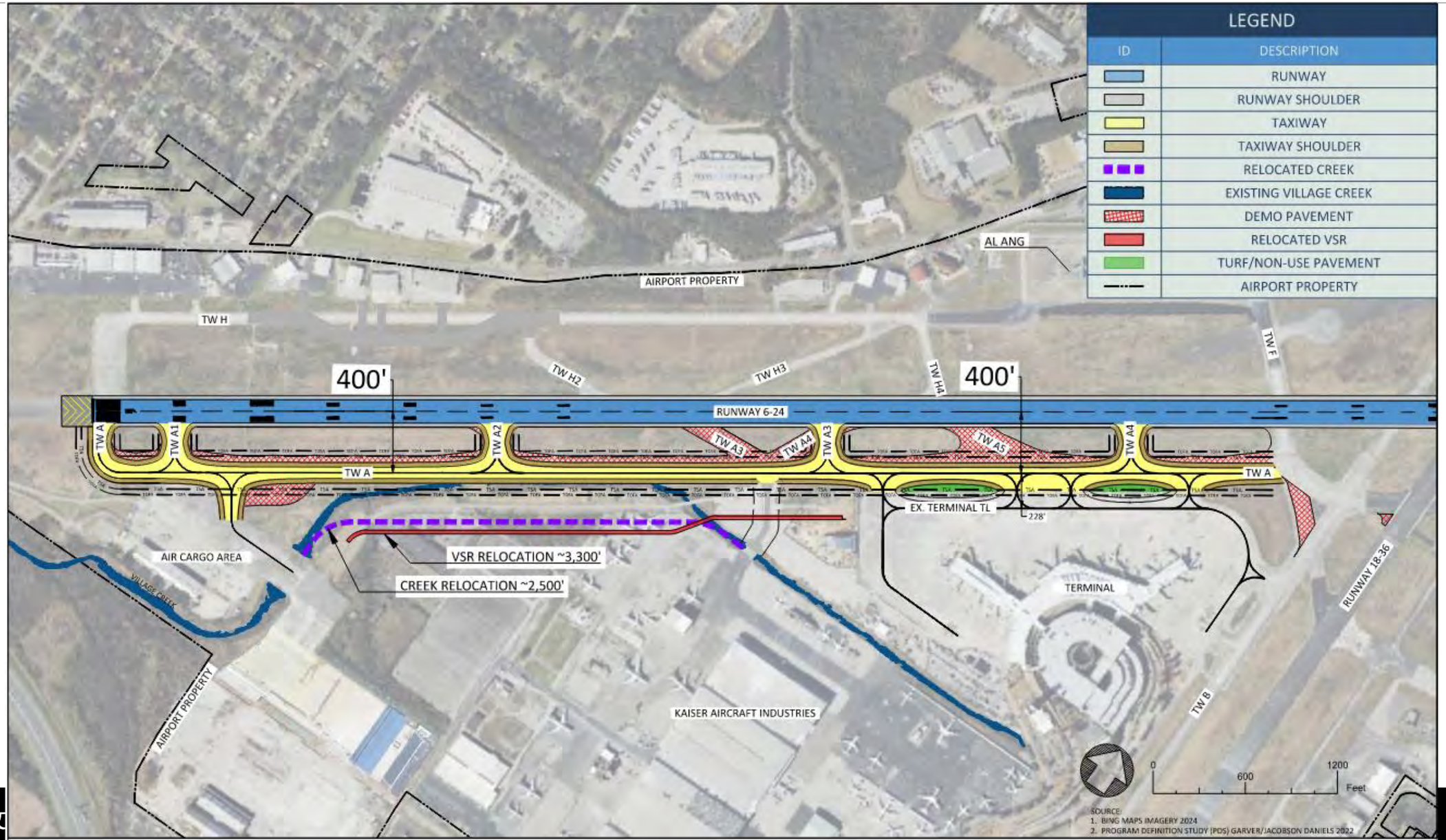
Need

As a result of the existing non-standard 350-foot separation between Runway 6/24 and Taxiway A, most of the Airport's mainline traffic cannot operate in an optimal environment. By relocating Taxiway A, most commercial aircraft will be able to utilize Taxiway A efficiently with minimal operational restrictions. The relocation is necessary to enhance airfield and aircraft safety, ensure the protection of personnel, and support the demand for the existing and future fleet mix.

Alternatives Considered

Alternative	Decision
Alternative 1: Village Creek Encapsulation In Place and Taxiway A Relocation to 400 feet.	Dismissed due to adverse environmental impacts from encapsulation.
Alternative 2: Village Creek Relocation and Taxiway A Relocation to 400 feet.	Carried forward for analysis.
Alternative 3a: Village Creek Encapsulation In Place and Taxiway A Relocation to 500 feet.	Dismissed due to adverse environmental impacts from encapsulation.
Alternative 3b: Village Creek Relocation and Encapsulation and Taxiway Relocation to 500 feet.	Dismissed due to adverse environmental impacts from encapsulation.
Alternative 4: Village Creek Relocation and Taxiway A Relocation to 500 feet.	Carried forward for analysis.
Alternative 5: Village Creek Relocation and Hybrid 400/500-foot Taxiway A Relocation	Carried forward for analysis.
Alternative 6: No Action Alternative	Carried forward for analysis.

Alternative 2 (400’ offset)



Alternative 2 (400’ offset)

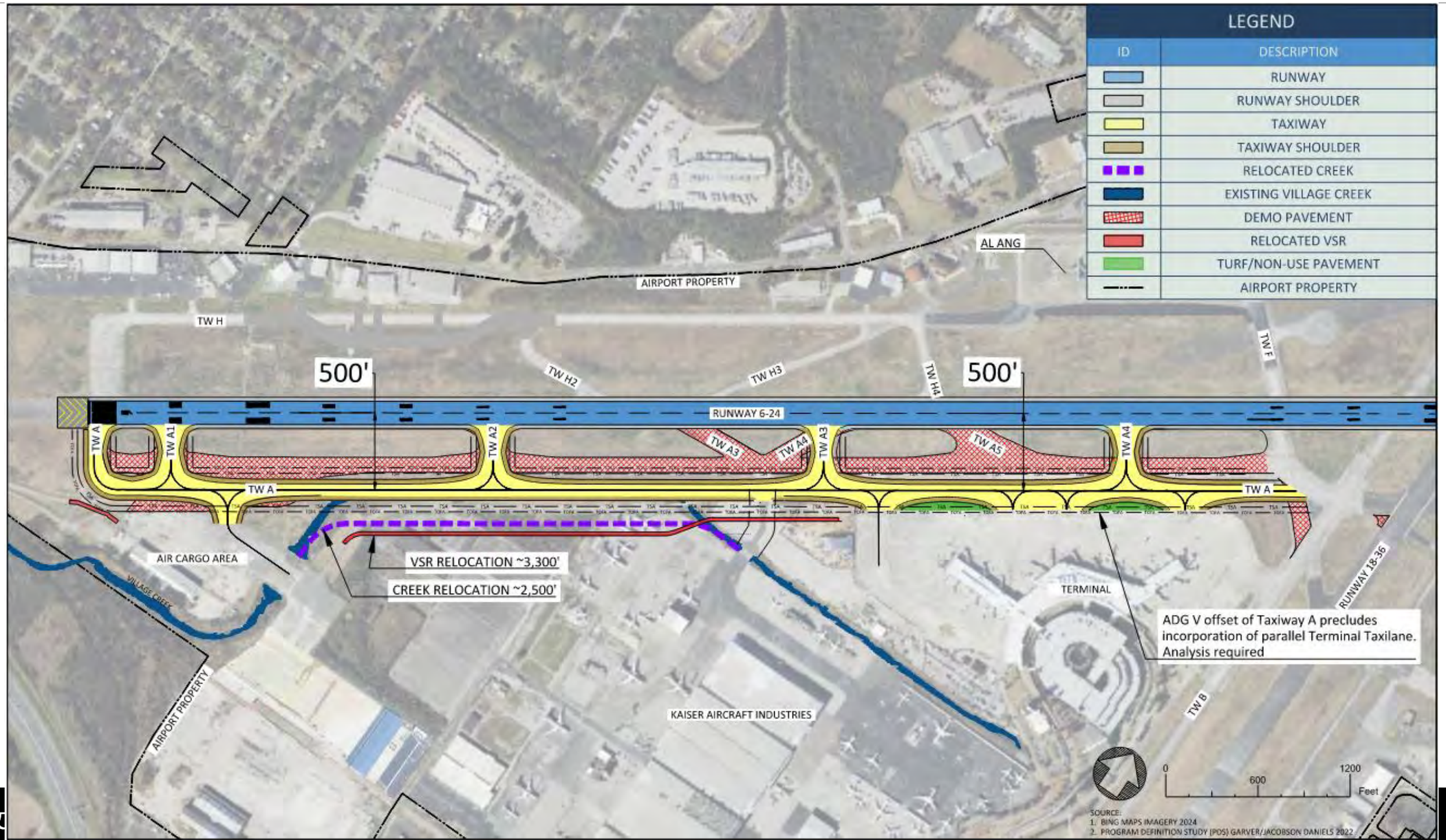
Positives

- Eliminates back taxi operations of large cargo aircraft on Runway 6/24.
- Eliminates some Taxiway A operational restrictions for large aircraft.
- Retains dual Taxiway/Taxilane in front of the terminal for commercial airline access.
- Construction costs would be less than both 500’ offset and hybrid alternative due to shortened taxiway connector lengths.
- Minimal impacts to existing air cargo parking. No loss of parking positions.

Negatives

- Requires some Taxiway A operational restrictions for large aircraft.
- Operational restrictions increase workload for Air Traffic Controllers.
- If critical aircraft changes in the future, the Taxiway will need to be moved again.

Alternative 4 (500’ offset)



Alternative 4 (500’ offset)

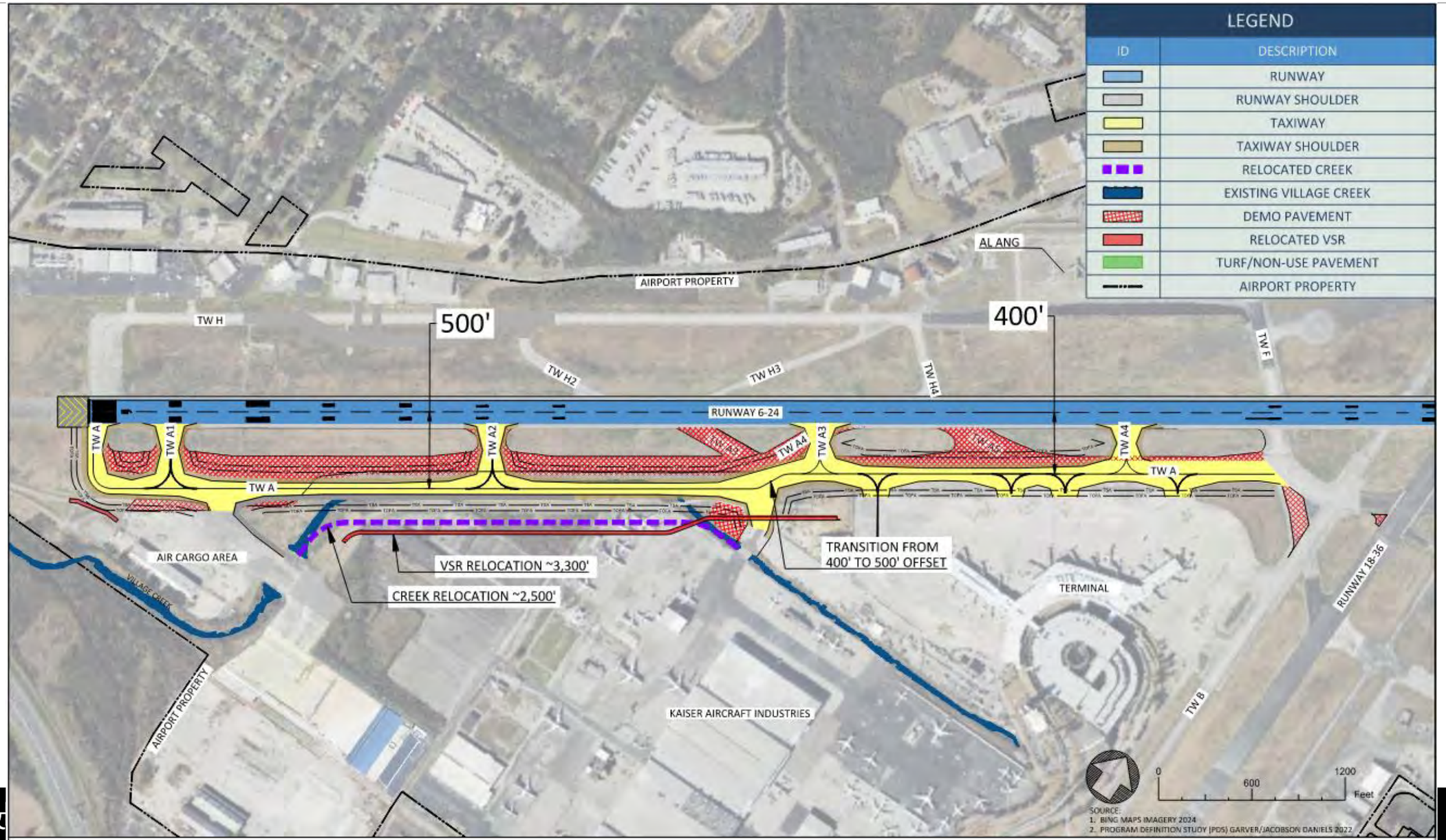
Positives

- Eliminates back taxi operations of large cargo aircraft on Runway 6/24.
- Eliminates some Taxiway A operational restrictions for large aircraft.
- If critical aircraft changes in the future, the Taxiway would not have to be moved again.

Negatives

- Operational restrictions increase workload for Air Traffic Controllers.
- Eliminates dual Taxiway/Taxilane in front of the terminal. This would block the active Taxiway and cause additional operational issues and/or delays.
- Significant impacts to existing cargo apron parking. At least one existing parking position would be impacted.

Alternative 5 (Hybrid 400’/500’ offset)



Alternative 5 (Hybrid 400’/500’ offset)

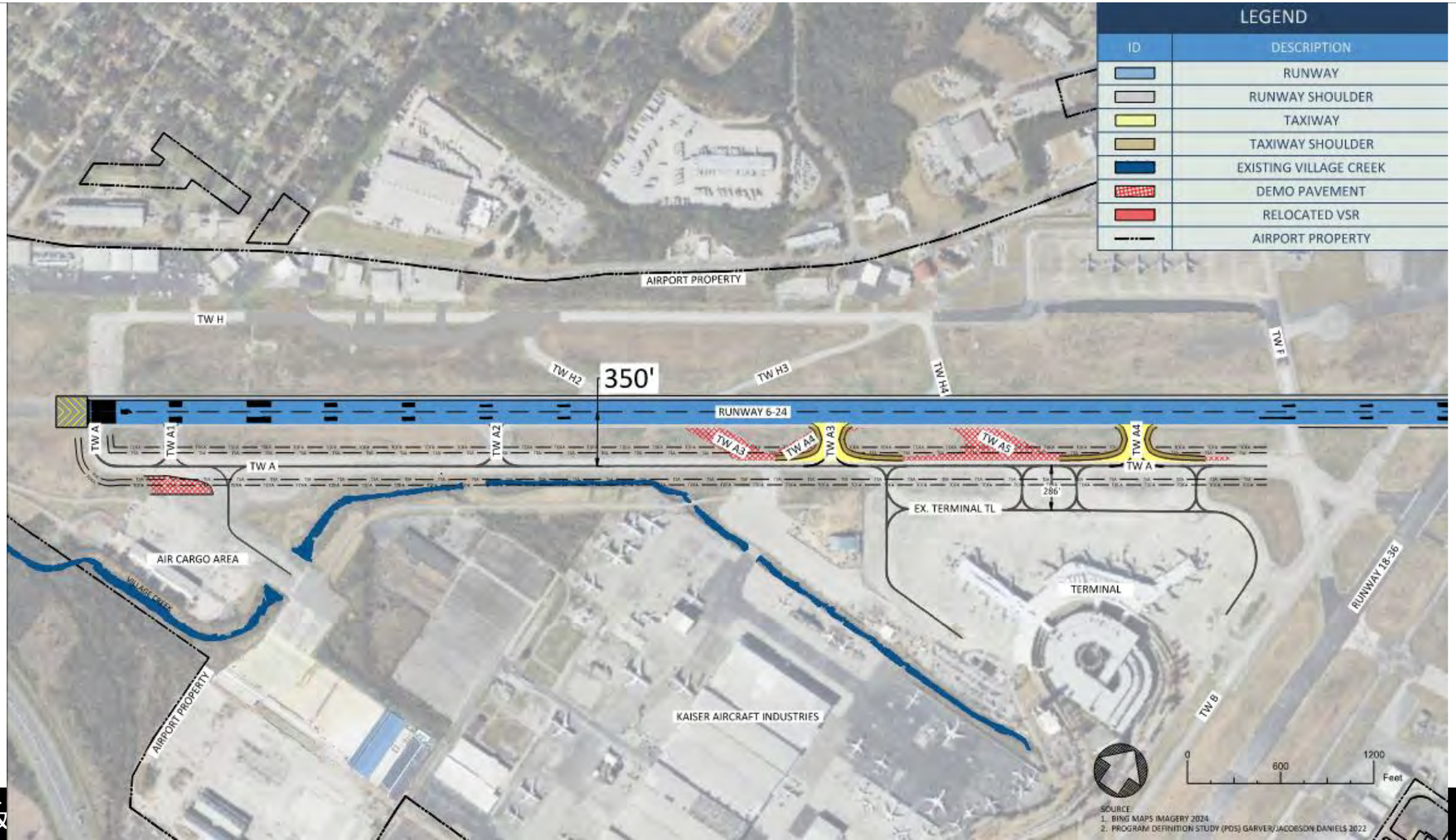
Positives

- Eliminates back taxi operations of large cargo aircraft on Runway 6/24.
- Eliminates some Taxiway A operational restrictions for large aircraft.
- Retains dual Taxiway/Taxilane in front of the terminal for commercial airline access.
- Reduction in workload for Air Traffic Controllers.
- Minimal impacts to existing air cargo parking. No loss of parking positions.

Negatives

- Requires some Taxiway A operational restrictions for large aircraft only for 400’ offset segment at terminal ramp.
- Requires a jog in the Taxiway.

Alternative 6 (No Action Alternative)



Alternative 6 (No Action Alternative)

- Existing airfield configuration would remain the same (i.e., Taxiway A and Village Creek in same location).
- FAA Design standards and safety enhancements would not be addressed.
- Includes the reconstruction of Taxiway A in place.
- Includes the demolition of existing non-standard taxiway connectors.
- Includes the construction of taxiway connectors that meet FAA design standards.

Village Creek Relocation – Summary

- Open air instead of encapsulation
  - To maintain existing aquatic habitat
- Creek design would carry existing capacity (would not decrease floodplain capacity)
  - Supported by floodplain modeling



Village Creek Relocation – Design Overview

- Design Concepts
  - Mimic the existing channel dimensions and capacity.
  - Include erosion control features for channel side slopes.
  - Backfill old channel once new channel is complete. Backfill only during warmer months to prevent impacts to the Watercress Darter.
  - BMPs during construction to mitigate impacts to water quality.

- Design Goals
  - Maintain existing water quality conditions.
  - Maintain existing habitat.
  - Hydraulic modeling to ensure that the new channel will not increase existing flood stages.

- Design Constraints
  - Vicinity to airfield: minimize wildlife attractants
  - Limited footprint available

Village Creek Relocation – Regulatory

- USACE Section 404
  - Section 404 impacts to the creek and any other jurisdictional resources will be permitted and mitigated for.
- FEMA / City of Birmingham Floodplain Regulations
  - FEMA CLOMR/LOMR
  - Coordination with the local floodplain manager.
  - Coordination with ADECA OWR.
- ADEM
  - Village Creek has an approved total maximum daily load for pathogens and siltation.
  - Village Creek is listed on the 303d list for pesticides.



Continued Communication

- Airport & FAA contacts
  - Eric Tomasovic, FAA: Eric.Tomasovic@faa.gov
  - Ocean Boyd, BHM: oboyd@flybhm.com

- Draft EA
  - We will forward a copy of the Draft EA to your offices, when available

- USACE Section 404
  - https://www.sam.usace.army.mil/Missions/Regulatory/Public-Notices/
  - USACE project number: SAM-2025-00299
  - Public notice will be posted after permit submittal (2026)

Questions?

Mead&Hunt

Thank you!

Mead&Hunt

Freshwater Land Trust's Village Creek Response

Outlook

Re: Birmingham-Shuttlesworth International Airport - Environmental Assessment (EA) - Agency Coordination Letter

From Sam McCoy <sam.mccoy@freshwaterlandtrust.org>
Date Fri 2025-09-26 2:49 PM
To Trevor Martin <Trevor.Martin@meadhunt.com>

1 attachment (1 MB)
FLT Village Creek 2025-01.pdf;

You don't often get email from sam.mccoy@freshwaterlandtrust.org. Learn why this is important

Hello Trevor,

Thank you for contacting me regarding the proposed construction options to increase the separation distance between the runway and taxiway, and their impacts on Village Creek. Freshwater Land Trust (FLT) owns 639 acres along Village Creek, including a parcel just 0.33 mile downstream of the proposed construction area (see attached map). Thus, we are very interested in any developments along this stream.

If the Birmingham Airport Authority does relocate a section of Village Creek, then FLT's greatest hope and concern is that natural stream morphology is considered when designing and constructing the new channel. Much of Village Creek is deeply channelized and eroded, meaning that its stream banks are vertical instead of gradually sloped and very steep. This condition is a result of all of the development around the creek and its stormwater runoff, which erodes the stream banks, and contributes to decreased water quality and flooding downstream. As an example, FLT's property immediately downstream of the airport shows evidence of frequent flooding (e.g., trash washed in, folded down vegetation).

Incorporating natural stream morphology into the new channel means constructing new stream banks that are gradually sloped and stabilized with rock and vegetation, adding some sinuosity to the channel, and including riparian buffers with native vegetation along the creek. Based on the maps you provided, the preferred construction plan (Alternative 2) should allow for approximately 150 feet between the new creek channel and the new taxiway and approximately 50 feet between the new creek channel and the new vehicle service road. These distances are more than enough space necessary to incorporate natural stream morphology into the design and construction.

There are two benefits to incorporating natural stream morphology into the design and construction of the new stream channel. First, it will improve water quality in Village Creek. This is most important because the federally endangered watercress darter has been located within the stretch of Village Creek near the airport. Second, natural stream morphology will reduce flooding along Village Creek at the airport, at our property near the airport, and in all the Birmingham neighborhoods downstream. Thus, this renovation at the airport could provide a public benefit to the local residents and environment.

Thank you again for contacting me about this proposed construction, and please let me know if you have any questions about my comments.

~Sam

Samuel McCoy (he/him)
Land Stewardship Director
Freshwater Land Trust
Physical: 3501 1st Ave S, Suite 201-A, Birmingham, AL 35222
Mailing: PO Box 337, Birmingham, AL 35201
Cell: (205) 834-5203
Office: (205) 417-2777

From: Trevor Martin <Trevor.Martin@meadhunt.com>
Sent: Wednesday, September 3, 2025 11:52 AM
To: Sam McCoy <sam.mccoy@freshwaterlandtrust.org>
Cc: Ocean Boyd <oboyd@flybhm.com>; Marcelo Lima <mlima@flybhm.com>; Jenna Weigman <Jenna.Weigman@meadhunt.com>; Ryan Hayes <Ryan.Hayes@meadhunt.com>; Celeste Vandeventer <Celeste.Vandeventer@meadhunt.com>
Subject: Birmingham-Shuttlesworth International Airport - Environmental Assessment (EA) - Agency Coordination Letter

You don't often get email from trevor.martin@meadhunt.com. Learn why this is important

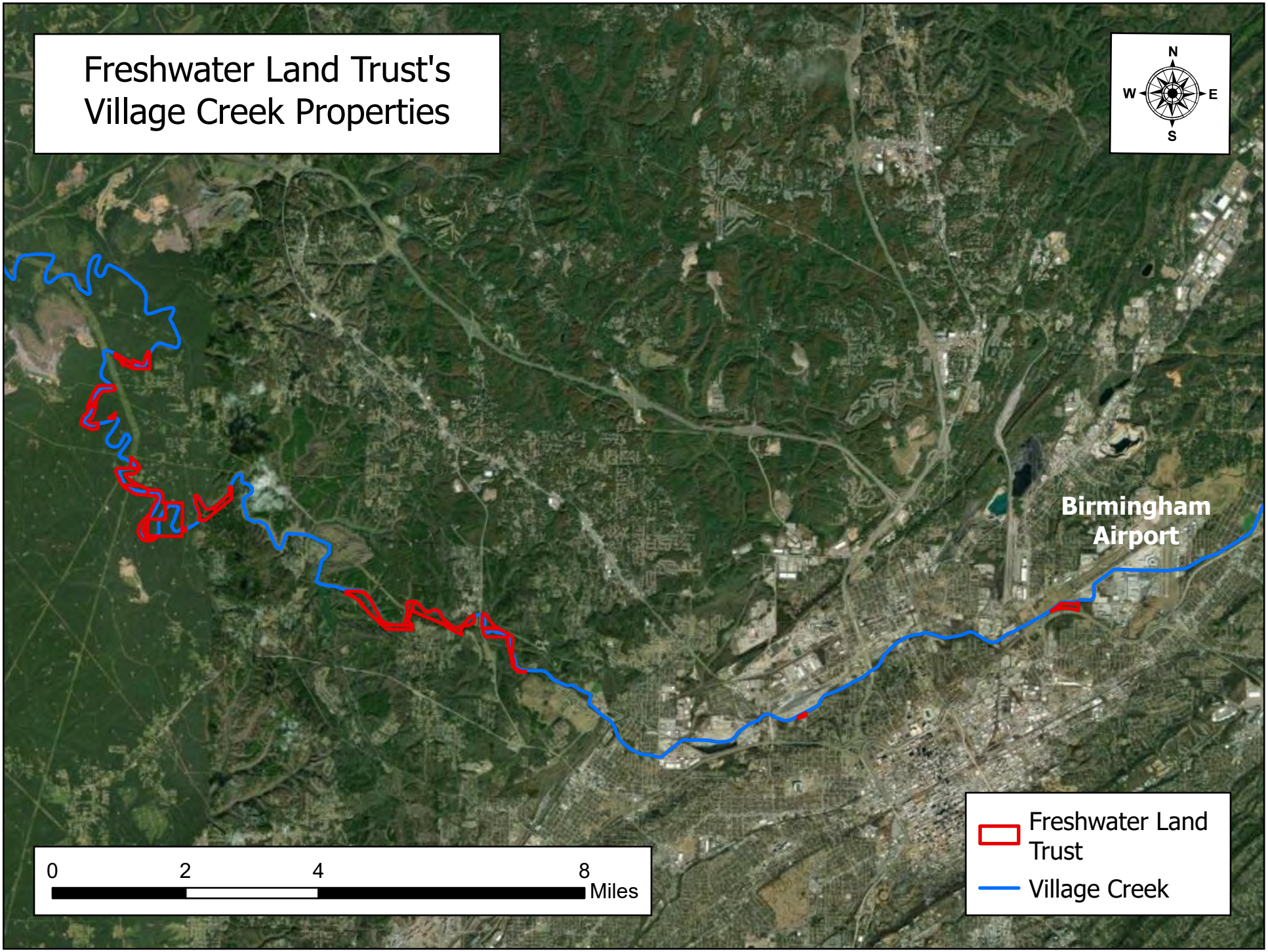
Hi Sam,

Attached for your review is information about an Environmental Assessment (EA) for the relocation of Taxiway A at the Birmingham-Shuttlesworth International Airport. If you have questions or comments regarding this letter, please feel free to contact me.

Thank you,

Trevor Martin, ENV SP
Airport Planner | Aviation
Direct: 303-597-0993 | Transfer Files
Mead&Hunt
LinkedIn | Facebook | Instagram | My LinkedIn

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Freshwater Land Trust's
Village Creek Properties
N
W
E
S
Birmingham
Airport
0
2
4
8
Miles
Freshwater Land Trust
Village Creek

Appendix F

Taxiway A and Village Creek Relocation Design

TWY A & Village Creek
Relocation Design Plans

BIRMINGHAM-SHUTTLESWORTH INTERNATIONAL AIRPORT

TAXIWAY A - 400' SEPARATION AND VILLAGE CREEK RELOCATION

5900 MESSER AIRPORT HWY
BIRMINGHAM, ALABAMA 35212
3226200-211437.01
SEPTEMBER 15, 2025
PRELIMINARY DESIGN SUBMITTAL



JEFFERSON COUNTY

BIRMINGHAM-SHUTTLESWORTH INTERNATIONAL AIRPORT

VICINITY MAP



LOCATION MAP



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TAXIWAY A - 400' SEPARATION AND VILLAGE CREEK RELOCATION
5900 MESSER AIRPORT HWY
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CHECKED BY:	DES

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SHEET CONTENTS
COVER SHEET

SHEET NO.:
G-001

LEGEND:

- BENCHMARK
- CONTROL POINT
- CLEANOUT, SANITARY OR STORM
- ELECTRICAL METER
- ELECTRICAL / COMMUNICATIONS PEDESTAL
- ELECTRICAL TRANSFORMER BOX
- ELECTRICAL SERVICE PANEL
- ELECTRICAL HANDHOLE/PULLBOX
- FIRE HYDRANT
- FLAGPOLE
- GAS METER
- GAS VALVE
- GATE
- GUY WIRE
- HANDHOLE, GENERIC
- INLET, ROUND
- INLET, SQUARE
- IRON PIN
- LIGHT POLE (DOUBLE)
- LIGHT POLE (SINGLE)
- MAILBOX
- MANHOLE, ELECTRIC
- MANHOLE, SANITARY SEWER
- MANHOLE, STORM SEWER
- MANHOLE, TELECOMMUNICATIONS
- PK or MAG NAIL
- POWER POLE
- POWER POLE, DOUBLE
- POWER POLE WITH LIGHT
- SANITARY VALVE
- SIGN (SINGLE POST)
- SIGN (DOUBLE POST)
- SHRUB
- STORM FLARED END SECTION
- CTV PEDESTAL BOX
- WATER VALVE
- WATER SHUT OFF
- WATER METER
- WATER SURFACE
- WELL
- G — GAS
- OHE — ELECTRIC, OVERHEAD
- UGE — ELECTRIC, UNDERGROUND
- EXISTING CONTOUR LINES
- x — FENCE
- FOC — FIBER OPTIC CABLE
- o — HANDRAIL
- PROPERTY LINE
- SS — SANITARY SEWER
- SD — STORM PIPE
- SWALE
- T — TELEPHONE
- TV — TV CABLE
- W — WATER
- VEGETATION
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- GUARDRAIL
- STREET SIGN
- EXISTING LIGHT POLE
- TAXIWAY EDGE LIGHT
- AIRFIELD GUIDANCE SIGN

- 132.75 ← PROPOSED ELEVATION
- 131.53 ← EXISTING ELEVATION
- FAA — FAA CABLE AND CONDUIT

ABBREVIATIONS:

ALCMS	AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM
AMSL	ABOVE MEAN SEA LEVEL
AOA	AIRCRAFT OPERATIONS AREA
APPROX	APPROXIMATE
ARFF	AIRCRAFT RESCUE AND FIRE FIGHTING
ATCT	AIR TRAFFIC CONTROL TOWER
BLDG	BUILDING
C-C	CENTER TO CENTER
CL	CENTERLINE
CONC	CONCRETE
CKT	CIRCUIT
CSPP	CONSTRUCTION SAFETY PHASING PLAN
DIA	DIAMETER
ELEV	ELEVATION
EOP	EDGE OF PAVEMENT
FAA	FEDERAL AVIATION ADMINISTRATION
FBO	FIXED BASE OPERATOR
FG	FINISHED GRADE
FOD	FOREIGN OBJECT DEBRIS
FT	FEET
GAL	GALLON
GND	GROUND
HDPE	HIGH DENSITY POLYETHYLENE
HMA	HOT MIX ASPHALT
IE	INVERT ELEVATION
ILS	INSTRUMENT LANDING SYSTEM
IN	INCHES
LF	LINEAL FEET
LOC	LOCALIZER
MIN	MINIMUM
MITL	MEDIUM INTENSITY TAXIWAY LIGHT
MPH	MILES PER HOUR
NIC	NOT IN CONTRACT
NOTAM	NOTICE TO AIRMAN
NTS	NOT TO SCALE
OFZ	OBJECT FREE ZONE
PAPI	PRECISION APPROACH PATH INDICATOR
PCC	PORTLAND CEMENT CONCRETE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
ROFA	RUNWAY OBJECT FREE AREA
ROW	RIGHT OF WAY
RSA	RUNWAY SAFETY AREA
RWY OR RW	RUNWAY
SIDA	SECURITY IDENTIFICATION DISPLAY AREA
SF	SQUARE FOOT
SPCD	SAFETY PLAN COMPLIANCE DOCUMENT
STA	STATION
TWY	TAXIWAY
TOFA	TAXIWAY OBJECT FREE AREA
TSA	TAXIWAY SAFETY AREA
TYP	TYPICAL
OFA	OBJECT FREE AREA

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G-022	PROJECT KEYMAP
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E-107	LIGHTING AND SIGNAGE PLAN - SHEET 7
E-108	LIGHTING AND SIGNAGE PLAN - SHEET 8

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TAXIWAY A - 400' SEPARATION AND VILLAGE CREEK RELOCATION

5900 MESSER AIRPORT HWY
BIRMINGHAM, ALABAMA 35212

ISSUED

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SHEET CONTENTS

LEGEND AND INDEX OF DRAWINGS

SHEET NO.

G-002

DESIGN CRITERIA

RELOCATED TAXIWAY A

RUNWAY / TAXIWAY SEPARATION = 400'
AIRFIELD DESIGN GROUP VI
TAXIWAY DESIGN GROUP VI
TAXIWAY WIDTH - 75'
PAVED TAXIWAY SHOULDERS - 30'

TERMINAL APRON
GROUP III
GROUP VI TAXIWAY / GROUP III
TAXILANE SEPARATION = 226.5'

TWY H
TWY H2
TWY H3
TWY H4
TWY F
RWY 6-24
ROFA
RSA
TSA
TOFA
30' SHOULDER
TWY A1
TWY A
TWY A2
TWY A3
TWY A4
75'
TWY
PROPOSED TWY A
282'
335'
TO 400'
RWY/TWY SEPARATION
AIR CARGO APRON
RELOCATED VILLAGE CREEK
RELOCATED VSR
OVERFLOW APRON
KAISER AIRCRAFT INDUSTRIES
TERMINAL APRON
TERMINAL BUILDING
RWY 18-36
TWY G
0
300
600

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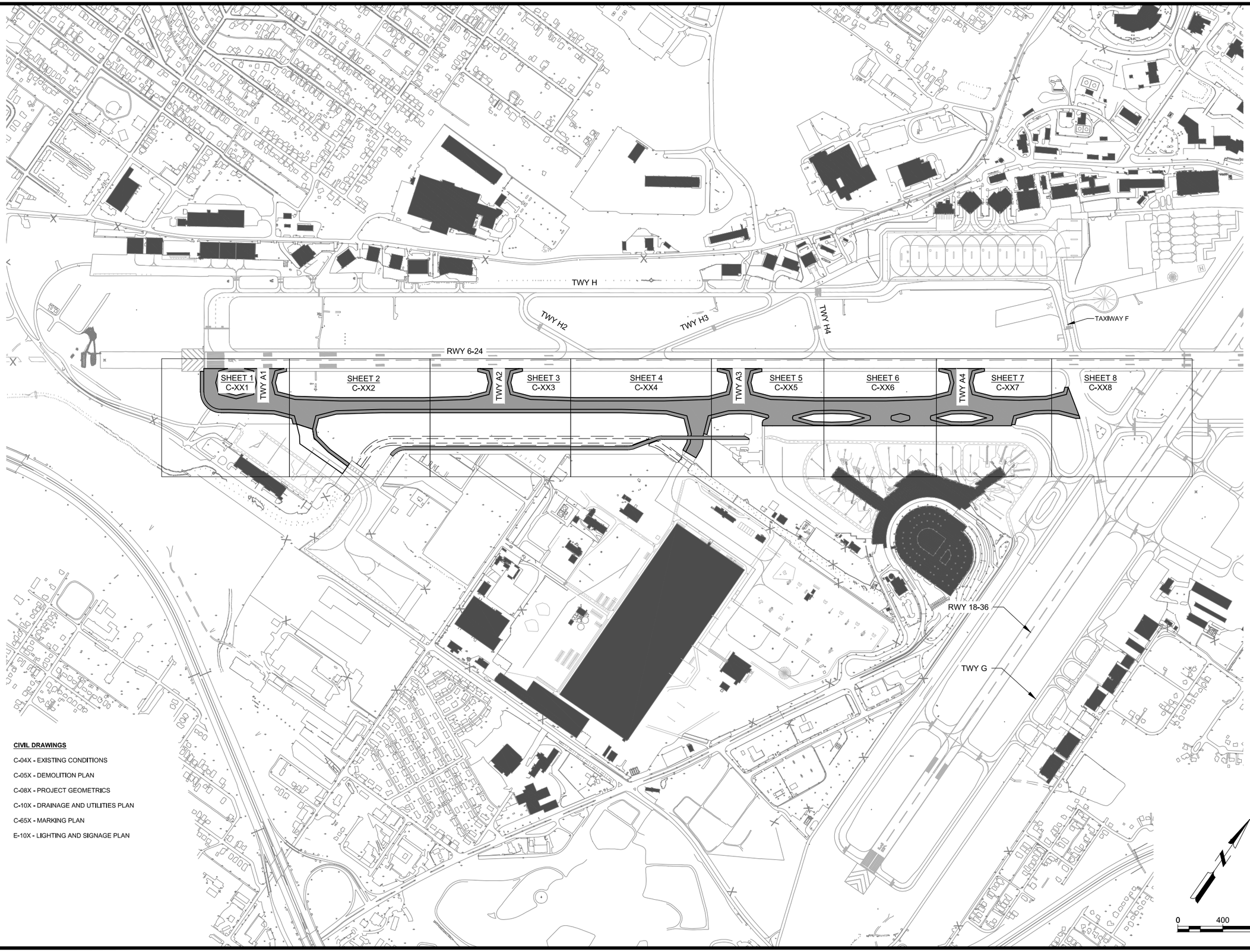
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SHEET CONTENTS
PROJECT LAYOUT PLAN

SHEET NO.
G-021



CIVIL DRAWINGS

C-04X - EXISTING CONDITIONS

C-05X - DEMOLITION PLAN

C-08X - PROJECT GEOMETRICS

C-10X - DRAINAGE AND UTILITIES PLAN

C-65X - MARKING PLAN

E-10X - LIGHTING AND SIGNAGE PLAN

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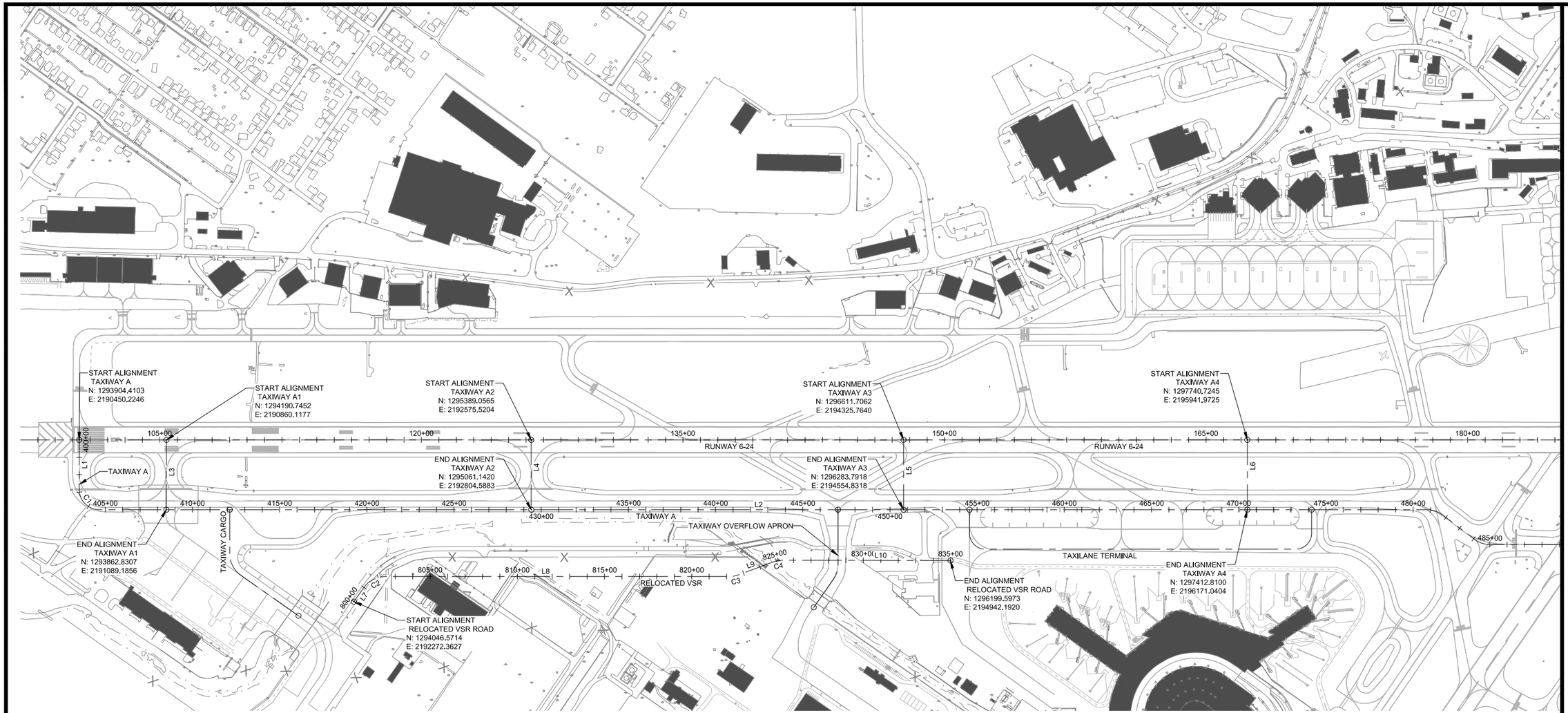
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SHEET CONTENTS
PROJECT KEYMAP

SHEET NO.
G-022



PROPOSED ALIGNMENT LINE DATA

LINE #	LENGTH	START STATION	END STATION	BEARING
L1	285.00	400+00.00	402+85.00	S34° 56' 11.76"E
L2	7613.39	404+65.64	480+79.03	N55° 03' 48.24"E
L3	400.00	510+00.00	514+00.00	S34° 56' 11.76"E
L4	400.00	520+00.00	524+00.00	S34° 56' 11.76"E
L5	400.00	530+00.00	534+00.00	S34° 56' 11.76"E
L6	400.00	540+00.00	544+00.00	S34° 56' 11.76"E
L7	98.15	800+00.00	800+98.15	S0° 12' 15.05"W
L8	1974.32	802+41.77	822+16.09	N55° 03' 44.00"E
L9	212.58	822+69.73	824+82.31	N34° 34' 23.02"E
L10	963.85	825+36.15	835+00.00	N55° 08' 18.84"E

PROPOSED ALIGNMENT CURVE DATA

#	△	LENGTH	CENTER POINT NORTHING	CENTER POINT EASTING	PC NORTHING	PC EASTING	PT NORTHING	PT EASTING
C1	90° 00' 00"	180.64'	1293736.628	2190707.711	1293670.771	2190613.435	1293642.353	2190773.568
C2	54° 51' 29"	143.62'	1294144.185	2192422.712	1294144.719	2192272.712	1294267.151	2192336.809
C3	20° 29' 21"	53.64'	1295520.784	2193869.404	1295397.818	2193955.307	1295435.666	2193992.915
C4	20° 33' 56"	53.84'	1295525.584	2194237.053	1295610.702	2194113.543	1295648.664	2194151.314

REFERENCED BENCHMARKS

DESCRIPTION	PUBLISHED NORTHING (I-FT)	PUBLISHED EASTING (I-FT)	SURVEYED NORTHING (U.S.-FT)	SURVEYED EASTING (U.S.-FT)	ELEVATION
BHM C	1294453.590	2198751.060	1294451.001	2198746.659	671.07
BHM B	1300109.201	2201275.762	1300106.587	2201271.280	676.16

REFERENCED BENCHMARKS (CONT'D)

DESCRIPTION	RTK GPS NORTHING (U.S.-FT)	RTK GPS EASTING (U.S.-FT)	STATIC OBSERVATION NORTHING (U.S.-FT)	STATIC OBSERVATION EASTING (U.S.-FT)	ELEVATION
BHM C	1294451.010	2198746.591	1294453.560	2198751.066	671.07
BHM B	1300106.587	2201271.280	1300109.134	2201275.791	676.16

SURVEY NOTE:

BASE MAPPING OF B'HAM INTERNATIONAL AIRPORT IS BASED UPON U.S. SURVEY PUBLISHED COORDINATE VALUES FROM OPUS FOR THE BHM B & BHM C CONTROL AREA ON INTERNATIONAL FEET

0 400 800

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SHEET CONTENTS
SURVEY CONTROL PLAN

SHEET NO.
G-023

LEGEND

B-X BORING TEST LOCATION

NOTES

1. SEE SHEETS B-051 THROUGH B-058 FOR BORING PROFILES
2. SEE GEOTECHNICAL REPORT FOR ADDITIONAL TESTING INFORMATION
3. ADDITIONAL PAVEMENT CORES AND BORINGS WERE INCLUDED IN THE PREVIOUSLY COMPLETED PLANNING AND DEVELOPMENT STUDY (PDS). INFORMATION ON THESE TESTS CAN BE FOUND IN A SEPARATE GEOTECHNICAL REPORT

TWY H

TWY H2

TWY H3

RWY 6-24

VILLAGE CREEK

EXISTING TWY A

B-1 B-2 B-3 B-4 B-5 B-6 B-7 B-8 B-9 B-10 B-11 B-12 B-13 B-14 B-15 B-16 B-17 B-18 B-19 B-20 B-21 B-22 B-23 B-24 B-25

AIR CARGO APRON

OVERFLOW APRON

KAISER AIRCRAFT INDUSTRIES

0 200 400

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BIRMINGHAM-SHUTTLESWORTH INTERNATIONAL AIRPORT

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BIRMINGHAM-SHUTTLESWORTH INTERNATIONAL AIRPORT
TAXIWAY A - 400' SEPARATION AND VILLAGE CREEK RELOCATION
5900 MESSER AIRPORT HWY
BIRMINGHAM, ALABAMA 35212

ISSUED

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PRELIMINARY DESIGN SUBMITTAL

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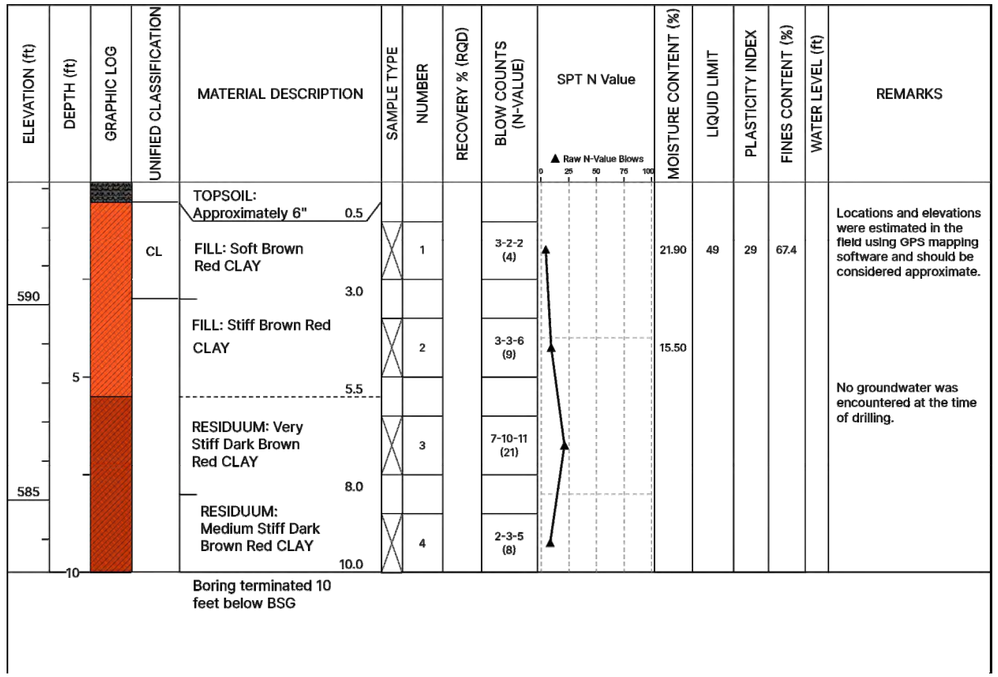
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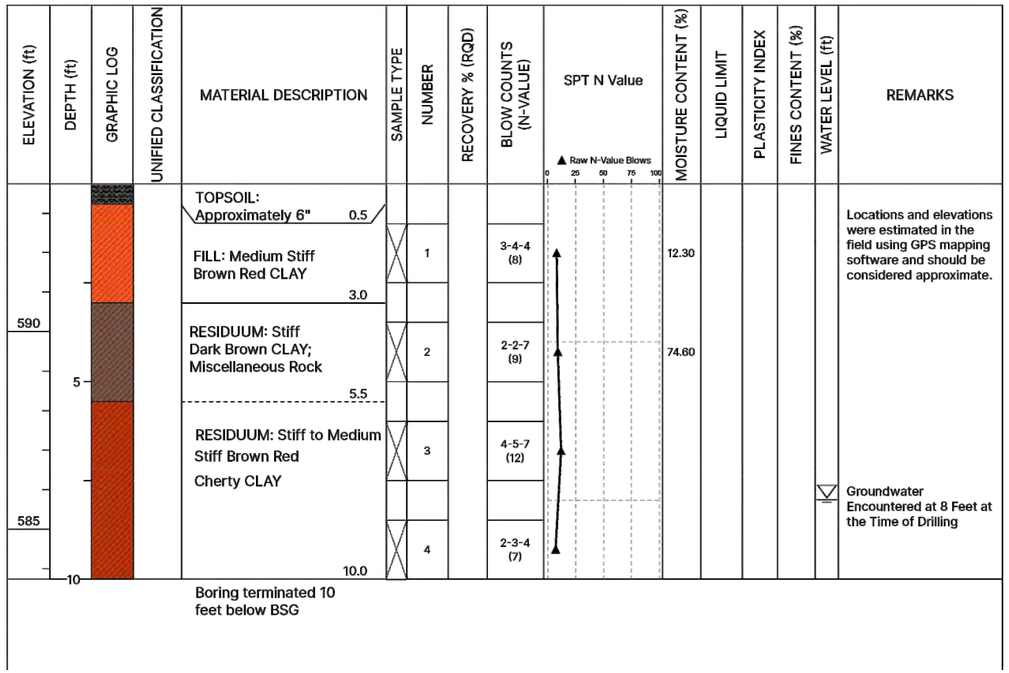
SOIL BORING LOCATION PLAN

SHEET NO.

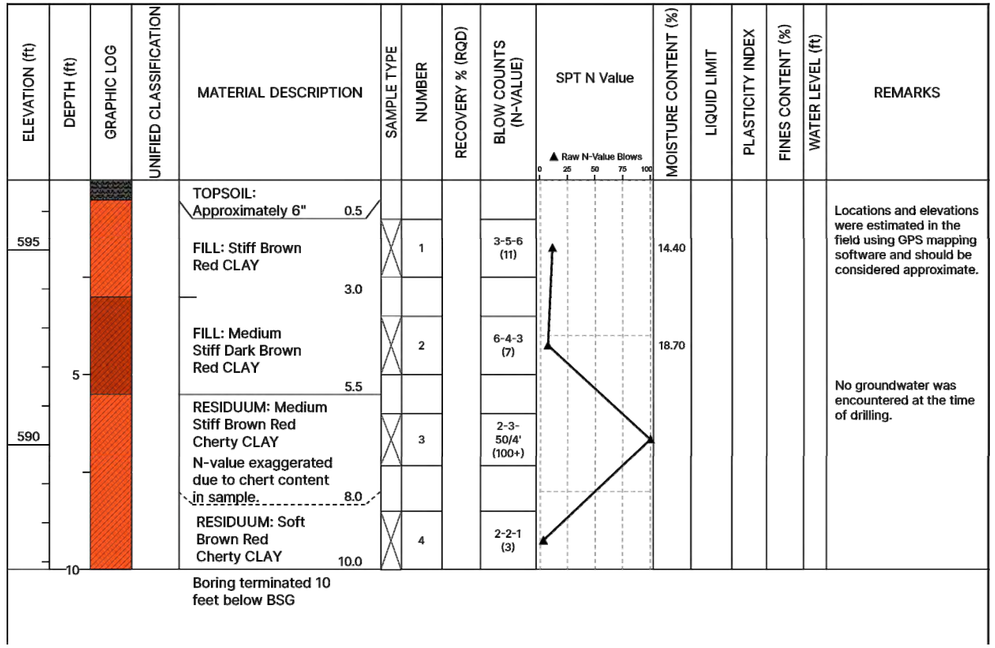
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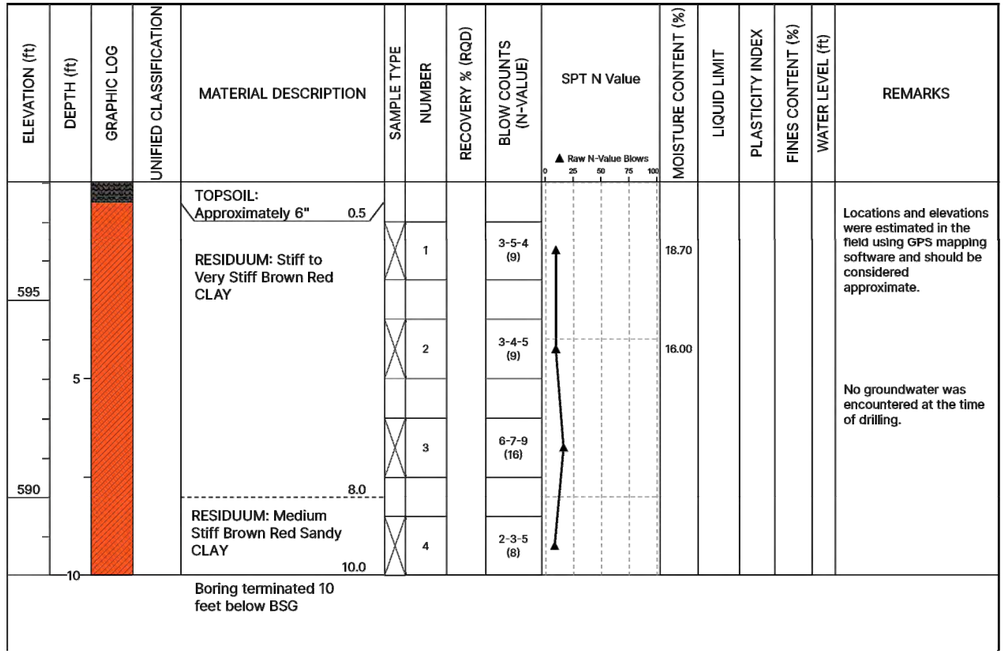
BOREHOLE 1



BOREHOLE 2



BOREHOLE 3



BOREHOLE 4

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5900 MESSER AIRPORT HWY
BIRMINGHAM, ALABAMA 35212

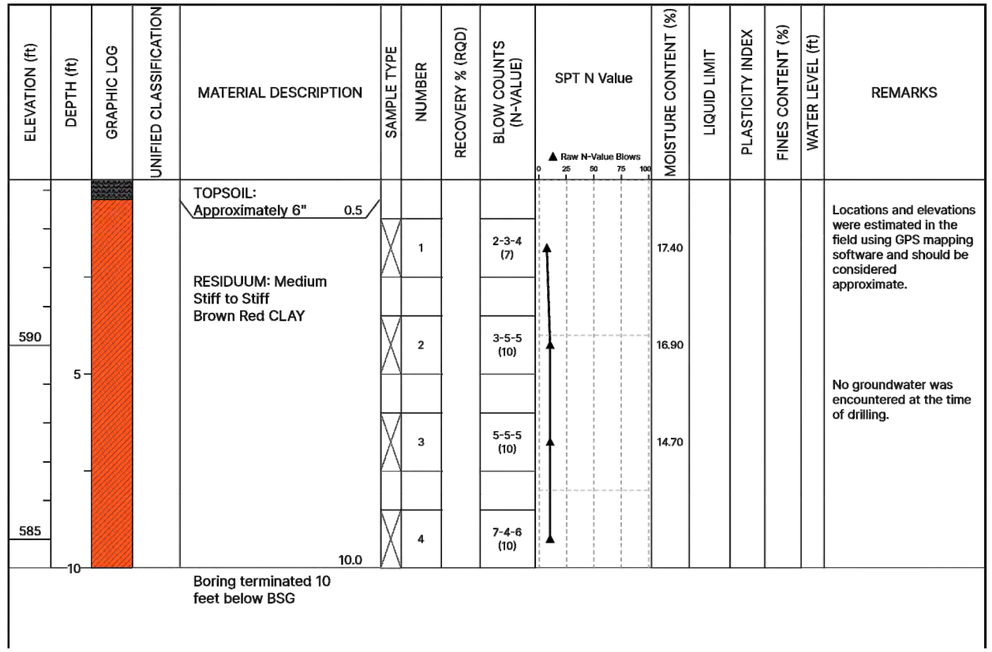
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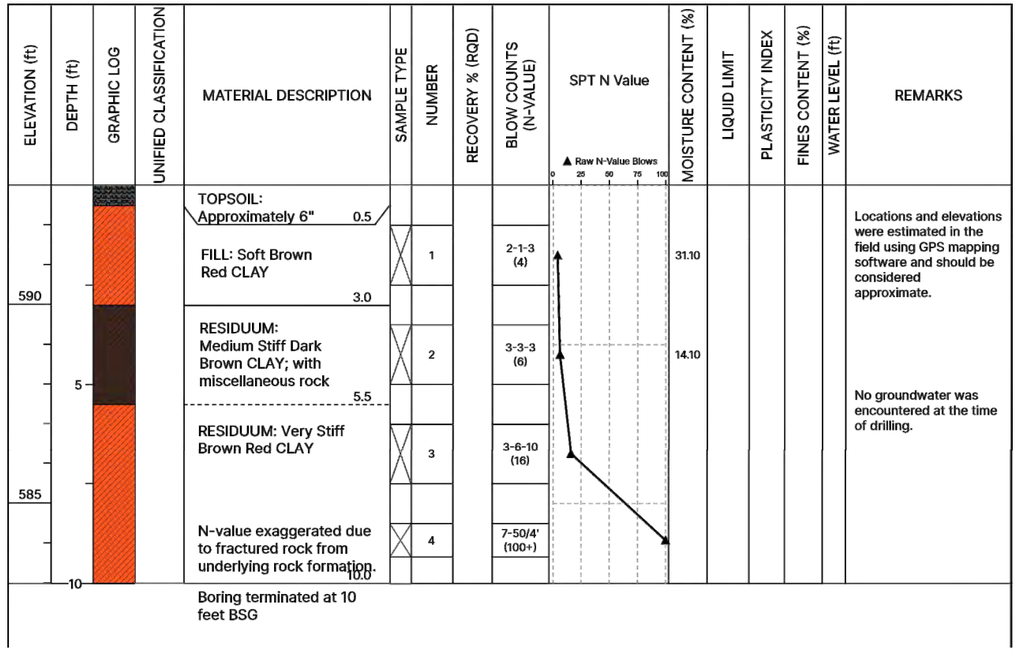
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SOIL BORING LOGS - SHEET 1

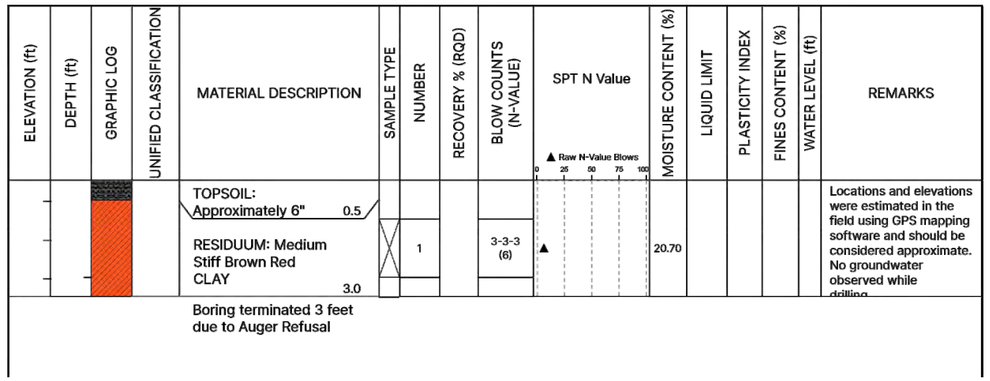
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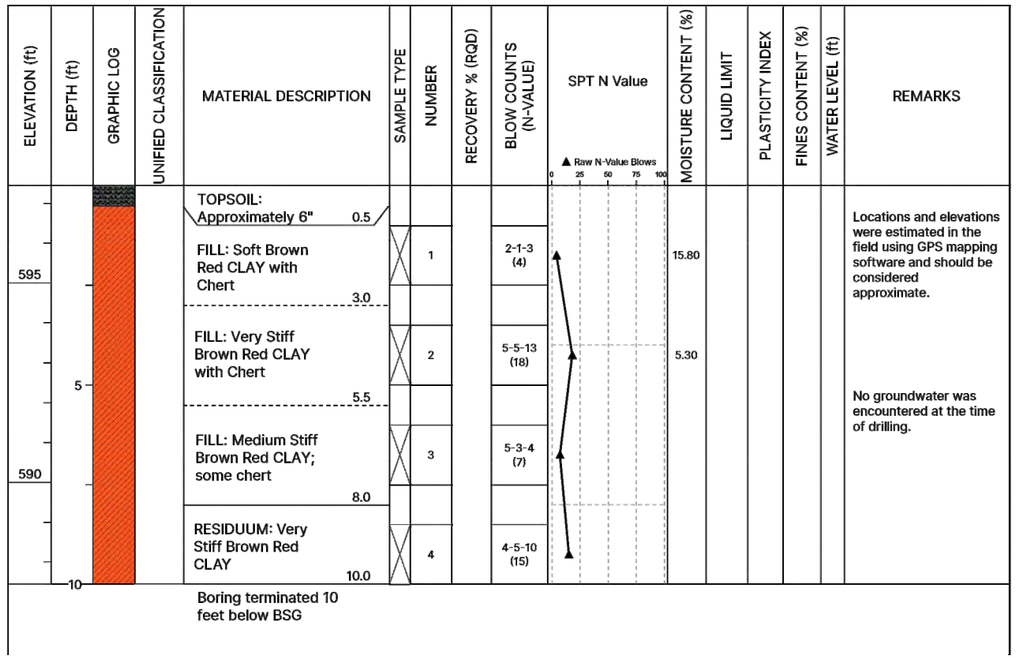
BOREHOLE 5



BOREHOLE 6



BOREHOLE 7



BOREHOLE 8

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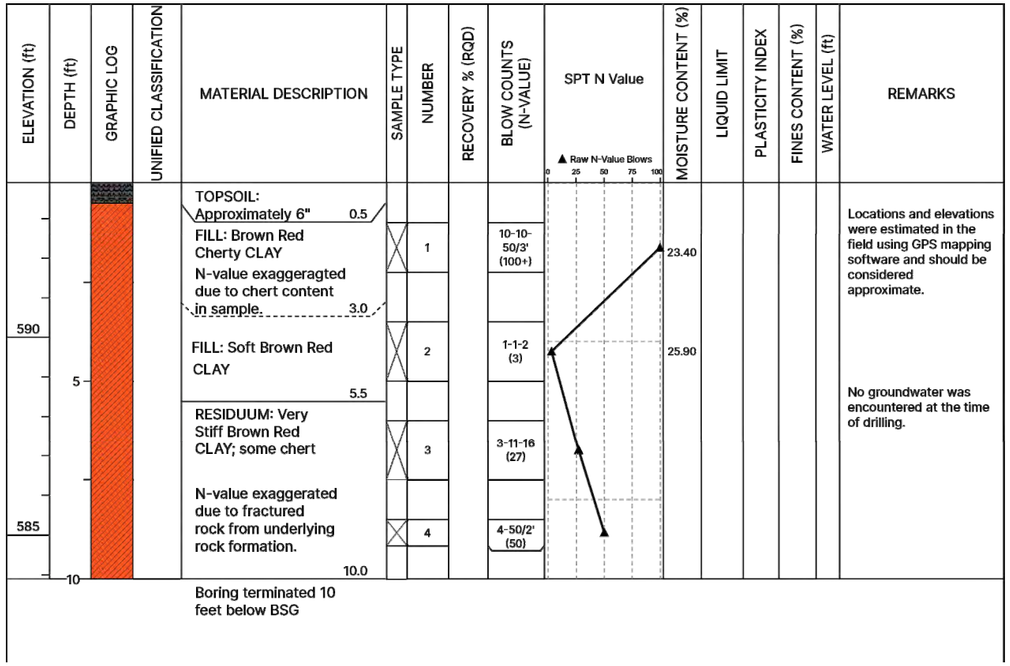
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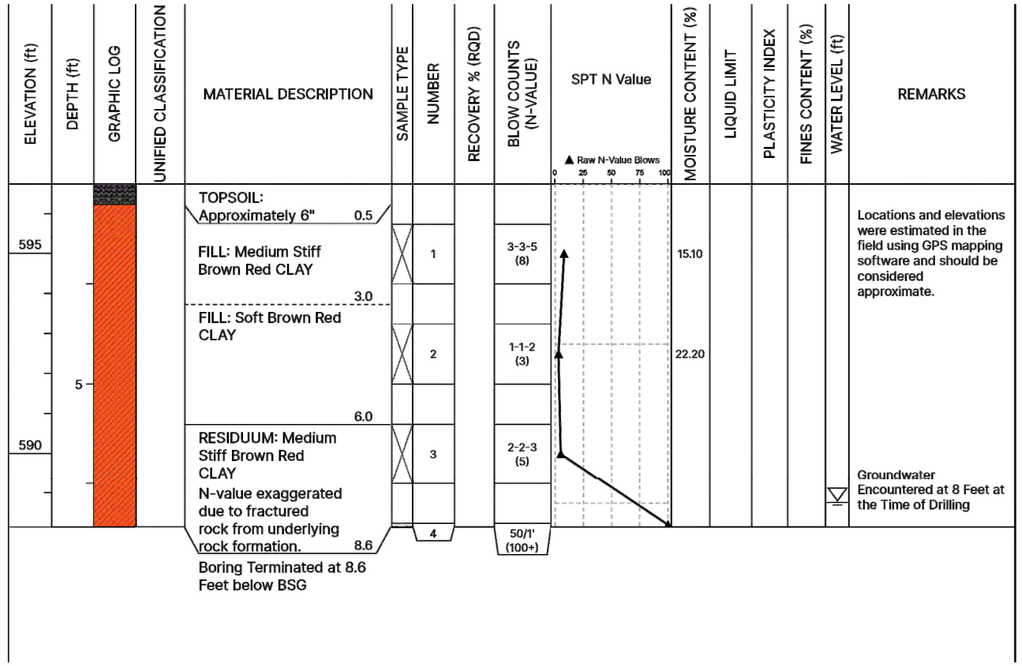
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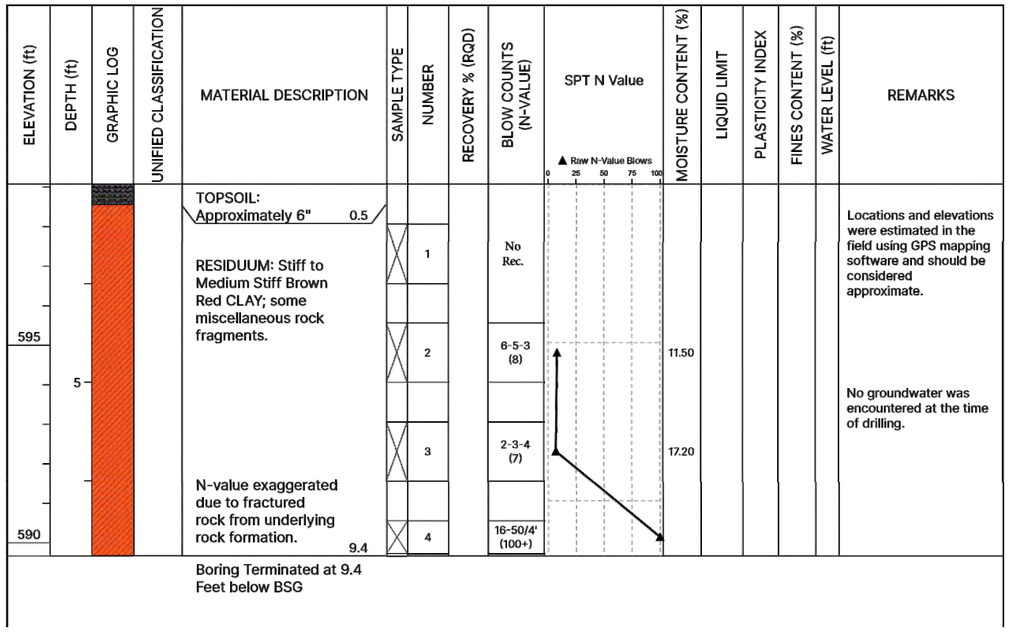
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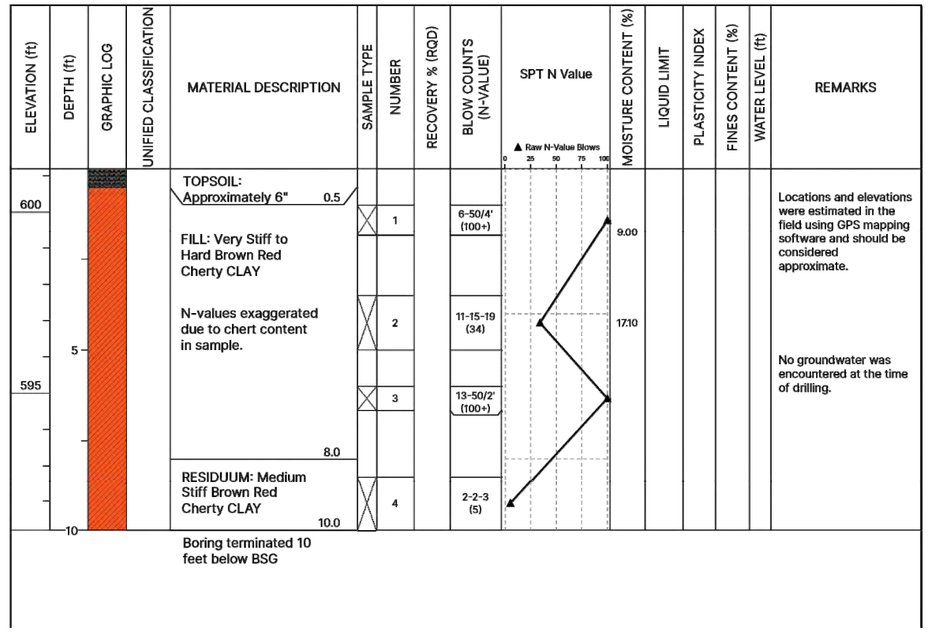
BOREHOLE 9



BOREHOLE 10



BOREHOLE 11



BOREHOLE 12

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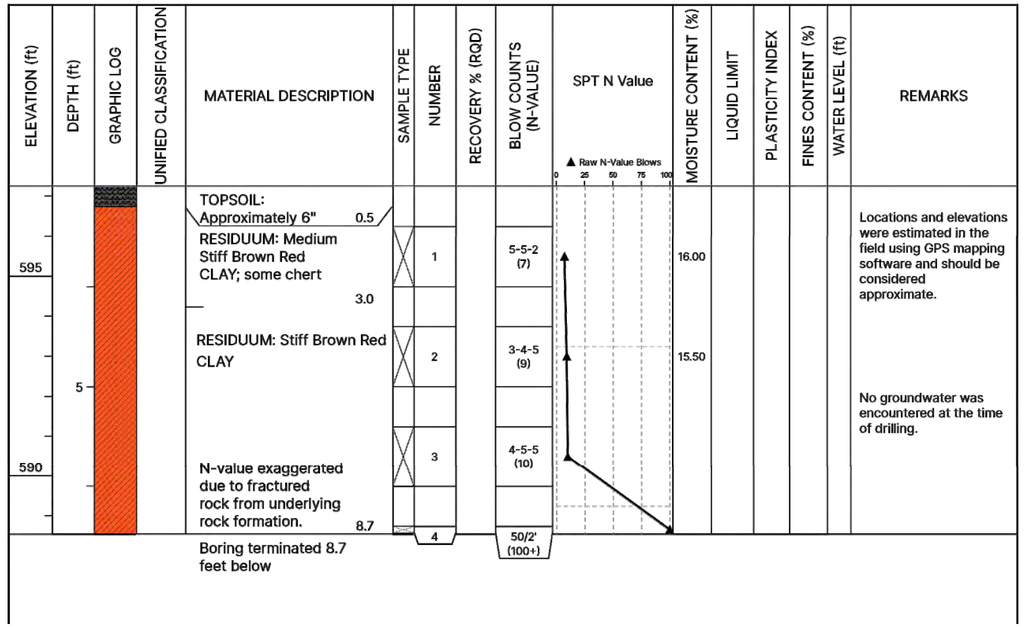
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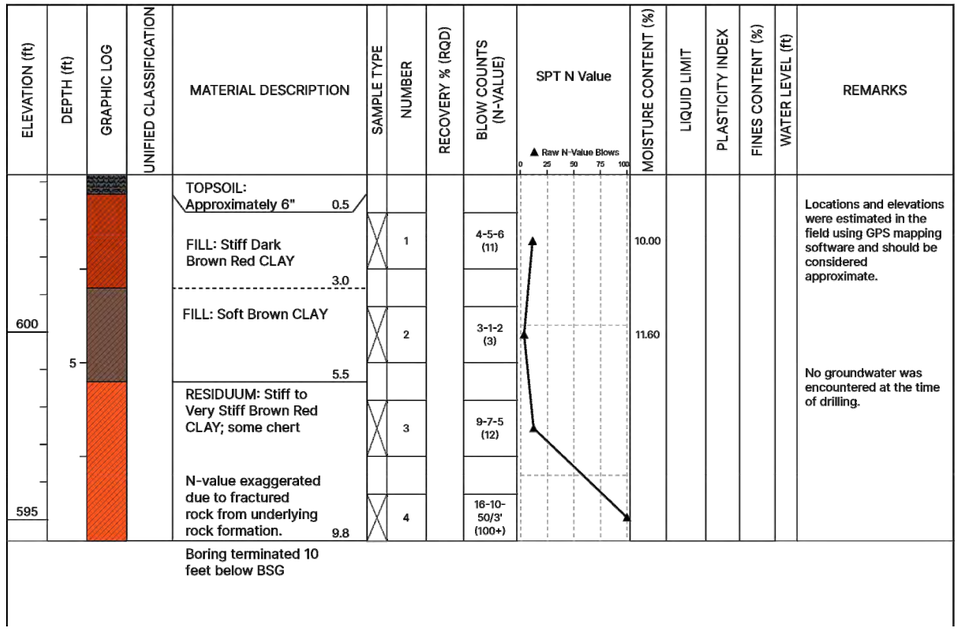
SOIL BORING LOGS - SHEET 3

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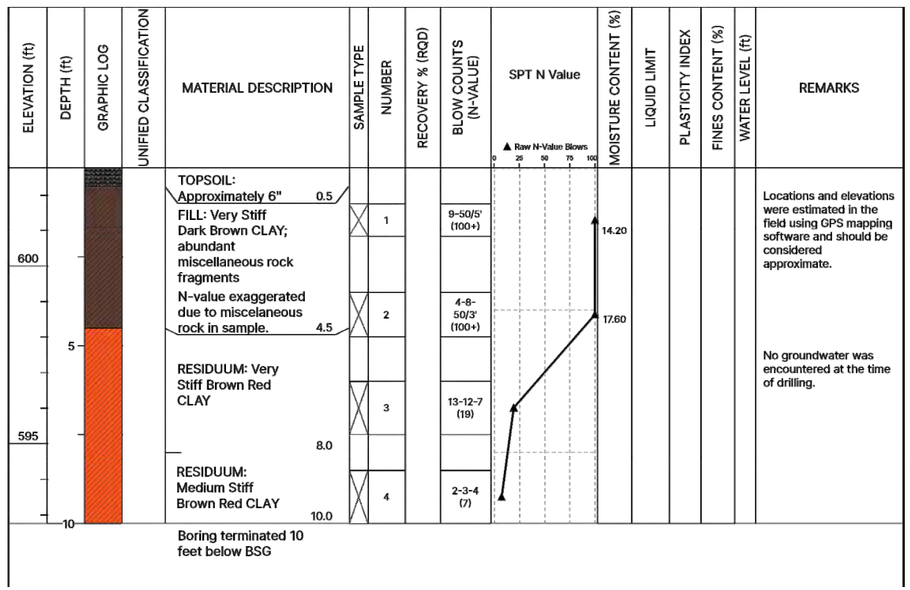
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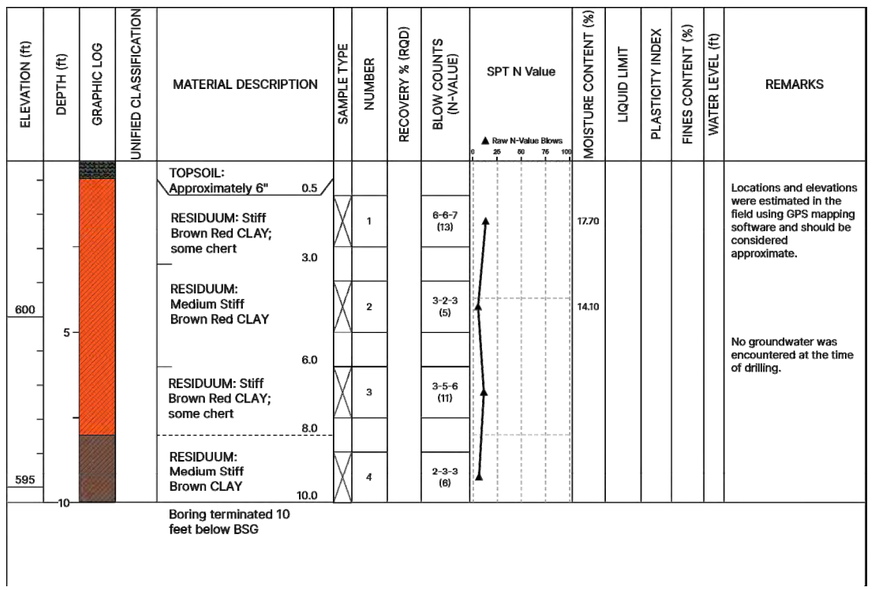
BOREHOLE 13



BOREHOLE 14



BOREHOLE 15



BOREHOLE 16

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BIRMINGHAM, ALABAMA 35212

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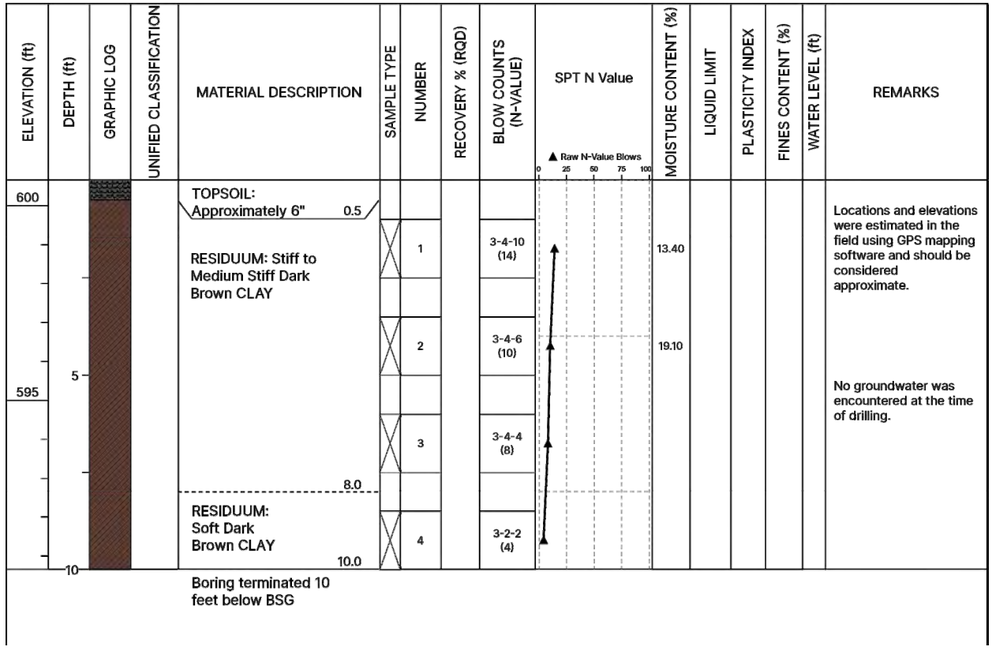
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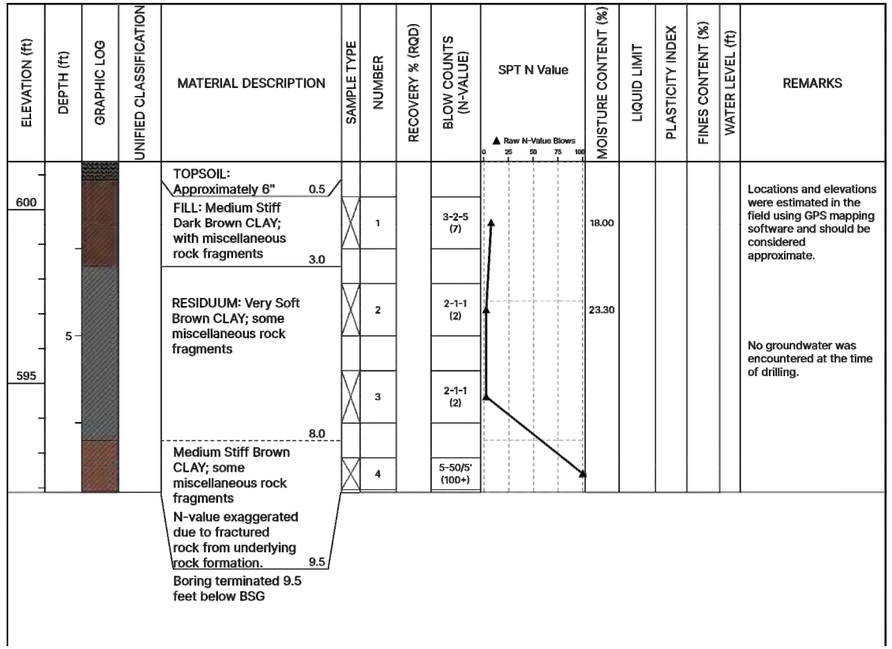
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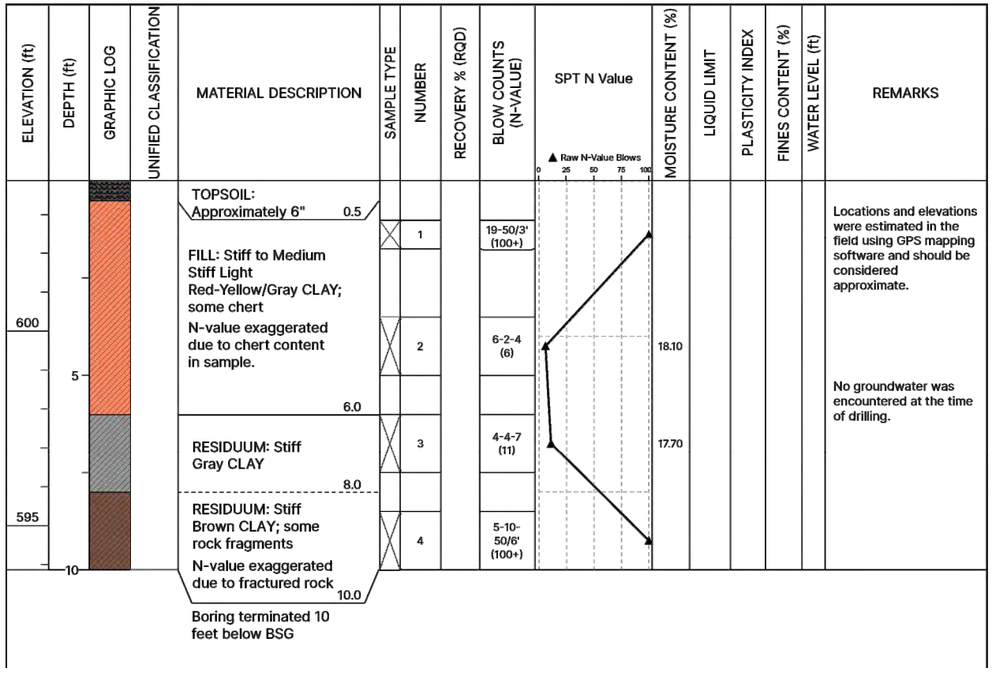
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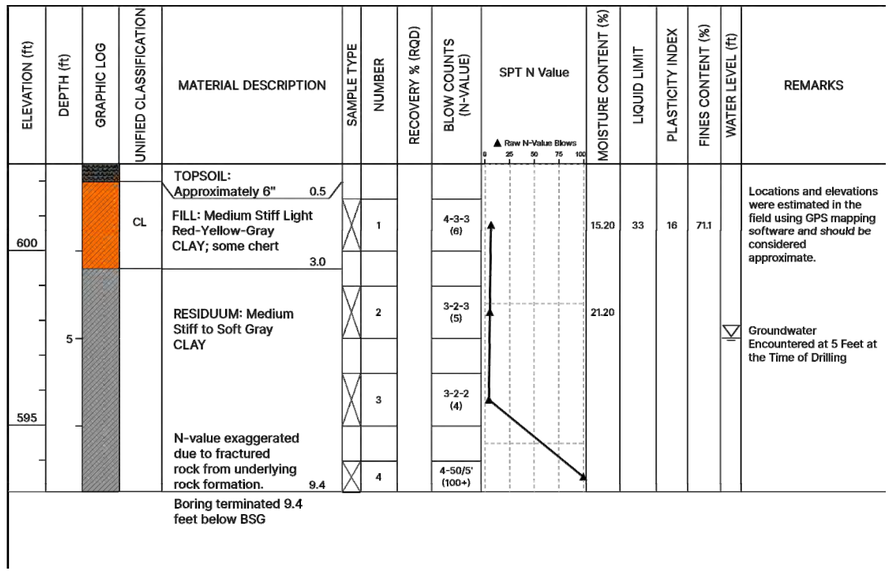
BOREHOLE 17



BOREHOLE 18



BOREHOLE 19



BOREHOLE 20

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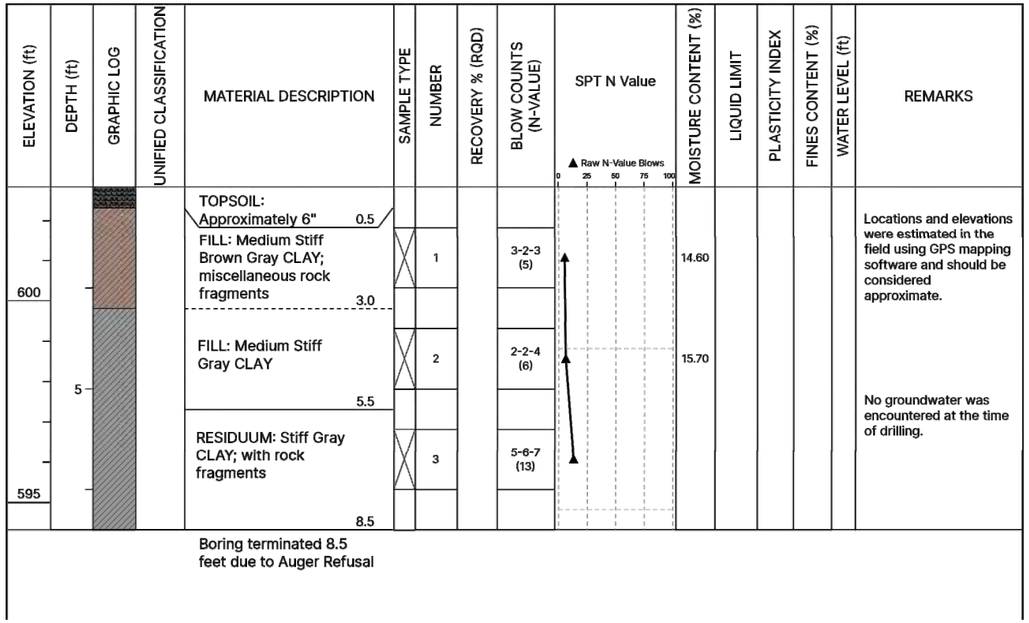
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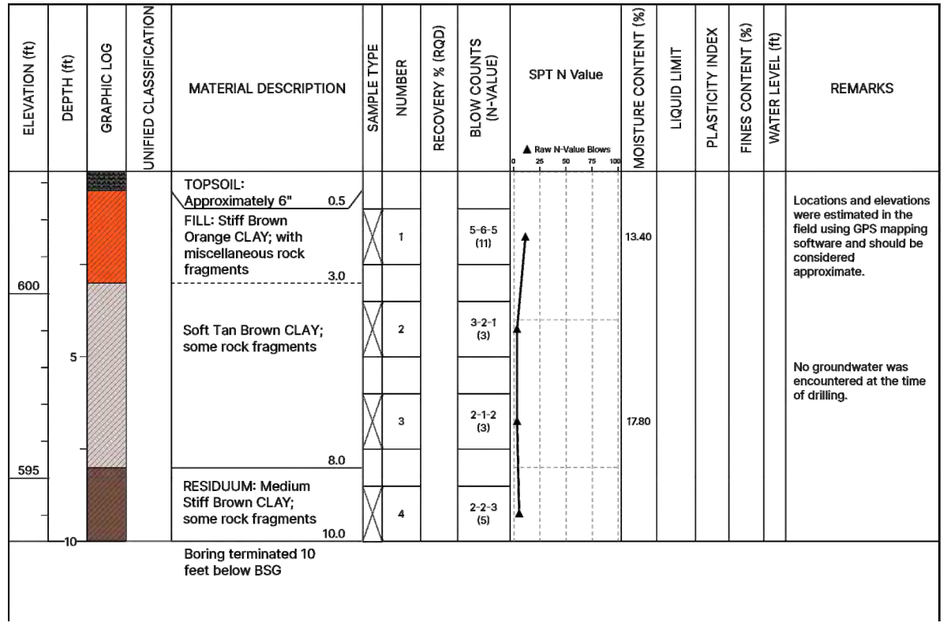
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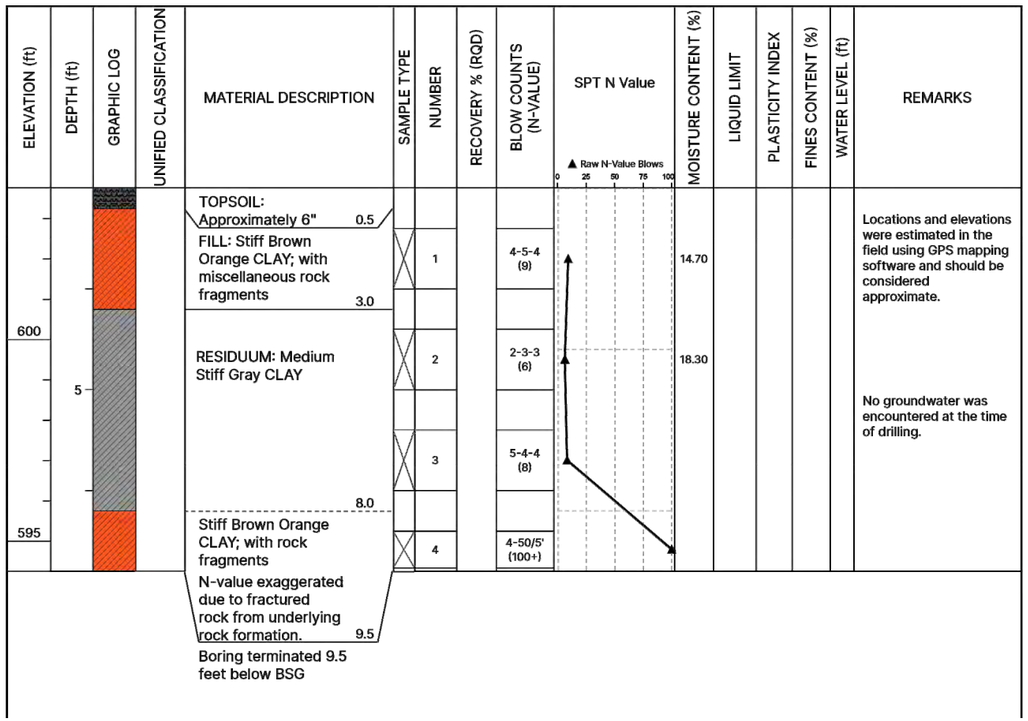
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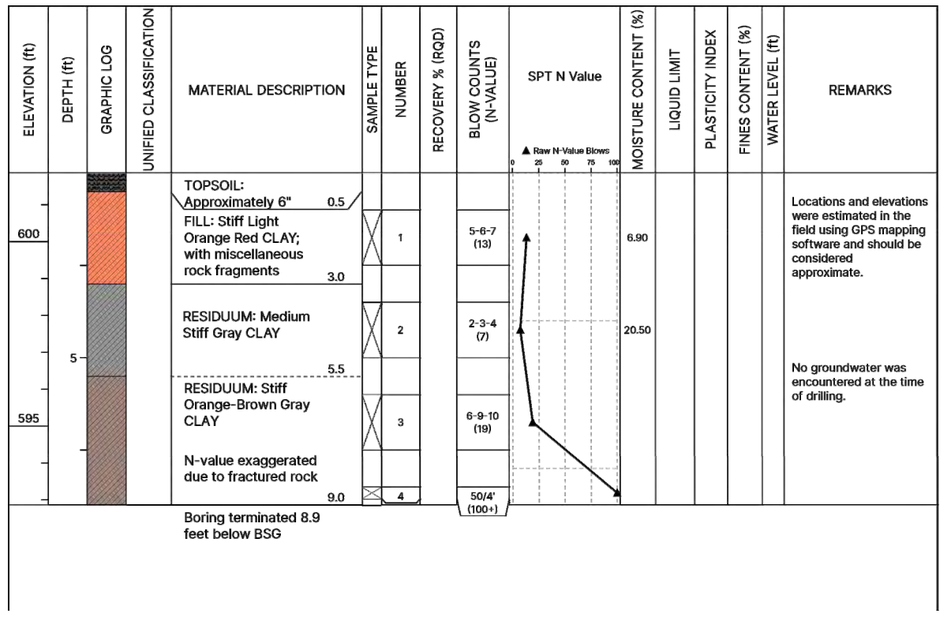
BOREHOLE 21



BOREHOLE 22



BOREHOLE 23



BOREHOLE 24

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BIRMINGHAM, ALABAMA 35212

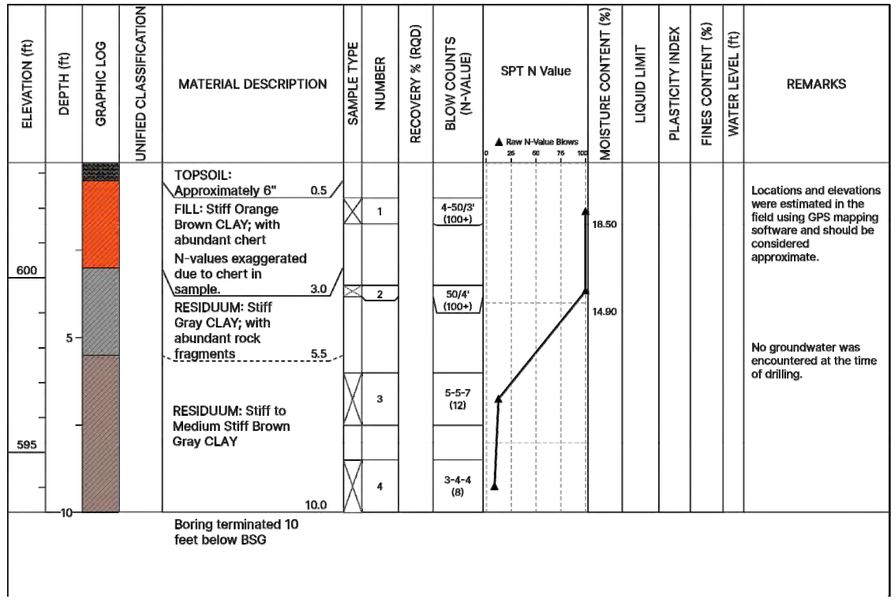
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SHEET CONTENTS
SOIL BORING LOGS - SHEET 6

SHEET NO.
B-057



BOREHOLE 25

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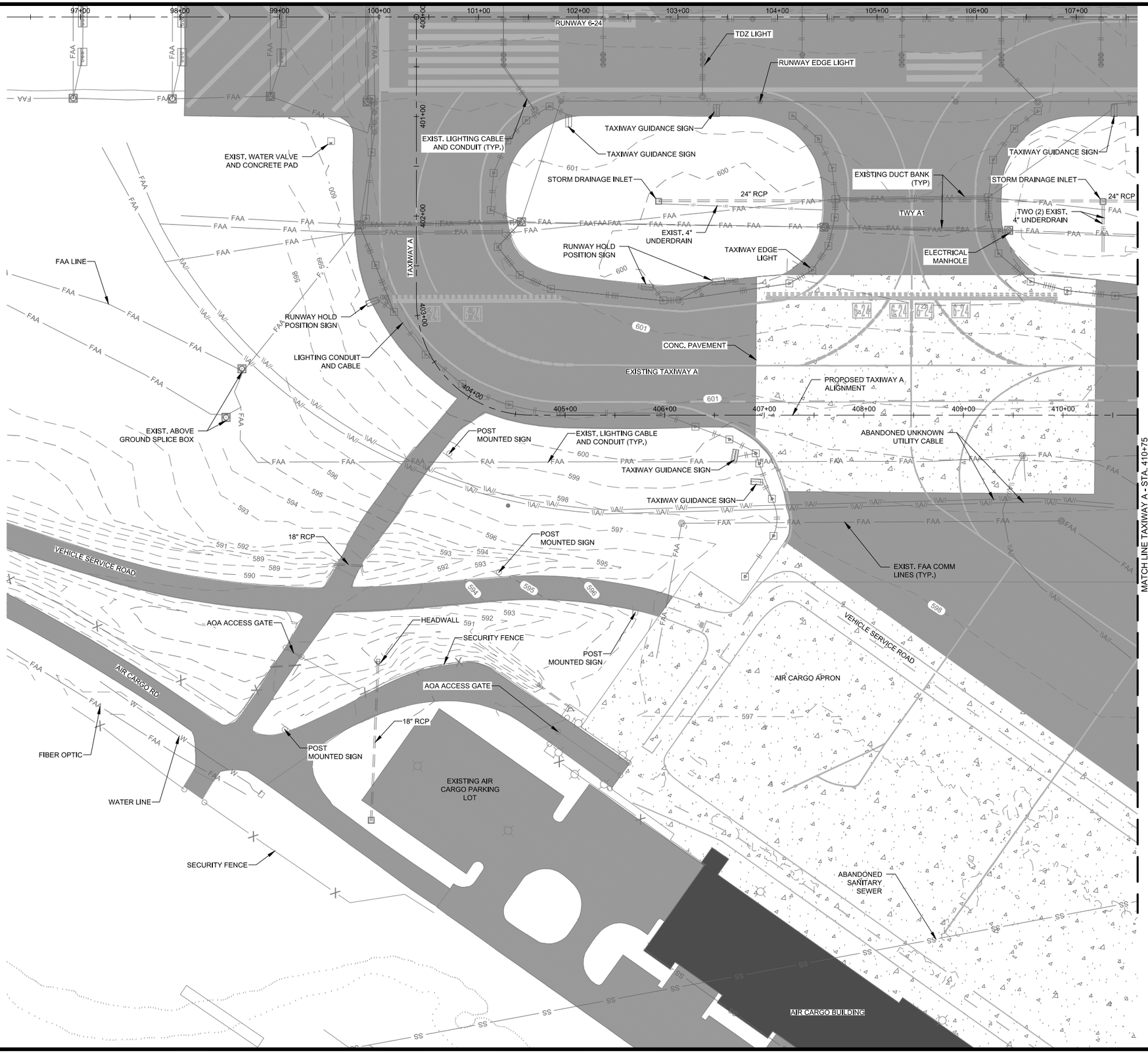
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SOIL BORING LOGS - SHEET 7

SHEET NO.

B-058



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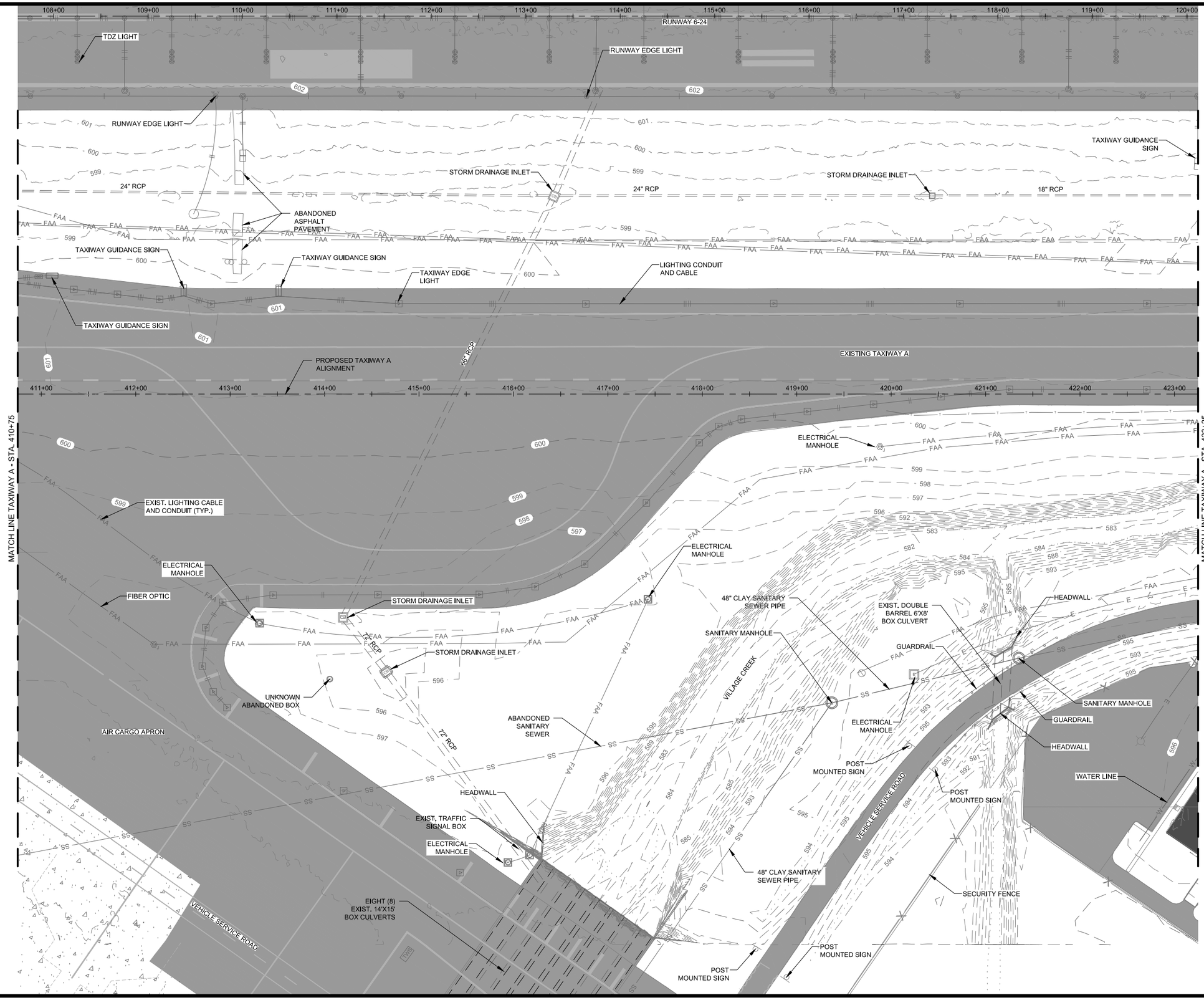
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SHEET CONTENTS

EXISTING CONDITIONS - SHEET 1

SHEET NO.

C-041



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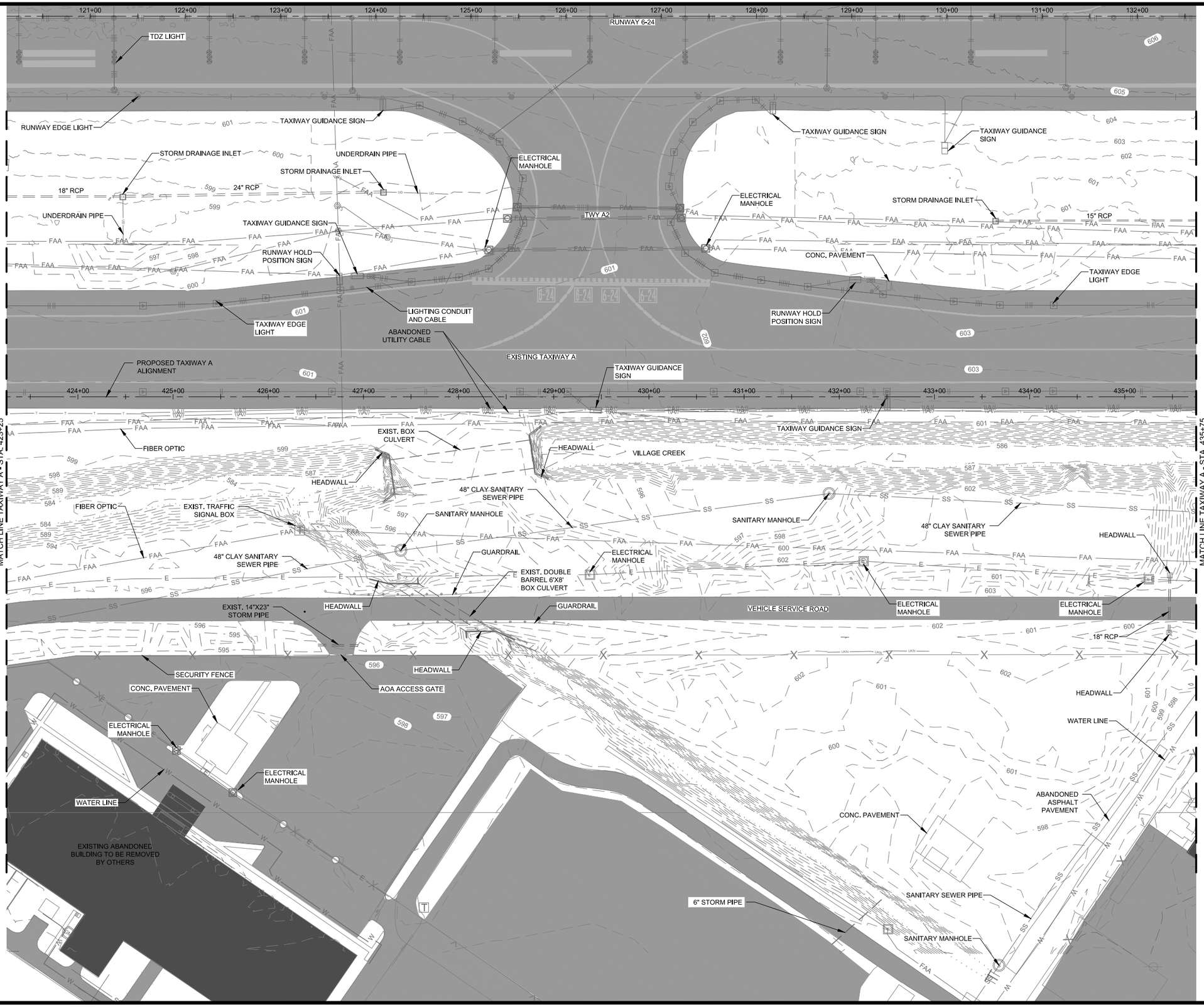
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EXISTING CONDITIONS - SHEET 2

SHEET NO.

C-042



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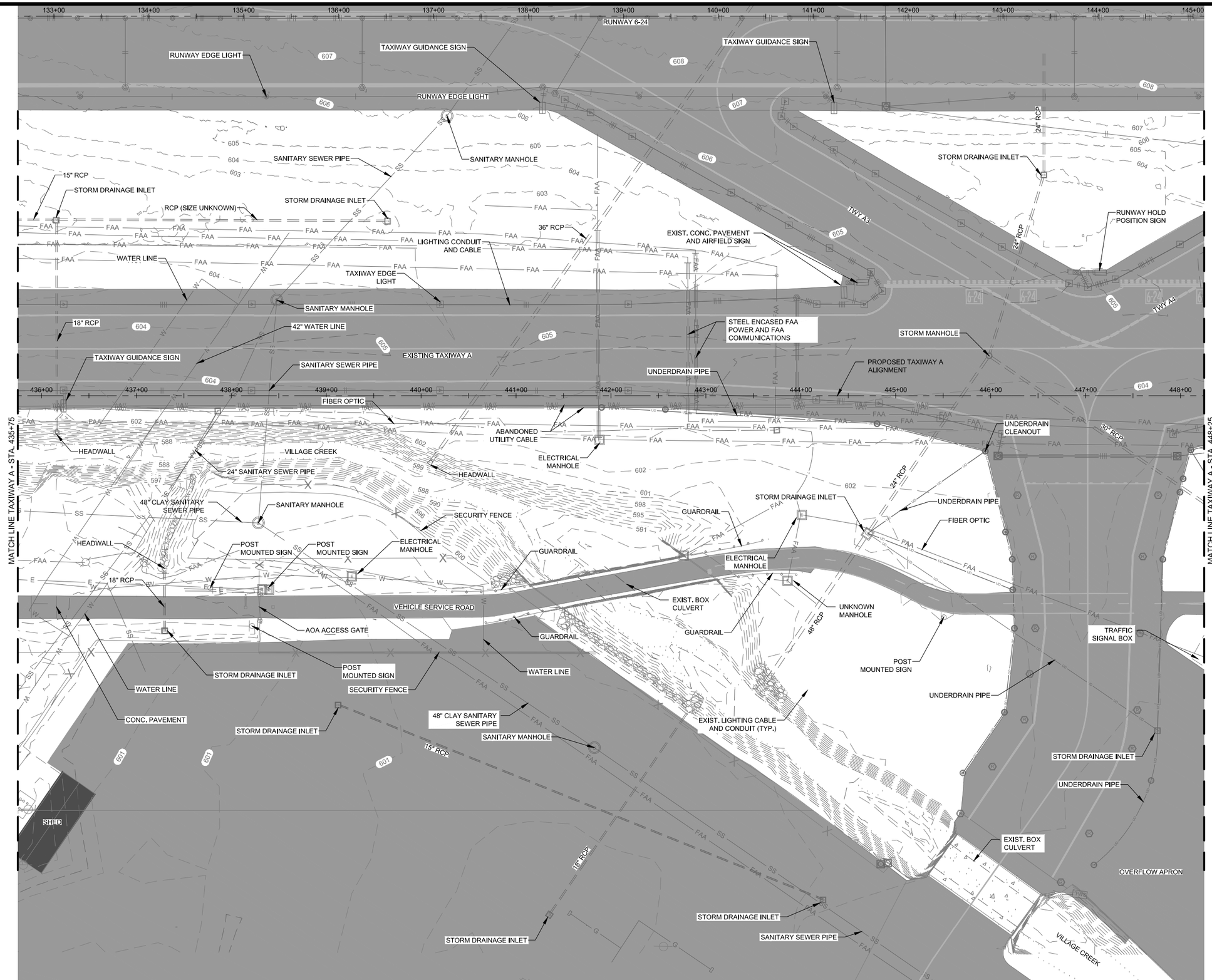
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EXISTING CONDITIONS - SHEET 3

SHEET NO.

C-043



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TAXIWAY A - 400' SEPARATION AND VILLAGE CREEK RELOCATION
5900 MESSER AIRPORT HWY
BIRMINGHAM, ALABAMA 35212

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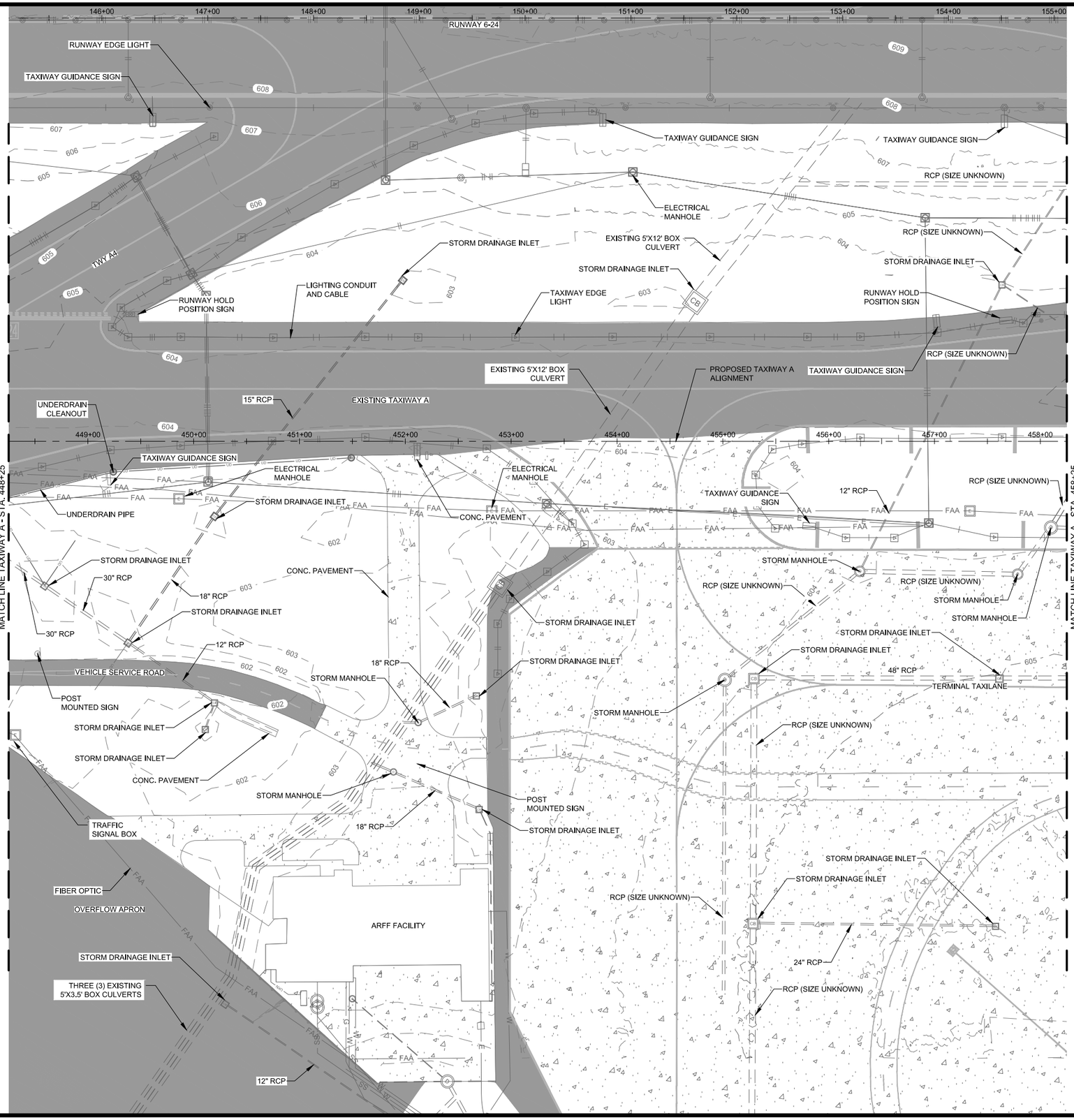
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SHEET CONTENTS

EXISTING CONDITIONS - SHEET 4

SHEET NO.

C-044



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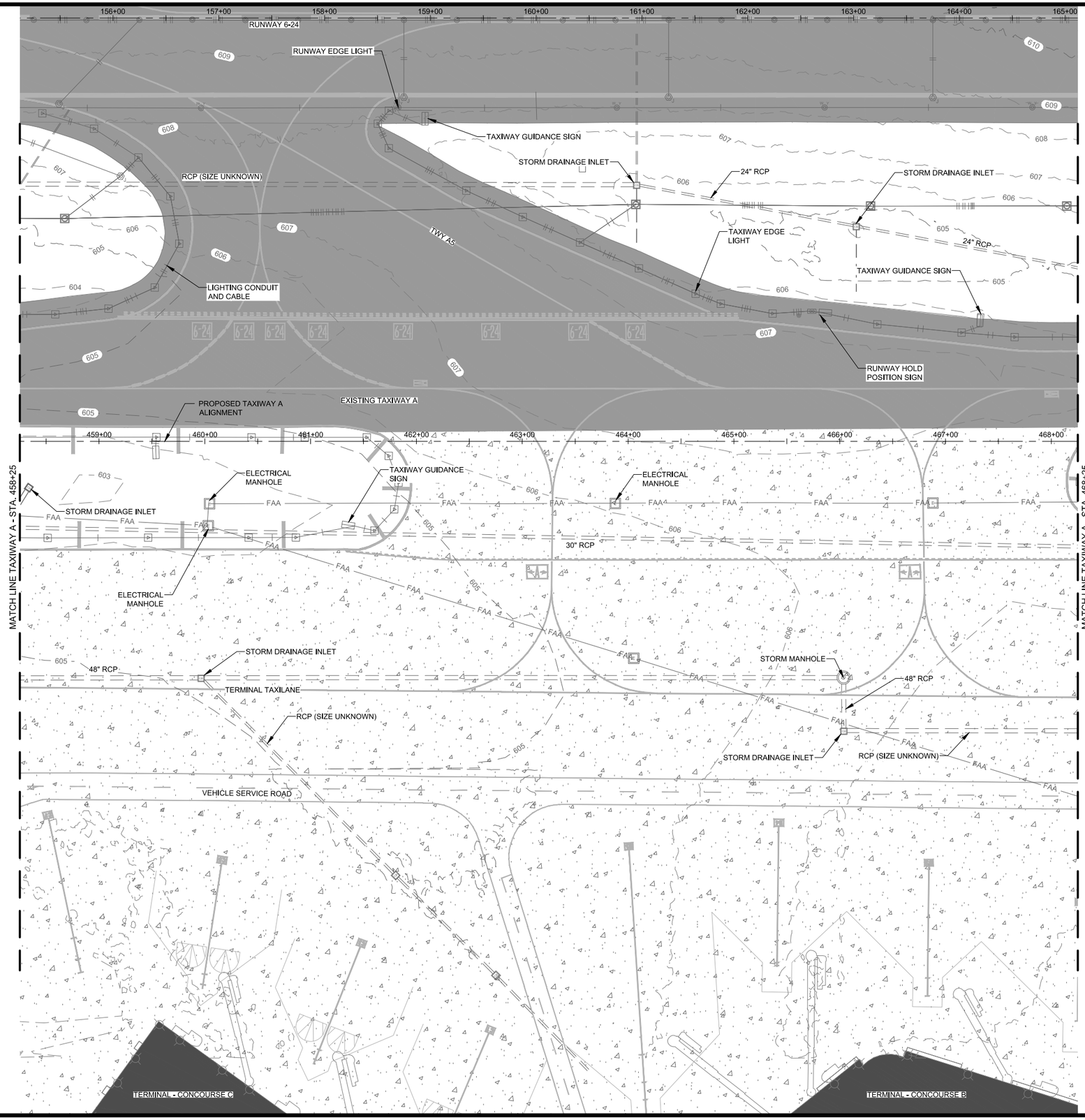
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SHEET CONTENTS

EXISTING CONDITIONS - SHEET 5

SHEET NO.

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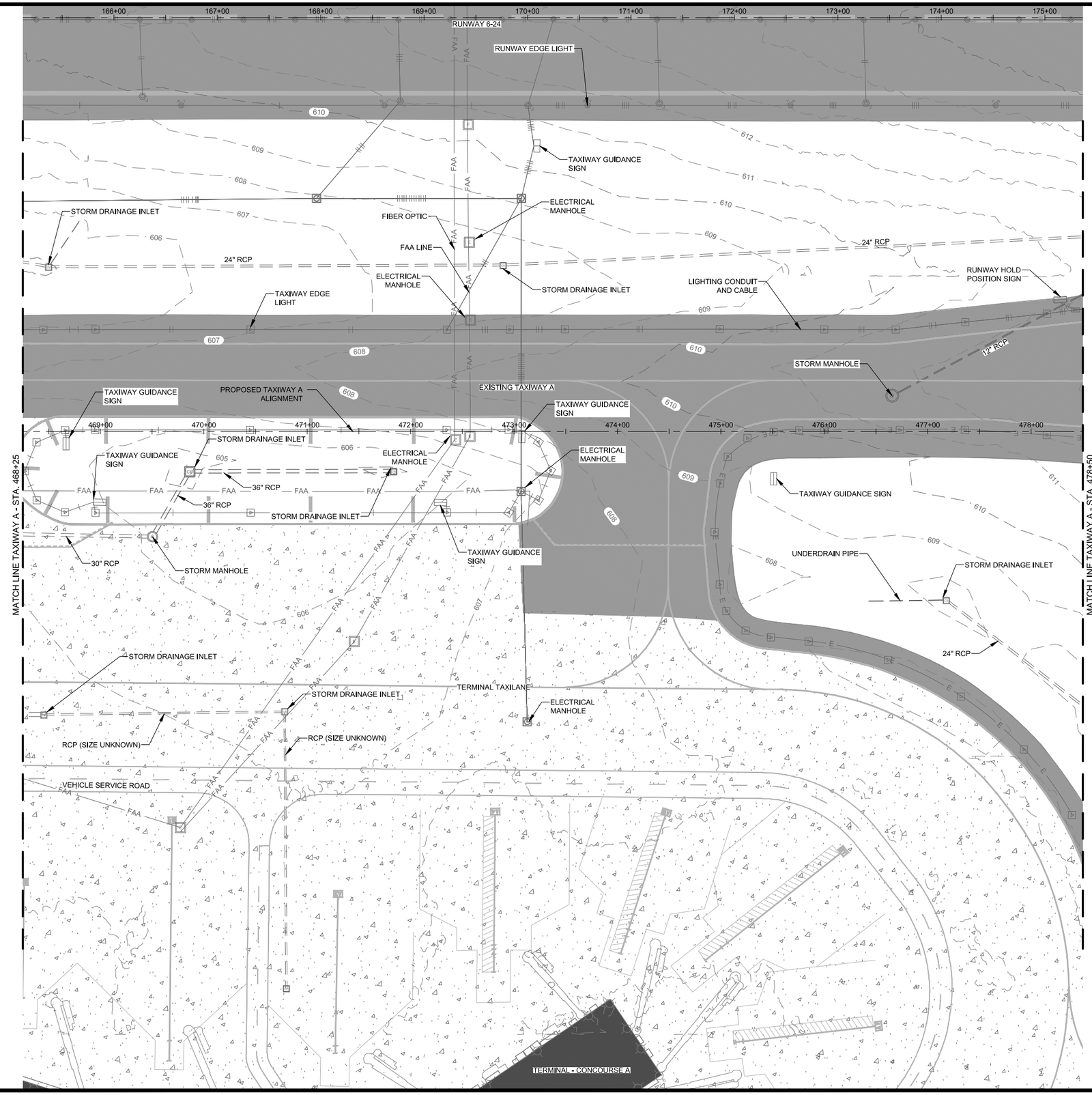
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SHEET CONTENTS

EXISTING CONDITIONS - SHEET 6

SHEET NO.

C-046



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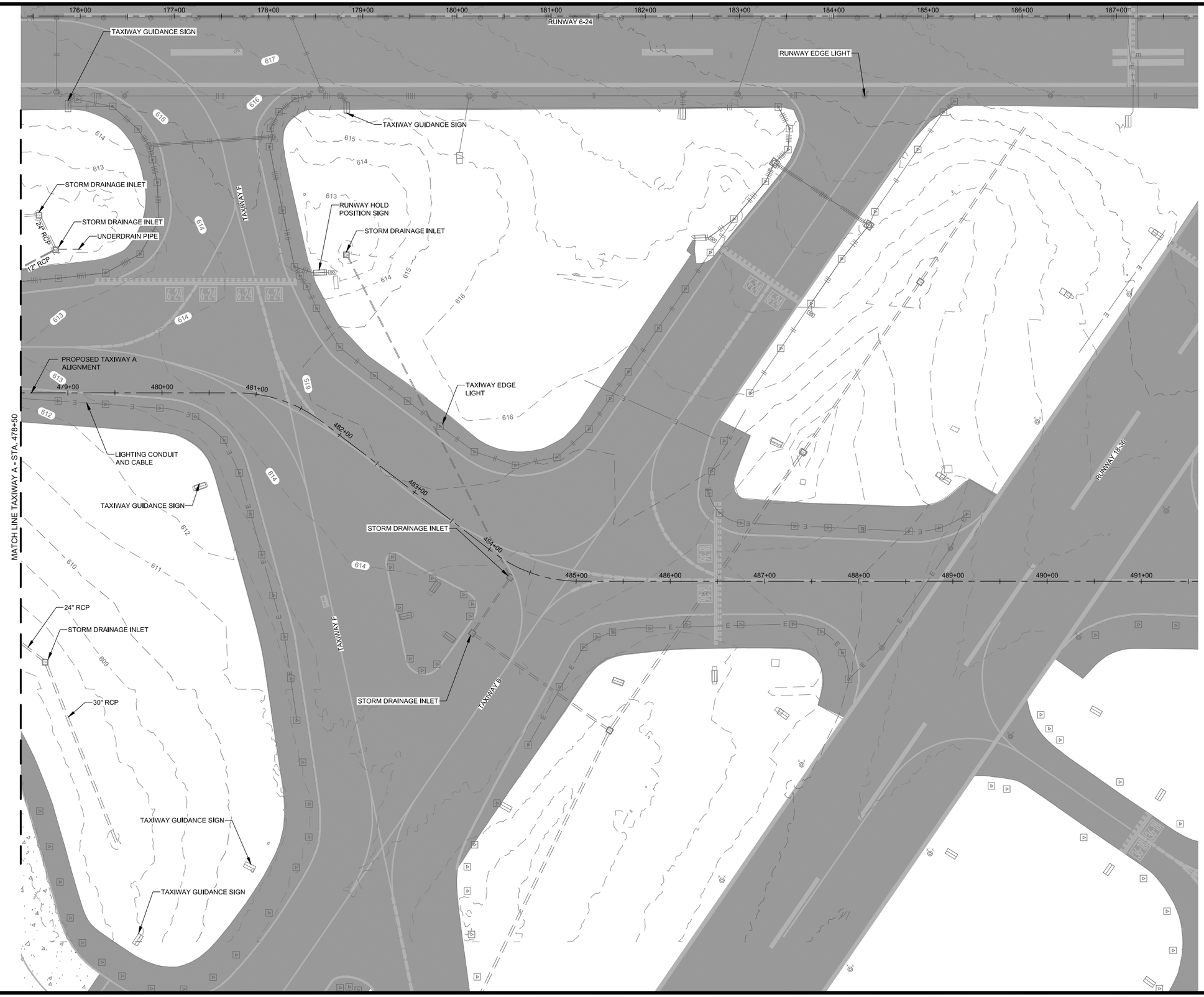
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SHEET CONTENTS

EXISTING CONDITIONS - SHEET 7

SHEET NO.

C-047



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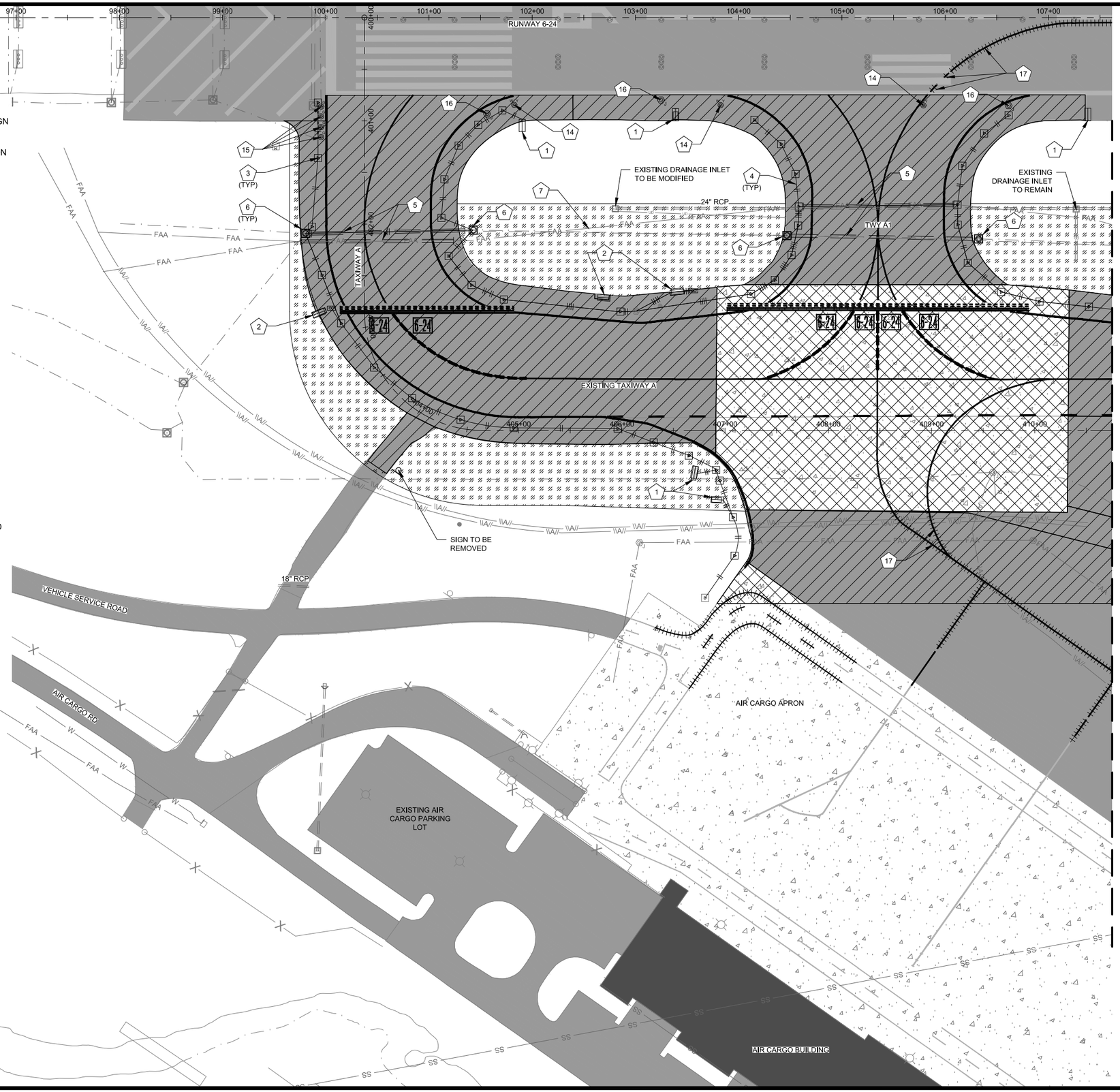
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SHEET CONTENTS

EXISTING CONDITIONS - SHEET 8

SHEET NO.

C-048



KEYED DEMOLITION NOTES

1. EXISTING TAXIWAY GUIDANCE SIGN TO BE REMOVED
2. EXISTING RUNWAY HOLD POSITION SIGN TO BE REMOVED
3. EXISTING TAXIWAY EDGE LIGHT AND BASE CAN TO BE REMOVED
4. EXISTING TAXIWAY EDGE LIGHT CABLE AND CONDUIT TO BE REMOVED
5. EXISTING DUCT BANK TO BE REMOVED
6. EXISTING ELECTRICAL MANHOLE TO BE REMOVED
7. EXISTING FAA CABLES TO BE MAINTAINED AND RELOCATED - SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION
8. EXISTING DRAINAGE STRUCTURE TO BE REMOVED
9. EXISTING DRAINAGE PIPE TO BE REMOVED
10. EXISTING GUARDRAIL TO BE REMOVED
11. EXISTING SANITARY STRUCTURE TO BE REMOVED
12. EXISTING SANITARY SEWER LINE TO BE REMOVED
13. EXISTING FENCE TO BE REMOVED
14. EXISTING RUNWAY EDGE LIGHT AND BASE CAN TO BE REMOVED
15. EXISTING RUNWAY THRESHOLD LIGHT AND BASE CAN TO BE REMOVED
16. EXISTING JUNCTION CAN TO BE ADJUSTED TO MATCH FINISHED GRADE
17. EXISTING MARKING TO BE REMOVED
18. EXISTING WATER LINE TO BE REMOVED

DEMOLITION NOTES:

1. ALL EXISTING TAXIWAY EDGE LIGHTS, SIGNS, CABLE, AND CONDUIT WITHIN LIMITS OF PAVEMENT DEMOLITION TO BE REMOVED UNLESS OTHERWISE NOTED.
2. DEMOLITION AND RELOCATION OF FAA CABLES SHALL BE CLOSELY COORDINATED WITH OWNER AND FAA. ALL FAA UTILITIES HALL BE FIELD VERIFIED PRIOR TO DEMOLITION
3. SEE PAVEMENT DEMOLITION SECTIONS SHEET C-061 FOR TYPICAL PAVEMENT SECTIONS BEING REMOVED.
4. CLEARING AND GRUBBING LIMITS REPRESENT THE APPROXIMATE LIMITS OF DISTURBANCE BASED UPON PROPOSED PROJECT LIMITS OF WORK

LEGEND

- ASPHALT REMOVAL
- CONCRETE REMOVAL
- CLEARING AND GRUBBING
- MARKING REMOVAL

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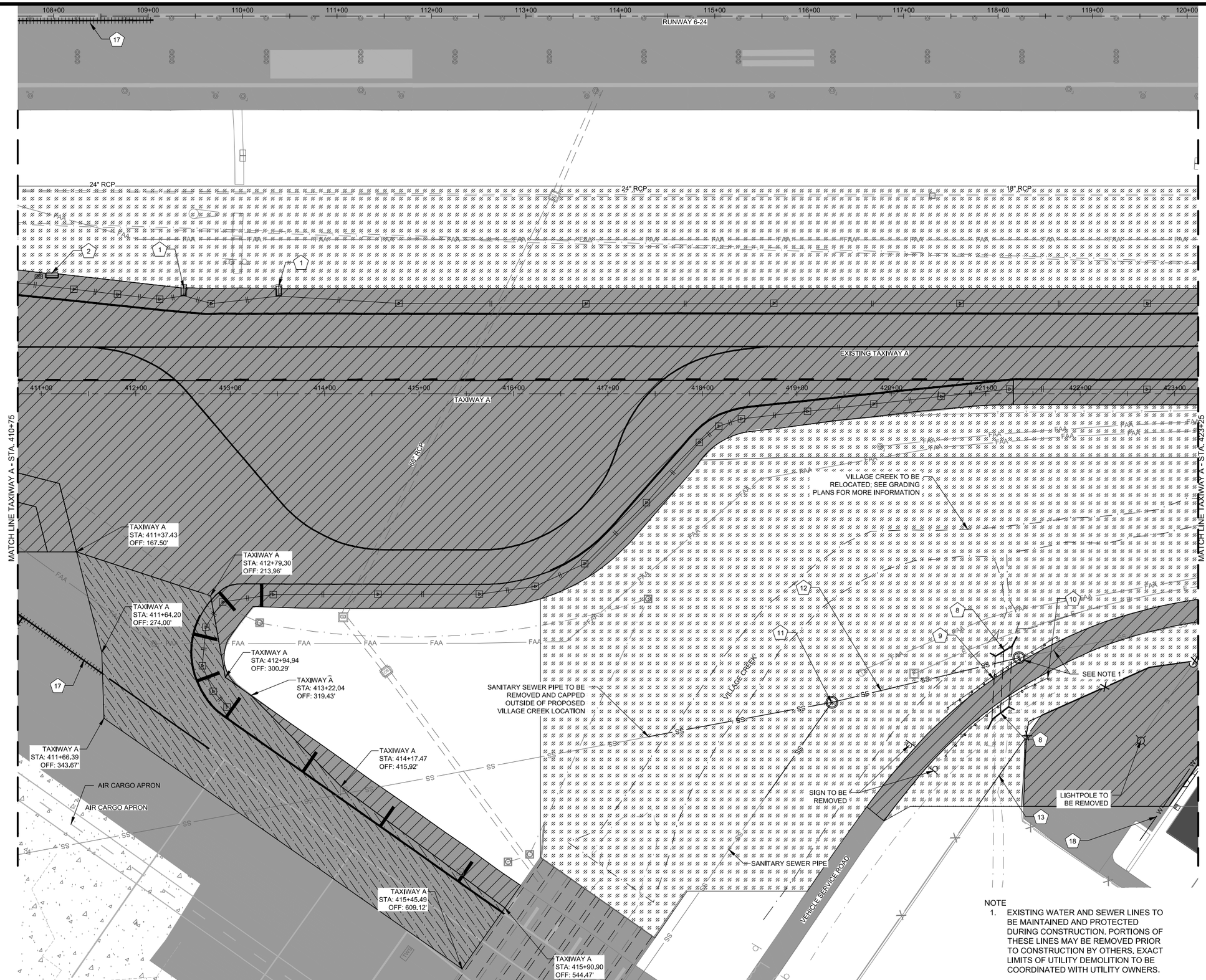
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SHEET CONTENTS

DEMOLITION PLAN - SHEET 1

SHEET NO.

C-051



LEGEND

- ASPHALT REMOVAL
- CONCRETE REMOVAL
- CLEARING AND GRUBBING
- MARKING REMOVAL
- ASPHALT MILLING (VARIABLE DEPTH)

KEYED DEMOLITION NOTES

1. EXISTING TAXIWAY GUIDANCE SIGN TO BE REMOVED
2. EXISTING RUNWAY HOLD POSITION SIGN TO BE REMOVED
3. EXISTING TAXIWAY EDGE LIGHT AND BASE CAN TO BE REMOVED
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16. EXISTING JUNCTION CAN TO BE ADJUSTED TO MATCH FINISHED GRADE
17. EXISTING MARKING TO BE REMOVED
18. EXISTING WATER LINE TO BE REMOVED

NOTE

1. EXISTING WATER AND SEWER LINES TO BE MAINTAINED AND PROTECTED DURING CONSTRUCTION. PORTIONS OF THESE LINES MAY BE REMOVED PRIOR TO CONSTRUCTION BY OTHERS. EXACT LIMITS OF UTILITY DEMOLITION TO BE COORDINATED WITH UTILITY OWNERS.

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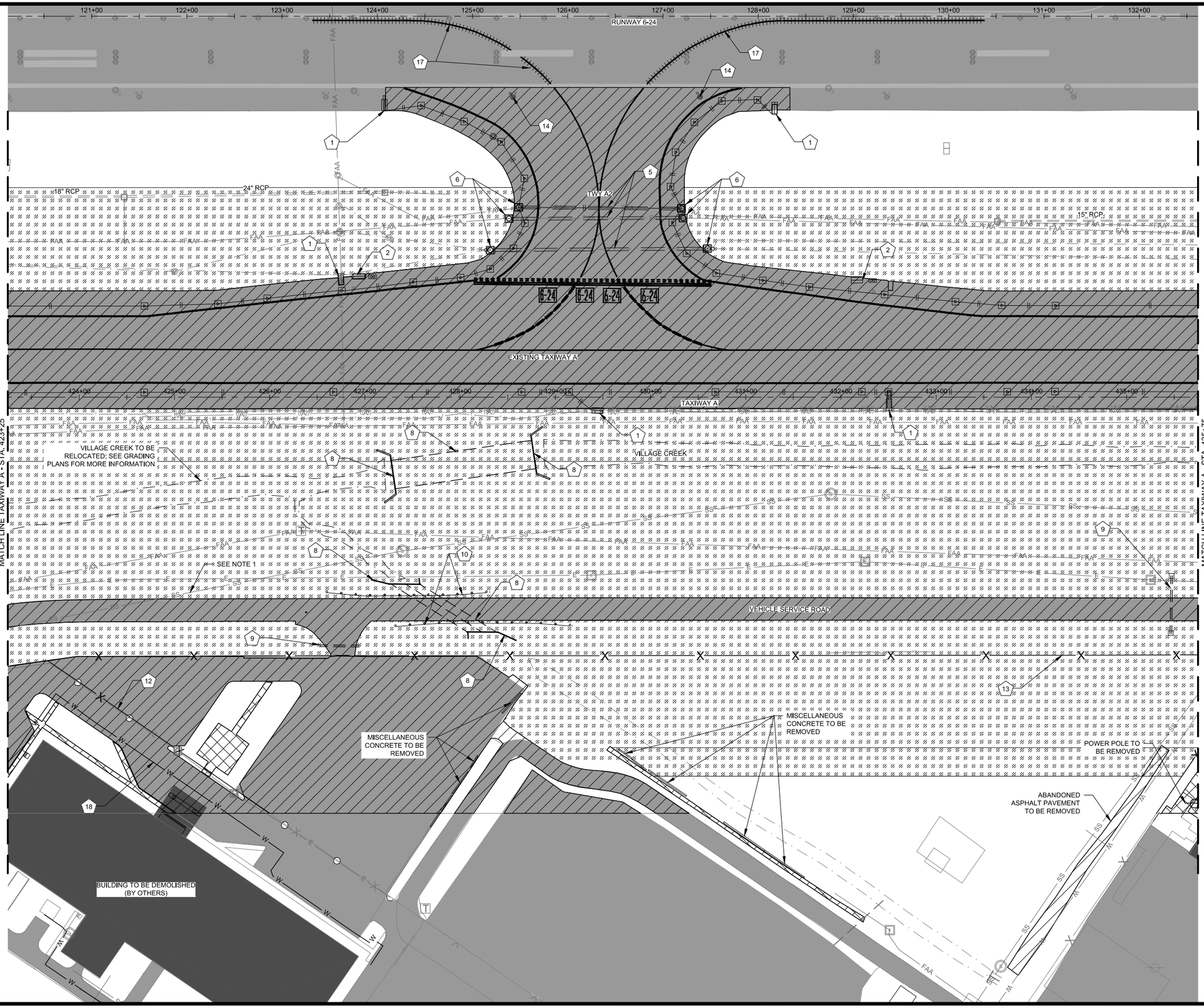
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SHEET CONTENTS

DEMOLITION PLAN - SHEET 2

SHEET NO.

C-052



LEGEND

- ASPHALT REMOVAL
- CONCRETE REMOVAL
- CLEARING AND GRUBBING
- MARKING REMOVAL

KEYED DEMOLITION NOTES

1. EXISTING TAXIWAY GUIDANCE SIGN TO BE REMOVED
2. EXISTING RUNWAY HOLD POSITION SIGN TO BE REMOVED
3. EXISTING TAXIWAY EDGE LIGHT AND BASE CAN TO BE REMOVED
4. EXISTING TAXIWAY EDGE LIGHT CABLE AND CONDUIT TO BE REMOVED
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15. EXISTING RUNWAY THRESHOLD LIGHT AND BASE CAN TO BE REMOVED
16. EXISTING JUNCTION CAN TO BE ADJUSTED TO MATCH FINISHED GRADE
17. EXISTING MARKING TO BE REMOVED
18. EXISTING WATER LINE TO BE REMOVED

NOTE

1. EXISTING WATER AND SEWER LINES TO BE MAINTAINED AND PROTECTED DURING CONSTRUCTION. PORTIONS OF THESE LINES MAY BE REMOVED PRIOR TO CONSTRUCTION BY OTHERS. EXACT LIMITS OF UTILITY DEMOLITION TO BE COORDINATED WITH UTILITY OWNERS.

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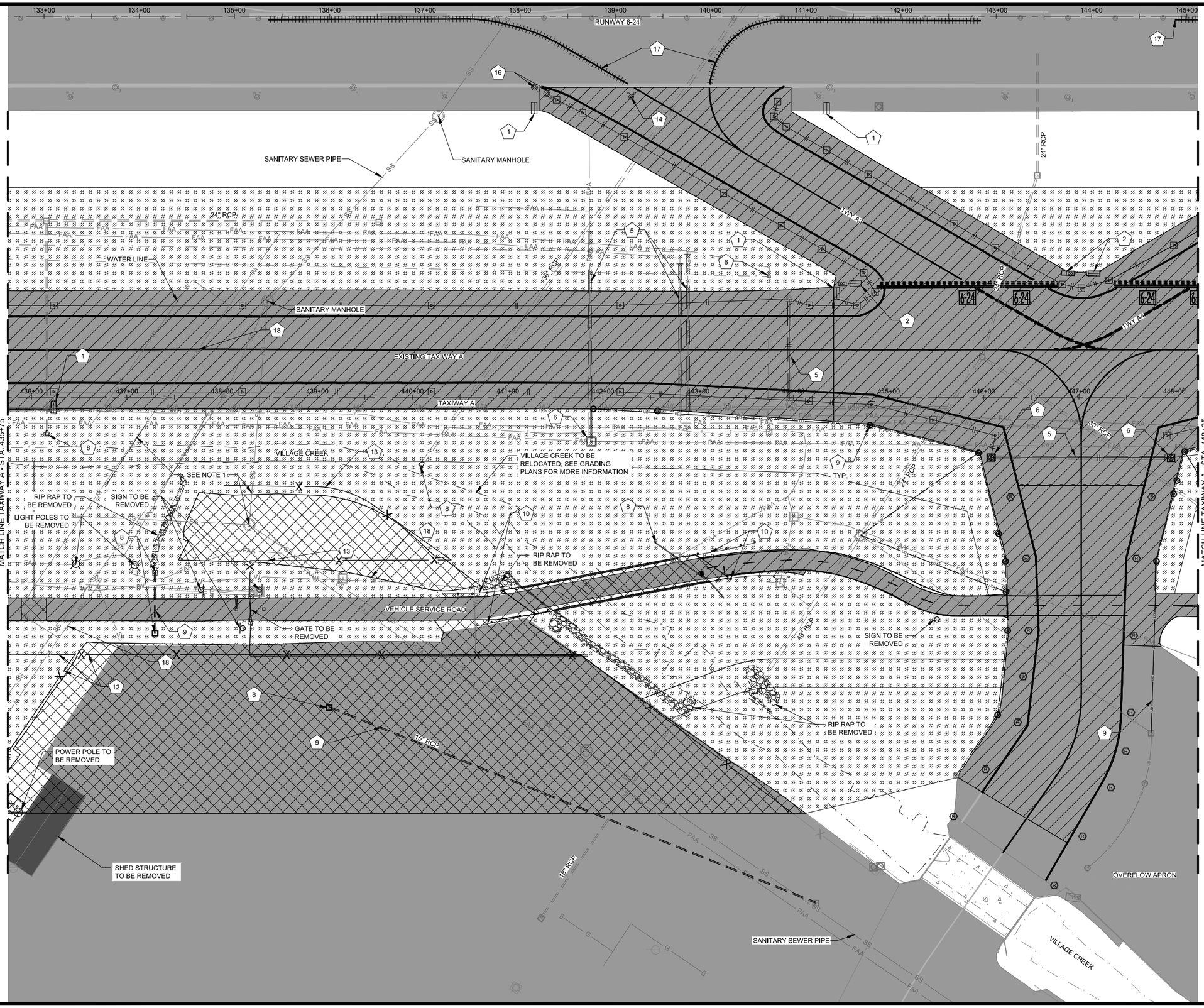
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SHEET CONTENTS

DEMOLITION PLAN - SHEET 3

SHEET NO.

C-053



LEGEND

- ASPHALT REMOVAL
- CONCRETE REMOVAL
- CLEARING AND GRUBBING
- MARKING REMOVAL

KEYED DEMOLITION NOTES

1. EXISTING TAXIWAY GUIDANCE SIGN TO BE REMOVED
2. EXISTING RUNWAY HOLD POSITION SIGN TO BE REMOVED
3. EXISTING TAXIWAY EDGE LIGHT AND BASE CAN TO BE REMOVED
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18. EXISTING WATER LINE TO BE REMOVED

NOTE

1. EXISTING WATER AND SEWER LINES TO BE MAINTAINED AND PROTECTED DURING CONSTRUCTION. PORTIONS OF THESE LINES MAY BE REMOVED PRIOR TO CONSTRUCTION BY OTHERS. EXACT LIMITS OF UTILITY DEMOLITION TO BE COORDINATED WITH UTILITY OWNERS.

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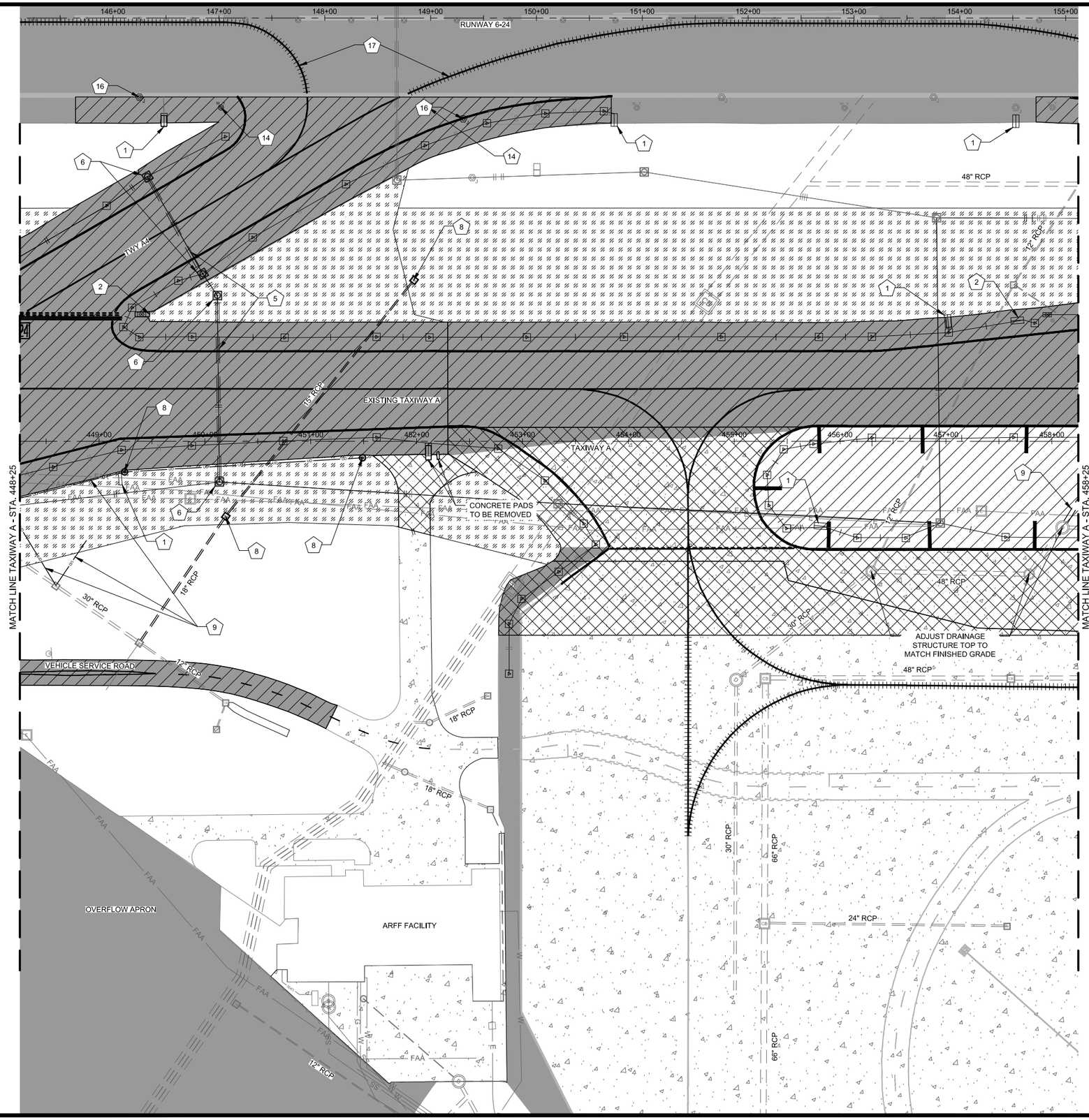
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SHEET CONTENTS

DEMOLITION PLAN - SHEET 4

SHEET NO.

C-054



LEGEND

- ASPHALT REMOVAL
- CONCRETE REMOVAL
- CLEARING AND GRUBBING
- MARKING REMOVAL

KEYED DEMOLITION NOTES

1. EXISTING TAXIWAY GUIDANCE SIGN TO BE REMOVED
2. EXISTING RUNWAY HOLD POSITION SIGN TO BE REMOVED
3. EXISTING TAXIWAY EDGE LIGHT AND BASE CAN TO BE REMOVED
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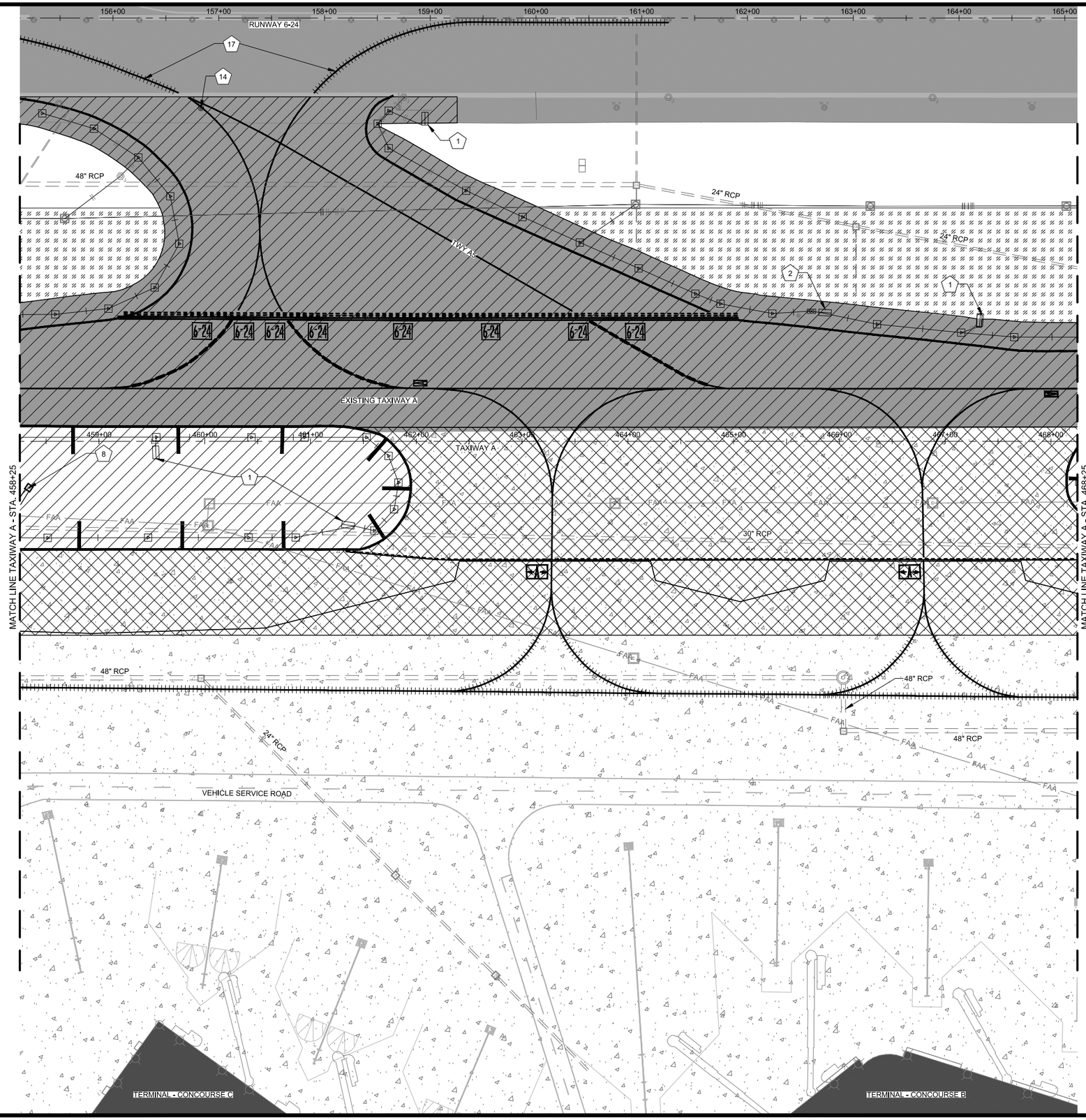
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SHEET CONTENTS

DEMOLITION PLAN - SHEET 5

SHEET NO.

C-055



LEGEND

- ASPHALT REMOVAL
- CONCRETE REMOVAL
- CLEARING AND GRUBBING
- MARKING REMOVAL

KEYED DEMOLITION NOTES

1. EXISTING TAXIWAY GUIDANCE SIGN TO BE REMOVED
2. EXISTING RUNWAY HOLD POSITION SIGN TO BE REMOVED
3. EXISTING TAXIWAY EDGE LIGHT AND BASE CAN TO BE REMOVED
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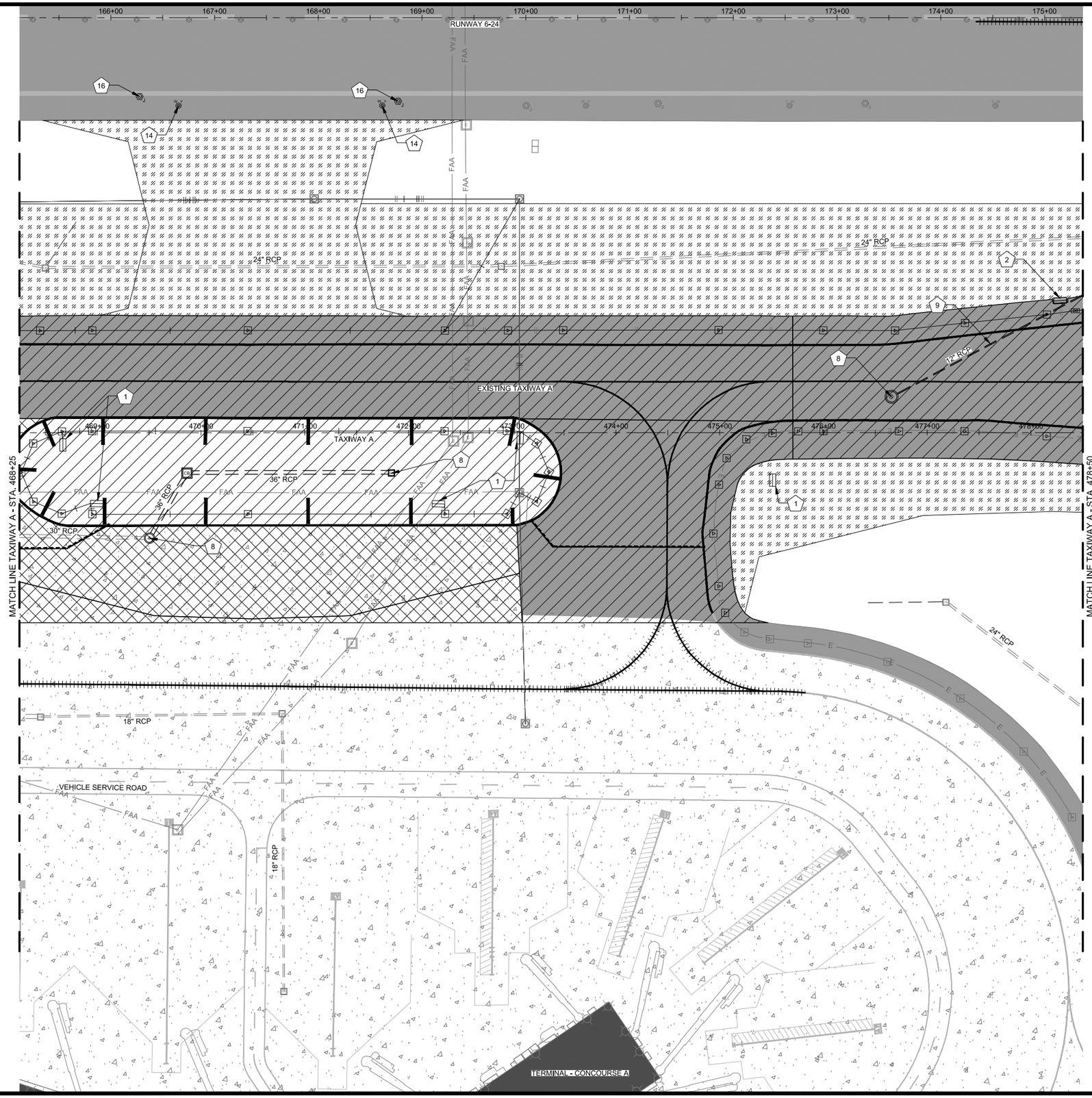
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SHEET CONTENTS

DEMOLITION PLAN - SHEET 6

SHEET NO.

C-056



LEGEND

- ASPHALT REMOVAL
- CONCRETE REMOVAL
- CLEARING AND GRUBBING
- MARKING REMOVAL

KEYED DEMOLITION NOTES

1. EXISTING TAXIWAY GUIDANCE SIGN TO BE REMOVED
2. EXISTING RUNWAY HOLD POSITION SIGN TO BE REMOVED
3. EXISTING TAXIWAY EDGE LIGHT AND BASE CAN TO BE REMOVED
4. EXISTING TAXIWAY EDGE LIGHT CABLE AND CONDUIT TO BE REMOVED
5. EXISTING DUCT BANK TO BE REMOVED
6. EXISTING ELECTRICAL MANHOLE TO BE REMOVED
7. EXISTING FAA CABLES TO BE MAINTAINED AND RELOCATED - SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION
8. EXISTING DRAINAGE STRUCTURE TO BE REMOVED
9. EXISTING DRAINAGE PIPE TO BE REMOVED
10. EXISTING GUARDRAIL TO BE REMOVED
11. EXISTING SANITARY STRUCTURE TO BE REMOVED
12. EXISTING SANITARY SEWER LINE TO BE REMOVED
13. EXISTING FENCE TO BE REMOVED
14. EXISTING RUNWAY EDGE LIGHT AND BASE CAN TO BE REMOVED
15. EXISTING RUNWAY THRESHOLD LIGHT AND BASE CAN TO BE REMOVED
16. EXISTING JUNCTION CAN TO BE ADJUSTED TO MATCH FINISHED GRADE
17. EXISTING MARKING TO BE REMOVED
18. EXISTING WATER LINE TO BE REMOVED

0 50 100

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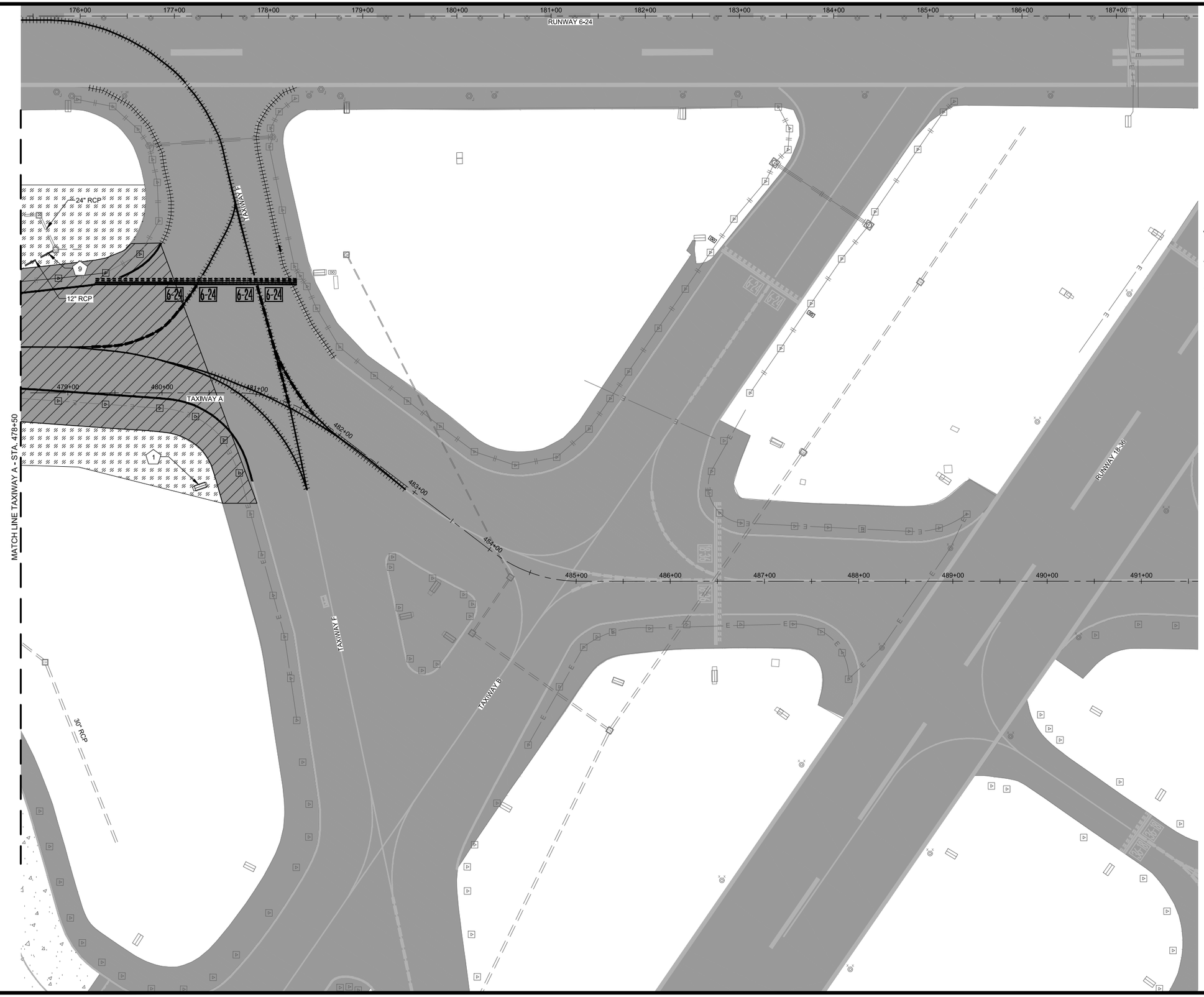
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SHEET CONTENTS

DEMOLITION PLAN - SHEET 7

SHEET NO.

C-057



LEGEND

- ASPHALT REMOVAL
- CONCRETE REMOVAL
- CLEARING AND GRUBBING
- MARKING REMOVAL

KEYED DEMOLITION NOTES

1. EXISTING TAXIWAY GUIDANCE SIGN TO BE REMOVED
2. EXISTING RUNWAY HOLD POSITION SIGN TO BE REMOVED
3. EXISTING TAXIWAY EDGE LIGHT AND BASE CAN TO BE REMOVED
4. EXISTING TAXIWAY EDGE LIGHT CABLE AND CONDUIT TO BE REMOVED
5. EXISTING DUCT BANK TO BE REMOVED
6. EXISTING ELECTRICAL MANHOLE TO BE REMOVED
7. EXISTING FAA CABLES TO BE MAINTAINED AND RELOCATED - SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION
8. EXISTING DRAINAGE STRUCTURE TO BE REMOVED
9. EXISTING DRAINAGE PIPE TO BE REMOVED
10. EXISTING GUARDRAIL TO BE REMOVED
11. EXISTING SANITARY STRUCTURE TO BE REMOVED
12. EXISTING SANITARY SEWER LINE TO BE REMOVED
13. EXISTING FENCE TO BE REMOVED
14. EXISTING RUNWAY EDGE LIGHT AND BASE CAN TO BE REMOVED
15. EXISTING RUNWAY THRESHOLD LIGHT AND BASE CAN TO BE REMOVED
16. EXISTING JUNCTION CAN TO BE ADJUSTED TO MATCH FINISHED GRADE
17. EXISTING MARKING TO BE REMOVED
18. EXISTING WATER LINE TO BE REMOVED

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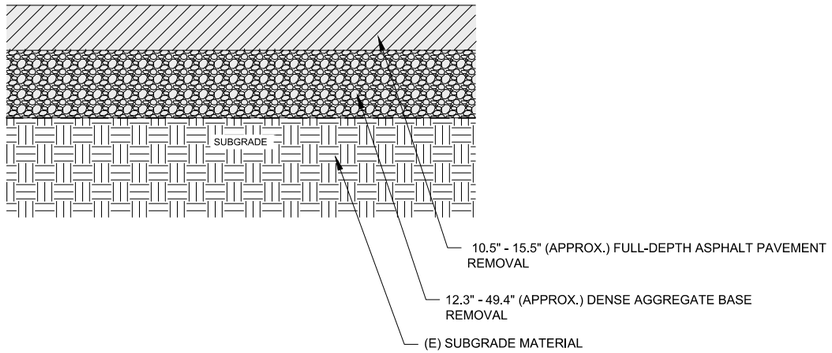
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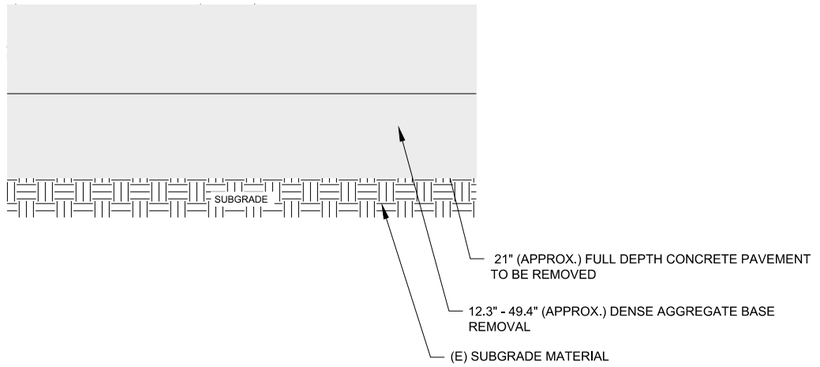
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SHEET CONTENTS
DEMOLITION PLAN - SHEET 8

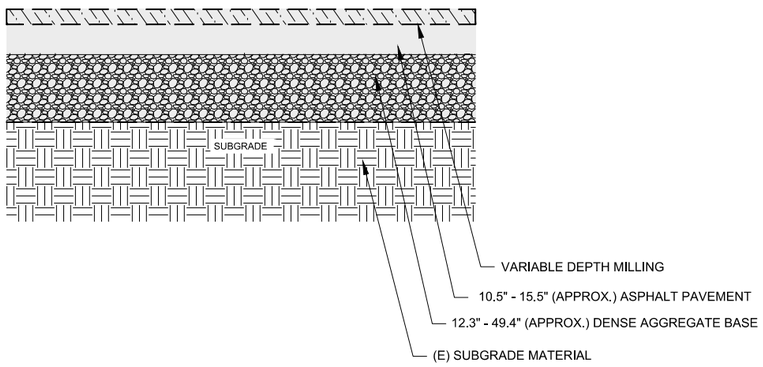
SHEET NO.
C-058



1 DEMOLITION SECTION
FULL - DEPTH ASPHALT REMOVAL
NOT TO SCALE



2 DEMOLITION SECTION
FULL - DEPTH CONCRETE REMOVAL
NOT TO SCALE



3 DEMOLITION SECTION
VARIABLE ASPHALT MILLING SECTION
NOT TO SCALE

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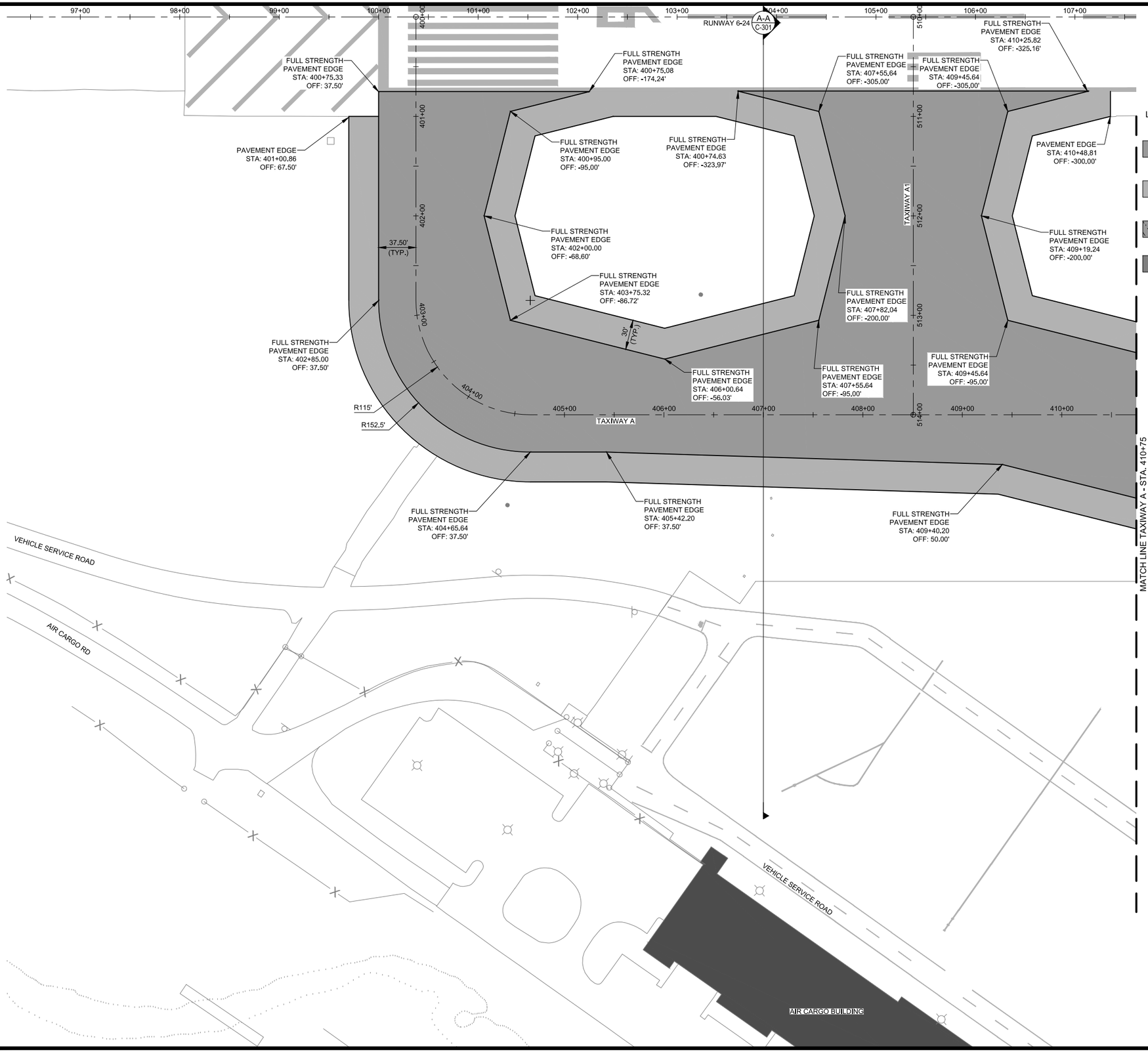
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SHEET CONTENTS
PAVEMENT DEMOLITON DETAILS

SHEET NO.
C-060



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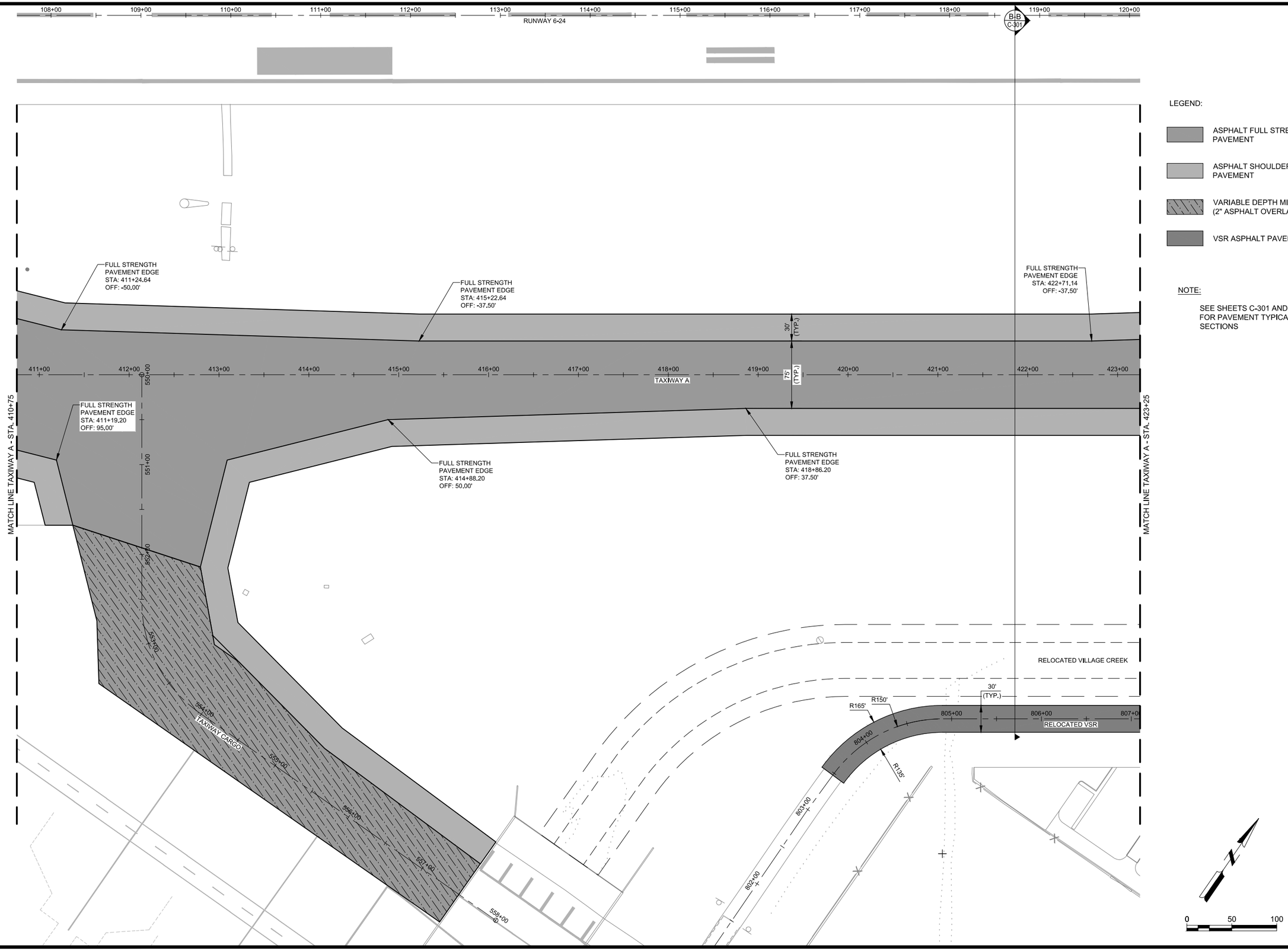
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SHEET CONTENTS

PROJECT GEOMETRICS - SHEET 1

SHEET NO.

C-081



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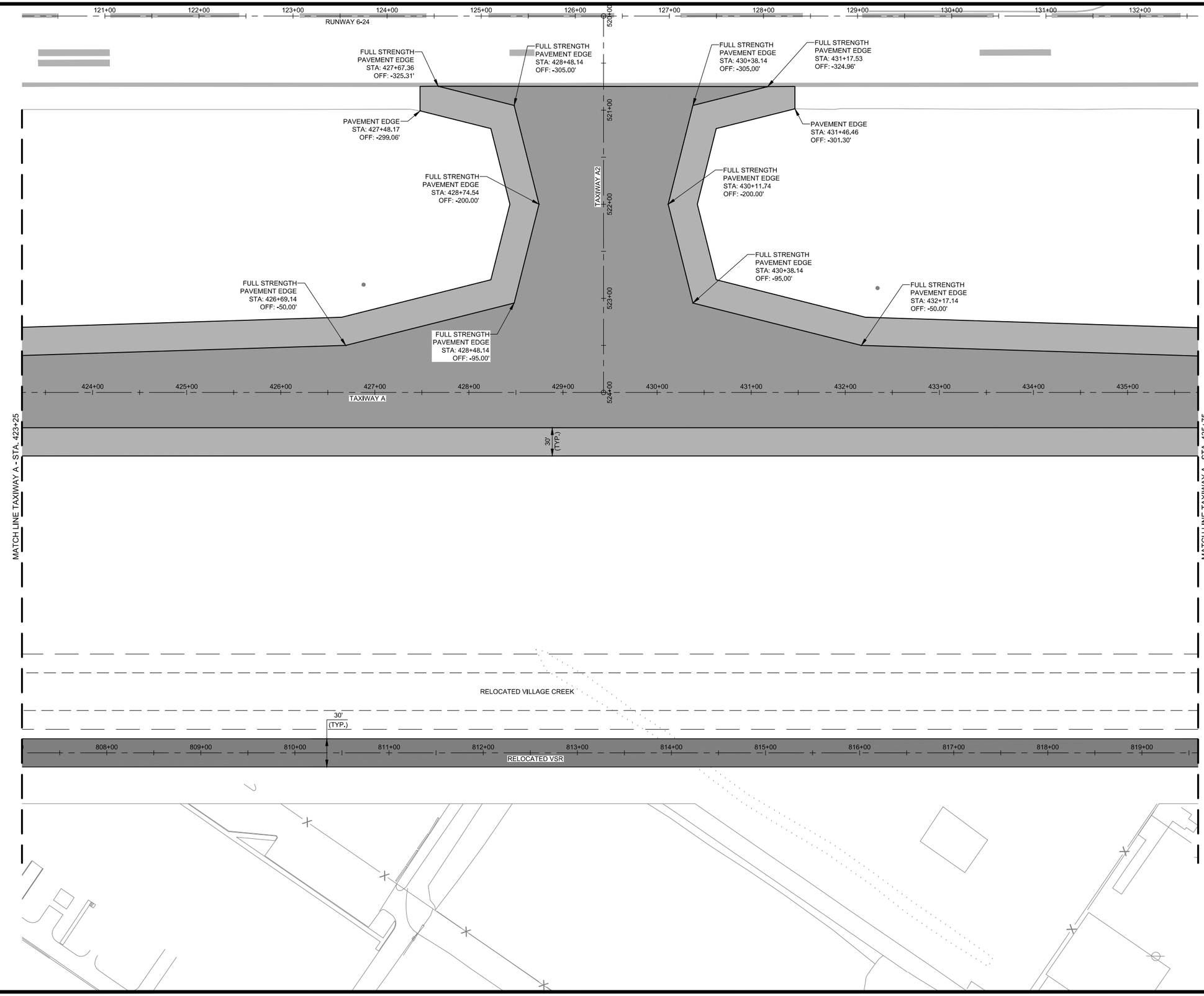
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SHEET CONTENTS
PROJECT GEOMETRICS - SHEET 2

SHEET NO.
C-082



LEGEND:

- ASPHALT FULL STRENGTH PAVEMENT
- ASPHALT SHOULDER PAVEMENT
- VARIABLE DEPTH MILLING (2" ASPHALT OVERLAY)
- VSR ASPHALT PAVEMENT

NOTE:

SEE SHEETS C-301 AND C-302 FOR PAVEMENT TYPICAL SECTIONS

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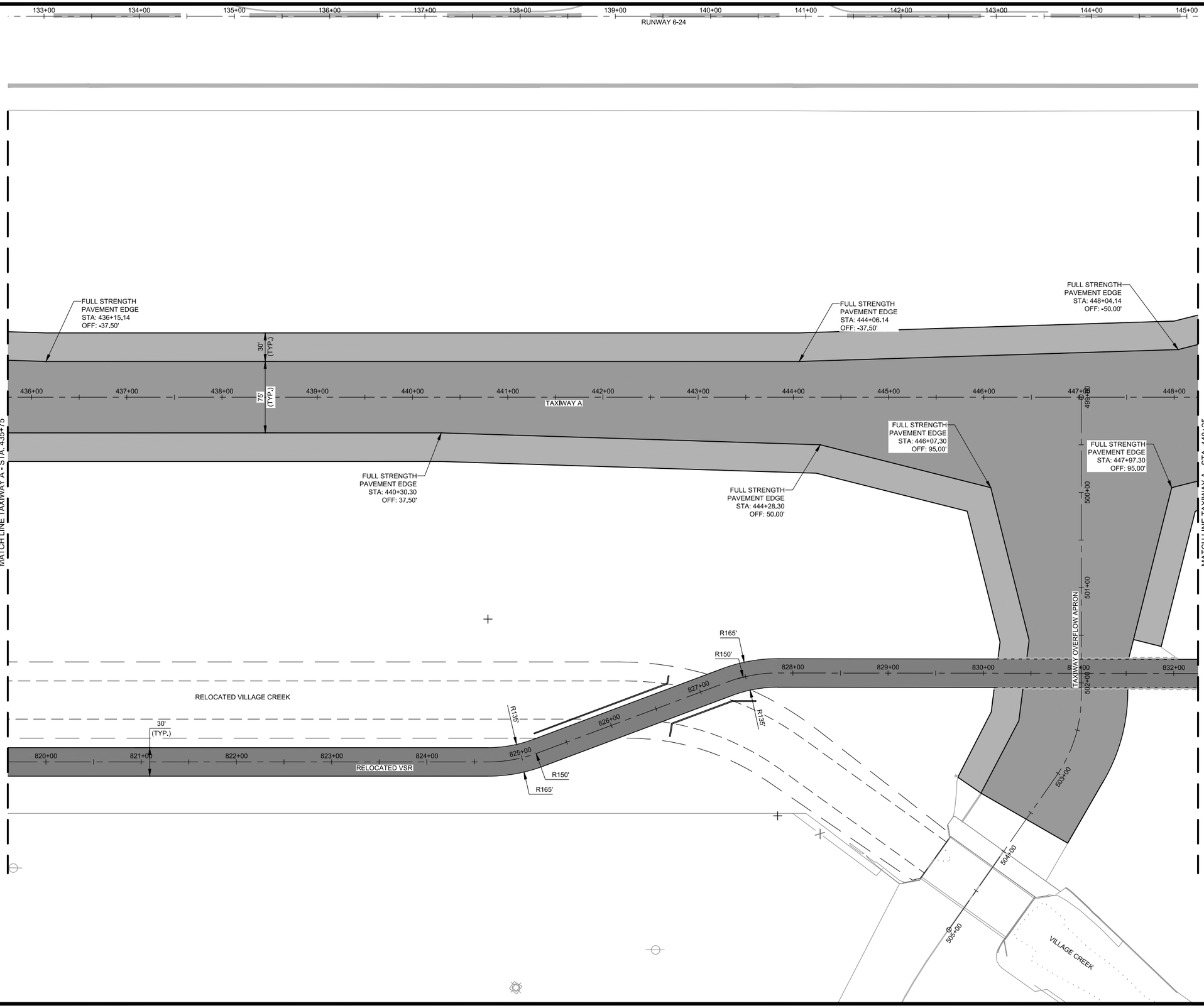
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SHEET CONTENTS

PROJECT GEOMETRICS - SHEET 3

SHEET NO.

C-083



LEGEND:

- ASPHALT FULL STRENGTH PAVEMENT
- ASPHALT SHOULDER PAVEMENT
- VARIABLE DEPTH MILLING (2" ASPHALT OVERLAY)
- VSR ASPHALT PAVEMENT

NOTE:

SEE SHEETS C-301 AND C-302 FOR PAVEMENT TYPICAL SECTIONS

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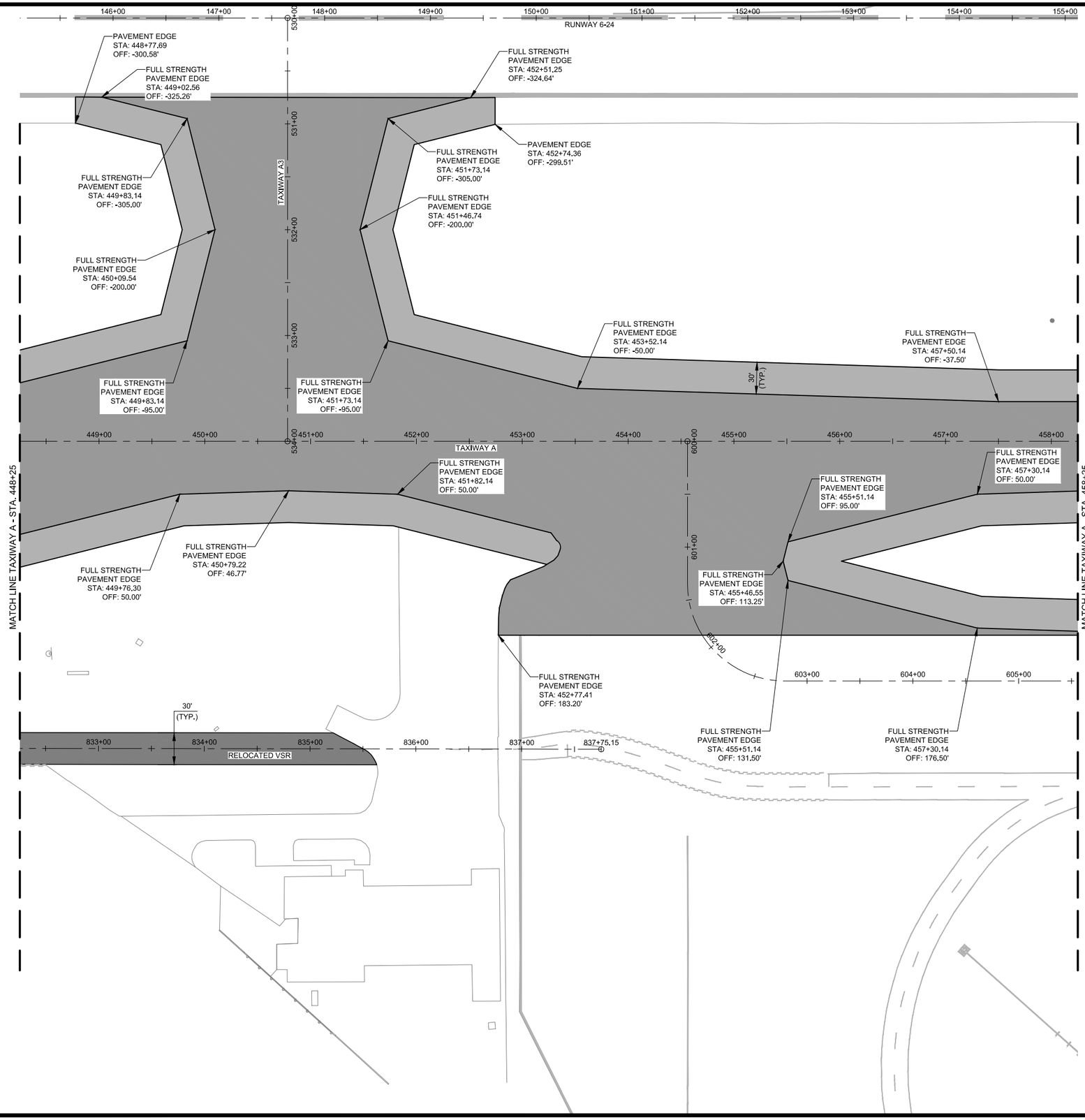
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SHEET CONTENTS

PROJECT GEOMETRICS - SHEET 4

SHEET NO.

C-084



LEGEND:

- ASPHALT FULL STRENGTH PAVEMENT
- ASPHALT SHOULDER PAVEMENT
- VARIABLE DEPTH MILLING (2" ASPHALT OVERLAY)
- VSR ASPHALT PAVEMENT

NOTE:

SEE SHEETS C-301 AND C-302 FOR PAVEMENT TYPICAL SECTIONS

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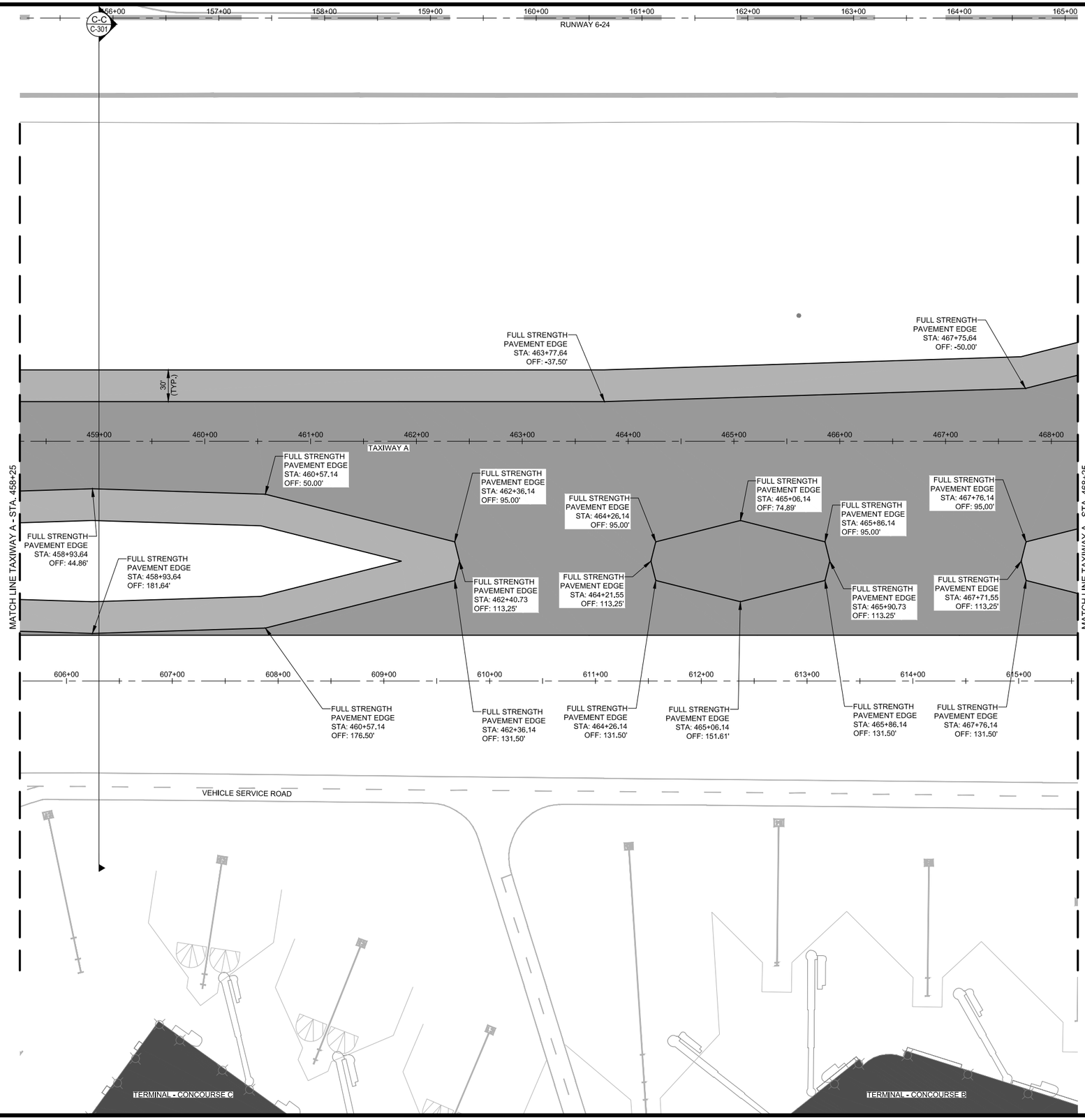
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SHEET CONTENTS

PROJECT GEOMETRICS - SHEET 5

SHEET NO.

C-085



LEGEND:

- ASPHALT FULL STRENGTH PAVEMENT
- ASPHALT SHOULDER PAVEMENT
- VARIABLE DEPTH MILLING (2" ASPHALT OVERLAY)
- VSR ASPHALT PAVEMENT

NOTE:

SEE SHEETS C-301 AND C-302 FOR PAVEMENT TYPICAL SECTIONS

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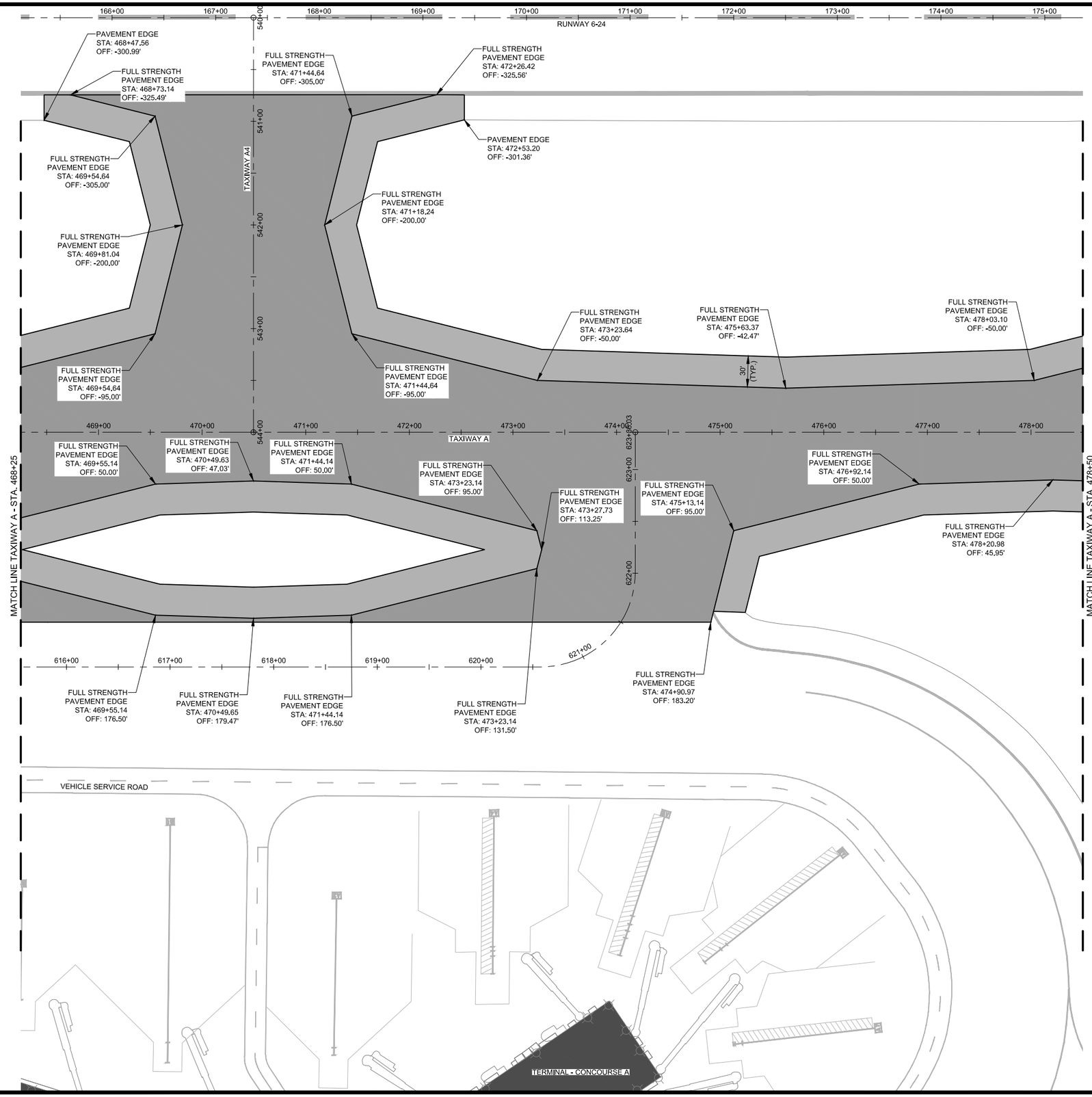
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SHEET CONTENTS

PROJECT GEOMETRICS - SHEET 6

SHEET NO.

C-086



LEGEND:

- ASPHALT FULL STRENGTH PAVEMENT
- ASPHALT SHOULDER PAVEMENT
- VARIABLE DEPTH MILLING (2" ASPHALT OVERLAY)
- VSR ASPHALT PAVEMENT

NOTE:

SEE SHEETS C-301 AND C-302 FOR PAVEMENT TYPICAL SECTIONS

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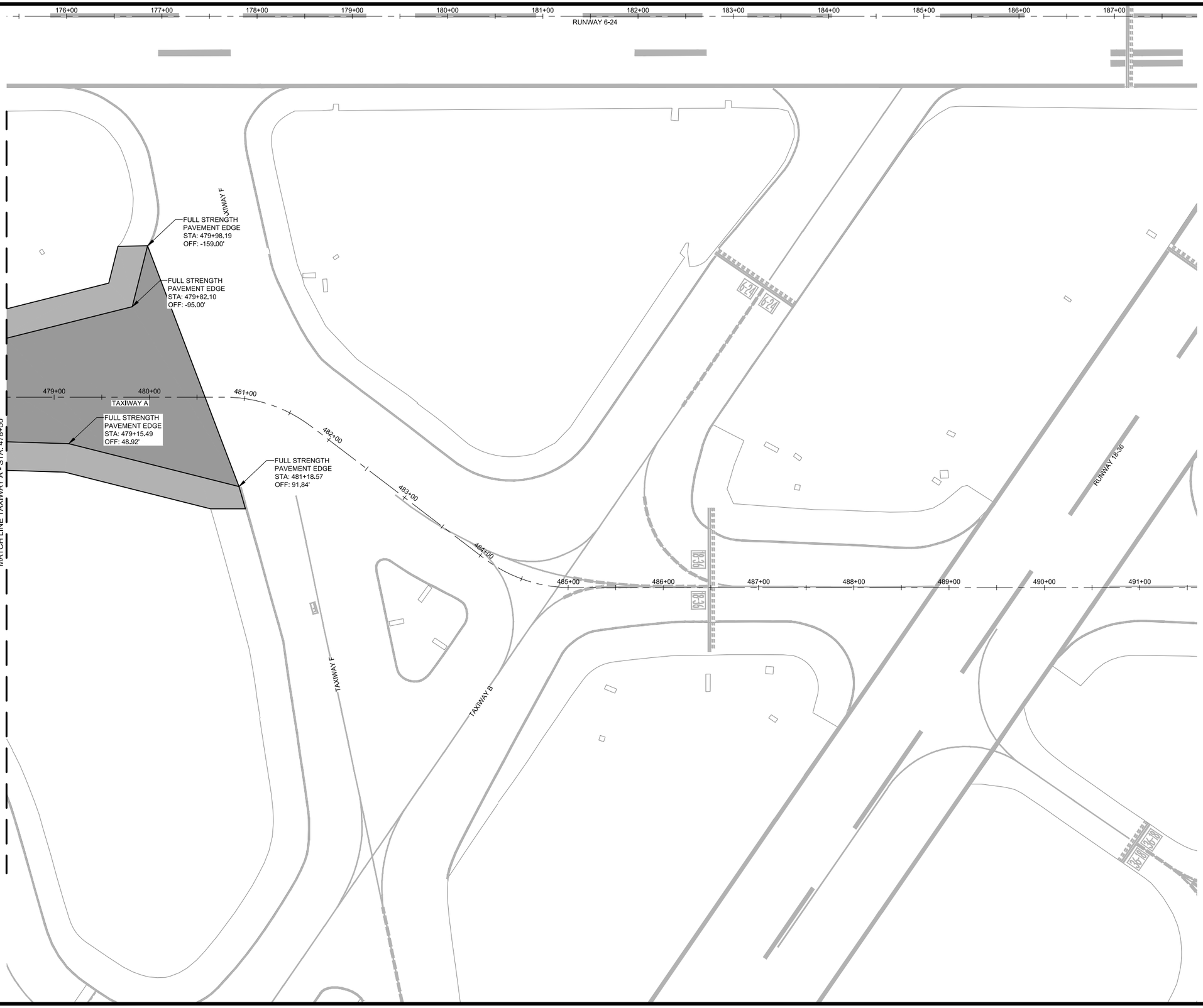
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SHEET CONTENTS

PROJECT GEOMETRICS - SHEET 7

SHEET NO.

C-087



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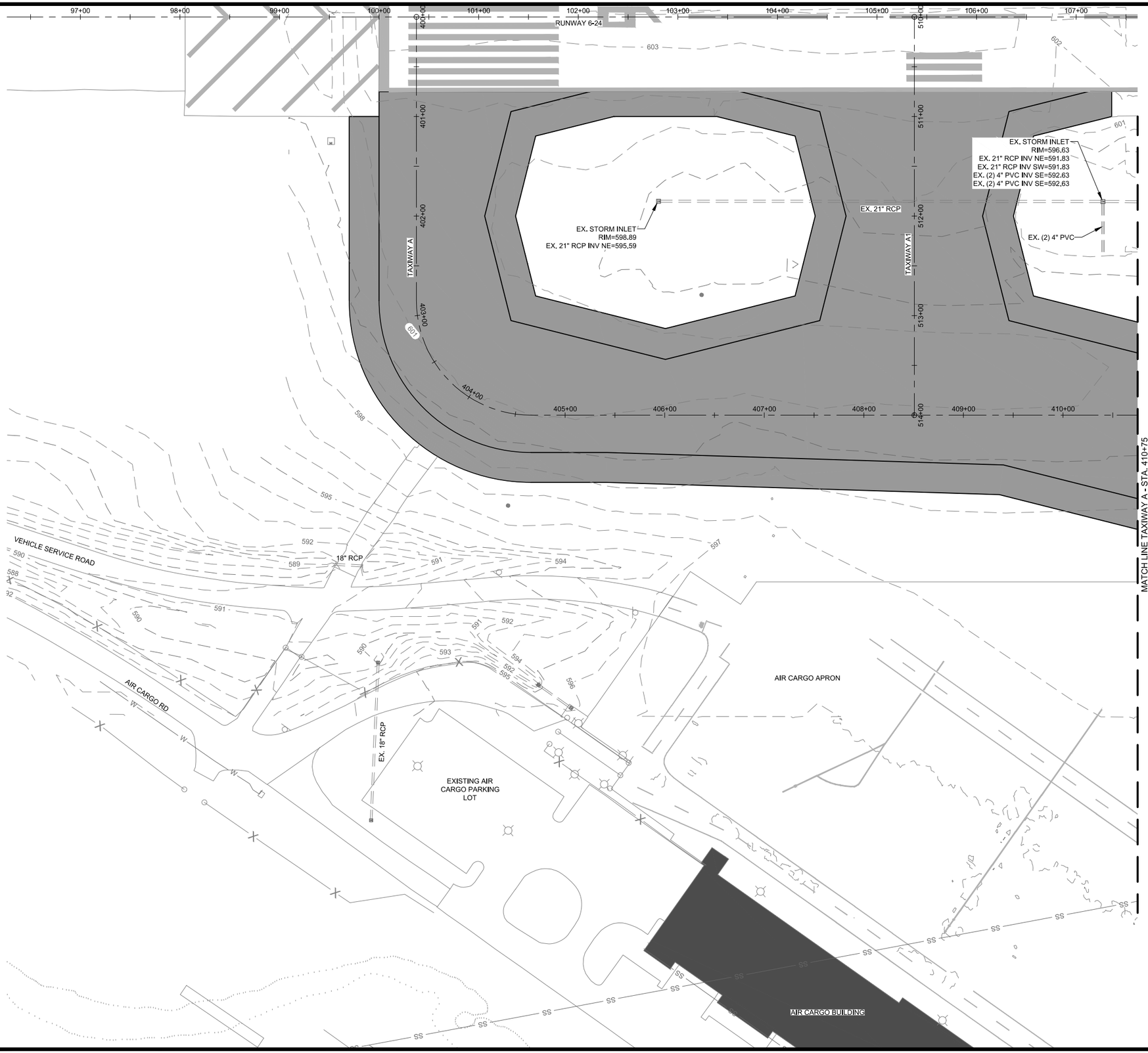
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SHEET CONTENTS

PROJECT GEOMETRICS - SHEET 8

SHEET NO.

C-088



NOTE

1. EXISTING WATER AND SEWER LINES TO BE MAINTAINED AND PROTECTED DURING CONSTRUCTION. PORTIONS OF THESE LINES MAY BE REMOVED PRIOR TO CONSTRUCTION BY OTHERS. EXACT LIMITS OF UTILITY DEMOLITION AND/OR RELOCATION TO BE COORDINATED WITH UTILITY OWNERS.

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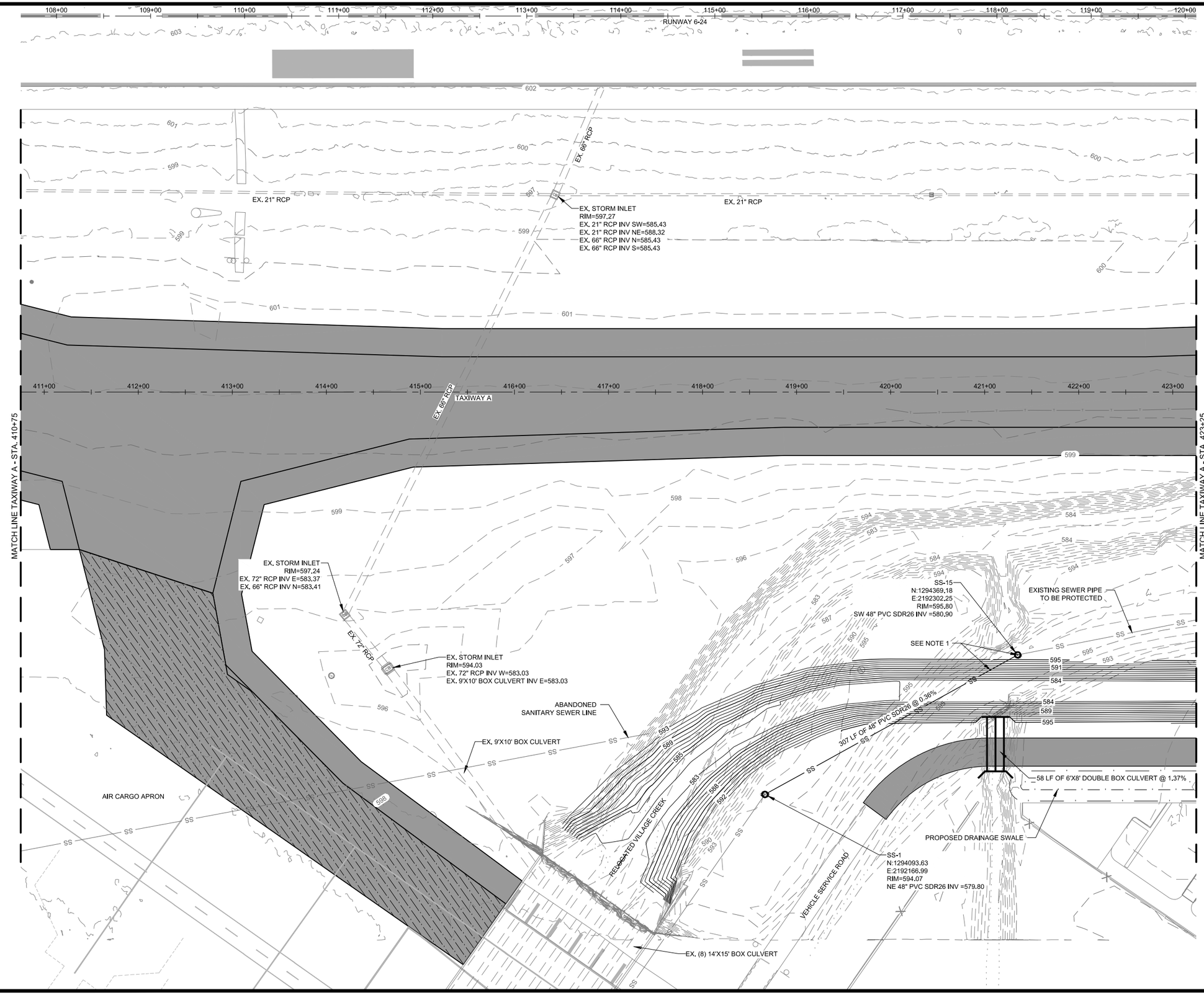
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SHEET CONTENTS

DRAINAGE AND UTILITY PLANS- SHEET 1

SHEET NO.

C-101



NOTE

1. EXISTING WATER AND SEWER LINES TO BE MAINTAINED AND PROTECTED DURING CONSTRUCTION. PORTIONS OF THESE LINES MAY BE REMOVED PRIOR TO CONSTRUCTION BY OTHERS. EXACT LIMITS OF UTILITY DEMOLITION AND/OR RELOCATION TO BE COORDINATED WITH UTILITY OWNERS.

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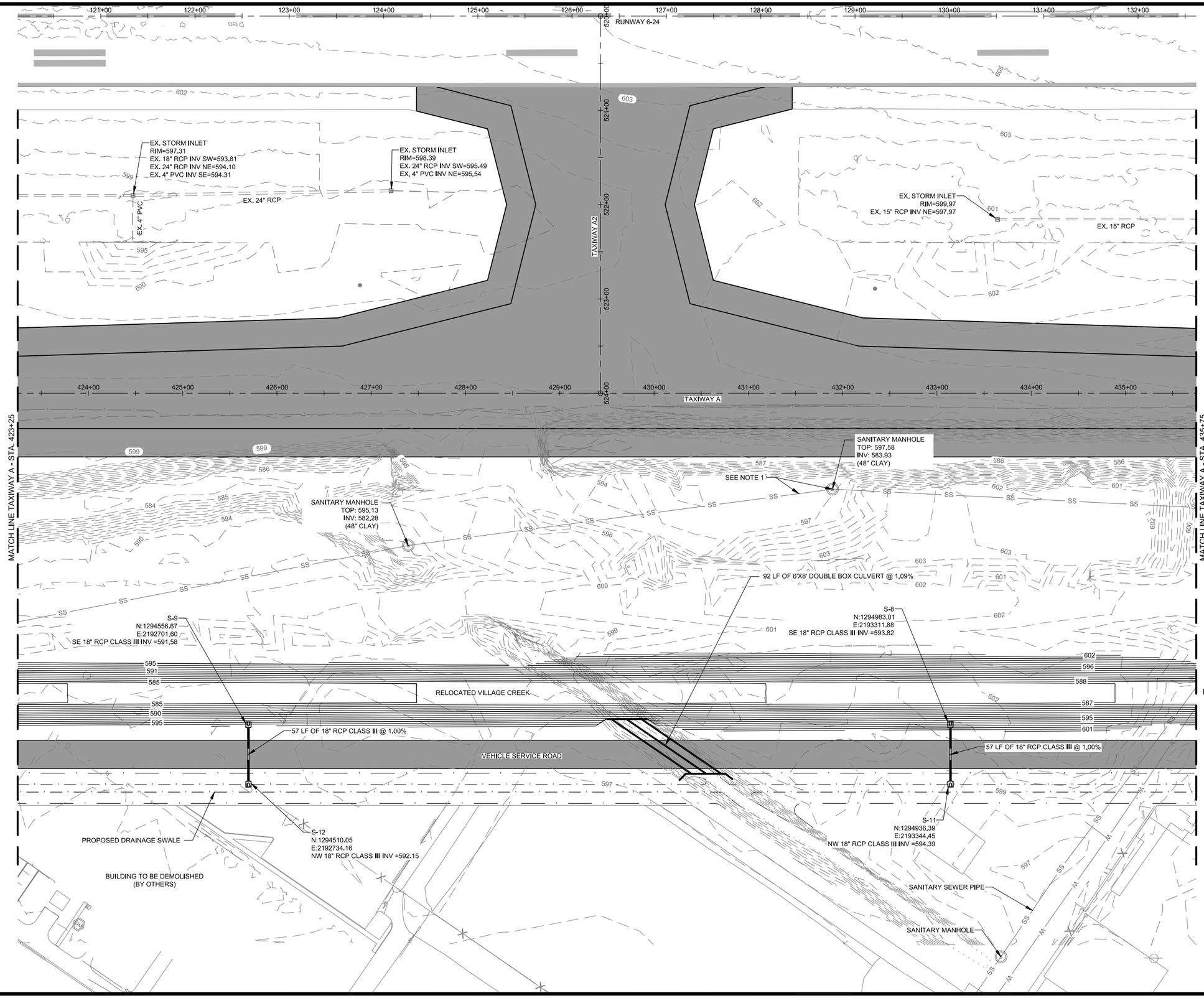
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SHEET CONTENTS

DRAINAGE AND UTILITY PLANS - SHEET 2

SHEET NO.

C-102



NOTE

1. EXISTING WATER AND SEWER LINES TO BE MAINTAINED AND PROTECTED DURING CONSTRUCTION. PORTIONS OF THESE LINES MAY BE REMOVED PRIOR TO CONSTRUCTION BY OTHERS. EXACT LIMITS OF UTILITY DEMOLITION AND/OR RELOCATION TO BE COORDINATED WITH UTILITY OWNERS.

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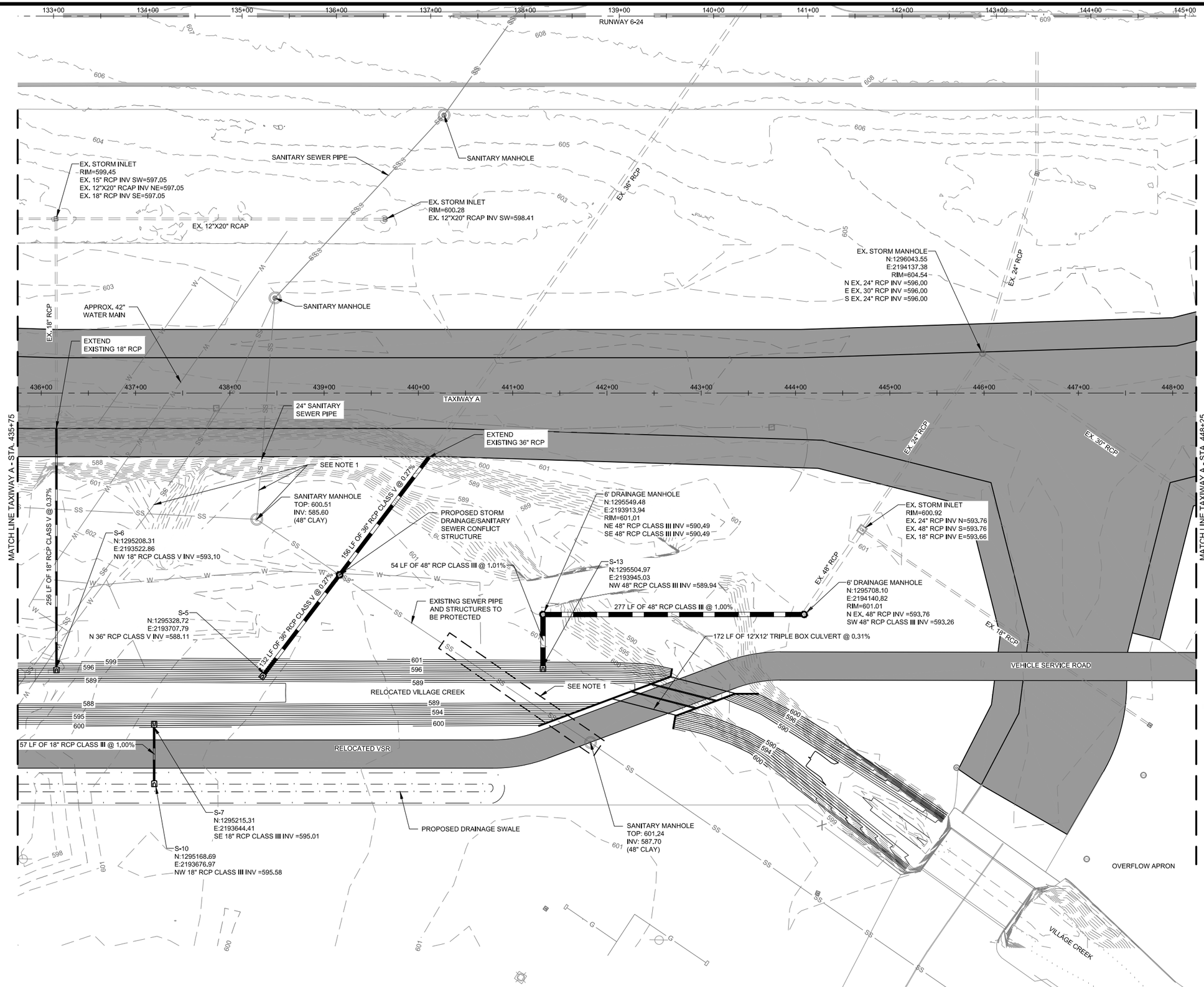
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SHEET CONTENTS

DRAINAGE AND UTILITY PLANS - SHEET 3

SHEET NO.

C-103



NOTE

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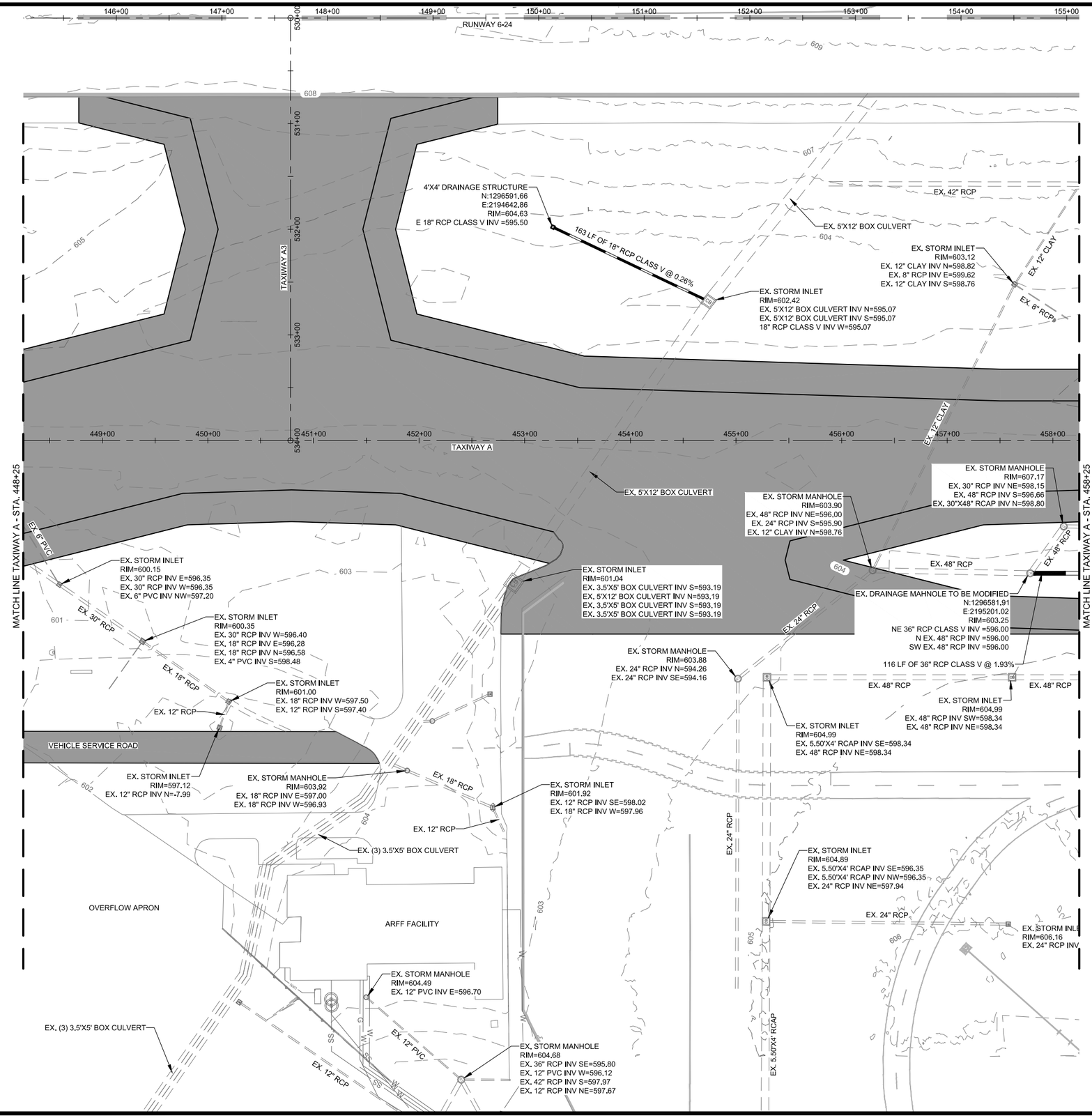
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DRAINAGE AND UTILITY PLANS - SHEET 4

SHEET NO.

C-104



NOTE

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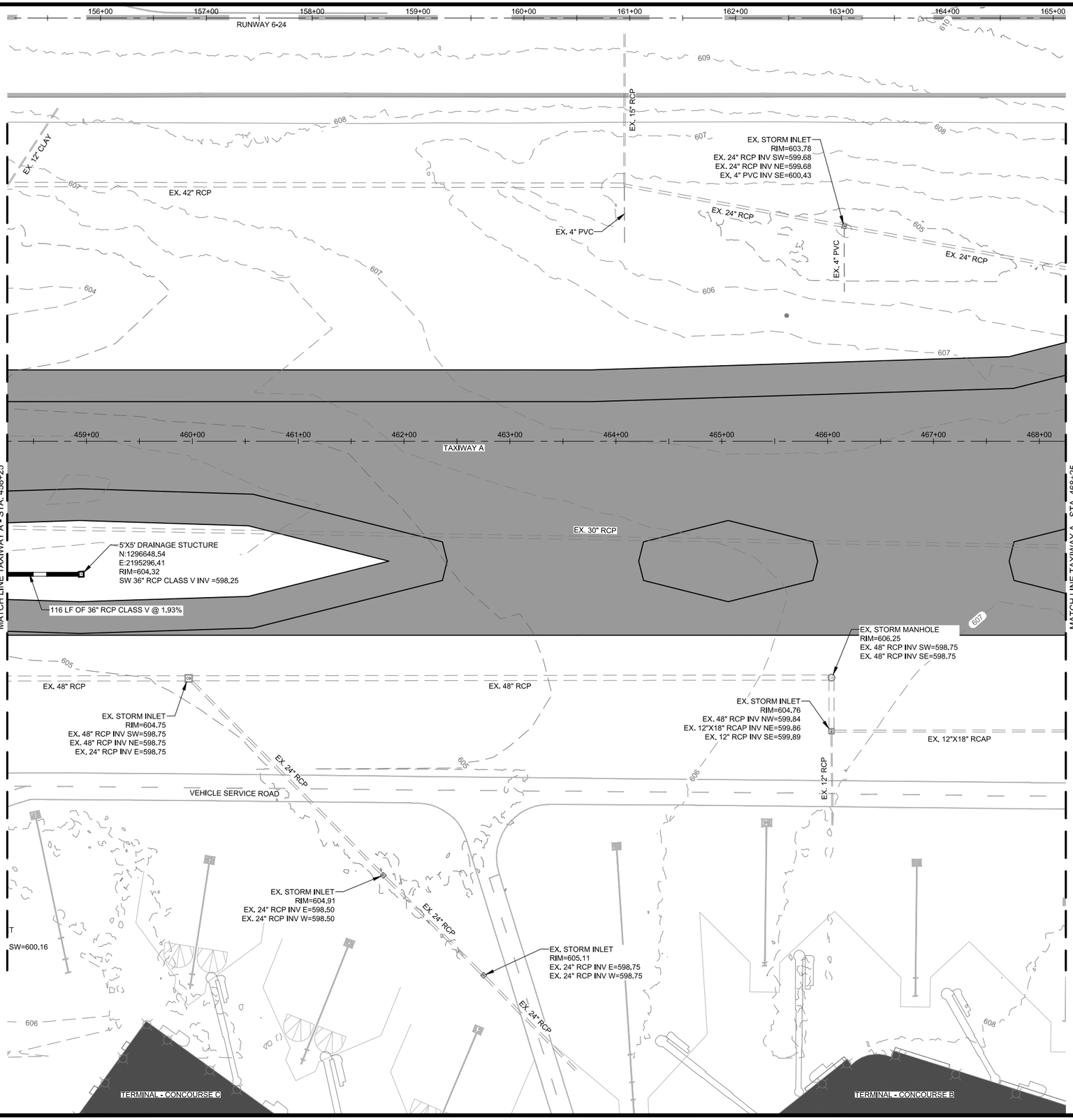
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DRAINAGE AND UTILITY PLANS - SHEET 5

SHEET NO.

C-105



NOTE

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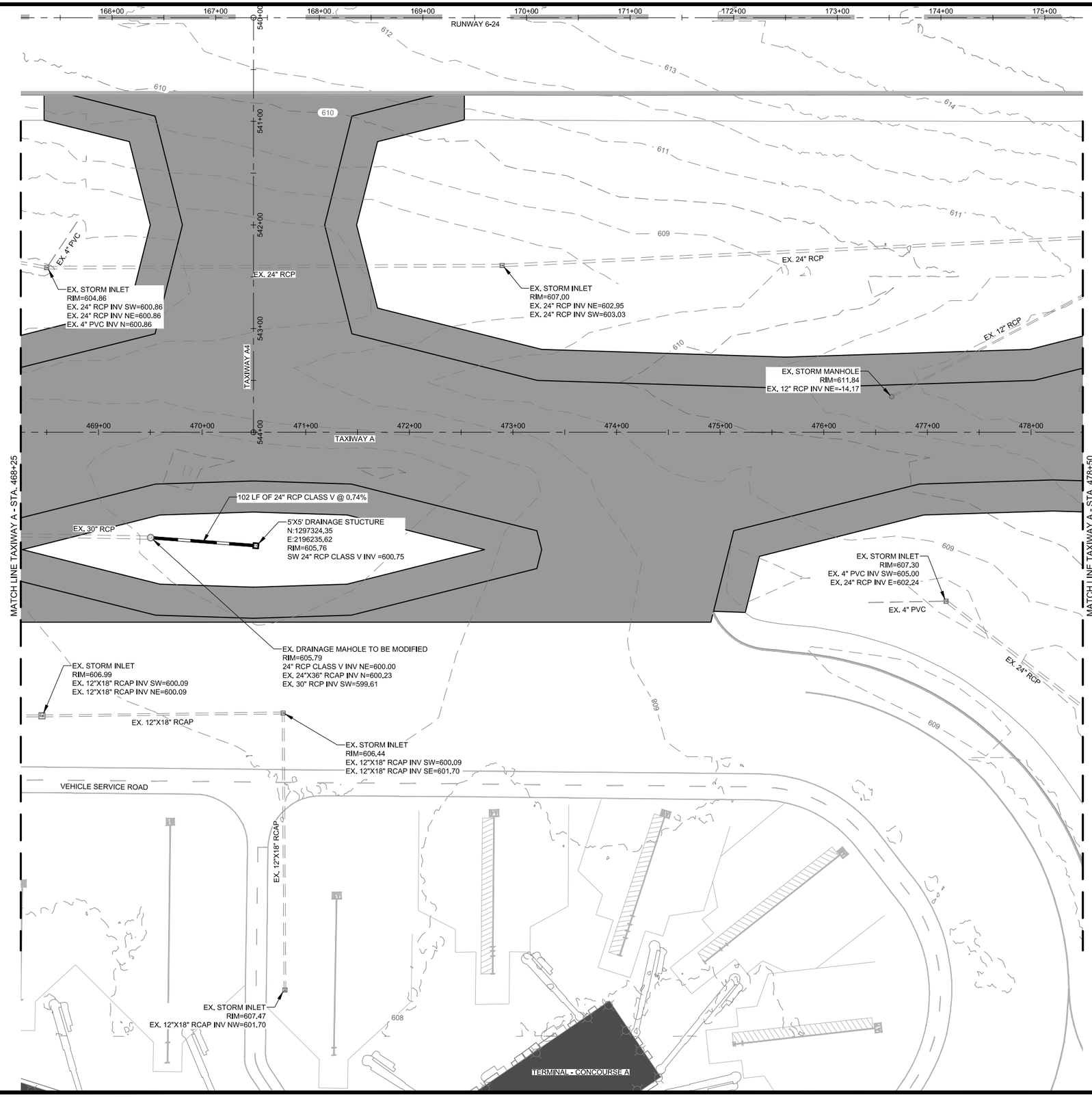
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DRAINAGE AND UTILITY PLANS - SHEET 6

SHEET NO.

C-106



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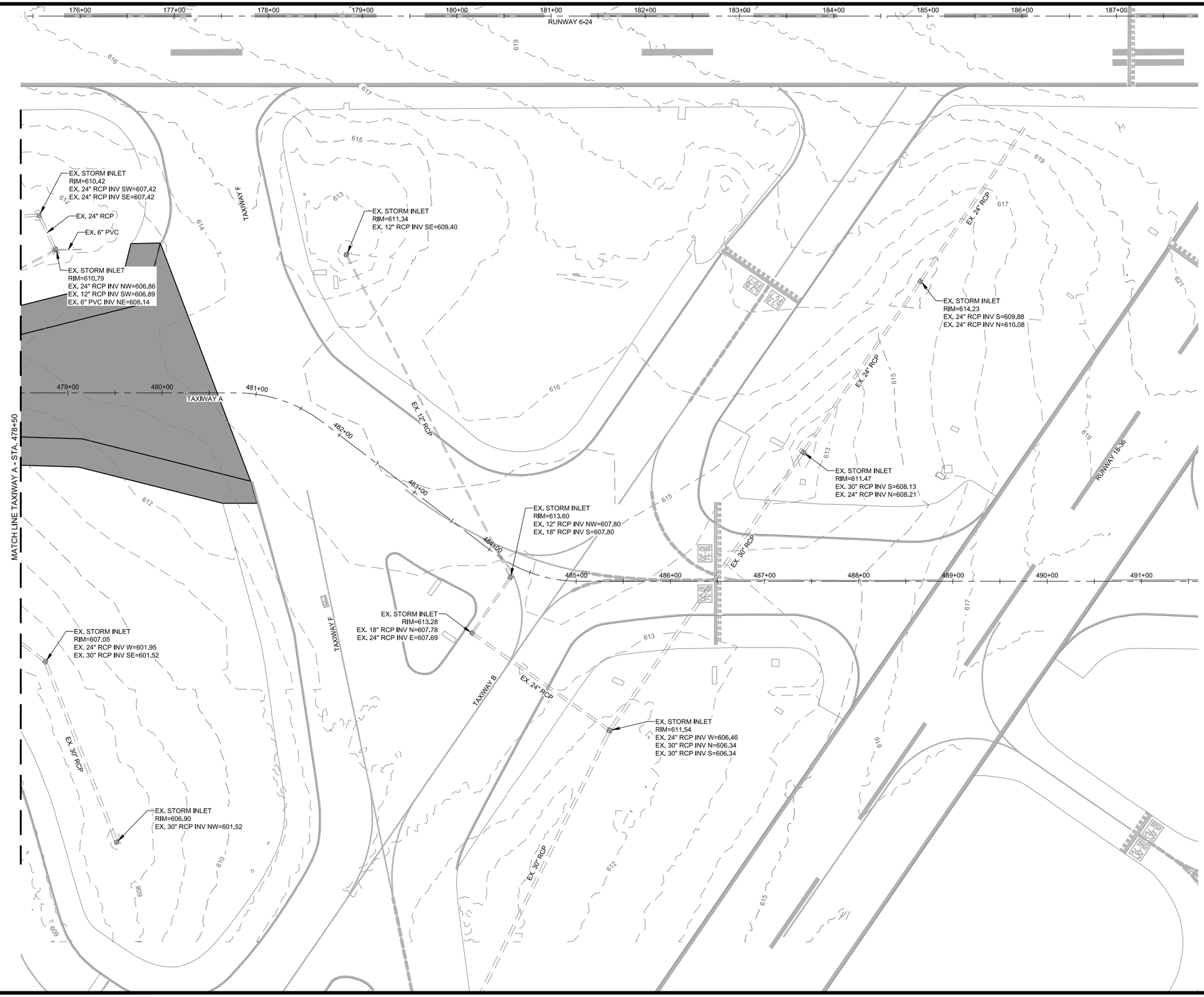
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DRAINAGE AND UTILITY PLANS - SHEET 7

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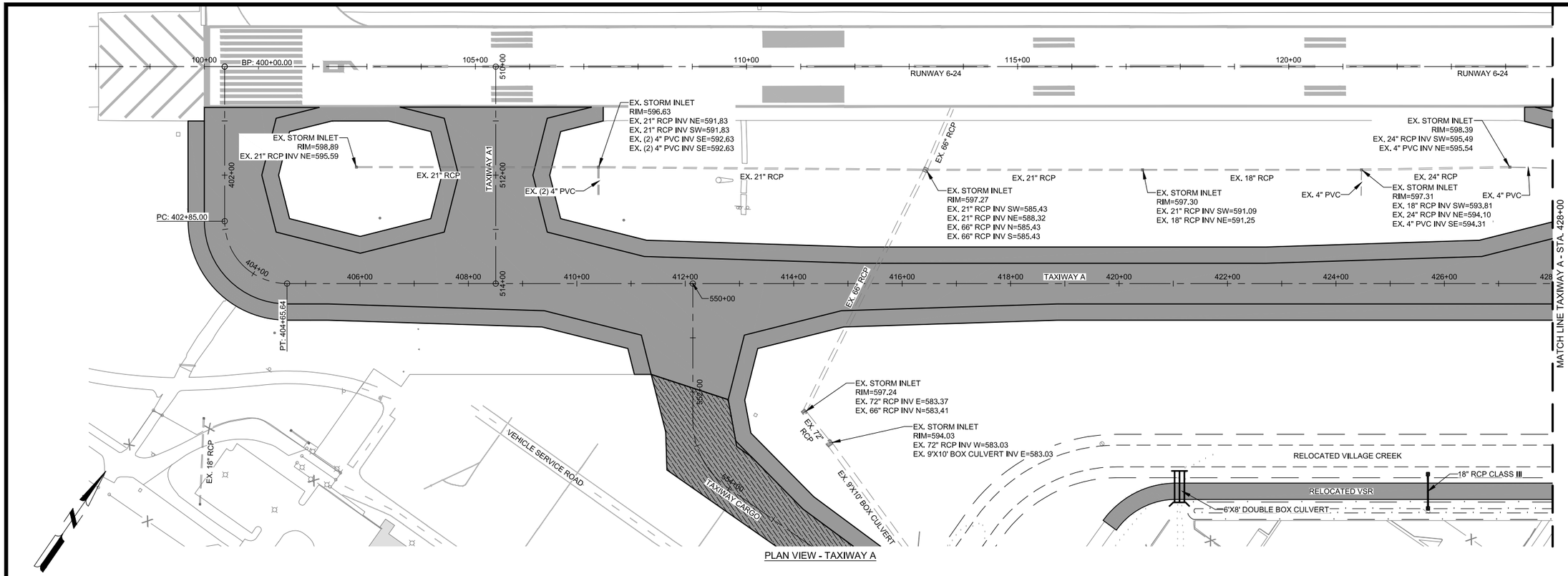
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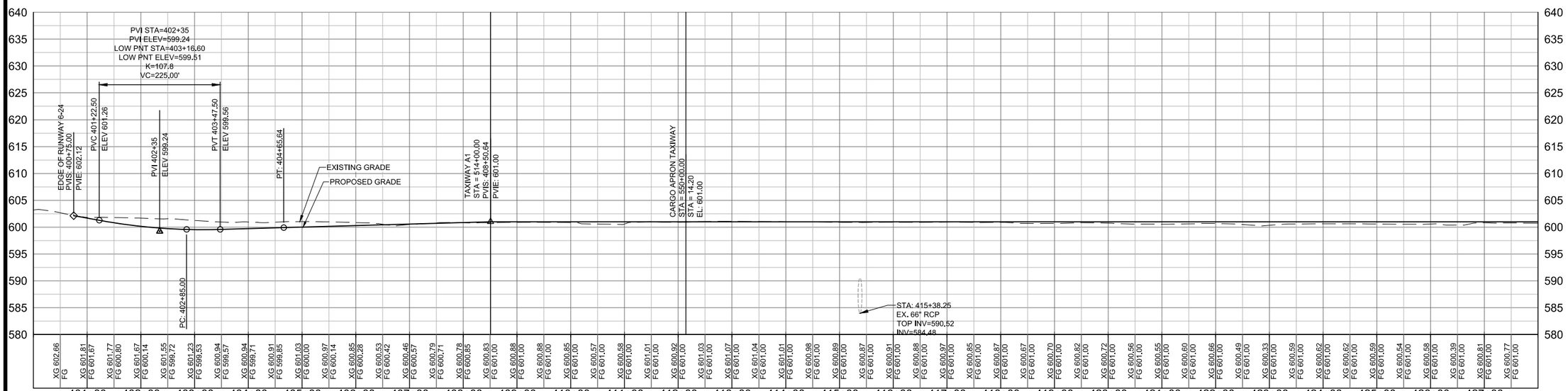
DRAINAGE AND UTILITY PLANS - SHEET 8

SHEET NO.

C-108



PLAN VIEW - TAXIWAY A



PROFILE VIEW - TAXIWAY A

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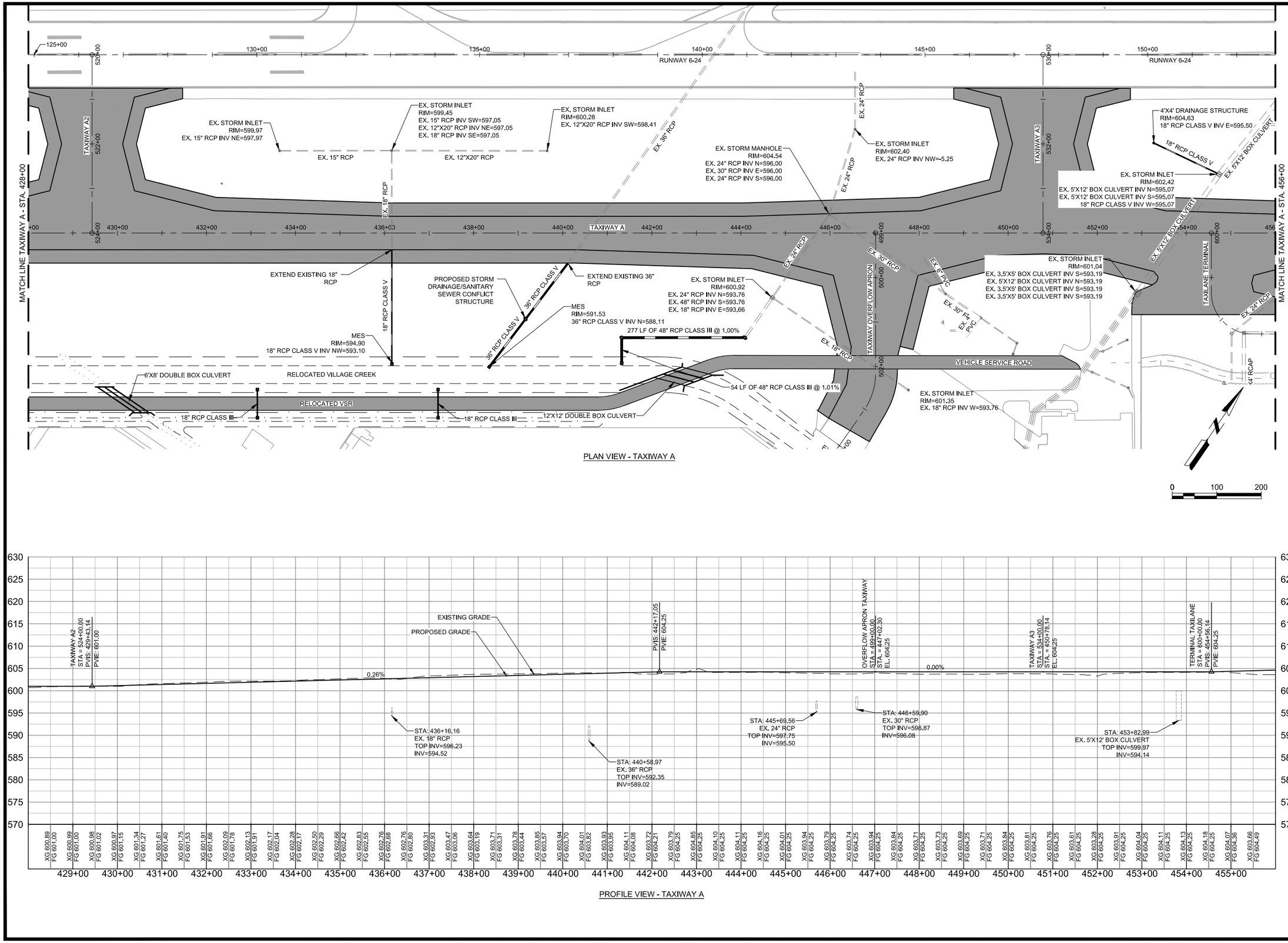
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TAXIWAY A PLAN AND PROFILE - SHEET 1

SHEET NO.

C-201



PLAN VIEW - TAXIWAY A

PROFILE VIEW - TAXIWAY A

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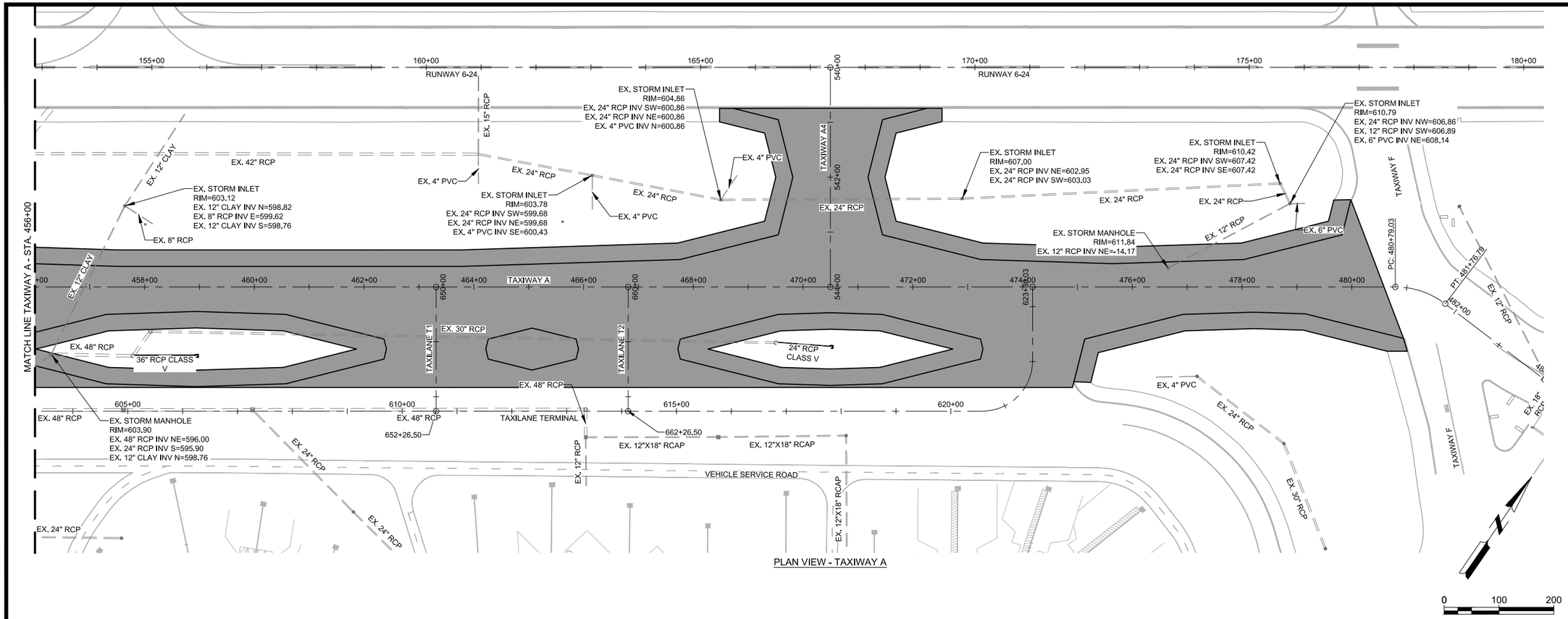
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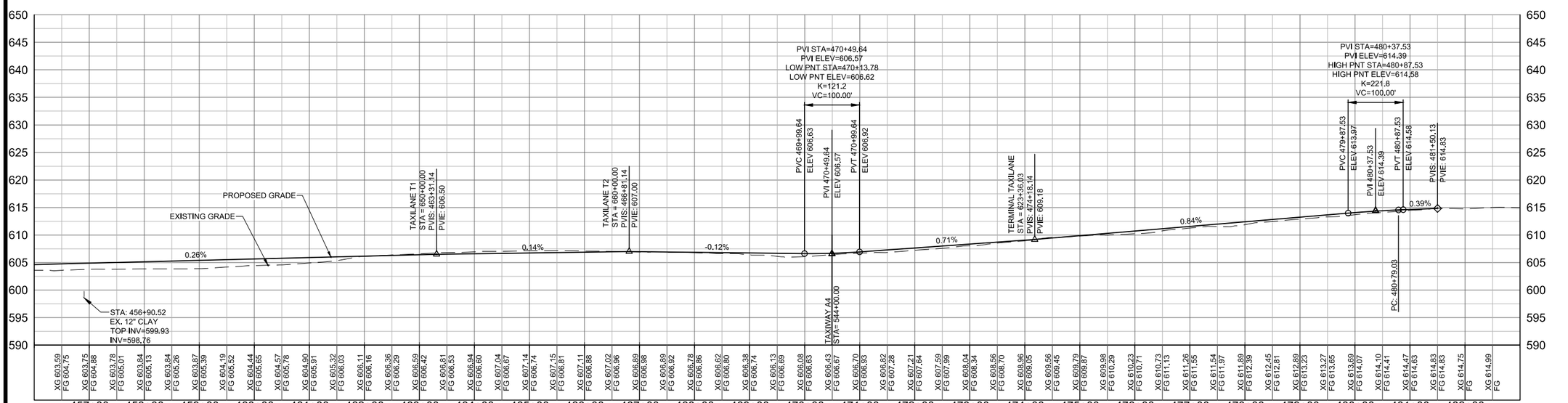
TAXIWAY A PLAN AND PROFILE - SHEET 2

SHEET NO.

C-202



PLAN VIEW - TAXIWAY A



PROFILE VIEW - TAXIWAY A

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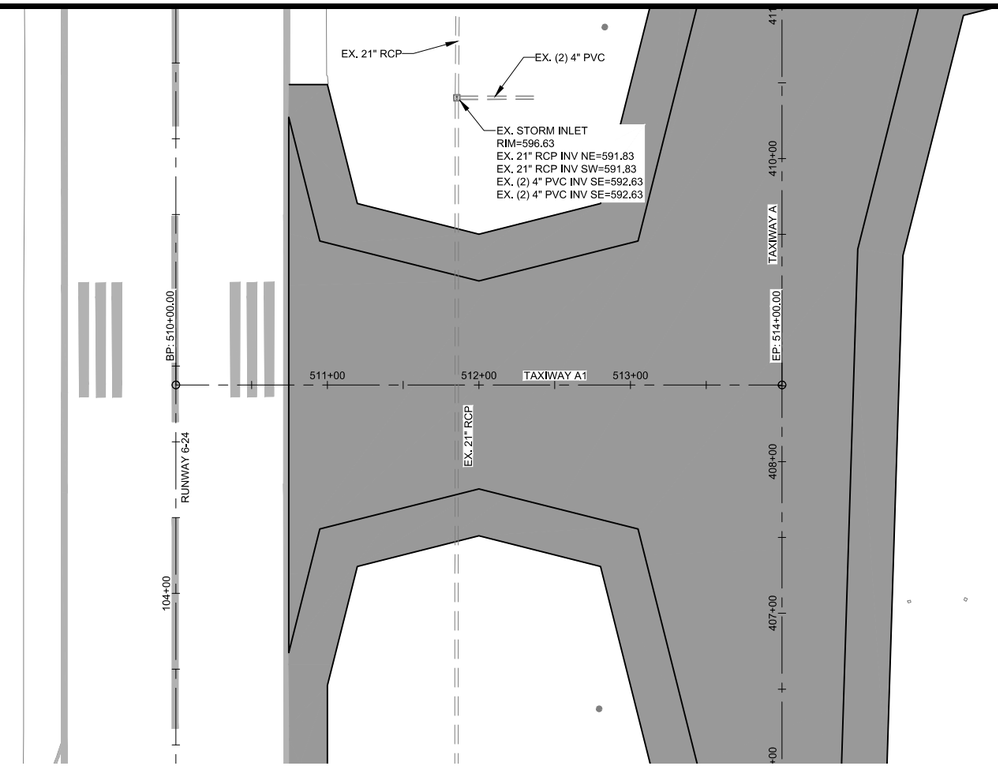
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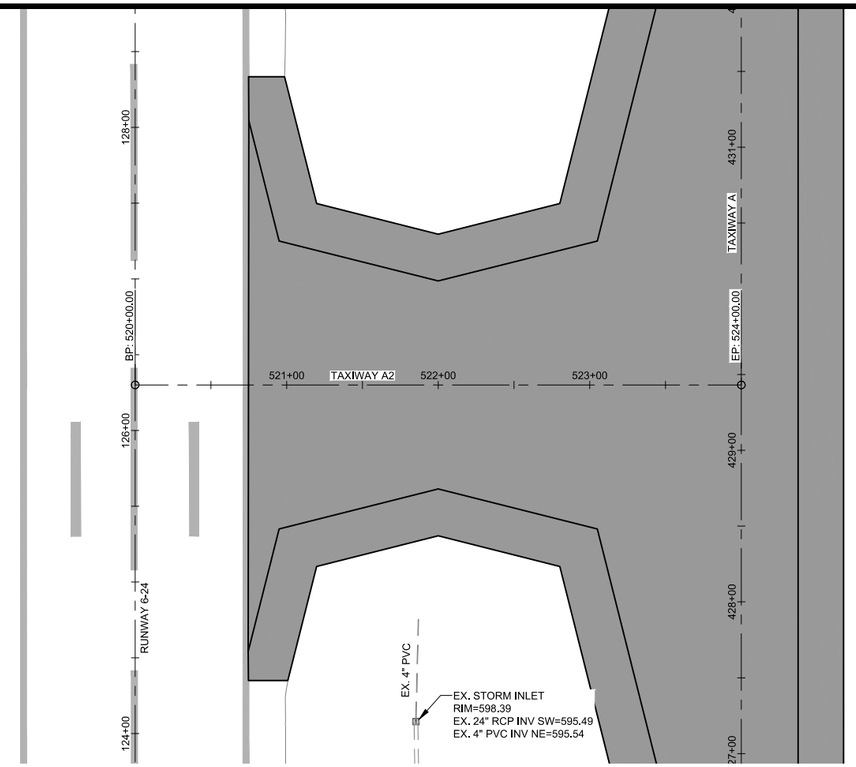
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TAXIWAY A PLAN AND PROFILE - SHEET 3

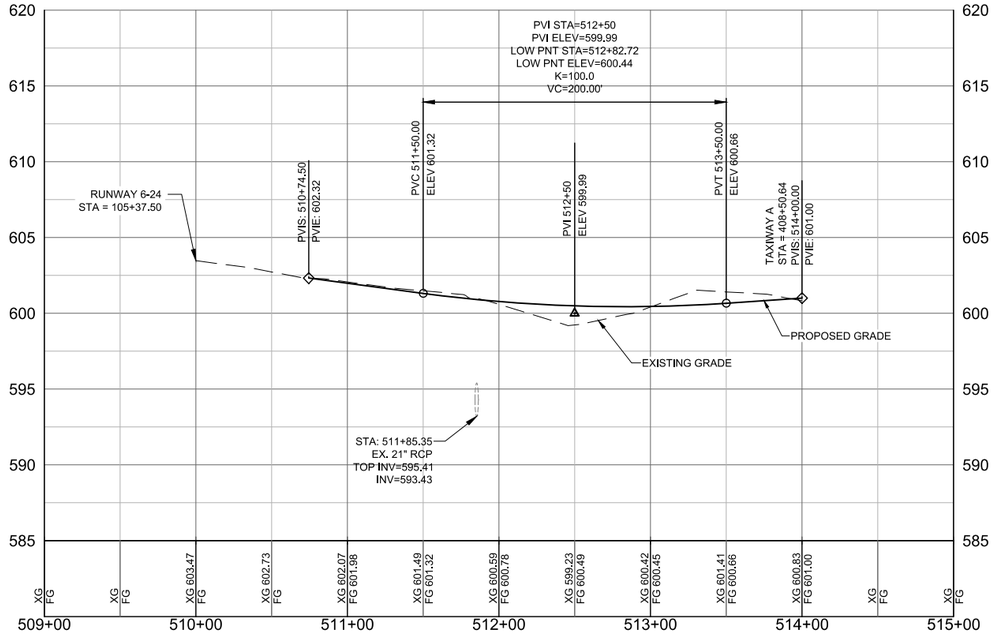
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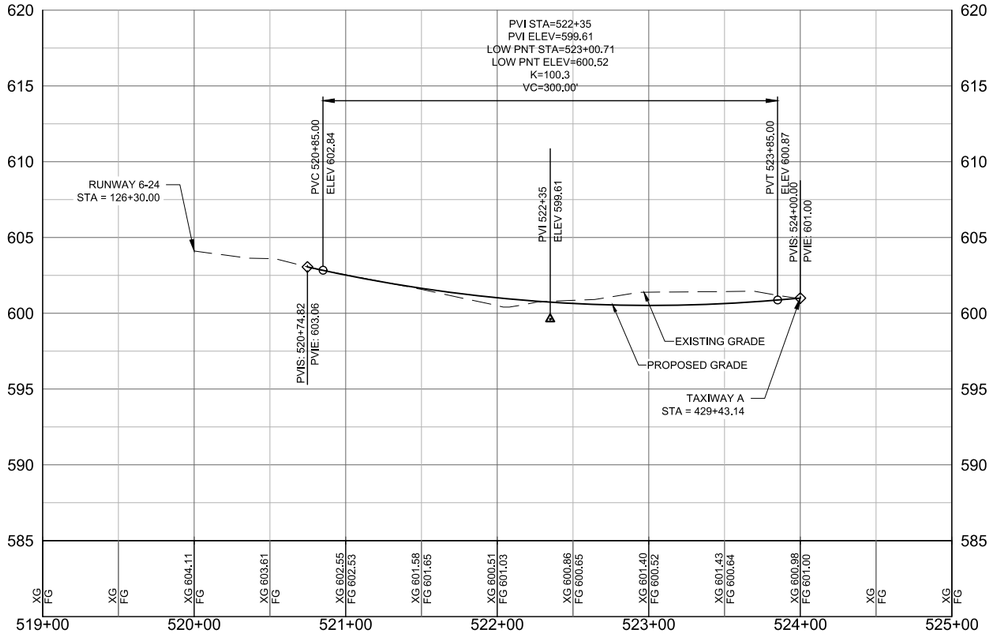
PLAN VIEW - TAXIWAY A1



PLAN VIEW - TAXIWAY A2



PROFILE VIEW - TAXIWAY A1



PROFILE VIEW - TAXIWAY A2

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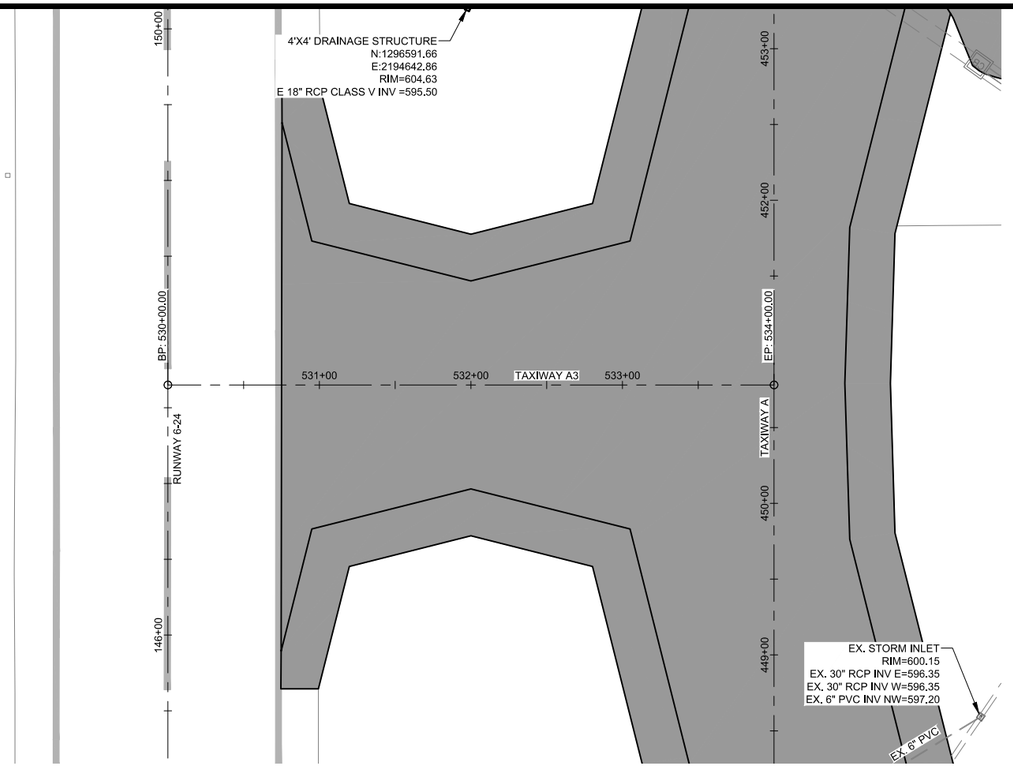
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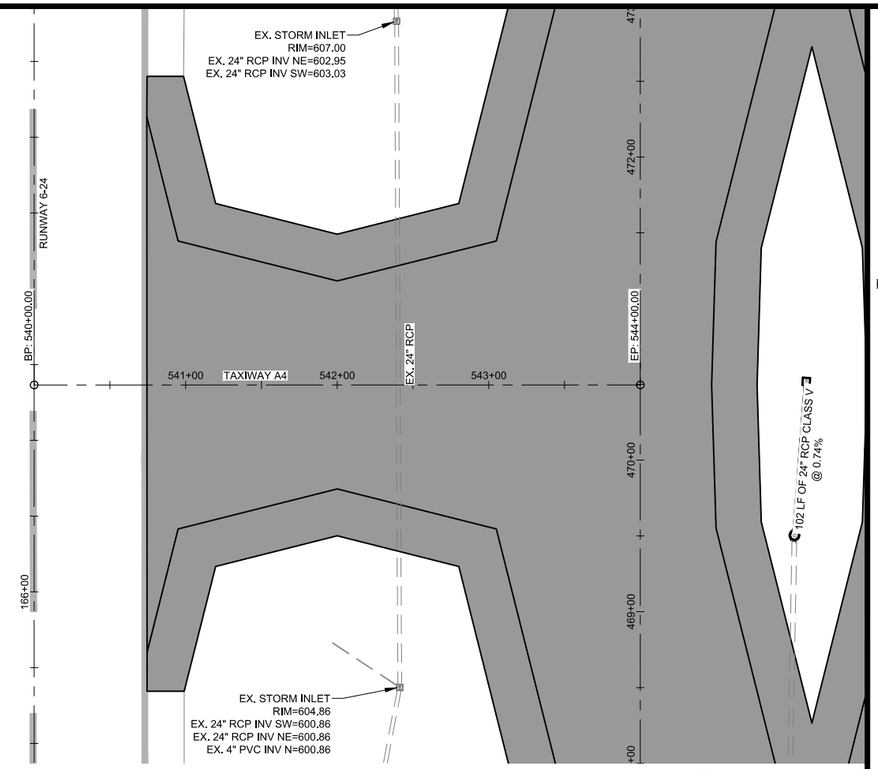
TAXIWAYS A1 & A2 PLAN AND PROFILE

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C-204

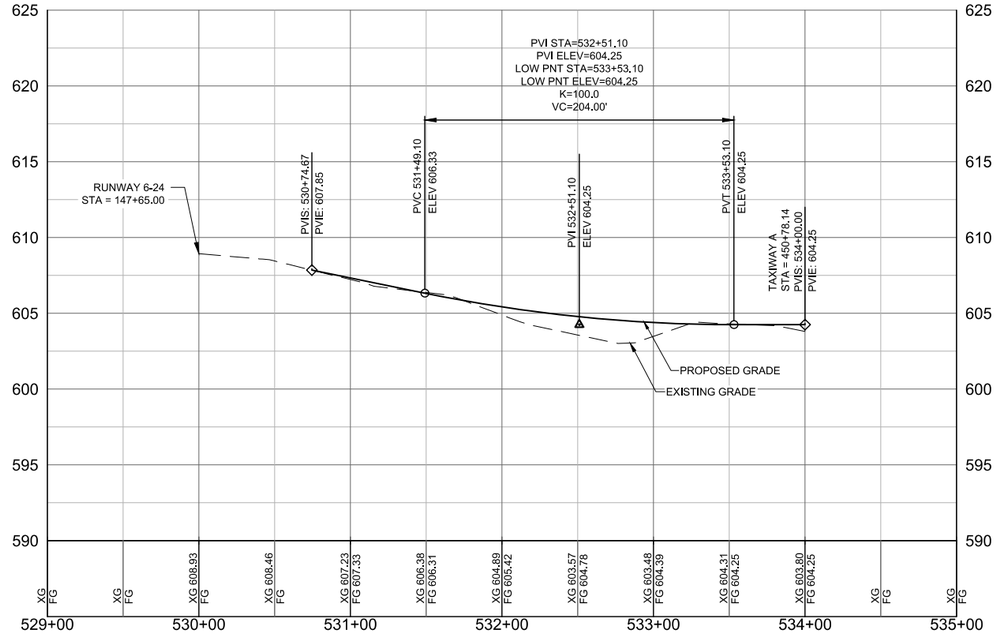


PLAN VIEW - TAXIWAY A3

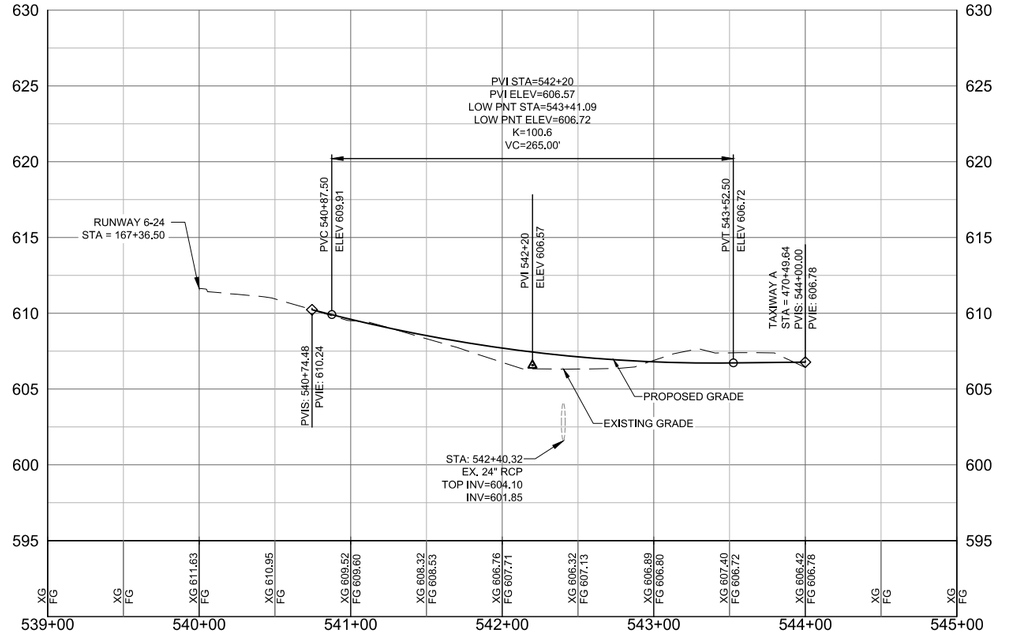


PLAN VIEW - TAXIWAY A4

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PROFILE VIEW - TAXIWAY A3



PROFILE VIEW - TAXIWAY A4

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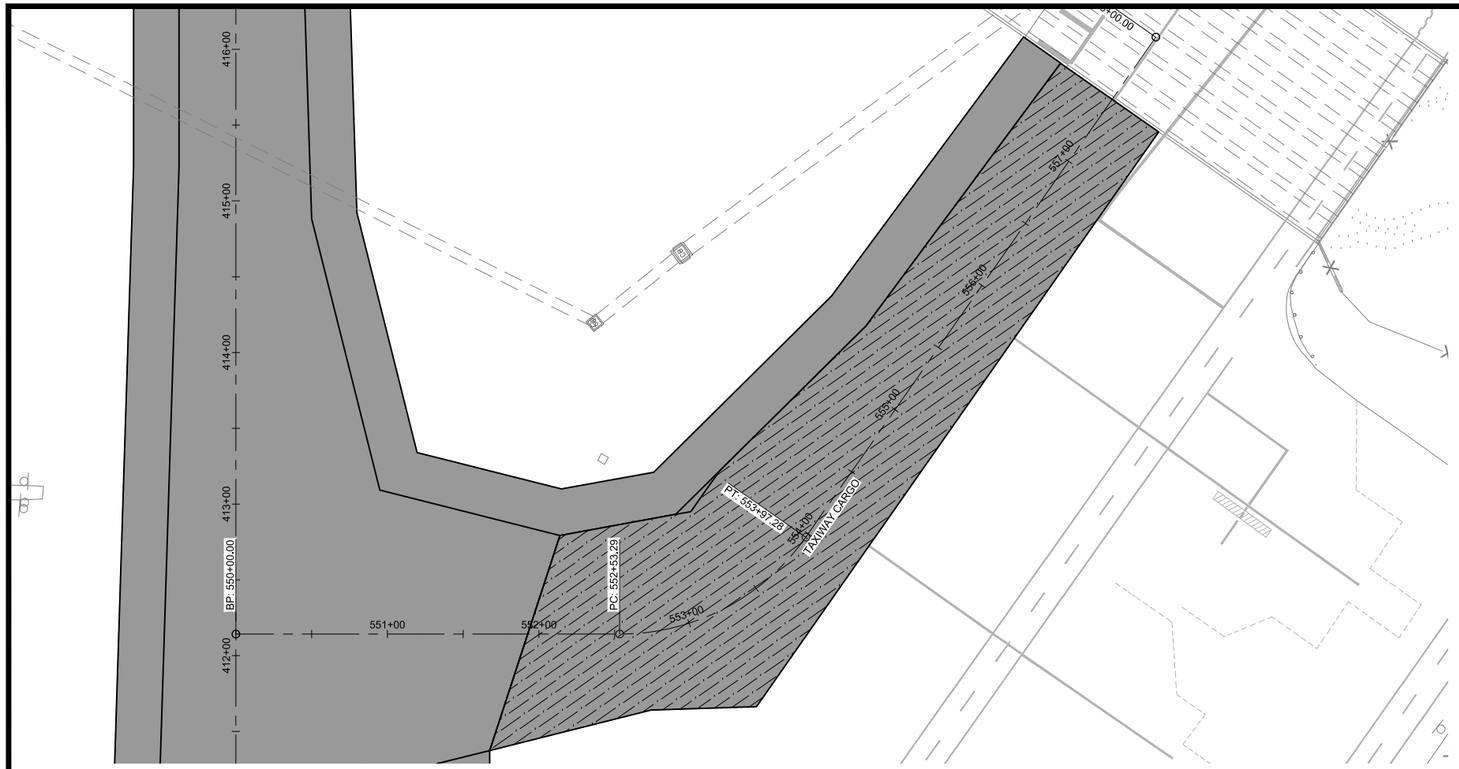
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TAXIWAYS A3 & A4 PLAN AND PROFILE

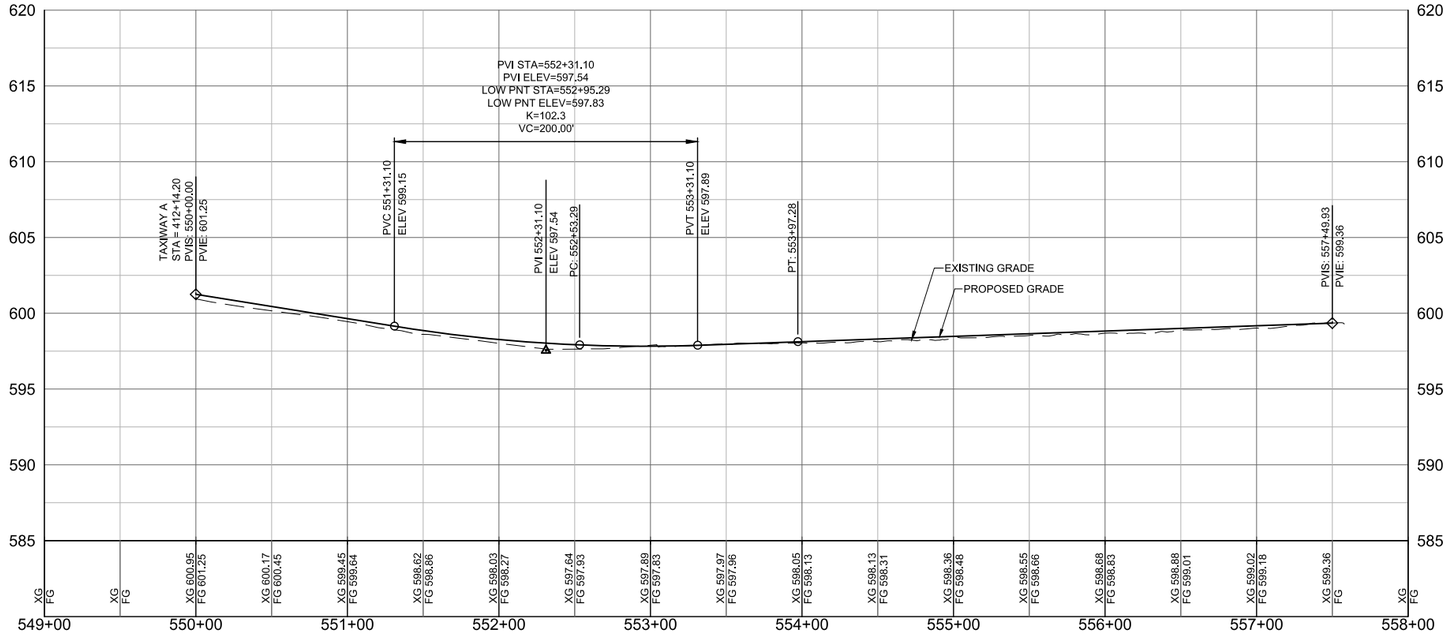
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PLAN VIEW - TAXIWAY CARGO

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PROFILE VIEW - TAXIWAY CARGO

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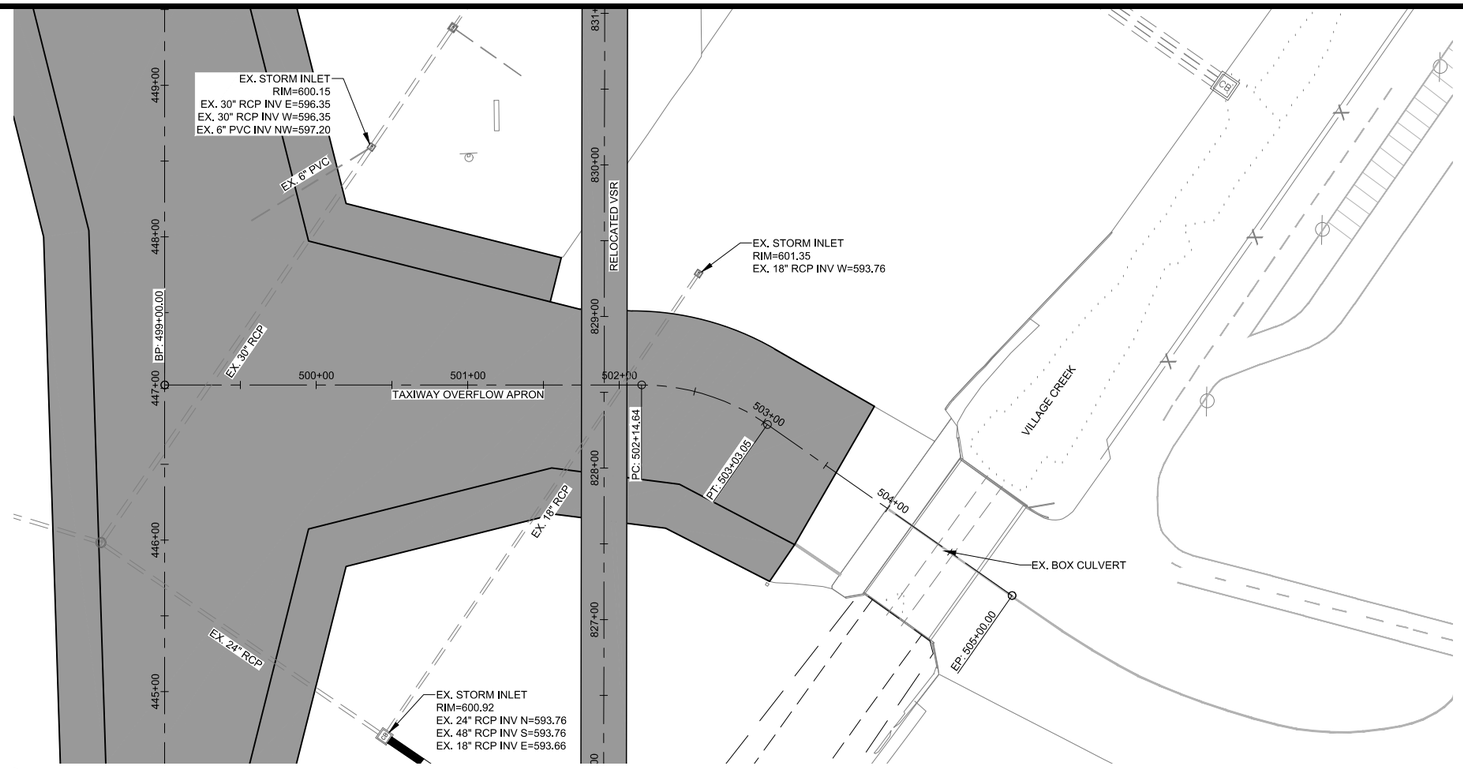
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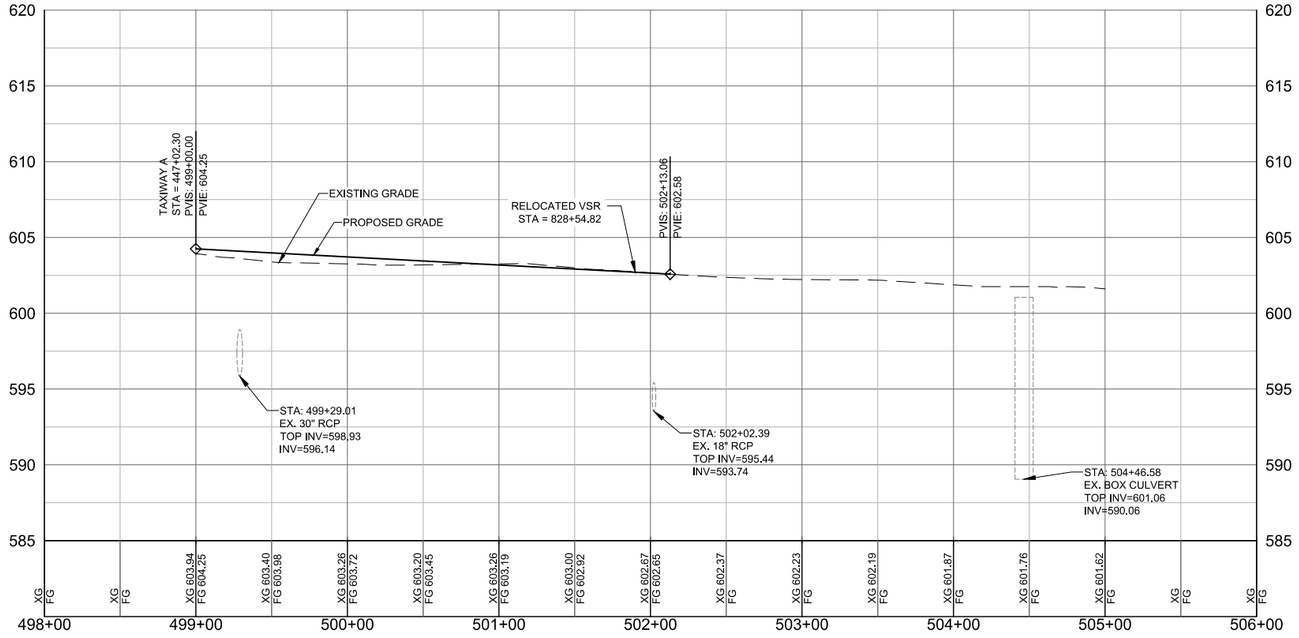
TAXIWAY CARGO PLAN AND PROFILE

SHEET NO.

C-206



PLAN VIEW - TAXIWAY OVERFLOW APRON



PROFILE VIEW - TAXIWAY OVERFLOW APRON

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TAXIWAY A - 400' SEPARATION AND VILLAGE CREEK RELOCATION
5900 MESSER AIRPORT HWY
BIRMINGHAM, ALABAMA 35212

ISSUED

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PRELIMINARY DESIGN SUBMITTAL

M&H NO.:	3226200-211437.01
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DRAWN BY:	RAD
CHECKED BY:	DES

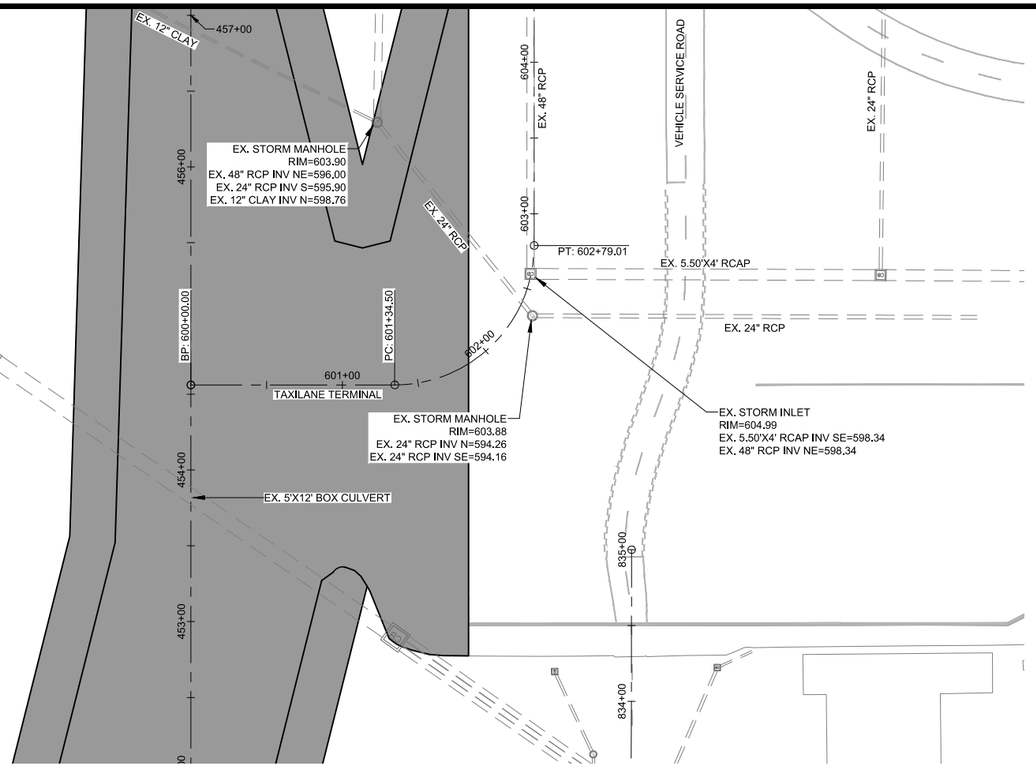
DO NOT SCALE DRAWINGS

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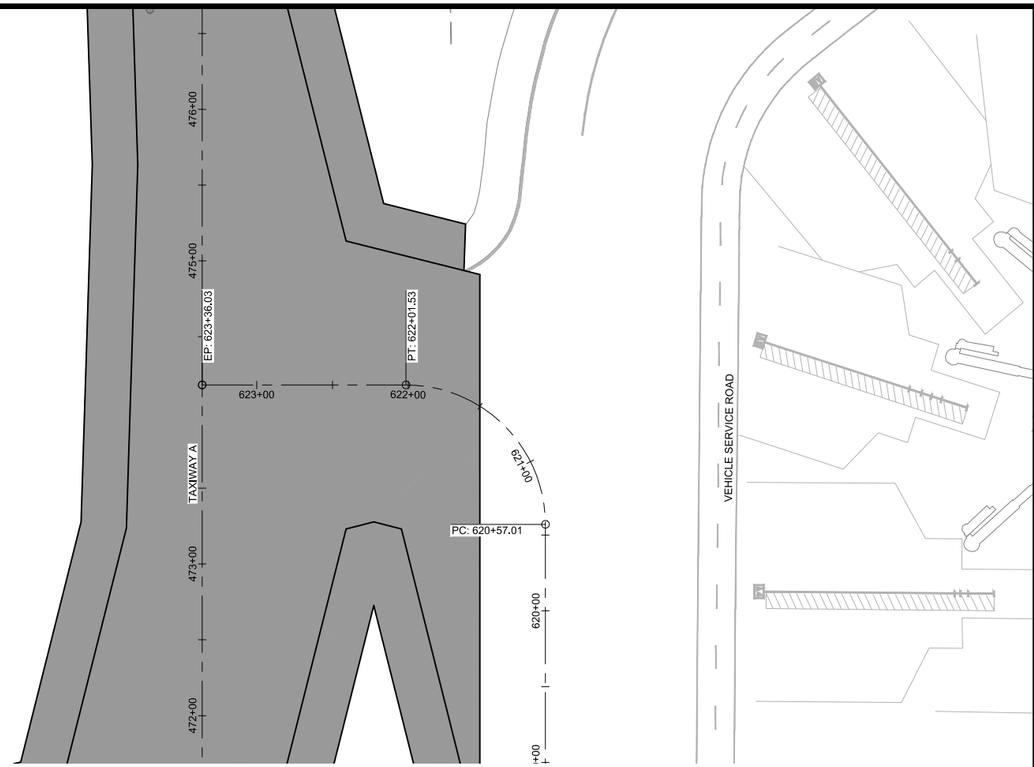
TAXIWAY OVERFLOW APRON PLAN AND PROFILE

SHEET NO.

C-207

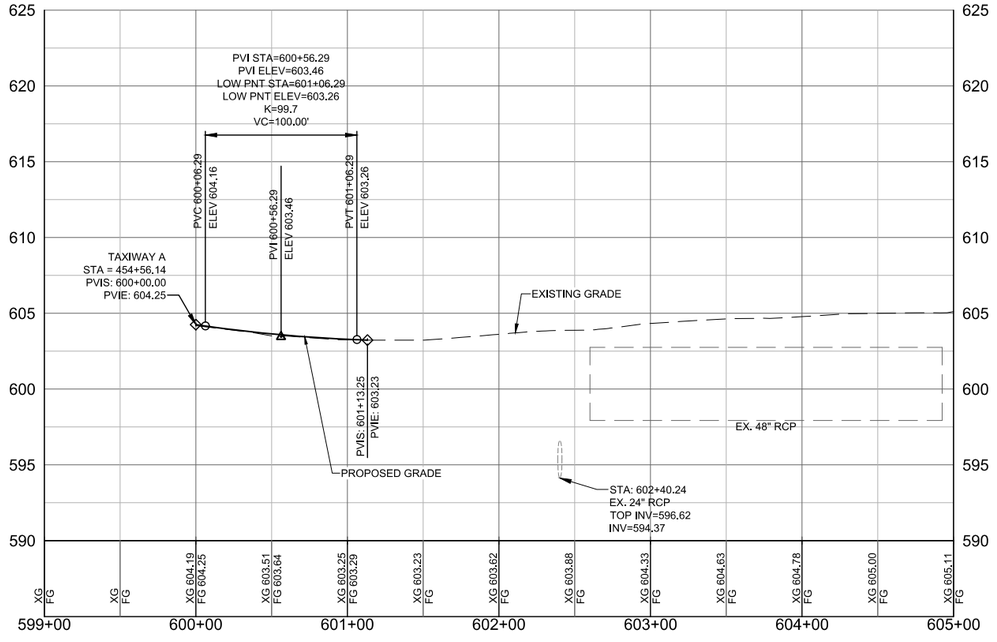


PLAN VIEW - TAXILANE TERMINAL



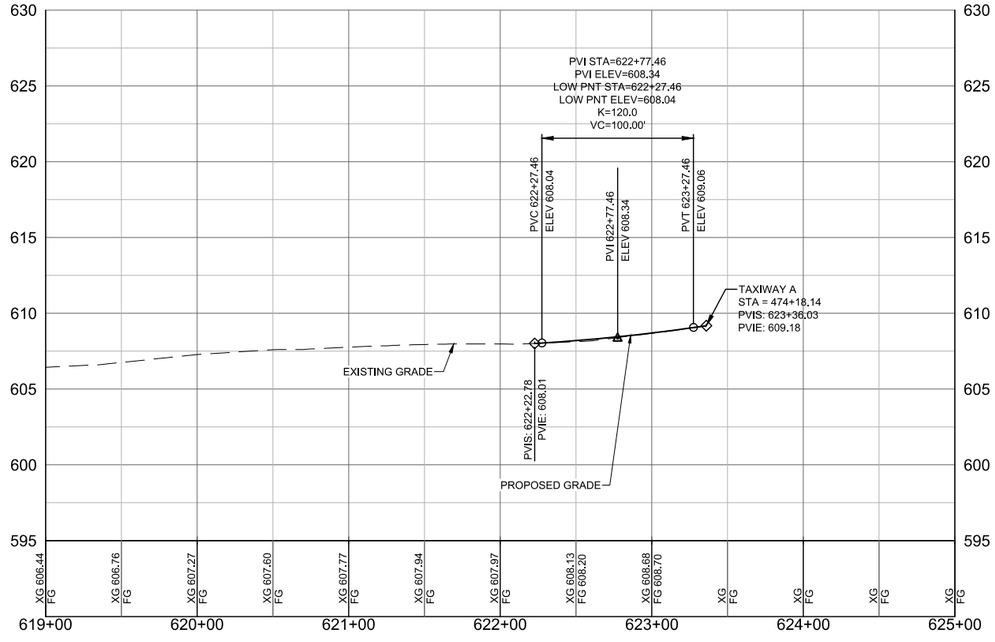
PLAN VIEW - TAXILANE TERMINAL

0 50 100



PROFILE VIEW - TAXILANE TERMINAL

0 50 100



PROFILE VIEW - TAXILANE TERMINAL

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BIRMINGHAM, ALABAMA 35212

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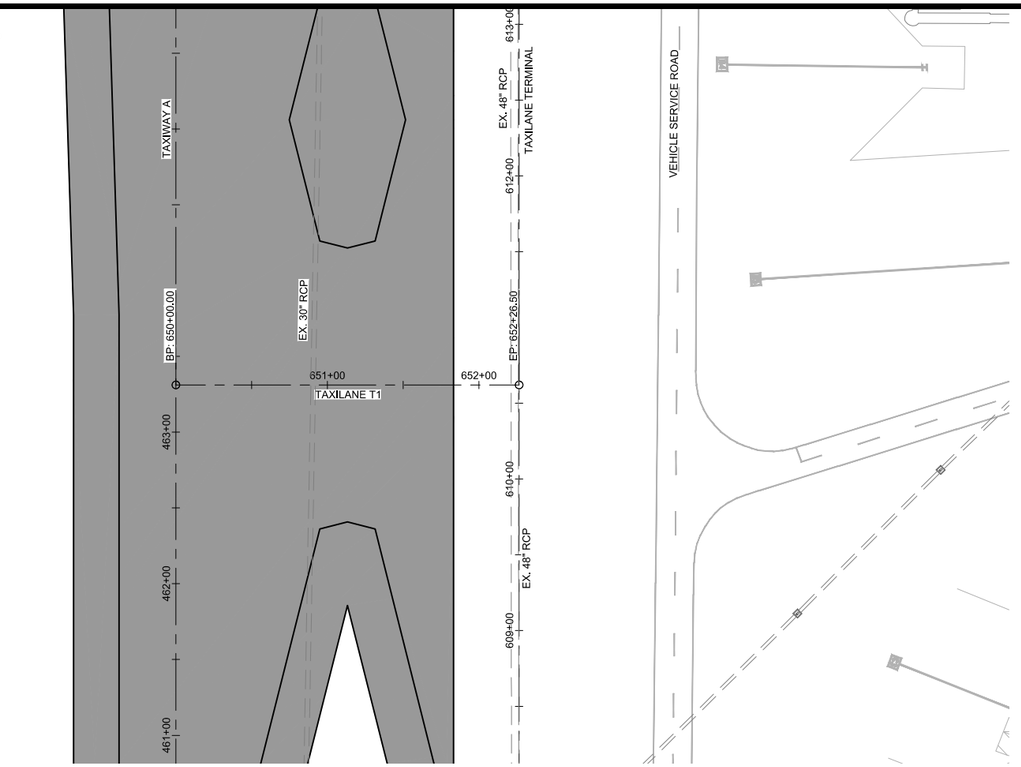
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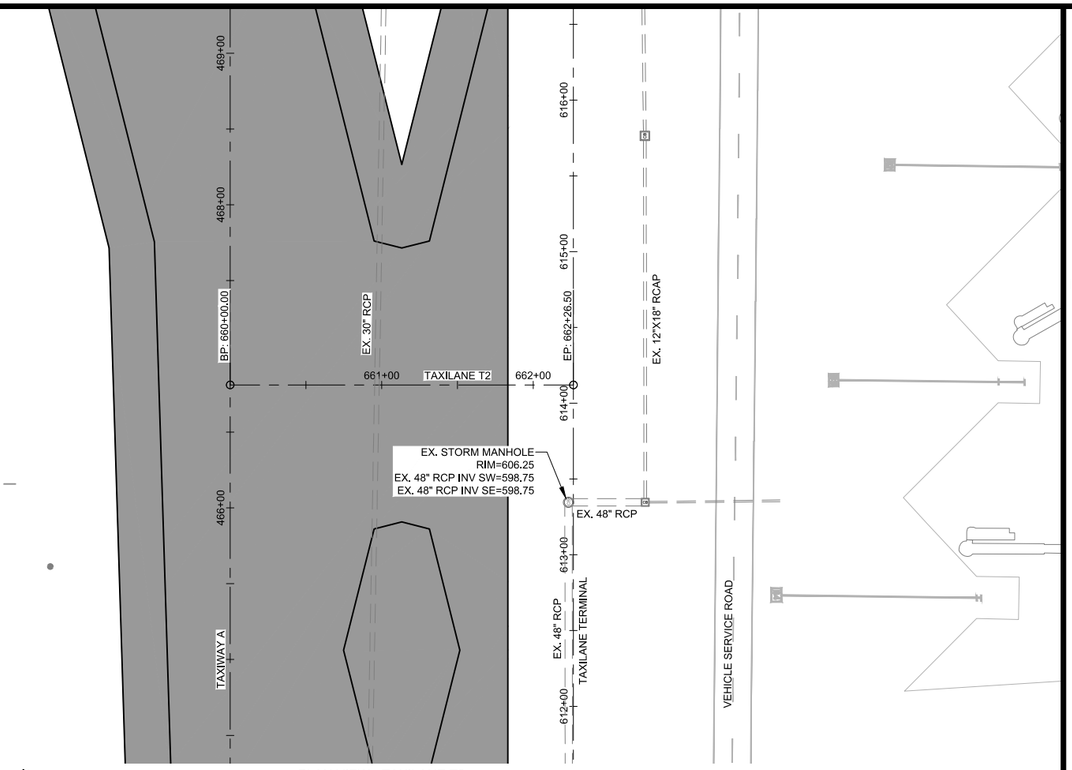
TAXIWAY TERMINAL PLAN AND PROFILE

SHEET NO.

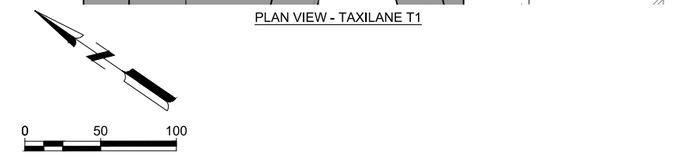
C-208

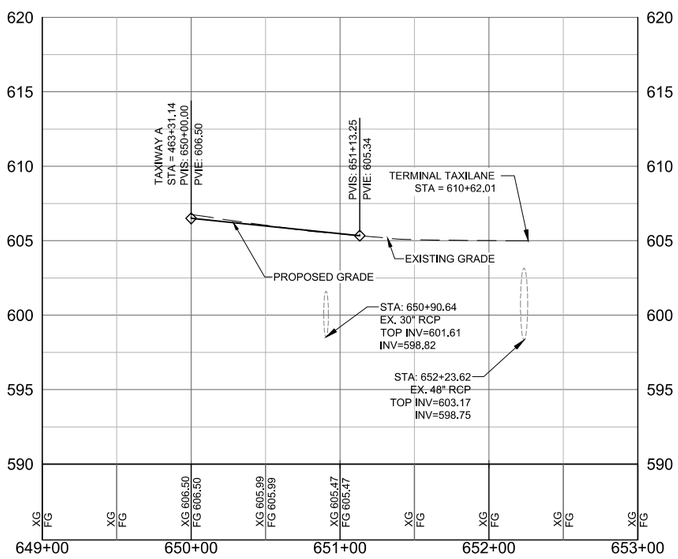


PLAN VIEW - TAXILANE T1

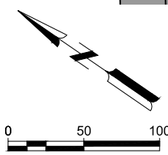


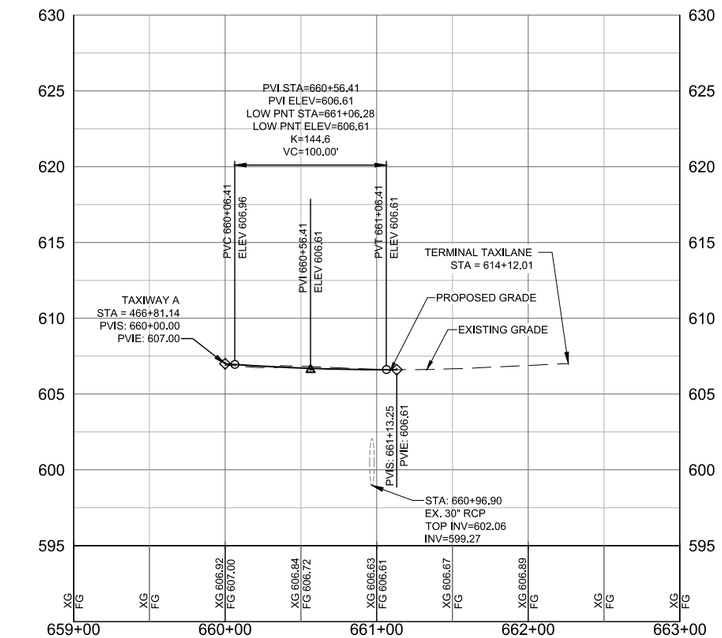
PLAN VIEW - TAXILANE T2





PROFILE VIEW - TAXILANE T1





PROFILE VIEW - TAXILANE T2

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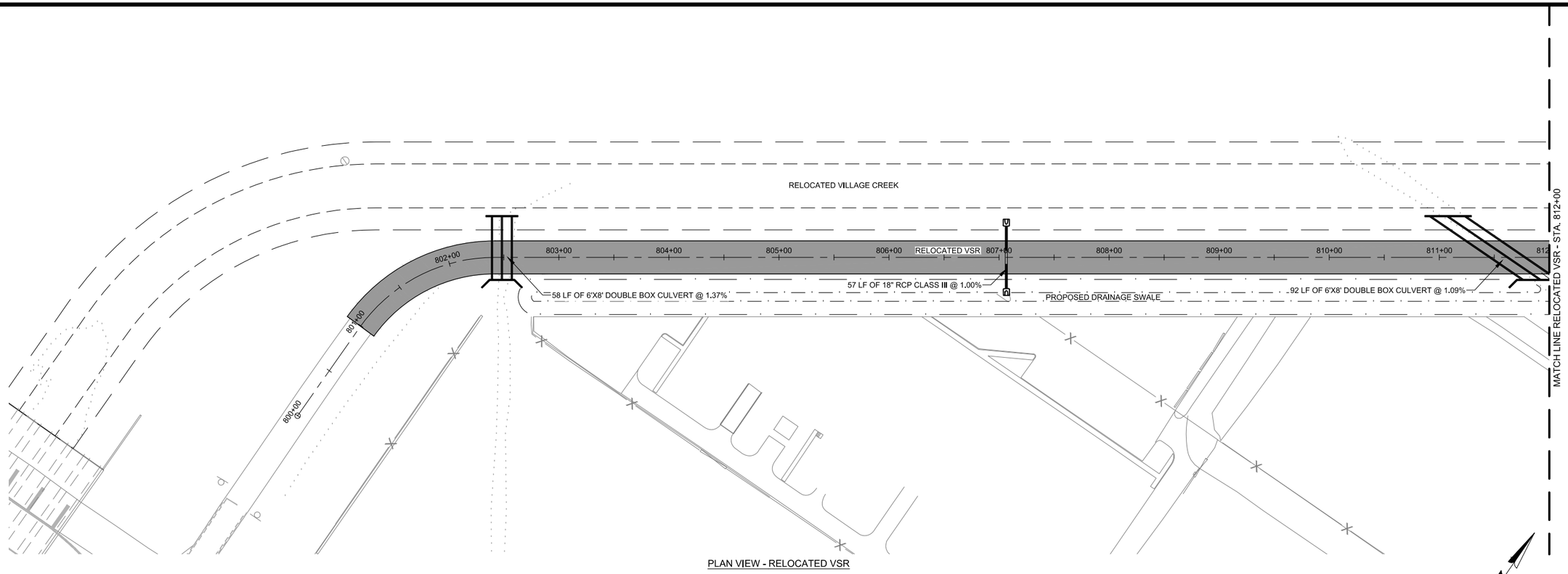
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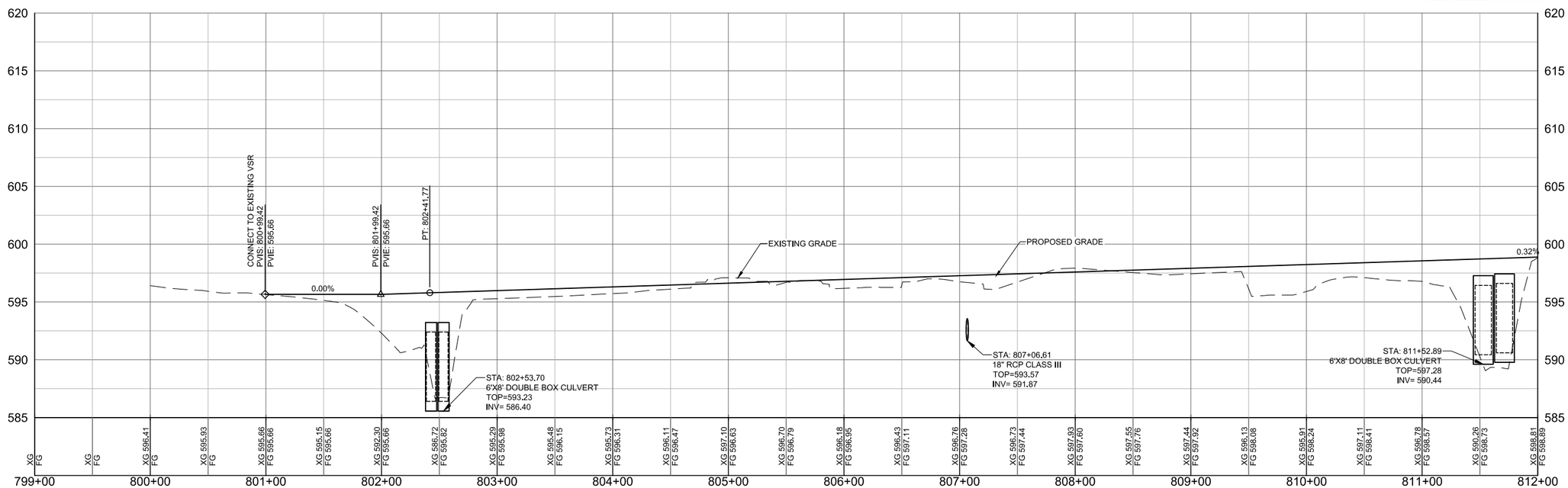
TAXILANE T1 & T2 PLAN AND PROFILE

SHEET NO.

C-209



PLAN VIEW - RELOCATED VSR



PROFILE VIEW - RELOCATED VSR

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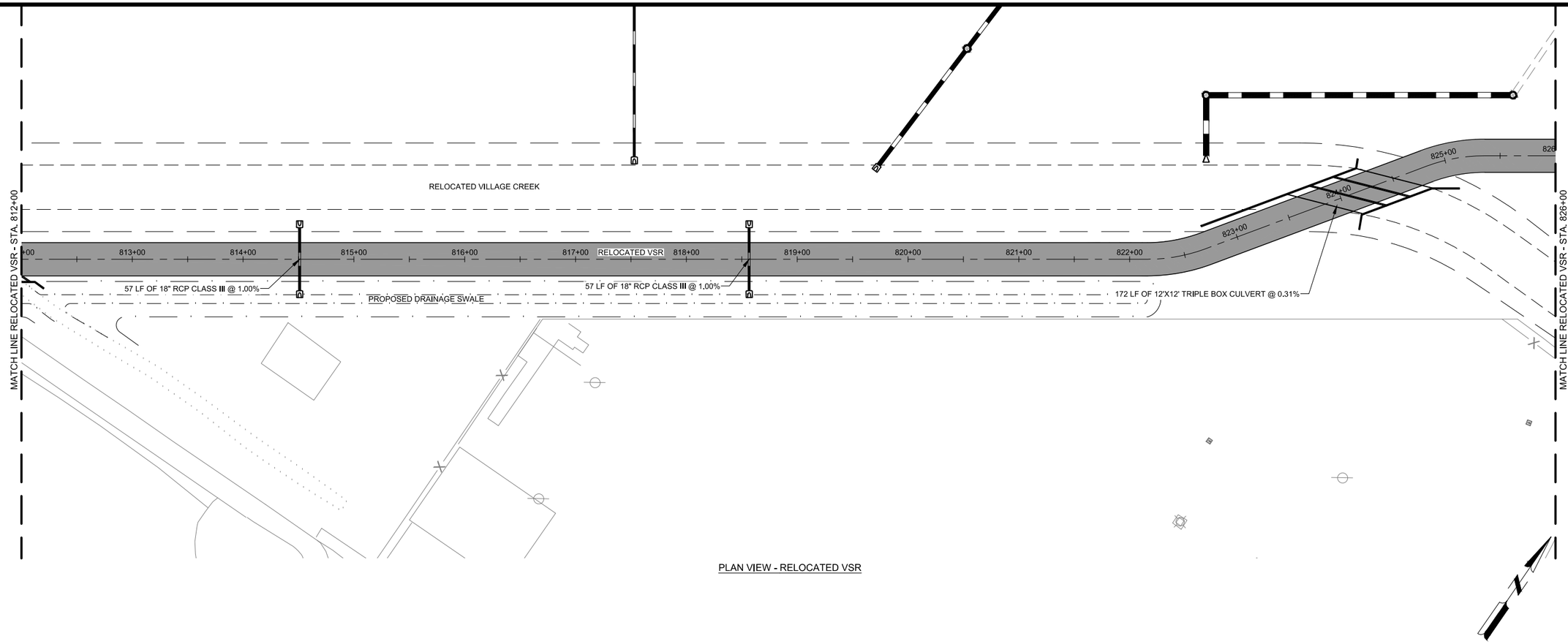
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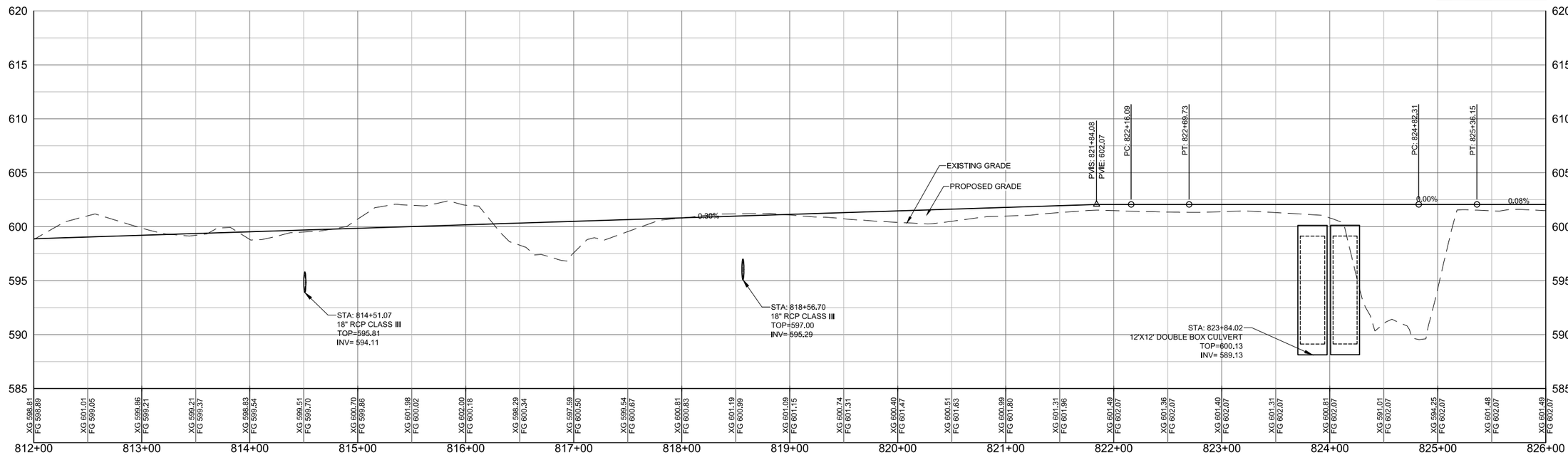
VEHICLE SERVICE ROAD PLAN AND PROFILE - SHEET 1

SHEET NO.

C-210



PLAN VIEW - RELOCATED VSR



PROFILE VIEW - RELOCATED VSR

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5900 MESSER AIRPORT HWY
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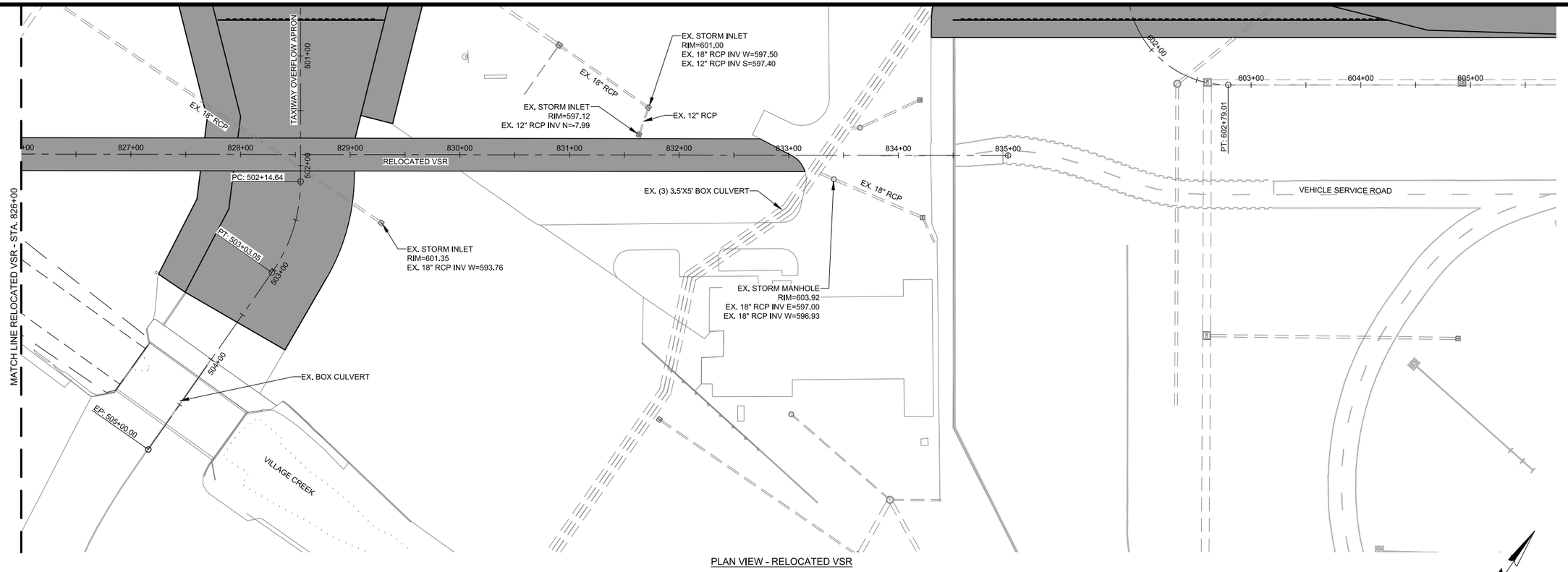
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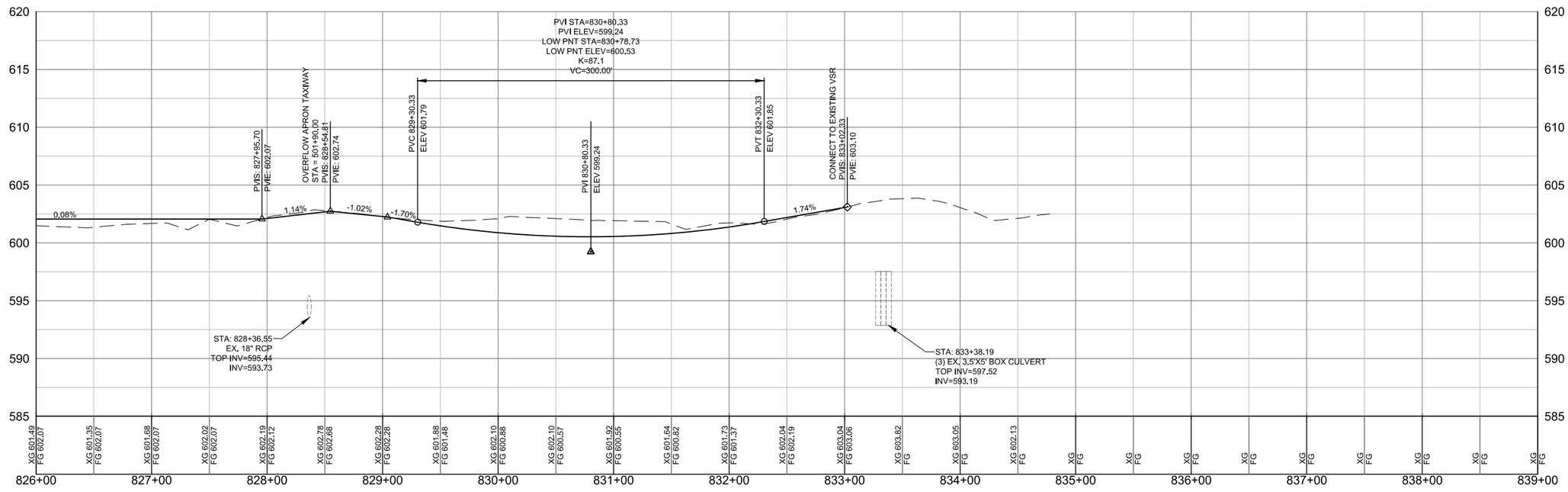
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SHEET CONTENTS
VEHICLE SERVICE ROAD PLAN AND PROFILE - SHEET 2

SHEET NO.
C-211



PLAN VIEW - RELOCATED VSR



PROFILE VIEW - RELOCATED VSR

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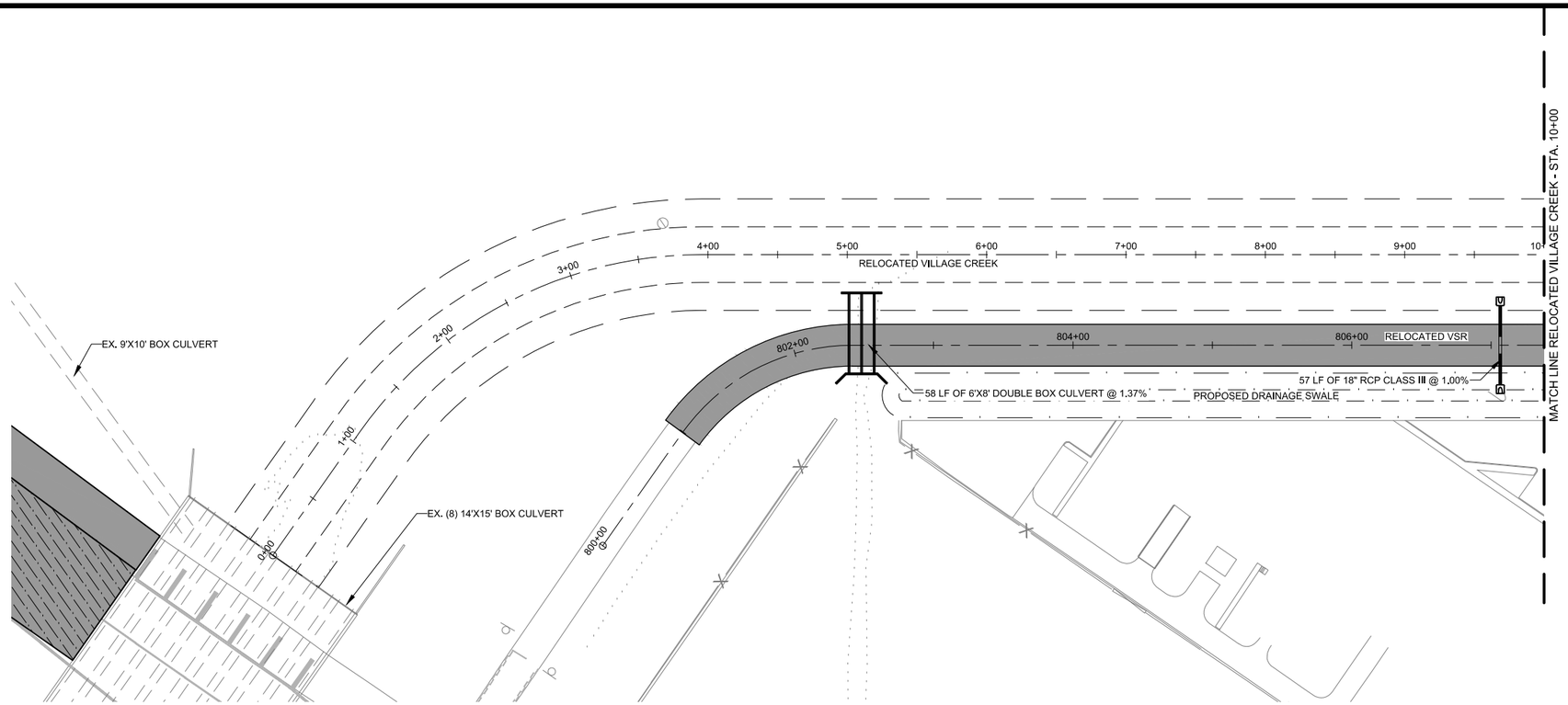
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SHEET CONTENTS

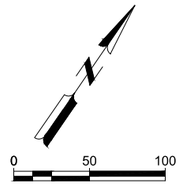
VEHICLE SERVICE ROAD PLAN AND PROFILE - SHEET 3

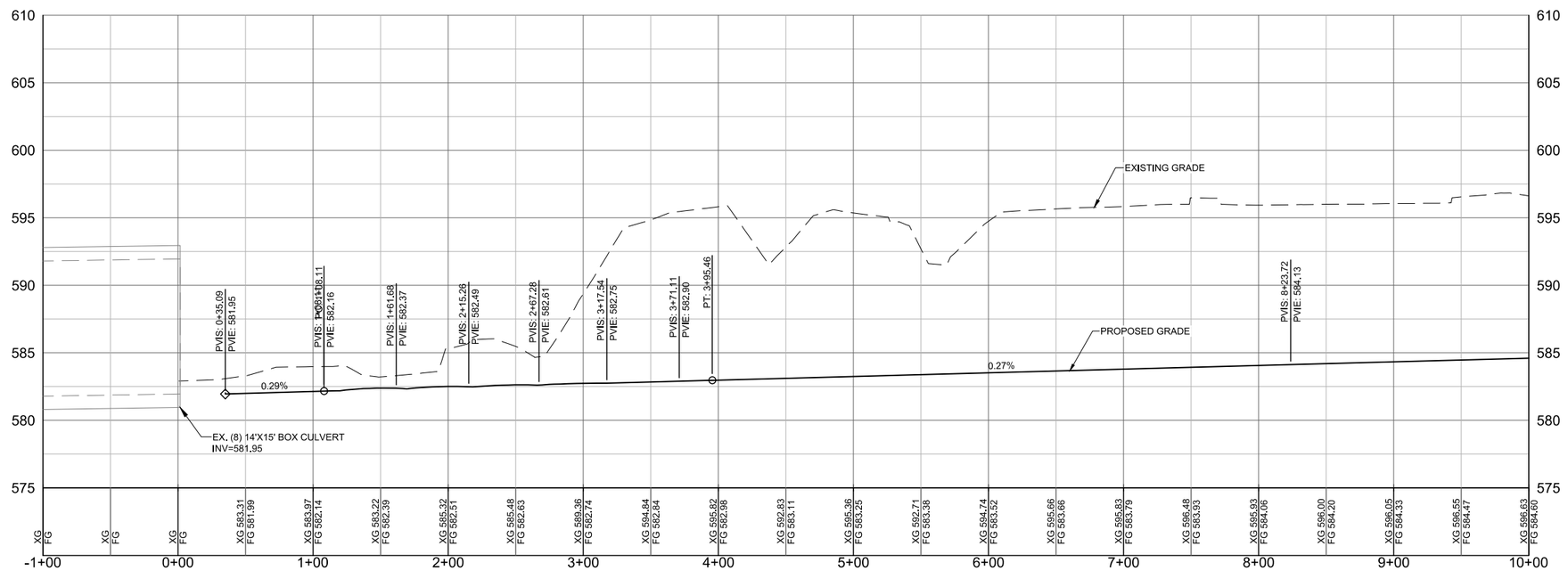
SHEET NO.

C-212



PLAN VIEW - RELOCATED VILLAGE CREEK





PROFILE VIEW - RELOCATED VILLAGE CREEK

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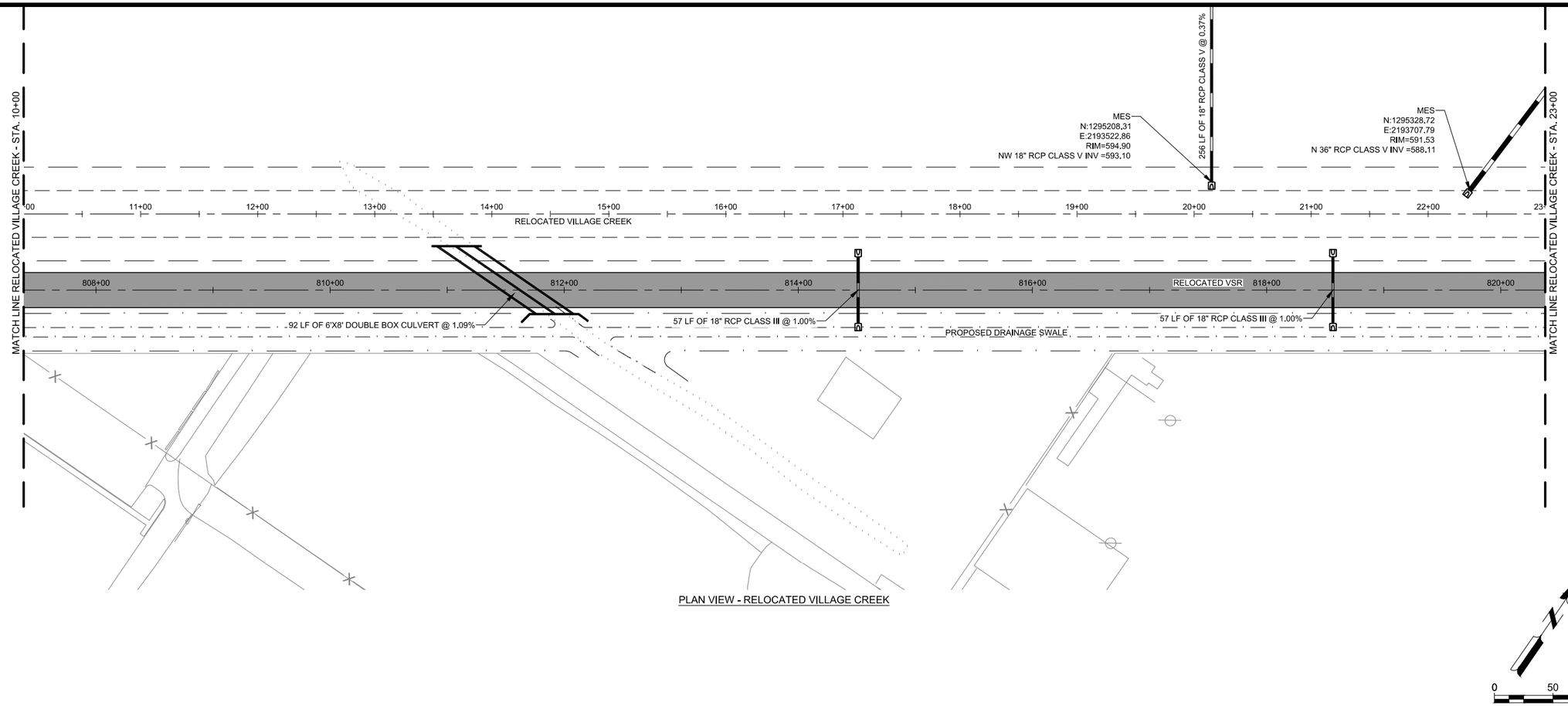
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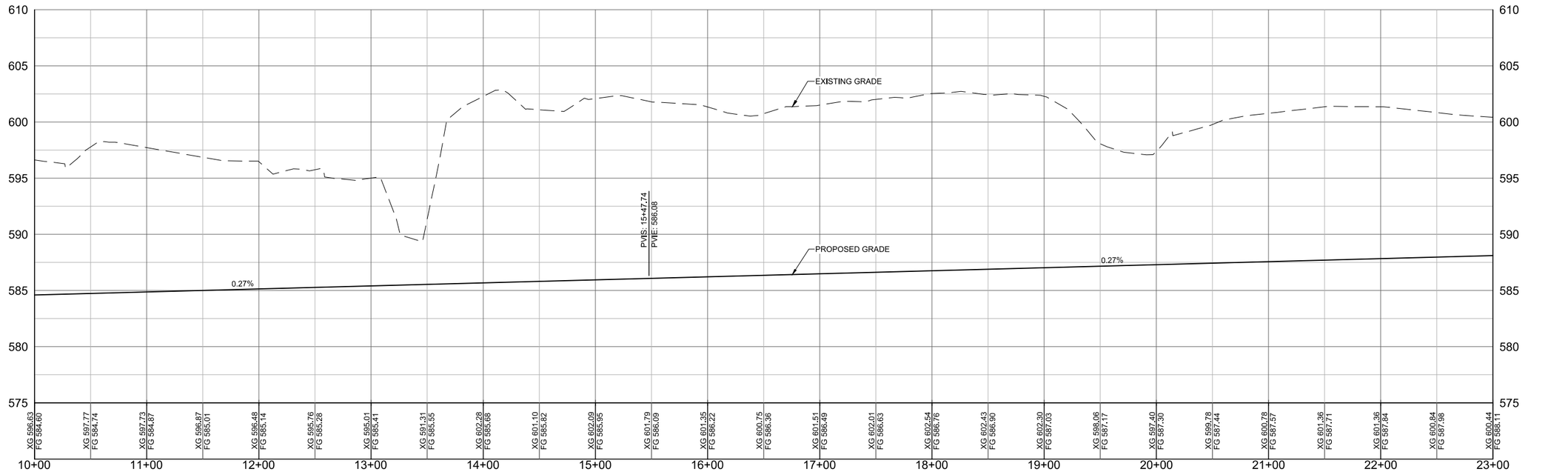
VILLAGE CREEK PLAN AND PROFILE - SHEET 1

SHEET NO.

C-213



PLAN VIEW - RELOCATED VILLAGE CREEK



PROFILE VIEW - RELOCATED VILLAGE CREEK

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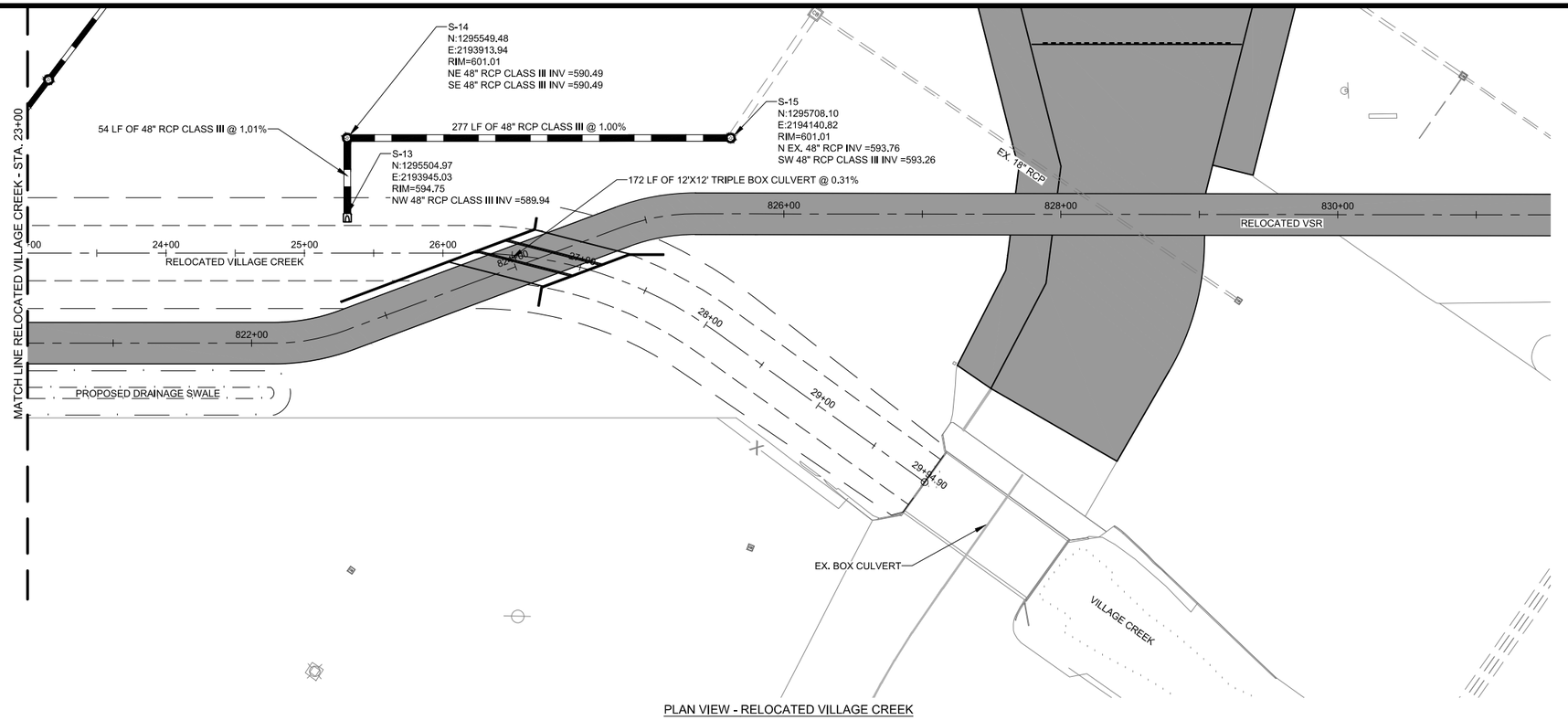
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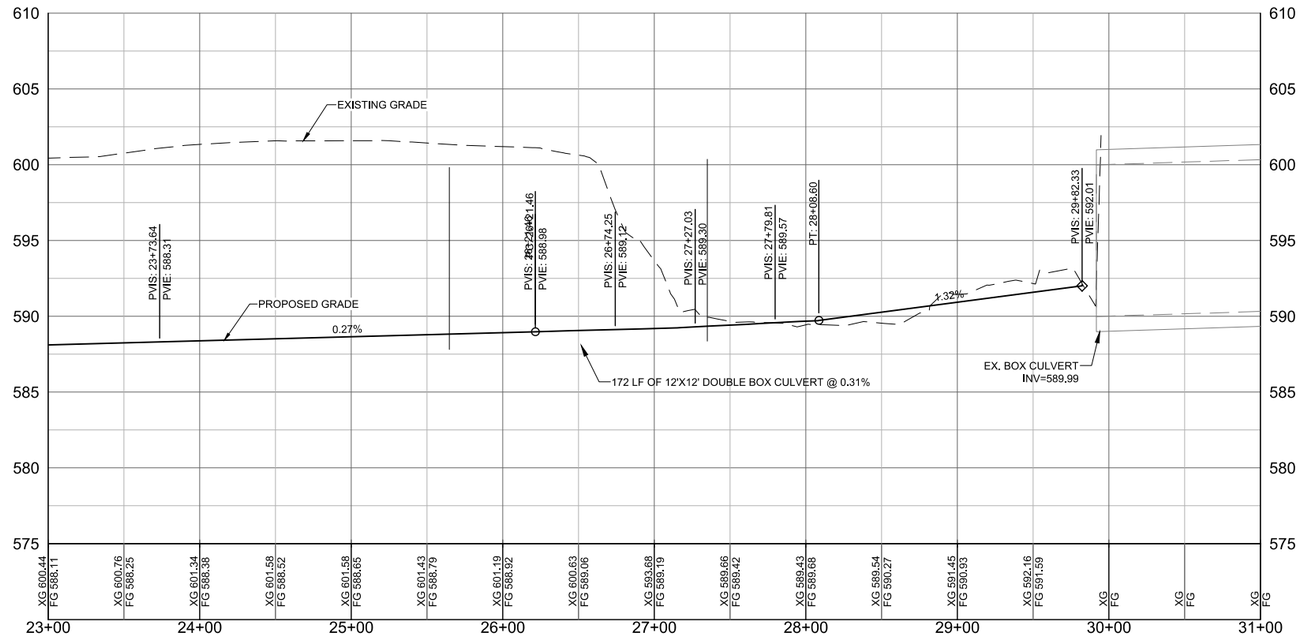
VILLAGE CREEK PLAN AND PROFILE - SHEET 2

SHEET NO.

C-214



PLAN VIEW - RELOCATED VILLAGE CREEK



PROFILE VIEW - RELOCATED VILLAGE CREEK

0 50 100

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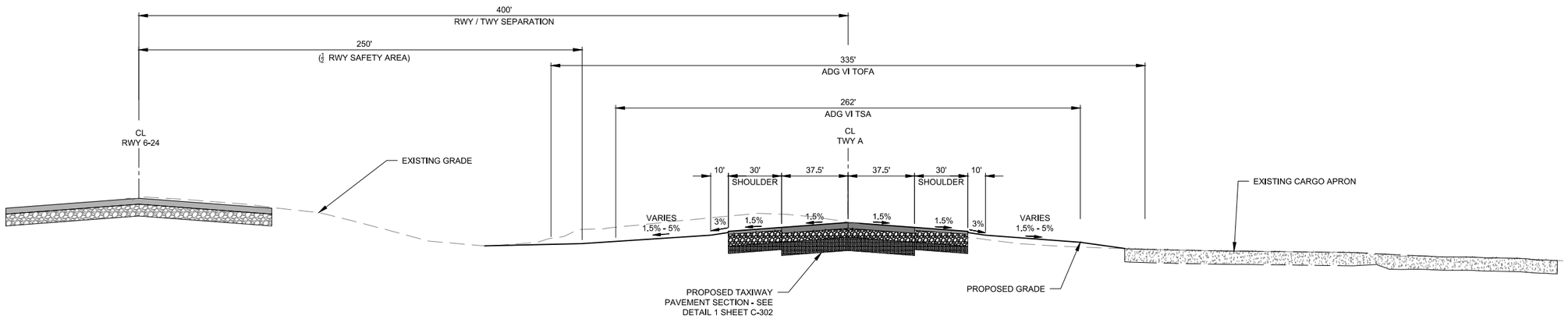
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SHEET CONTENTS

VILLAGE CREEK PLAN AND PROFILE - SHEET 3

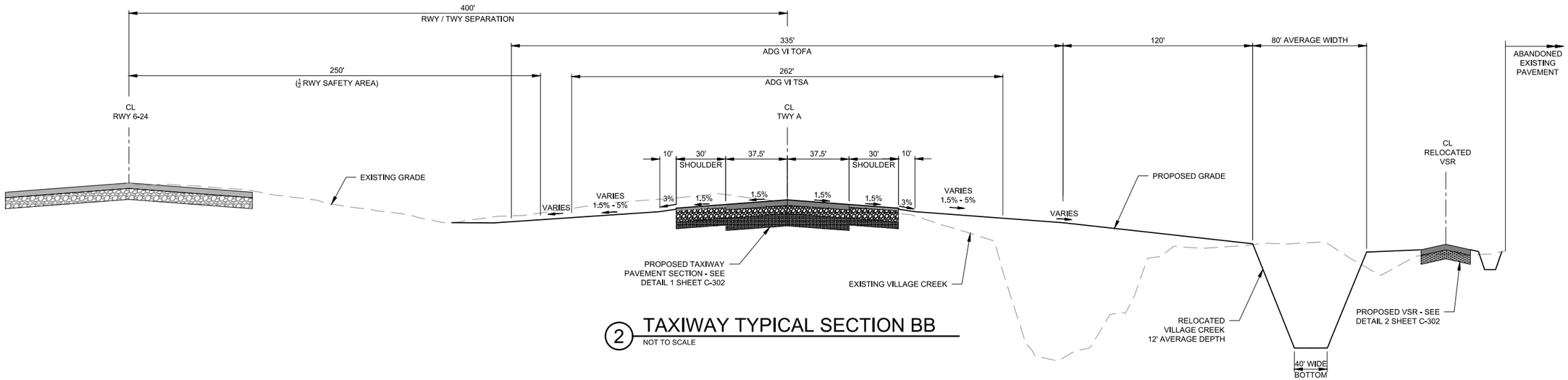
SHEET NO.

C-215



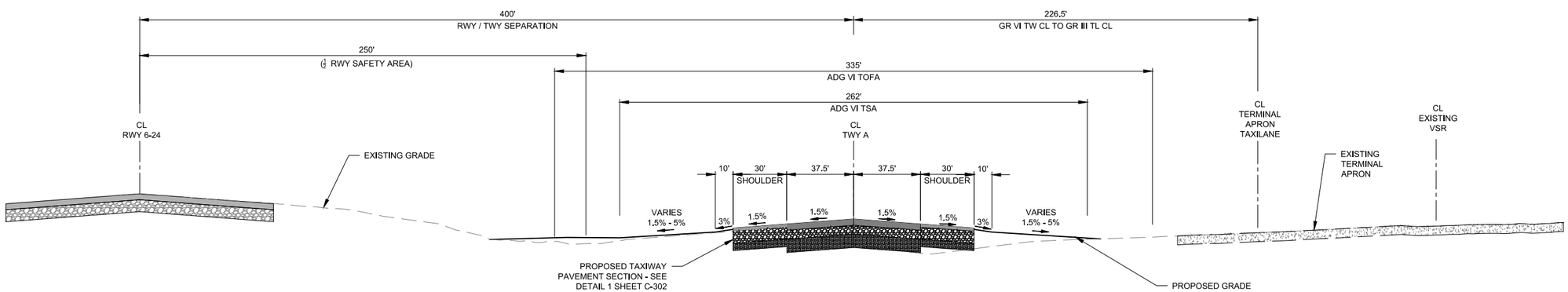
1 TAXIWAY TYPICAL SECTION AA

NOT TO SCALE



2 TAXIWAY TYPICAL SECTION BB

NOT TO SCALE



3 TAXIWAY TYPICAL SECTION CC

NOT TO SCALE

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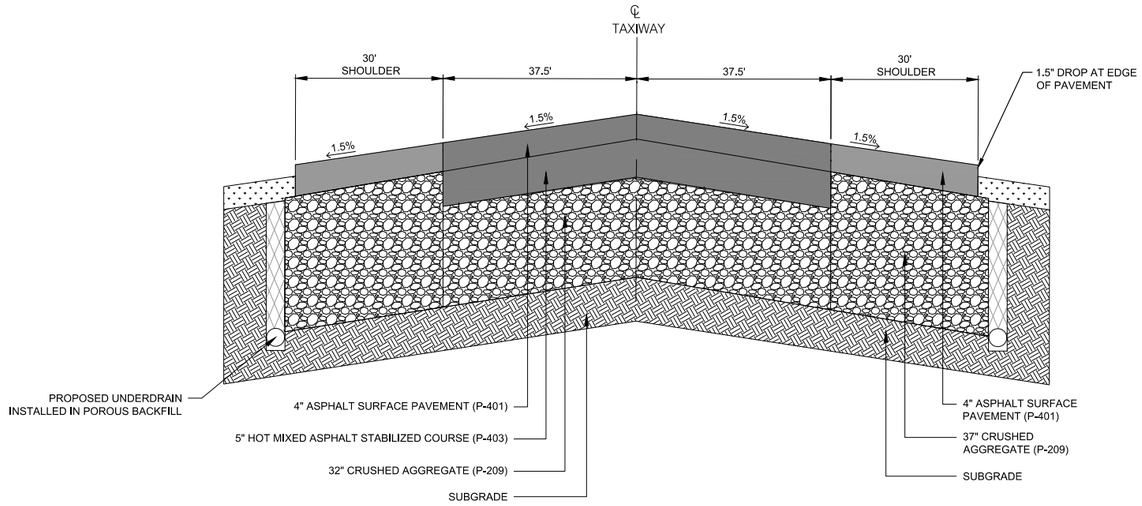
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TYPICAL SECTIONS - SHEET 1

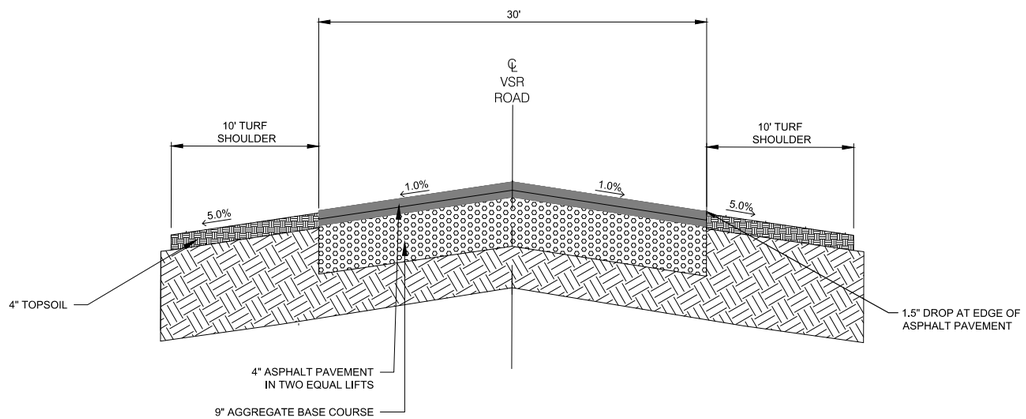
SHEET NO.

C-301



1 TYPICAL TAXIWAY PAVEMENT SECTION

NOT TO SCALE



2 AIRPORT VSR ROAD SECTION

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BIRMINGHAM-SHUTTLESWORTH
INTERNATIONAL AIRPORT
TAXIWAY A - 400' SEPARATION AND
VILLAGE CREEK RELOCATION
5900 MESSER AIRPORT HWY
BIRMINGHAM, ALABAMA 35212

ISSUED

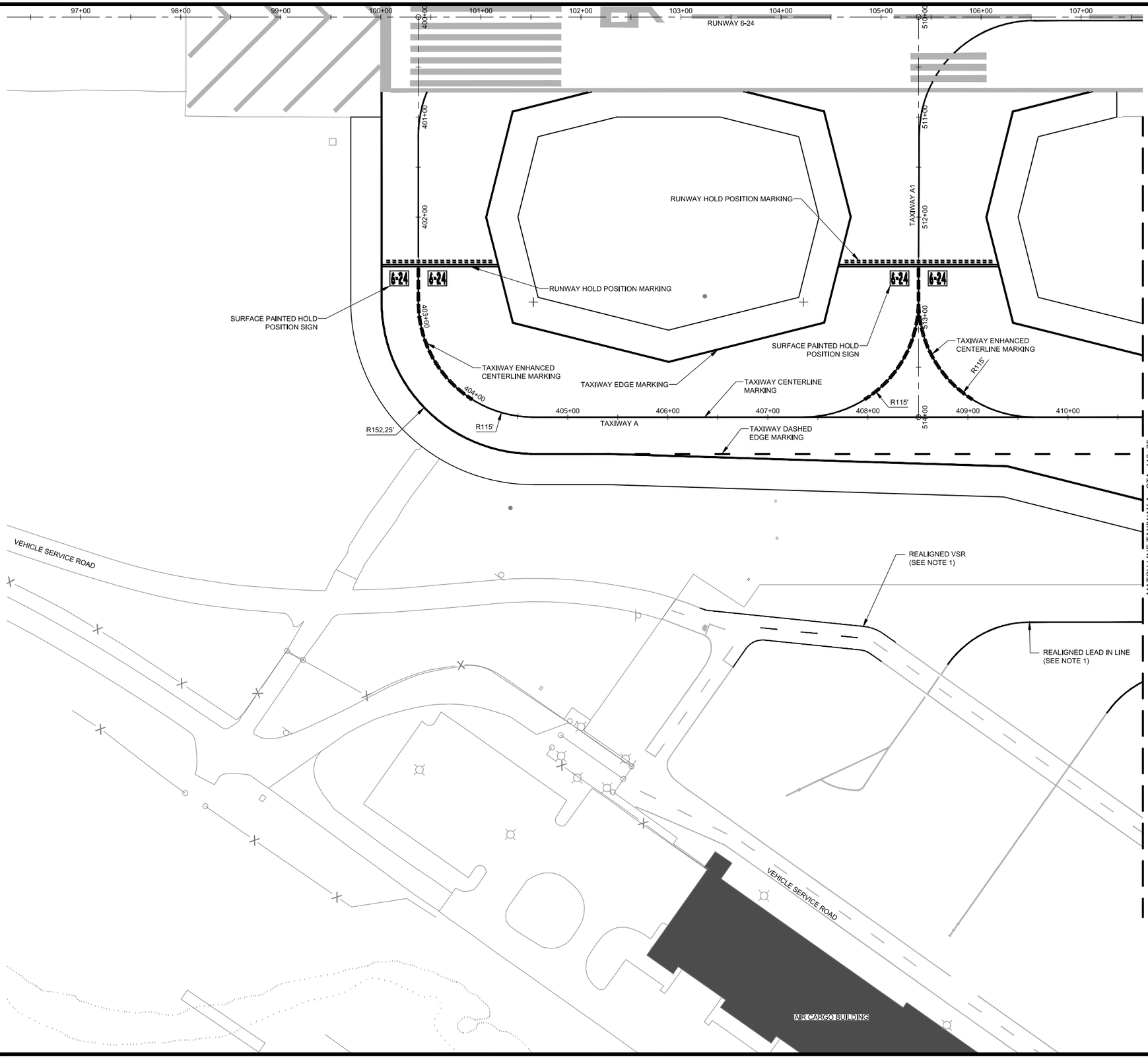
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SHEET CONTENTS
TYPICAL SECTIONS - SHEET 2

SHEET NO.
C-302



NOTE:

1. EXISTING AIR CARGO MARKINGS WILL REQUIRE ADJUSTMENTS BASED UPON NEW TAXIWAY LOCATION AND ASSOCIATED SAFETY AREA AND OBJECT FREE ADJUSTMENTS. FURTHER COORDINATION WITH AIR CARGO AND AUTHORITY WILL BE REQUIRED TO FINALIZE NEW APRON MARKINGS AND ALLOWABLE AIRCRAFT AT EACH CARGO PARKING POSITION.

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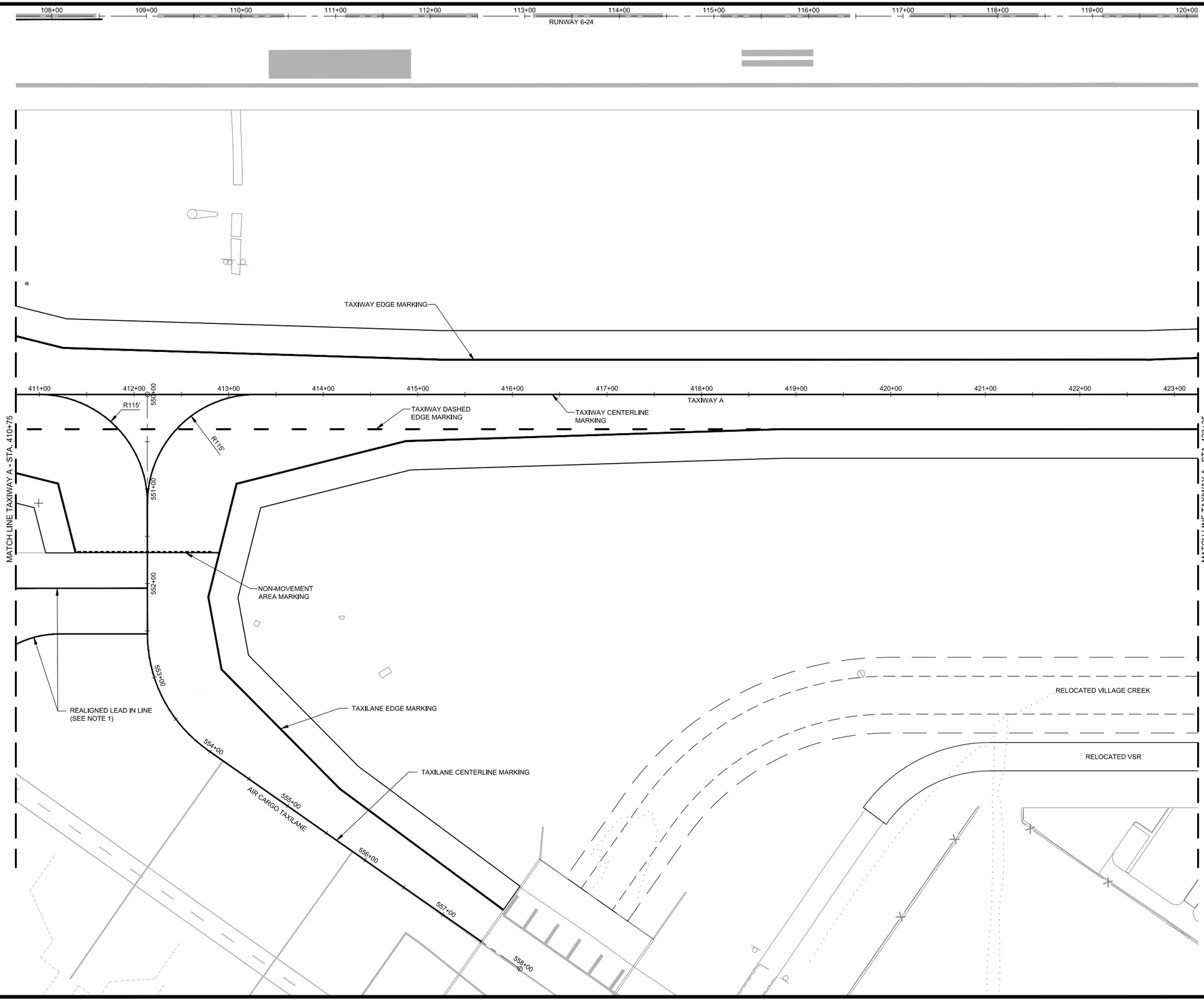
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SHEET CONTENTS

MARKING PLAN - SHEET 1

SHEET NO.

C-651



NOTE:
1. EXISTING AIR CARGO MARKINGS WILL REQUIRE ADJUSTMENTS BASED UPON NEW TAXIWAY LOCATION AND ASSOCIATED SAFETY AREA AND OBJECT FREE ADJUSTMENTS. FURTHER COORDINATION WITH AIR CARGO AND AUTHORITY WILL BE REQUIRED TO FINALIZE NEW APRON MARKINGS AND ALLOWABLE AIRCRAFT AT EACH CARGO PARKING POSITION.

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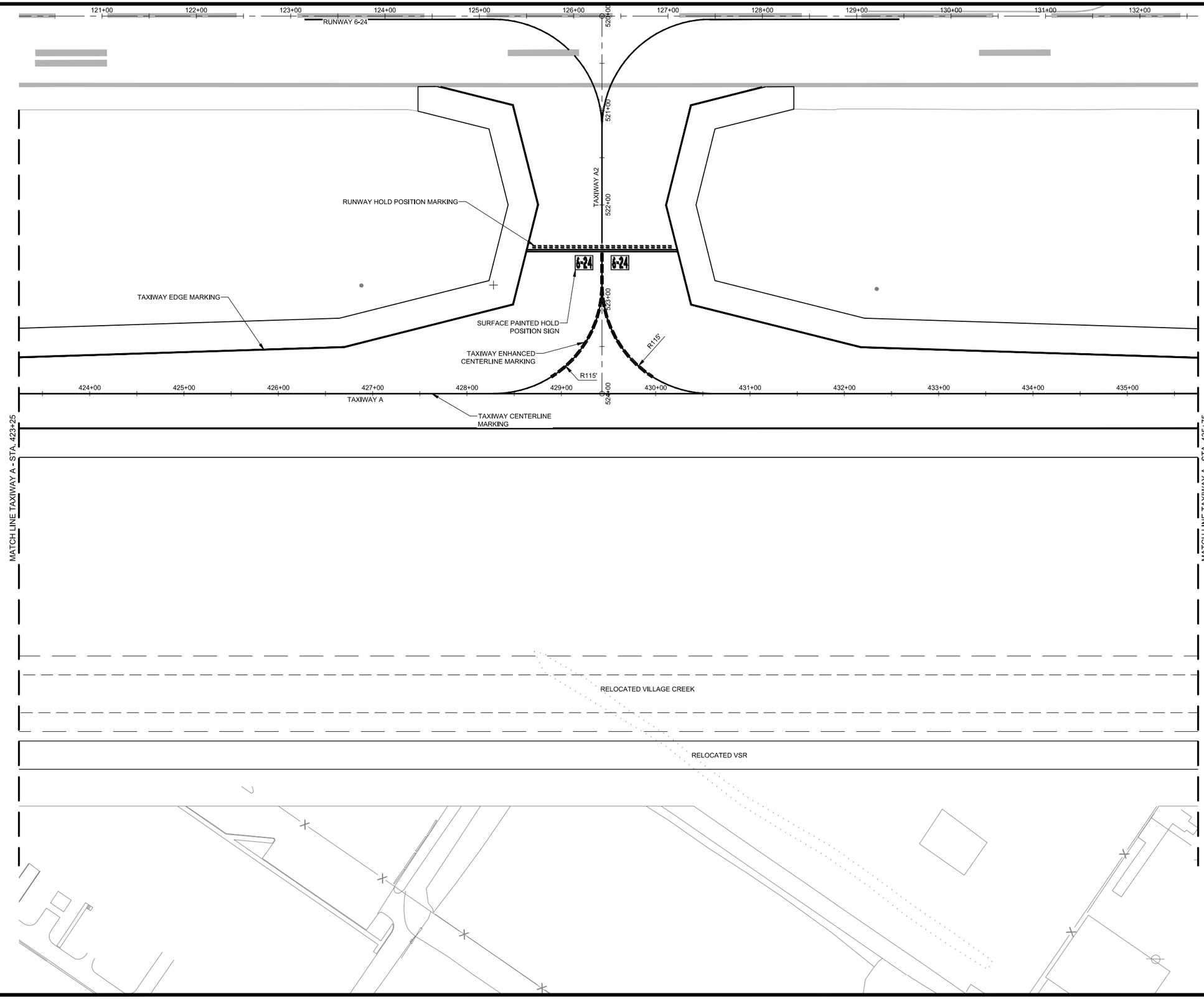
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SHEET CONTENTS
MARKING PLAN - SHEET 2

SHEET NO.
C-652



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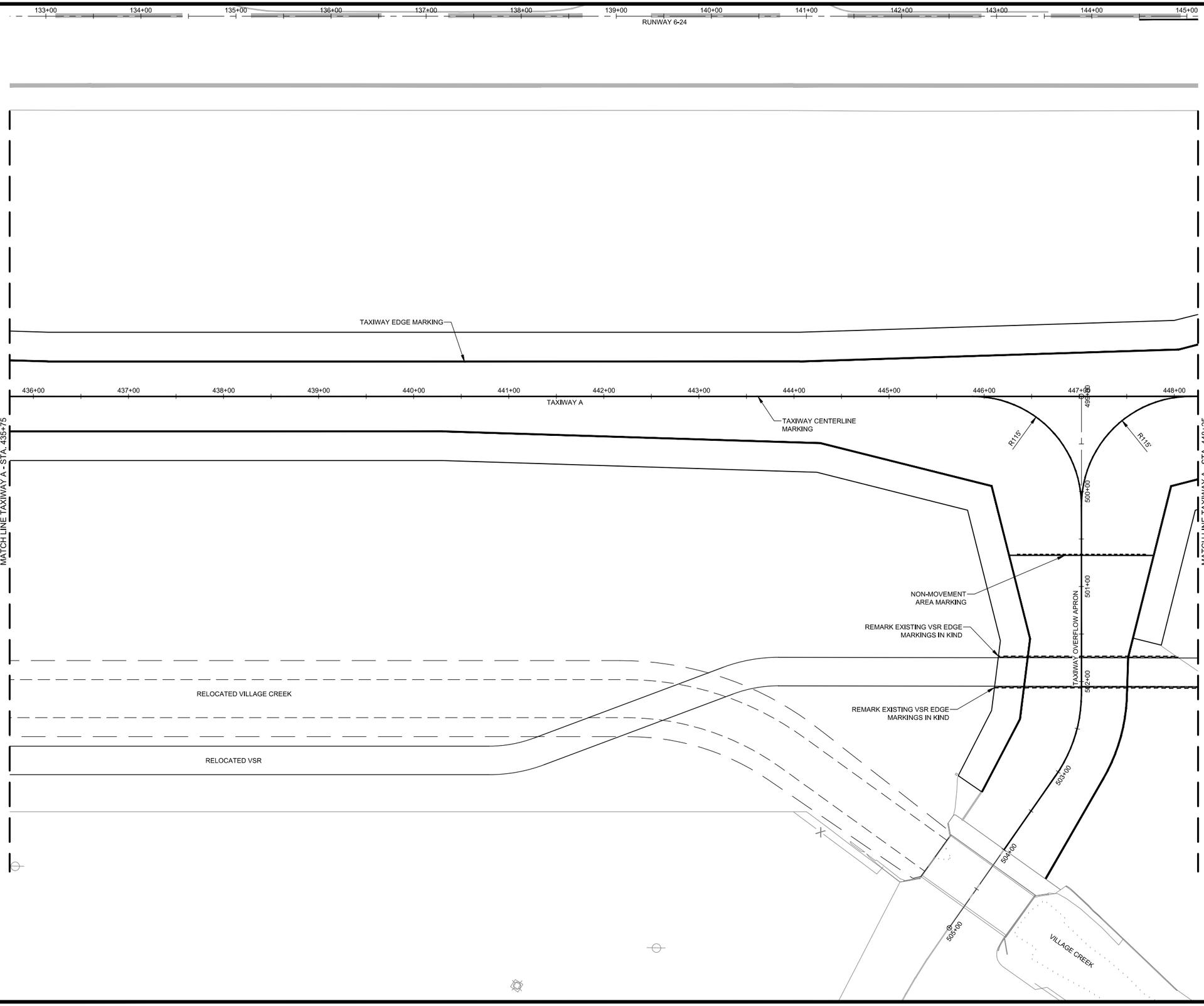
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SHEET CONTENTS

MARKING PLAN - SHEET 3

SHEET NO.

C-653



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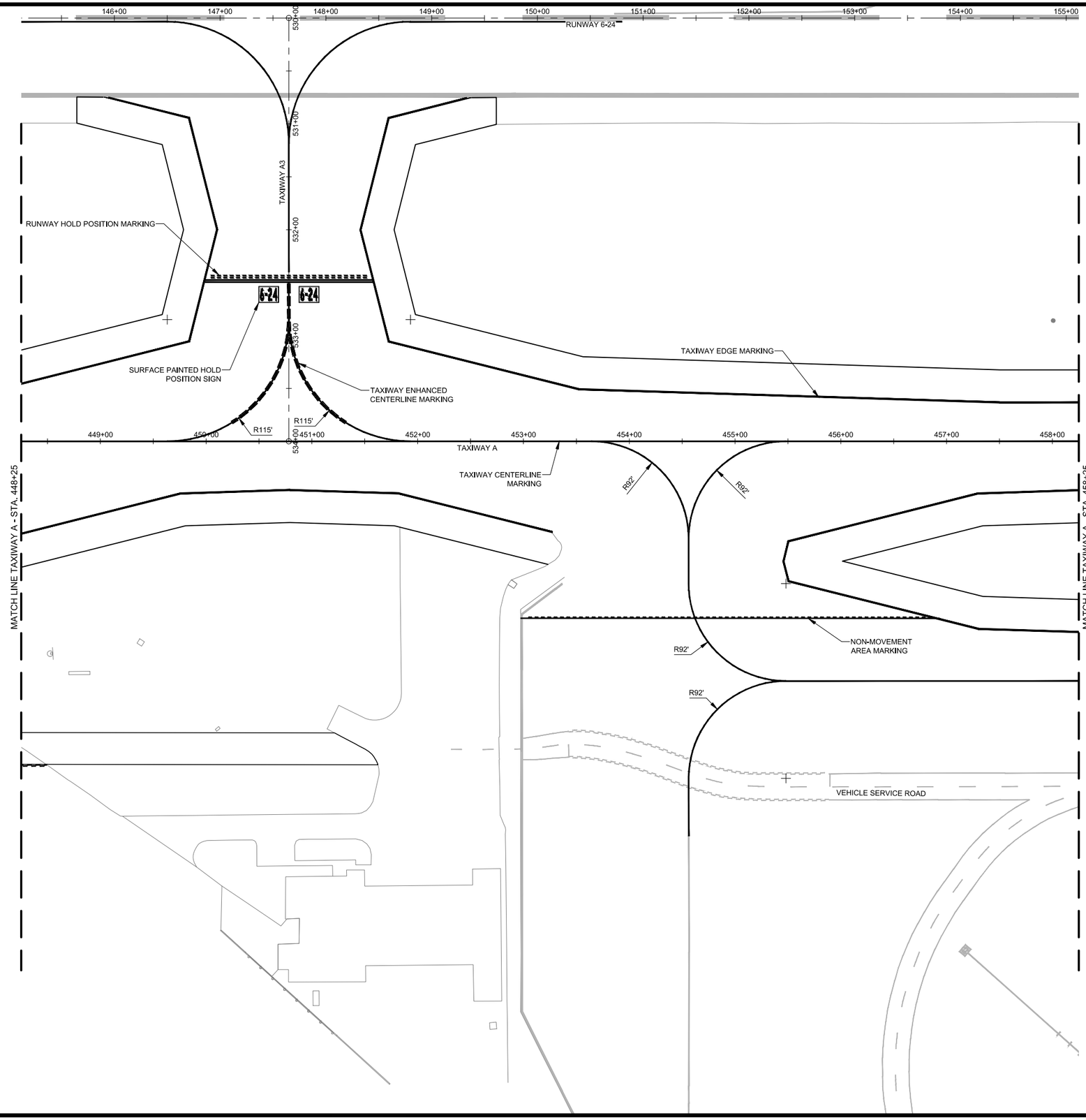
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SHEET CONTENTS

MARKING PLAN - SHEET 4

SHEET NO.

C-654



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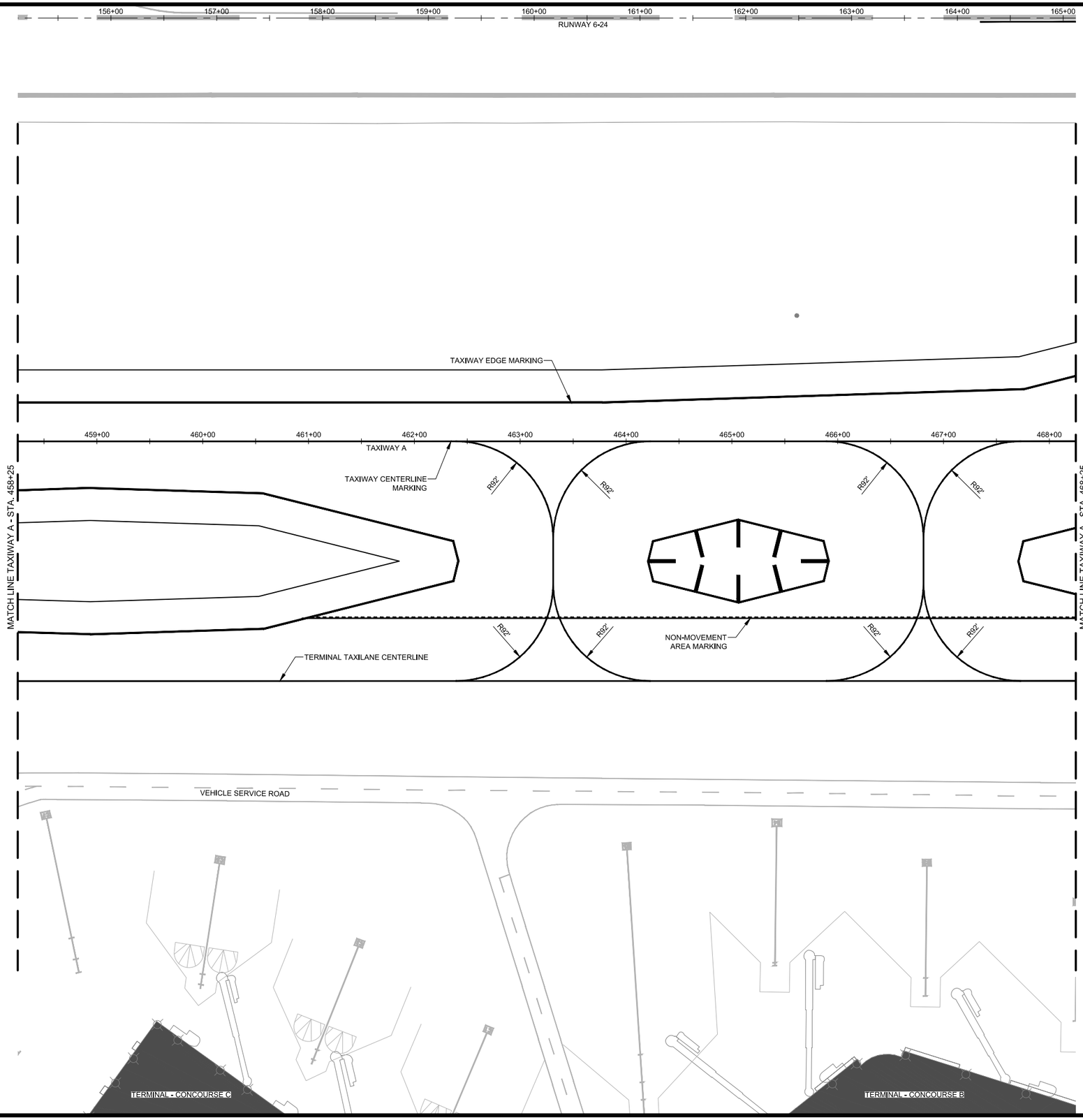
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SHEET CONTENTS

MARKING PLAN - SHEET 5

SHEET NO.

C-655



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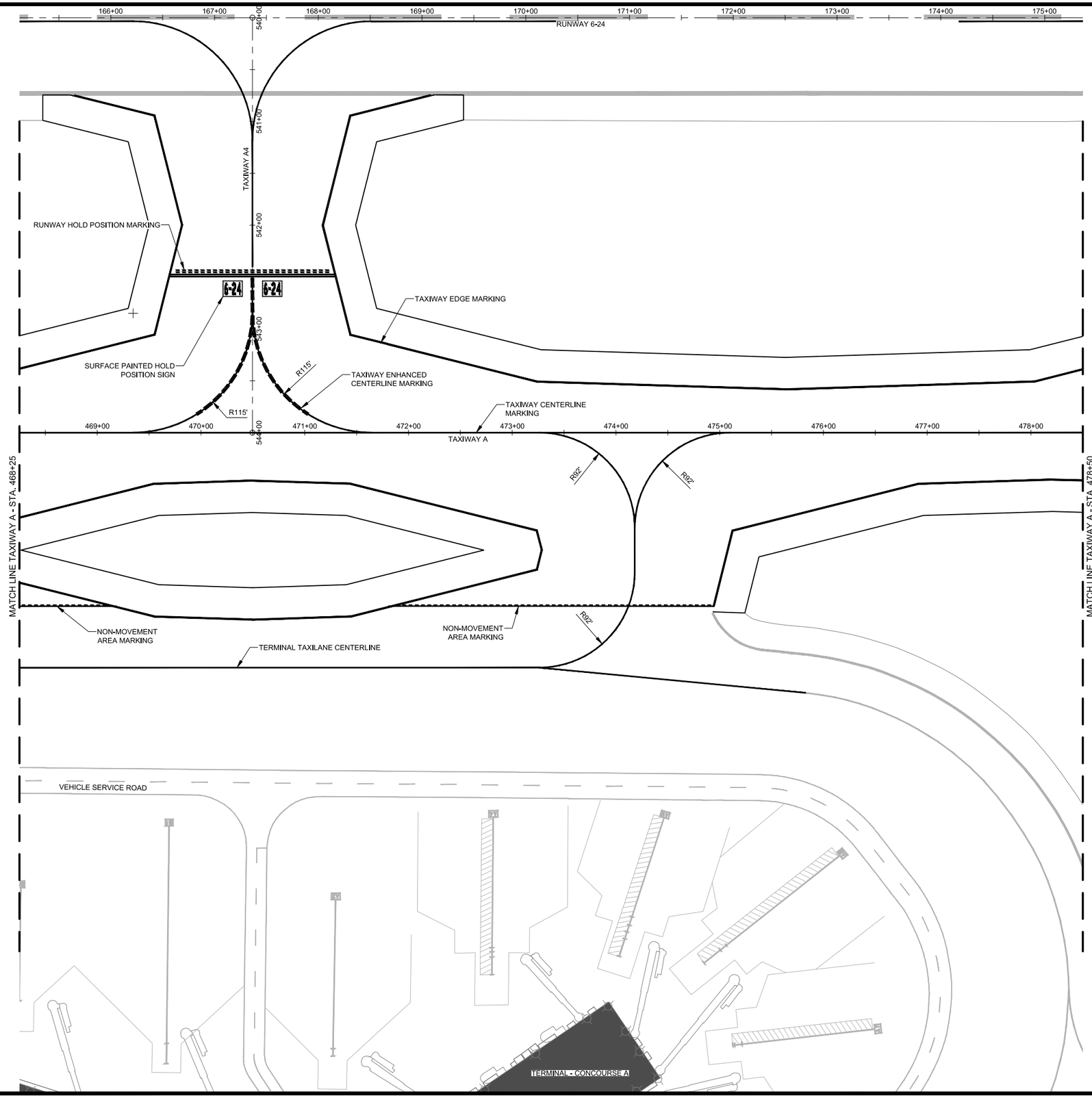
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SHEET CONTENTS

MARKING PLAN - SHEET 6

SHEET NO.

C-656



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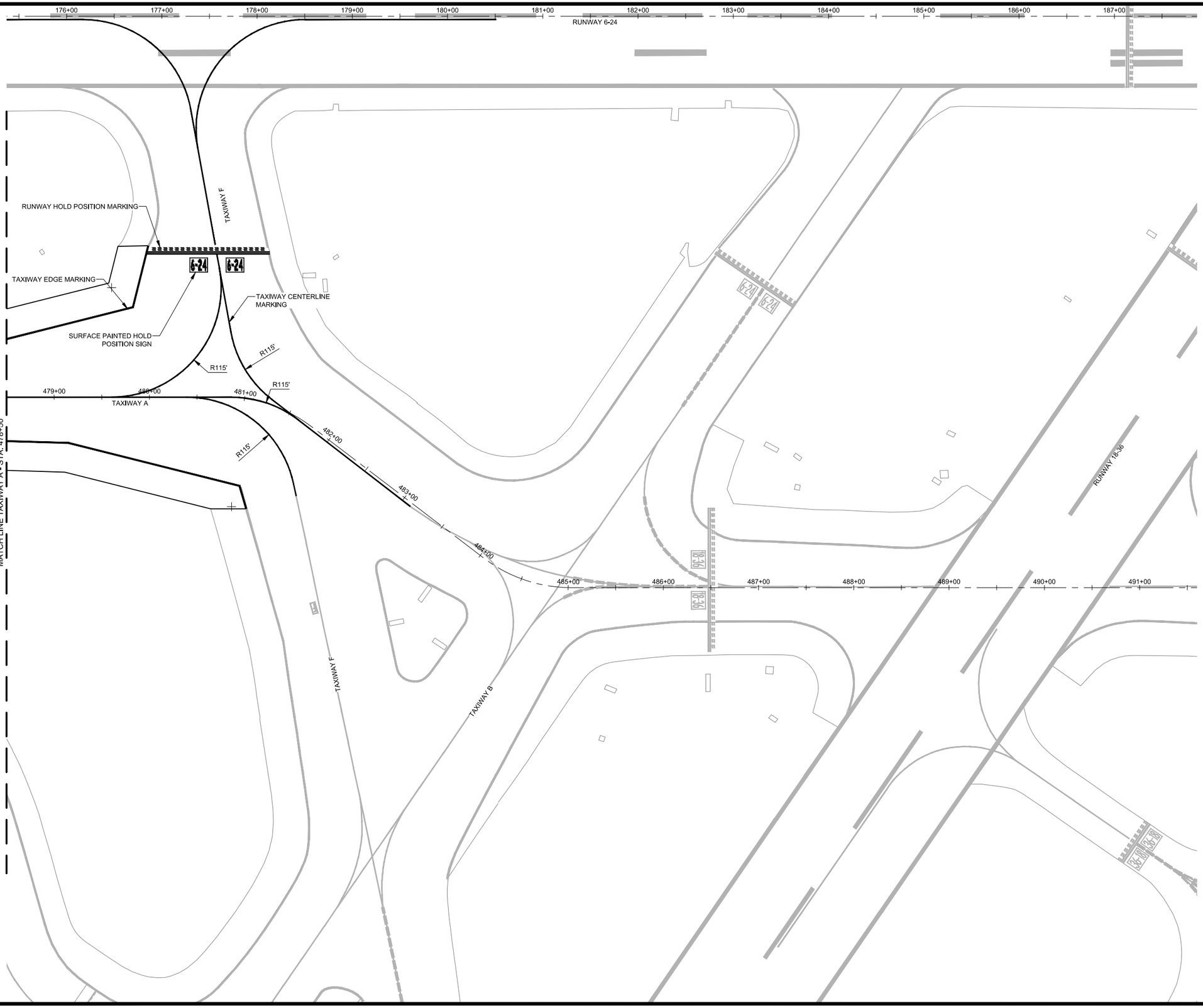
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SHEET CONTENTS

MARKING PLAN - SHEET 7

SHEET NO.

C-657



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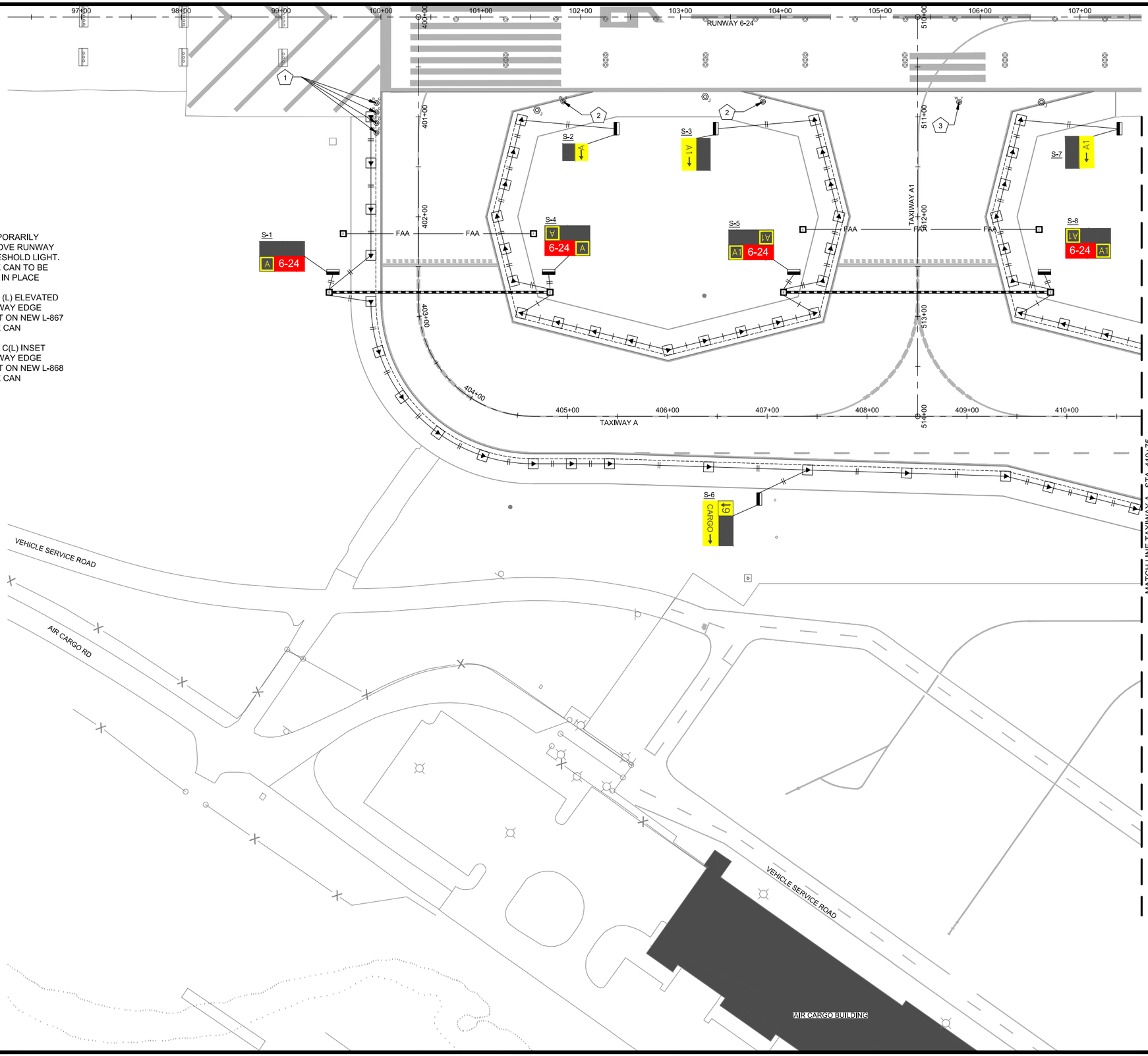
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SHEET CONTENTS

MARKING PLAN - SHEET 8

SHEET NO.

C-658



KEY NOTE LEGEND

1. TEMPORARILY REMOVE RUNWAY THRESHOLD LIGHT. BASE CAN TO BE LEFT IN PLACE
2. L-861 (L) ELEVATED RUNWAY EDGE LIGHT ON NEW L-867 BASE CAN
3. L-850 C(L) INSET RUNWAY EDGE LIGHT ON NEW L-868 BASE CAN

LEGEND

- NEW L861T(L) ELEVATED, LED MITL ON L867 BASE
- L858 (L) GUIDANCE SIGN ON PCC BASE
- #8 5KV, L-824C, IN NEW CONDUIT UNLESS OTHERWISE NOTED (TICK MARKS INDICATE NUMBER OF CIRCUITS)
- #6 SOLID BARE COPPER COUNTERPOISE
- 4'X4'X4' AIRCRAFT RATED HANDHOLE WITH SPRING ASSISTED LID
- 4W-4" CONCRETE ENCASED ELECTRICAL DUCT BANK
- FAA — FAA CONCRETE ENCASED DUCT BANK (SIZE AND EXACT LOCATION TO BE COORDINATED WITH AGENCY)
- W_Y — RUNWAY THRESHOLD / EDGE LIGHT
- EXISTING JUNCTION CAN

GENERAL NOTES

1. EXISTING RUNWAY AND FAA CABLING HAS NOT BEEN SHOWN FOR CLARITY. RUNWAY LIGHTING IMPROVEMENTS ARE LIMITED TO THE ISOLATED REPLACEMENT OF EDGE LIGHT FIXTURES.
2. LOCATION AND QUANTITY OF PROPOSED FAA DUCT BANKS SHALL BE COORDINATED WHEN EXTENT OF FAA WORK IS DETERMINED. MULTIPLE EXISTING CIRCUITS AND DUCT BANKS CURRENTLY EXIST IN THE PROJECT AREA AND THE ULTIMATE IMPACT AND IMPROVEMENTS IS UNKNOWN AT THIS TIME.
3. ALL EXISTING TAXIWAY A CABLING, SIGNAGE, DUCT, AND LIGHT FIXTURES SHALL BE REPLACED OTHERWISE NOTED. CONNECTIONS TO EXISTING HOMERUN CIRCUITS AND REQUIRED NEW HOMERUN CABLING AND ELECTRICAL VAULT IMPROVEMENTS SHALL BE DETERMINED UPON FIELD INSPECTION

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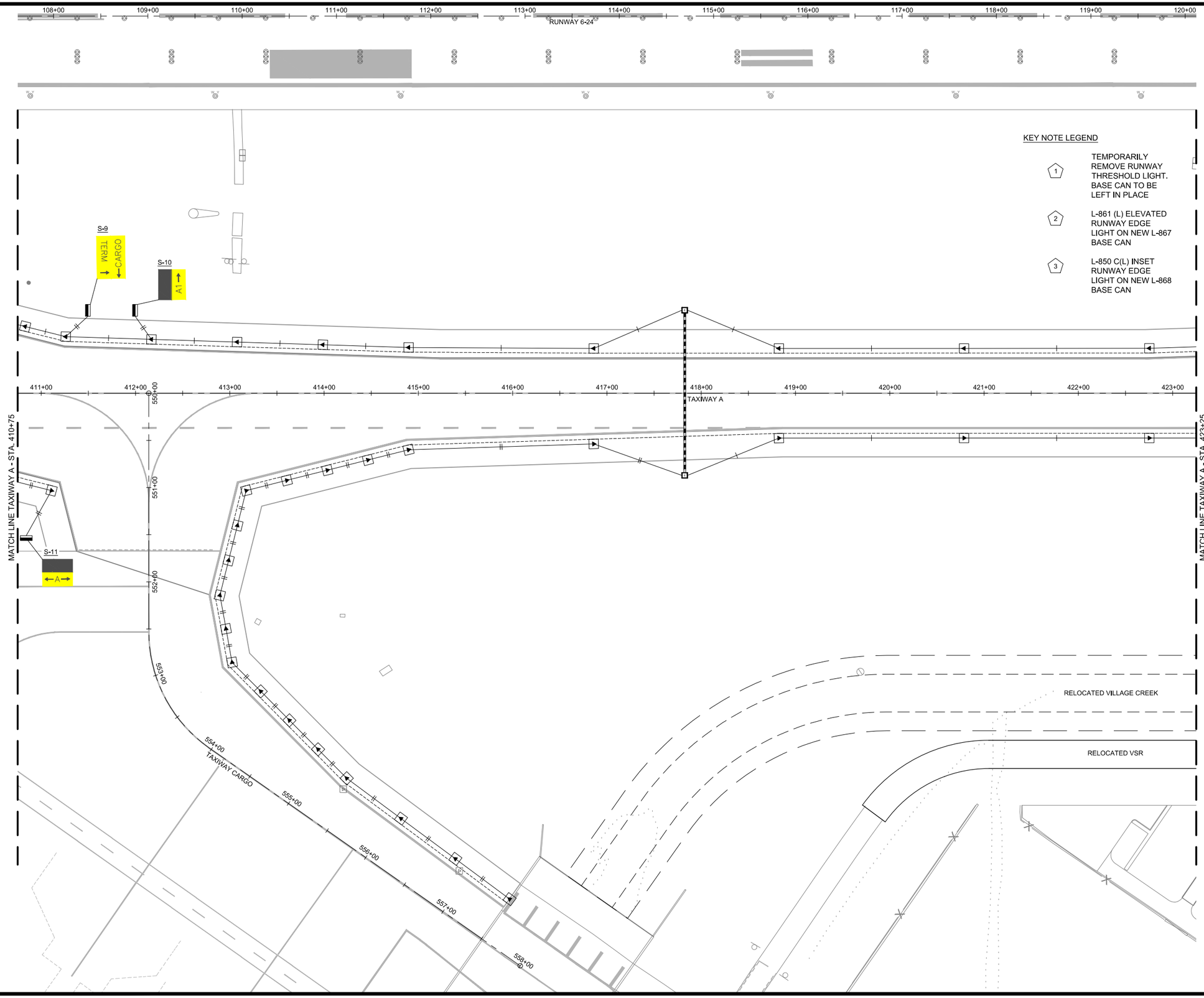
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SHEET CONTENTS

LIGHTING AND SIGNAGE PLAN - SHEET 1

SHEET NO.

E-101



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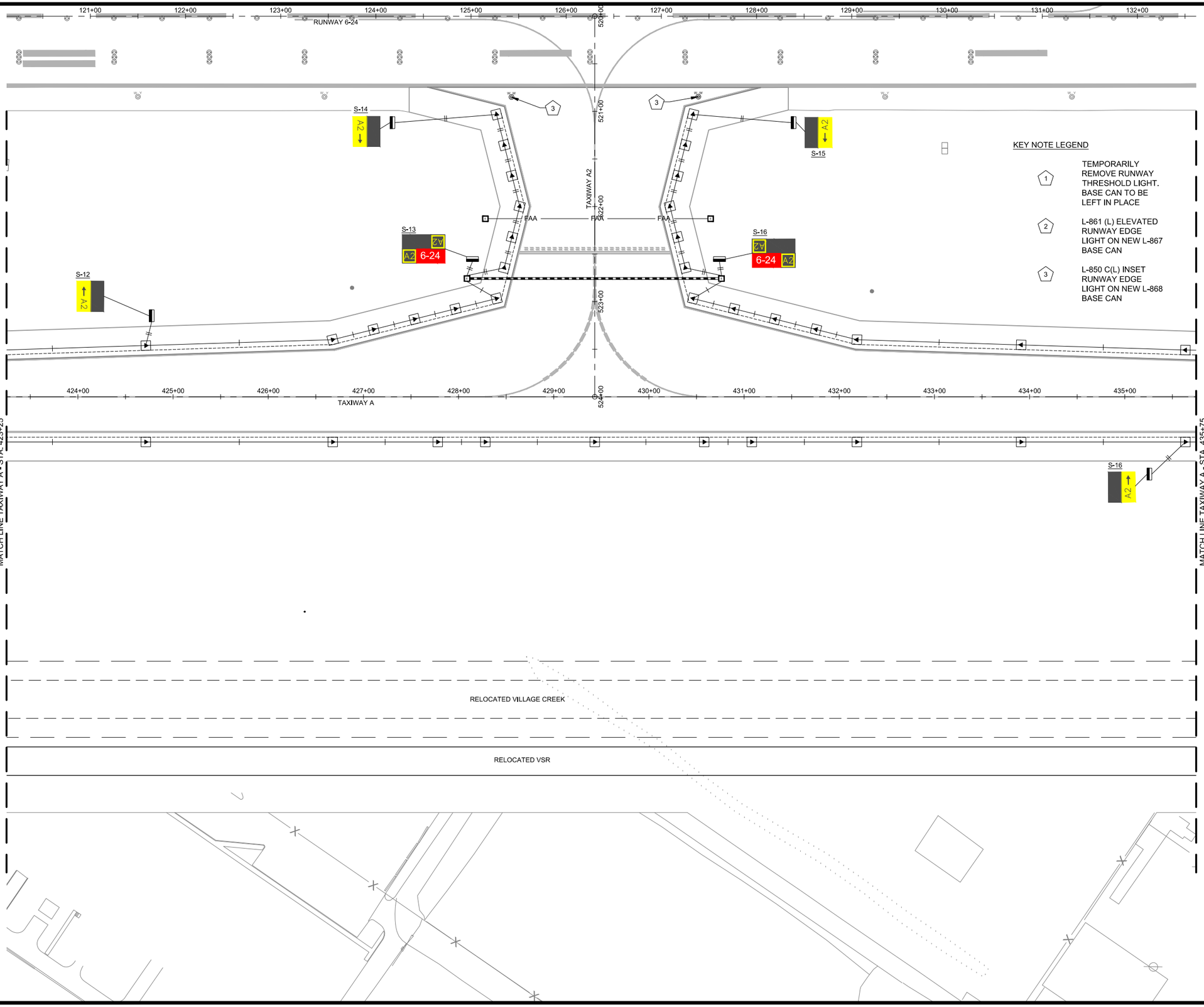
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SHEET CONTENTS
LIGHTING AND SIGNAGE PLAN - SHEET 2

SHEET NO.
E-102



KEY NOTE LEGEND

1. TEMPORARILY REMOVE RUNWAY THRESHOLD LIGHT. BASE CAN TO BE LEFT IN PLACE
2. L-861 (L) ELEVATED RUNWAY EDGE LIGHT ON NEW L-867 BASE CAN
3. L-850 C(L) INSET RUNWAY EDGE LIGHT ON NEW L-868 BASE CAN

LEGEND

- NEW L861T(L) ELEVATED, LED MITL ON L867 BASE
- L858 (L) GUIDANCE SIGN ON PCC BASE
- #8 5KV, L-824C, IN NEW CONDUIT UNLESS OTHERWISE NOTED (TICK MARKS INDICATE NUMBER OF CIRCUITS)
- #6 SOLID BARE COPPER COUNTERPOISE
- 4'X4'X4' AIRCRAFT RATED HANDHOLE WITH SPRING ASSISTED LID
- 4W-4" CONCRETE ENCASED ELECTRICAL DUCT BANK
- FAA — FAA CONCRETE ENCASED DUCT BANK (SIZE AND EXACT LOCATION TO BE COORDINATED WITH AGENCY)
- W Y — RUNWAY THRESHOLD / EDGE LIGHT
- EXISTING JUNCTION CAN

GENERAL NOTES

1. EXISTING RUNWAY AND FAA CABLING HAS NOT BEEN SHOWN FOR CLARITY. RUNWAY LIGHTING IMPROVEMENTS ARE LIMITED TO THE ISOLATED REPLACEMENT OF EDGE LIGHT FIXTURES.
2. LOCATION AND QUANTITY OF PROPOSED FAA DUCT BANKS SHALL BE COORDINATED WHEN EXTENT OF FAA WORK IS DETERMINED. MULTIPLE EXISTING CIRCUITS AND DUCT BANKS CURRENTLY EXIST IN THE PROJECT AREA AND THE ULTIMATE IMPACT AND IMPROVEMENTS IS UNKNOWN AT THIS TIME.
3. ALL EXISTING TAXIWAY A CABLING, SIGNAGE, DUCT, AND LIGHT FIXTURES SHALL BE REPLACED OTHERWISE NOTED. CONNECTIONS TO EXISTING HOMERUN CIRCUITS AND REQUIRED NEW HOMERUN CABLING AND ELECTRICAL VAULT IMPROVEMENTS SHALL BE DETERMINED UPON FIELD INSPECTION

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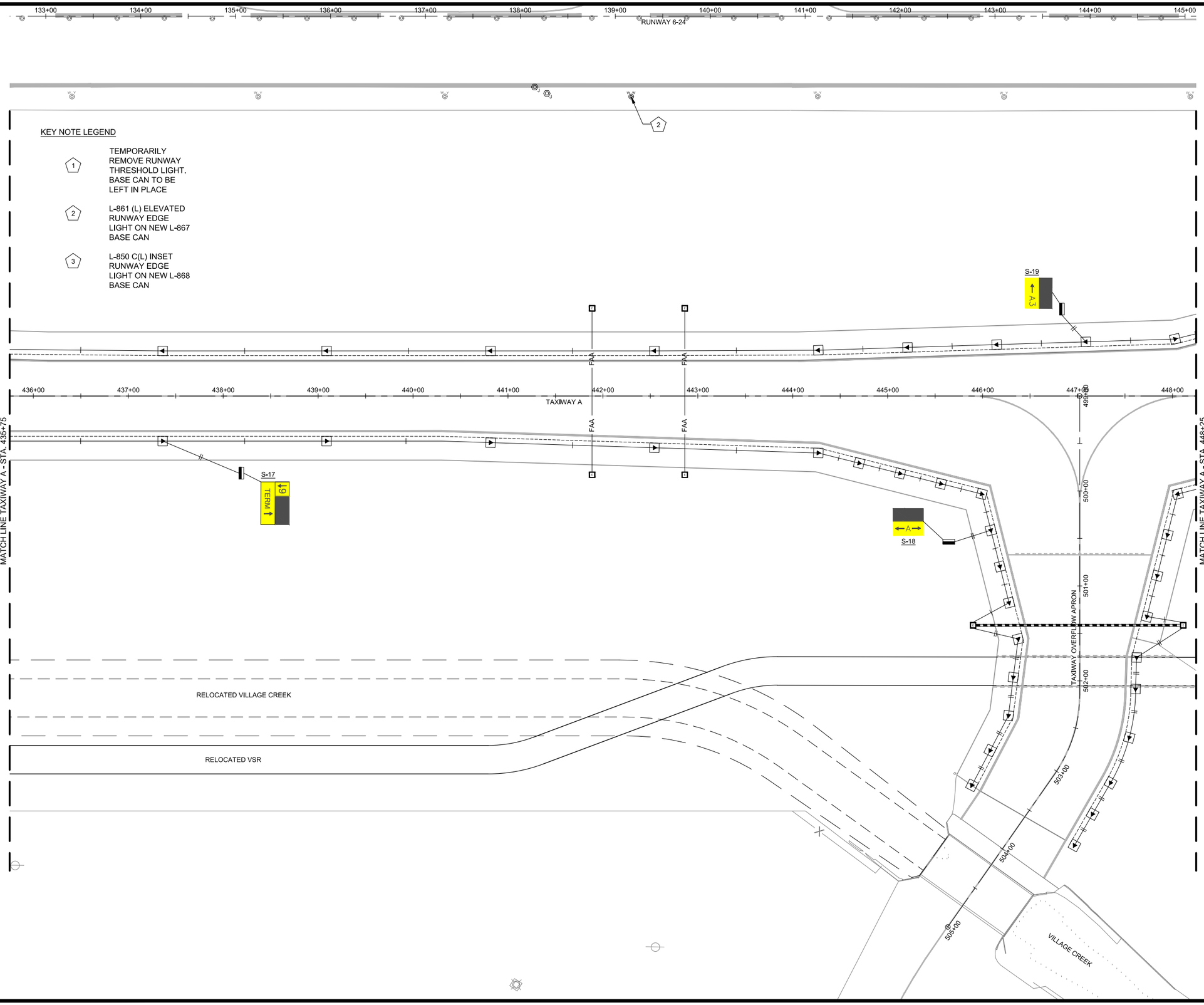
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SHEET CONTENTS

LIGHTING AND SIGNAGE PLAN - SHEET 3

SHEET NO.

E-103



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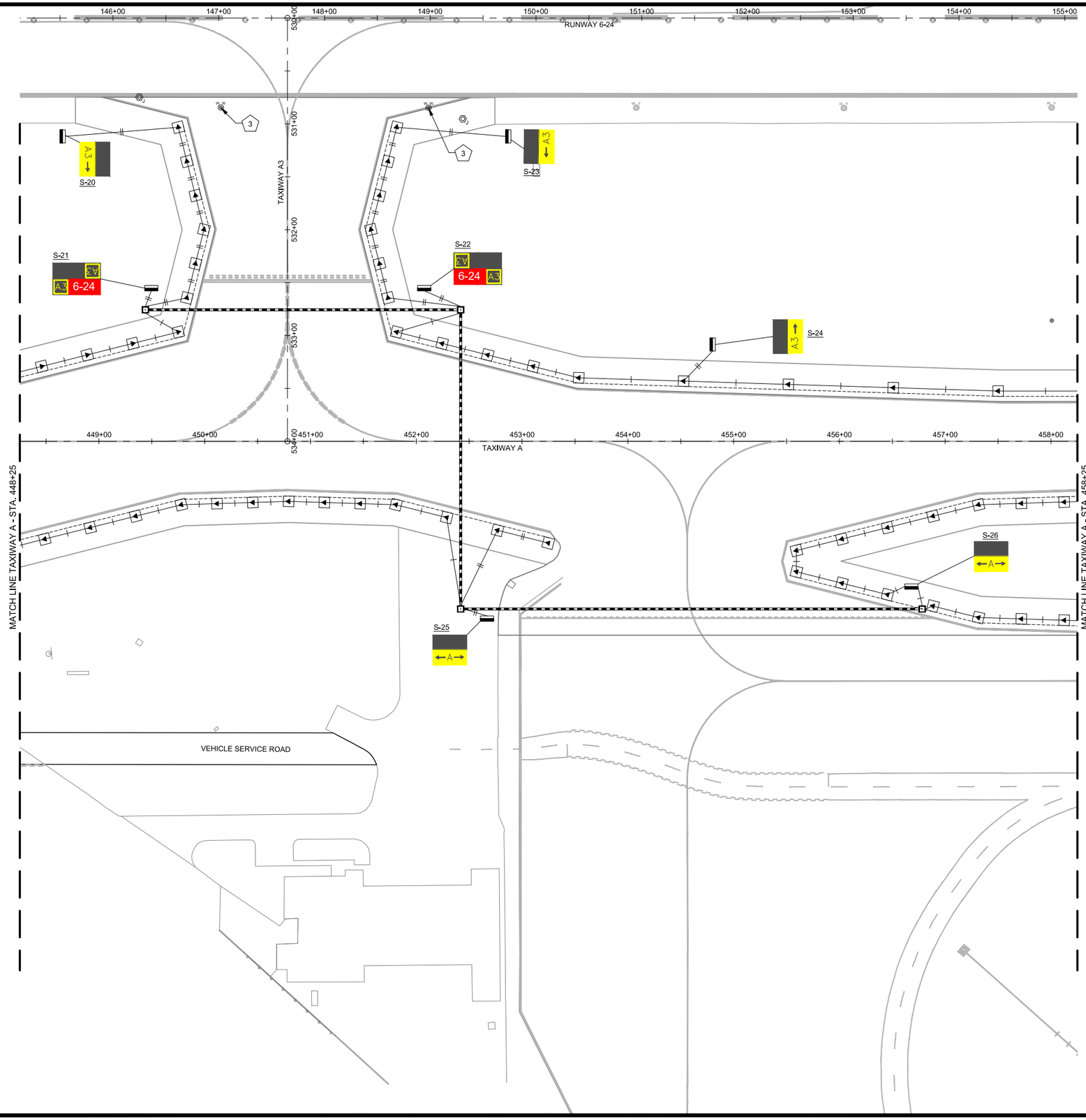
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SHEET CONTENTS

LIGHTING AND SIGNAGE PLAN - SHEET 4

SHEET NO.

E-104



KEY NOTE LEGEND

1. TEMPORARILY REMOVE RUNWAY THRESHOLD LIGHT. BASE CAN TO BE LEFT IN PLACE
2. L-861 (L) ELEVATED RUNWAY EDGE LIGHT ON NEW L-867 BASE CAN
3. L-850 C(L) INSET RUNWAY EDGE LIGHT ON NEW L-868 BASE CAN

LEGEND

- NEW L861T(L) ELEVATED, LED MITL ON L867 BASE
- L858 (L) GUIDANCE SIGN ON PCC BASE
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- W_Y — RUNWAY THRESHOLD / EDGE LIGHT
- EXISTING JUNCTION CAN

GENERAL NOTES

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Mead & Hunt
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BIRMINGHAM-SHUTTLESWORTH INTERNATIONAL AIRPORT

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BIRMINGHAM-SHUTTLESWORTH INTERNATIONAL AIRPORT
TAXIWAY A - 400' SEPARATION AND VILLAGE CREEK RELOCATION
5900 MESSER AIRPORT HWY
BIRMINGHAM, ALABAMA 35212

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PRELIMINARY DESIGN SUBMITTAL

M&H NO.:	3226200-211437.01
DATE:	SEPTEMBER 15, 2025
DESIGNED BY:	CPS
DRAWN BY:	CPS
CHECKED BY:	DES

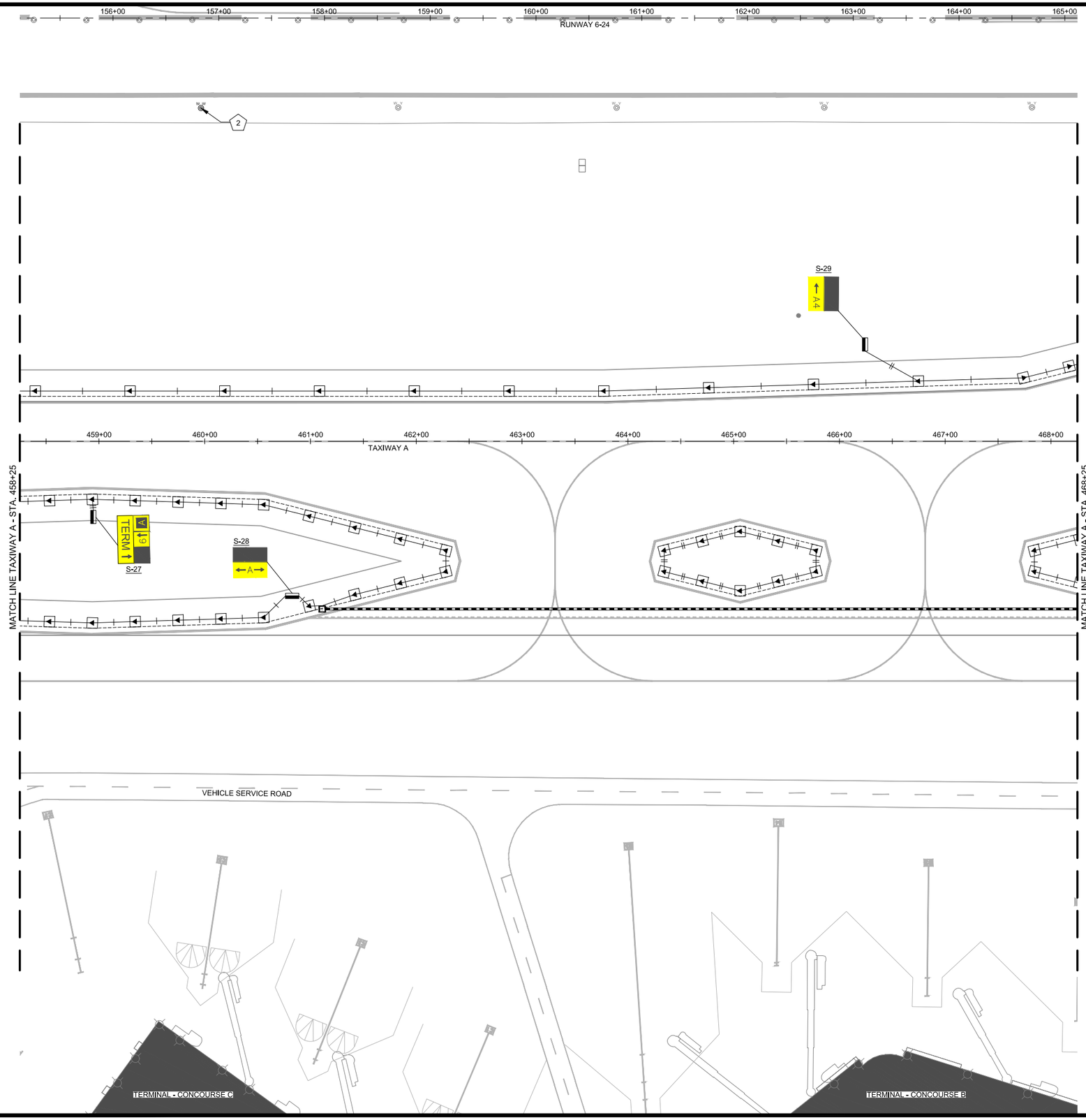
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SHEET CONTENTS

LIGHTING AND SIGNAGE PLAN - SHEET 5

SHEET NO.

E-105



KEY NOTE LEGEND

1. TEMPORARILY REMOVE RUNWAY THRESHOLD LIGHT. BASE CAN TO BE LEFT IN PLACE
2. L-861 (L) ELEVATED RUNWAY EDGE LIGHT ON NEW L-867 BASE CAN
3. L-850 C(L) INSET RUNWAY EDGE LIGHT ON NEW L-868 BASE CAN

LEGEND

- NEW L861T(L) ELEVATED, LED MITL ON L867 BASE
- L858 (L) GUIDANCE SIGN ON PCC BASE
- #8 5KV, L-824C, IN NEW CONDUIT UNLESS OTHERWISE NOTED (TICK MARKS INDICATE NUMBER OF CIRCUITS)
- #6 SOLID BARE COPPER COUNTERPOISE
- 4'X4'X4' AIRCRAFT RATED HANDHOLE WITH SPRING ASSISTED LID
- 4W-4" CONCRETE ENCASED ELECTRICAL DUCT BANK
- FAA — FAA CONCRETE ENCASED DUCT BANK (SIZE AND EXACT LOCATION TO BE COORDINATED WITH AGENCY)
- W Y — RUNWAY THRESHOLD / EDGE LIGHT
- EXISTING JUNCTION CAN

GENERAL NOTES

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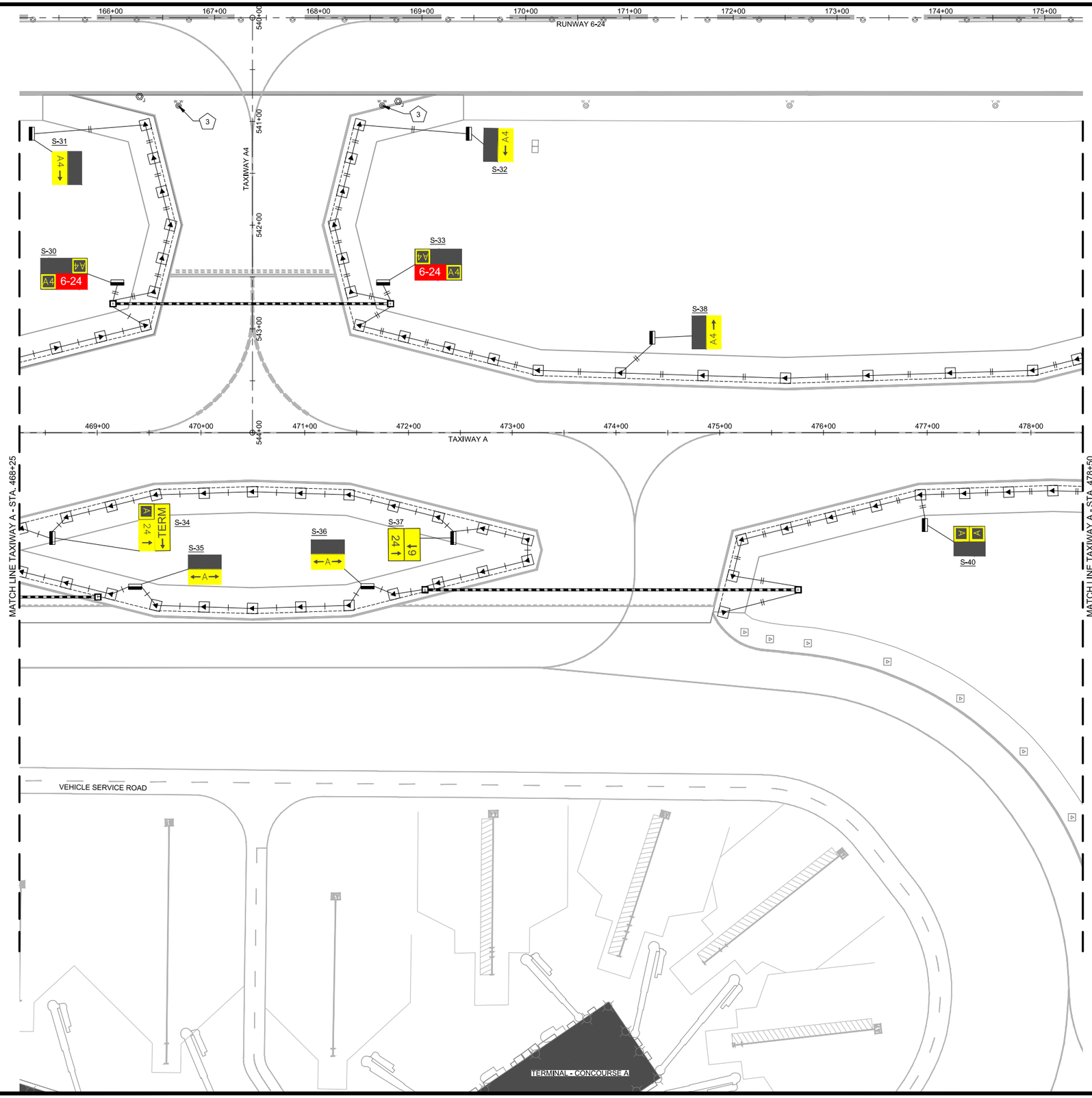
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SHEET CONTENTS

LIGHTING AND SIGNAGE PLAN - SHEET 6

SHEET NO.

E-106



KEY NOTE LEGEND

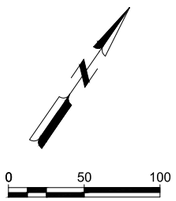
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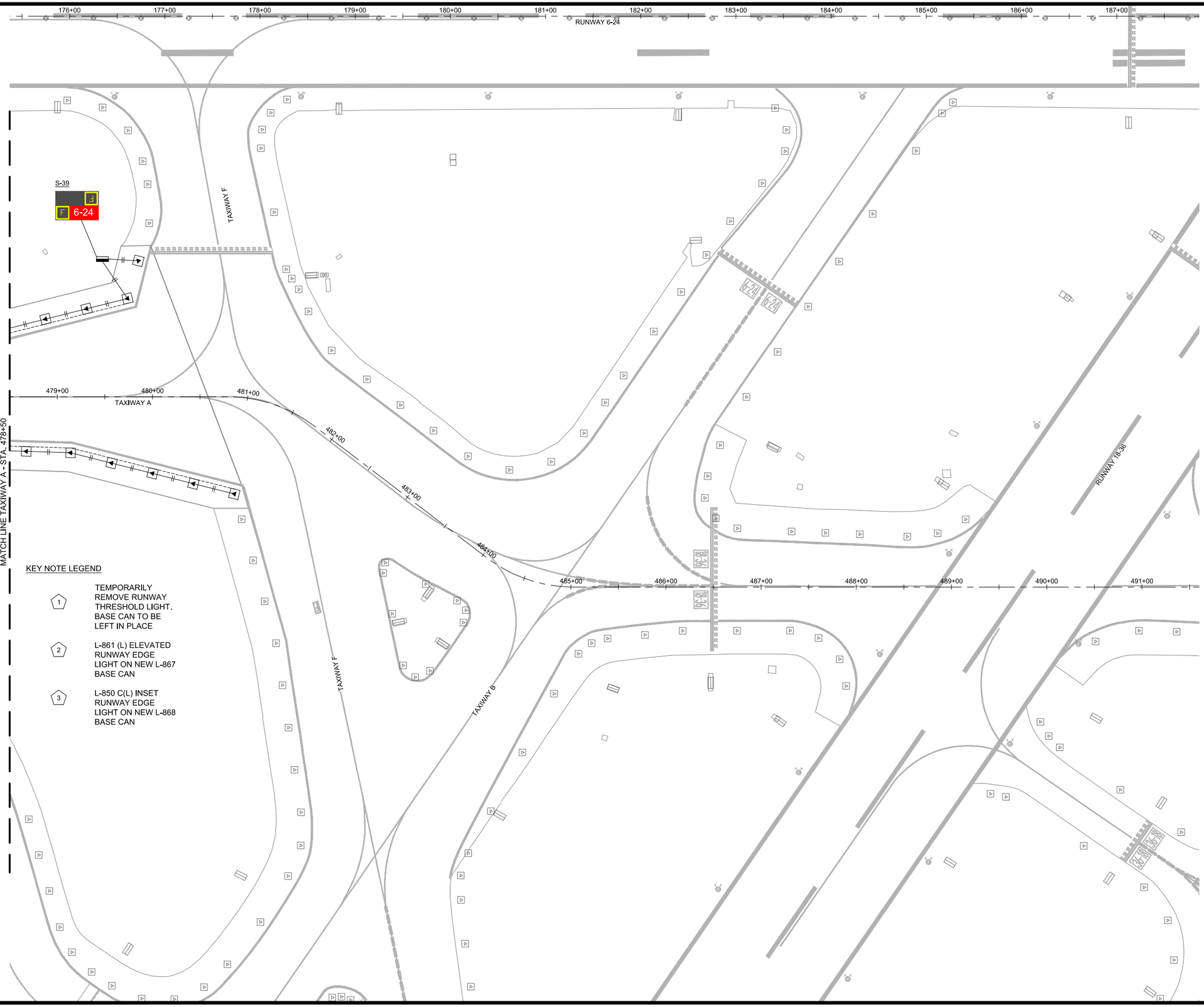
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SHEET CONTENTS

LIGHTING AND SIGNAGE PLAN - SHEET 7

SHEET NO.

E-107



KEY NOTE LEGEND

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SHEET CONTENTS

LIGHTING AND SIGNAGE PLAN - SHEET 8

SHEET NO.

E-108