Ellington Field Aviation Logistics and Operations Facility Environmental Assessment

JSC Environmental Management Office (JE)

Availability:

Available only with approval of issuing office:

June 2025

National Aeronautics and
Space Administration
Lyndon B. Johnson Space Center
Houston, Texas

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ABSTRACT

LEAD AGENCY	National Aeronautics and Space Administration (NASA) Lyndon B. Johnson Space Center (JSC)
PROPOSED ACTION	Construction of a new facility, Ellington Field (EF) Aviation Logistics and Operations Facility (ALOF)
INFORMATION CONTACT	Jennifer Morrison, JSC NEPA/Cultural Resources Manager, (Mail Code: JE111; Telephone: 281-244-0878; E-mail: jennifer.l.morrison@nasa.gov)
DATE	June 2025
ABSTRACT	NASA has prepared this Tiered Environmental Assessment (TEA) for the construction and operation of a new facility, Aviation Logistics and Operations Facility (ALOF) at Ellington Field (EF) and the demolition of Building E125. The JSC Master Plan Programmatic Environmental Assessment (PEA) outlines a tiered structure that requires each of its individual elements (e.g., projects) be addressed in a detailed environmental analysis that would be executed in the manner necessary to conform with the Master Plan and comply with NASA's implementing regulations (14 Code of Federal Regulations [CFR] §1216.3). NASA policy explicitly requires each Center to develop, maintain, and implement a Master Plan for the orderly management and future development of the Center's real property assets, including land, buildings, physical resources, and infrastructure in support of mission requirements. This TEA includes an environmental assessment of one project component of JSC's 20-year revitalization strategy for constructing new state-of-the-art installations and vacating and/or demolishing (deconstructing) non-essential installations to support core capabilities, meet mission requirements, and respond effectively to mission changes. The new 52,000 +/- square foot (SF) facility will function as a combined-use warehouse and office space that will replace World War II-era buildings at JSC's EF. ALOF will consolidate multiple existing structures into one modern, energy-efficient facility to improve the longevity of sensitive components, boost operational efficiency, and lessen safety and security issues related to the warehouse and office areas located in multiple buildings at EF. The project is pursuing Leadership in Energy and Environmental Design (LEED) Silver certification. Through the National Environmental Policy Act (NEPA) public participation process, JSC provides transparency and solicits input from stakeholders into the decision to construct the ALOF. If not adopted, JSC would not have the infrastructure improvements necessary for mission success.

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DRAFT FINDING OF NO SIGNIFICANT IMPACT

AGENCY	National Aeronautics and Space Administration (NASA) Lyndon B. Johnson Space Center (JSC)
ACTION	Publication of a Finding of No Significant Impact (FONSI)
SUMMARY	Based upon the information presented in the Draft Tiered Environmental Assessment and comments received during the public comment period, NASA has made a Finding of No Significant Impact (FONSI) for the construction of the Ellington Field (EF) Aviation, Logistics and Operations Facility (ALOF). Pursuant to the National Environmental Policy Act of 1969, as amended (42 United States Code 4321, et seq.), the National Aeronautics and Space Administration's (NASA) policy and procedures (14 Code of Federal Regulation [CFR] § 1216.3), NASA announces the availability of the Draft Tiered Environmental Assessment (TEA) addressing the potential environmental impacts from the proposed ALOF project in Houston, Texas. The project includes the construction of a new 52,000 +/- square foot (SF) facility that will function as a combined-use warehouse and office space and will replace World War II-era buildings at JSC's EF. The construction of the EF ALOF will allow NASA to consolidate multiple existing structures into one modern, energy-efficient facility. EF ALOF will improve the longevity of sensitive components, boost operational efficiency, and lessen safety and security issues related to the warehouse and office areas located in multiple buildings at EF. The impacts of the Proposed Action will be lessened by demolishing/divesting outdated and inefficient buildings (E265, E266, E267, E270, E272, and E273) and transforming the area into a green space with native species. There are no impacts to cultural resources that were identified in the Section 106 Consultation with the State Historic Preservation Office (SHPO).
ADDRESS	2101 NASA Parkway, Houston, TX 77058 NASA-JSC (Mail Code: JE111) The EA that supports this FONSI will be available at the Clear Lake City-County Freeman Branch Library, 16616 Diana Lane, Houston, TX 77062.
CONTACTS FOR FURTHER INFORMATION	Requests for copies of the TEA and FONSI, or for additional information, please contact: Jennifer Morrison, JSC NEPA/Cultural Resources Manager Mail Code: JE111; Telephone: 281-244-0878; E-mail:jennifer.l.morrison@nasa.gov
SUPPLEMENTAL INFORMATION	JSC prepared a tiered EA (TEA) to support the NEPA decision-making process to construct the EF ALOF. This analysis tiered off the 2019 JSC Master Plan Supplemental Programmatic Environmental Assessment (SPEA) where appropriate. The TEA is an analysis of the associated environmental impacts of

the Proposed Action. The TEA is hereby incorporated by reference into this FONSI and is available for public and interagency review and comment.

NASA evaluated the Proposed Action and the No-Action Alternative. Under the No-Action Alternative, NASA would not construct the EF ALOF, and JSC would continue to operate and maintain the buildings and infrastructure currently in use at the property. The No-Action Alternative would not improve the infrastructure deemed necessary to meet the current and future initiatives of NASA and JSC.

NASA evaluated the environmental consequences of the Proposed Action for stormwater, air quality, floodplains, noise, hazardous material/waste, ecosystems (e.g., vegetation, wildlife), and cultural resources. The TEA analysis also determined that the Proposed Action is not anticipated to result in impacts to topography, wetlands, marine mammals and fish, coastal zone management, population, wild and scenic rivers, vegetation and wildlife, and employment/income elements.

The Proposed Action may result in minor, short-term adverse impacts to air quality, stormwater, and noise resources. Best management practices (BMPs), contract specifications, existing site and state permits, and site requirements for chemical inventories and use will minimize any adverse impacts to less than significant levels. The Proposed Action includes energy and water efficiency design elements, diverts large percentages of construction and demolition debris from landfill, reduces transportation impacts by utilizing locally sourced materials whenever possible, implements native landscaping and pervious surfaces, and implements indoor air quality improvements, all of which will reduce environmental impacts.

The proposed project meets the National Historic Preservation Act definition of a federal undertaking. The proposed location is not within JSC's designated Historic District. Upon review and consultation with the SHPO, NASA and the SHPO have determined that the construction of this building will not have any adverse effects on the historic resources at EF.

Based upon the information presented in the TEA, I have determined that the environmental impacts associated with the construction of the EF ALOF do not have a significant effect on the human environment presently nor in the short-term foreseeable future of NASA's operations and missions. Therefore, issuance of a FONSI is warranted, and preparation of an Environmental Impact Statement (EIS) is not required.

To be signed once finalized. _____

Stephen Koerner Date
Acting Director, Johnson Space Center

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LIST OF ACRONYMS

Acronym	Full Term
AASHTO	American Association of State Highway and Transportation Officials
BMPs	Best Management Practices
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon Dioxide Equivalent
dB	Decibels
DNL	Day-Night Average Sound Level
EF	Ellington Field
EMO	Environmental Management Office
EO	Executive Order
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
ERD	Environmental Resource Document
ERT	Environmental Resource Tool
ESALs	Equivalent single axle loads
FEMA	Federal Emergency Management Agency
FFE	Finished Floor Elevation
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
GHGs	Greenhouse Gases
HGB	Houston/Galveston/Brazoria
HPO	Historic Preservation Officer
JE	JSC Environmental Management Office
JPR	JSC Procedural Requirements
JSC	Lyndon B. Johnson Space Center
MSGP	Multi-Sector General Permit
MS4	Multi-Sector
NAAQS	National Ambient Air Quality Standard
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act

Acronym	Full Term
NOI	Notice of Intent
NO_x	Nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPR	NASA Procedural Requirements
NRHP	National Register of Historic Places
NSR	New Source Review
O&M	Operations and Maintenance
O_3	Ozone
Pb	Lead
PCBs	Polychlorinated biphenyls
PM	Particulate matter
ppb	Parts per billion
ppm	Parts per million
PSD	Prevention of Significant Deterioration
SCTF	Sonny Carter Training Facility
SF	Square Foot
SHPO	State Historic Preservation Office
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	Sulfur dioxide
SPEA	Supplemental Programmatic Environmental Assessment
SWPPP	Storm Water Pollution Prevention Plan
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TEA	Tiered Environmental Assessment
TERMs	Transportation emission reduction measures
THC	Texas Historical Commission
TWA	Time-Weighted Average
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

E.1 Introduction

The National Aeronautics and Space Administration (NASA) Johnson Space Center (JSC) has prepared a Tiered Environmental Assessment (TEA) to provide transparency, encourage widespread information dissemination, and assist in the decision-making process to construct a new facility, Ellington Field (EF) Aviation Logistics and Operations Facility (ALOF). JSC has prepared the TEA per the National Environmental Policy Act of 1969 (NEPA), as amended; NASA's NEPA policy and procedures (14 Code of Federal Regulations CFR §1216); and NASA Procedural Requirements (NPR) 8580.1, Implementing NEPA and Executive Order 12114. The TEA considered the environmental impacts of the Proposed Action and the No-Action Alternative.

A public notice will be published within local newspapers in potentially affected areas that allow the public to review and provide comments for 30 days. JSC will also contact tribal nations, local, state, and federal agencies, and other interested parties either directly or through each state's respective NEPA clearinghouse, as required. The comments received will be addressed in the final TEA (see Appendix B). The TEA includes a draft FONSI for review for the proposed project.

E.2 Proposed Action Summary

The Proposed Action was identified in the 2019 revised JSC Master Plan Supplemental Programmatic Environmental Assessment (SPEA). The JSC Master Plan includes a redevelopment strategy, implemented over 20 years that would replace aging buildings in poor condition with new, sustainable water and energy-efficient buildings and infrastructure with improved working environments, better functional relationships, and reduced operating costs. The Proposed Action will support JSC's overall human space exploration mission and provide the building and infrastructure necessary to support current and future mission requirements.

The project includes the construction of a new 52,000 +/- square foot (SF) facility (31,477 SF warehouse and 21,022 SF office) that will function as a combined-use warehouse and office space and will replace World War II-era buildings at JSC's EF. EF ALOF will consolidate multiple existing structures into one modern, energy-efficient facility. ALOF will improve the longevity of sensitive components, boost operational efficiency, and lessen safety and security issues related to the warehouse and office areas located in multiple buildings at EF. The impacts of the Proposed Action will be lessened by demolishing/divesting outdated and inefficient buildings (E265, E266, E267, E270, E272, and E273) and transforming the area into a green space with native vegetation.

The site layout provides access and space for turning movements for emergency vehicles, delivery trucks, WB-67 interstate semitrailers, and shop maintenance vehicles per vehicle templates provided by the American Association of State Highway and Transportation Officials (AASHTO) and NASA Operations and Maintenance (O&M) personnel. A Vehicle Tracking Analysis for the largest emergency service vehicle and WB-67 semitrailer was completed to ensure proper maneuverability throughout the loading dock area.

Approximately 19,000 SF of paving will be provided for the ALOF. The paving will consist of heavy-duty concrete paving 6.5 inches thick to account for 250,000 equivalent single axle loads (ESALs). Additionally, approximately 2,200 SF of reinforced concrete sidewalk will be provided throughout the site to connect to ramps and stairs, ensuring seamless circulation around the building.

E.2.1 No-Action Alternative

Under the No-Action Alternative, NASA would not construct the EF ALOF, and JSC would continue to operate and maintain the buildings and infrastructure currently in use at the property. The No Action Alternative would not improve the infrastructure deemed necessary to meet the current and future initiatives of NASA and JSC.

E.3 Summary of Environmental Impacts

NASA has evaluated the short-term and long-term environmental impacts on stormwater; groundwater; wetlands; floodplains; coastal zone management; noise; air quality; greenhouse gas emissions; hazardous material uses, hazardous waste generation and pollution prevention; ecosystems (e.g., vegetation, wildlife, endangered species); land use; socioeconomics; and cultural resources.

The primary impacts to the environment from the construction and operation of the EF ALOF are stormwater, air quality, and noise; however, these impacts have been lessened using mitigation measures. It is expected that temporary construction-related impacts would affect air quality, stormwater, noise, population, socioeconomic factors, and increased traffic to the proposed location. NASA would employ various Best Management Practices (BMPs) and other mitigation measures, along with appropriate monitoring activities, to reduce these adverse impacts. The Proposed Action does not result in adverse impacts to the JSC Historic District as the facility will not be located within the Historic District. Upon review and consultation with the State Historic Preservation Office (SHPO), NASA and the SHPO have determined that the construction of EF ALOF will not have any adverse effects on the JSC Historic District.

JSC will distribute the Draft EF ALOF TEA and preliminary FONSI to stakeholders and the public as outlined in the NEPA policy for federal facilities. Comments on the suggested project actions will be accepted during a 30-day public review period. JSC will evaluate the direct and indirect environmental impacts, identify the reasonably foreseeable impacts, and implement the mitigation measures as required from the proposed project to ensure compliance. JSC has determined that the environmental analysis within this TEA is sufficient and there are no significant impacts associated with the proposed action that have not been mitigated to a less than significant level; therefore, an Environmental Impact Statement (EIS) is not required.

1.0 INTRODUCTION

The National Aeronautics and Space Administration (NASA) Johnson Space Center (JSC) has served and continues to serve as a hub of human spaceflight activity for more than half a century. JSC's mission statement is to lead human space exploration. The agency focuses on four priorities: maximize use of the space station; enable the success of the Commercial Crew Program; develop Orion for future missions; and build the foundation for human missions to Mars. The mission is to continue to progress in support of the four priorities mentioned above as the agency extends human exploration to the stars. Consistent with this goal, JSC recognizes the need to manage, and as necessary, upgrade installations and infrastructure to ensure the appropriate support of JSC's missions.

1.1 Location Description

The Ellington Field (EF) Aviation Logistics and Operations Facility (ALOF) proposed location is at EF Airport. EF Airport is 13 kilometers (eight miles) northwest of JSC and 27 kilometers (17 miles) southeast of downtown Houston, in Harris County, Texas (Figure 1). Most of the 750-hectare (1,900-acre) airport is owned by the City of Houston, and tracts are leased to the State of Texas and several fixed-base operators. The U.S. Government owns seven NASA tracts at EF Airport, including the area designated as Sonny Carter Training Facility (SCTF). The Texas National Guard operates military airplanes and helicopters. The City of Houston directs commercial and general aviation, as well as NASA's training and simulation aircraft.

Figures 1 and 2 depict the proposed location of EF ALOF near Brantly Avenue at EF. The proposed facility layout and floor plans can be found in Appendix A, Site Plans.

Figure 1. Proposed EF ALOF Vicinity Map

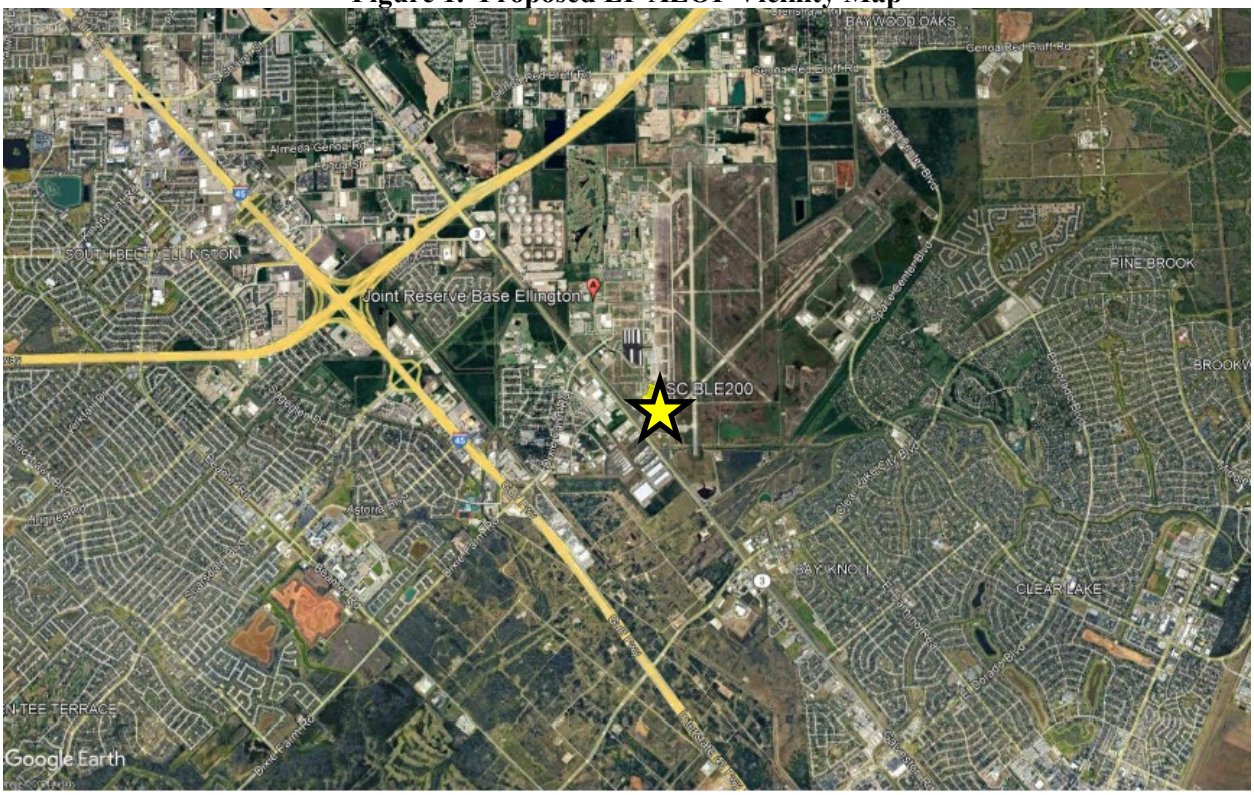


Figure 2. Proposed EF ALOF Site Map (Enlarged)

1.2 Regulatory Background

NASA has prepared this Tiered EA (TEA) to identify and evaluate the environmental consequences of constructing the EF ALOF. NASA has prepared this TEA per the requirements of the National Environmental Policy Act of 1969, as amended (NEPA) (42 United States Code [U.S.C.] §4321 et seq.), NASA's implementing regulations (14 CFR §1216), and NASA Procedural Requirements (NPR) 8580.1A*, Implementing NEPA and Executive Order 12114*. JSC is utilizing the NEPA administrative process to engage stakeholders and the public in this decision-making process. NASA's regulations for NEPA compliance are described in 14 CFR §1216 and NPR 8580.1. The regulations specify that NASA must complete the NEPA process prior to proceeding with taking a proposed action with the potential to affect the environment. Under these regulations, NASA must use a systematic, interdisciplinary process that includes public involvement to evaluate the potential impacts of its activities on the environment.

The Environmental Assessment (EA) is a concise public document that serves to provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). An EA includes a brief discussion of the purpose and need for the proposed action, a range of reasonable alternatives to the proposed action, environmental impacts analysis of the proposed action and its alternatives, and a listing of preparers. NASA must prepare an EIS when significant environmental impacts are anticipated and cannot otherwise be avoided.

A Programmatic EA (PEA) was completed as part of the 2016 JSC Master Plan process and a Supplemental Programmatic EA (SPEA) was completed in 2020 as part of the 2019 JSC Master Plan update process, which included the Proposed Action. A PEA is an EA that can cover broader agency actions, such as rulemaking or establishing a policy, program, or plan, as well as when decisions are based on subsequent tiered-NEPA review. This TEA for the proposed new EF ALOF tiers off the 2019 Master Plan SPEA. Updates were captured as part of the most recent EF-SCTF Environmental Resource Document (ERD) review process, which is being converted to a web-based Environmental Resources Tool (ERT).

2.0 PURPOSE AND NEED

The JSC Master Plan addresses land use planning and facility modifications supporting JSC's missions. The overall goals of the Master Plan are to further human spaceflight by developing resilient buildings, reliable infrastructure, safe and secure access, and a livable campus. The Master Plan is needed to implement JSC's vision for a sustainable capability to develop, operate, and integrate human exploration activities involving commercial, academic, international, and U.S. Government partners. The Master Plan provides guidelines to support redevelopment of JSC's real property assets that incorporate JSC's guiding principles and development constraints and embrace the concepts associated with energy and water conservation, renewable energy, resilience, floodplain management, and protection of NASA's rich historical and cultural assets while ensuring the appropriate level of sensitivity for protection of human health and the environment.

2.1 Description of the Proposed Action

This TEA considered the Proposed Action and the No-Action Alternative. NASA owns small tracts of land at EF, so there were no other alternative locations to consider. NASA acquired the land for the proposed action from the City of Houston in 2022. The newly acquired buildings from the 1960s-era were demolished in 2023 (except Building E125) to make accommodations for a more functional and efficient structure that will meet NASA's needs and strategic goals.

2.2 Proposed Action

The Proposed Action includes the construction of a new 52,000 +/- square foot (SF) facility (31,477 SF warehouse and 21,022 SF office space) and the demolition of Building E125. The new building will function as a combined-use warehouse and office space and will replace World War II-era buildings at JSC's EF. Multiple inefficient and outdated buildings at EF will be demolished and replanted with native species to offset the construction of the new facility as part of JSC's Master Plan Revitalization Strategy. NASA will evaluate opportunities for divestment or partial demolition to reduce the Center's footprint and support its goals and the mission. Building E125 will be demolished and returned to green space as a part of the proposed action. Additional demolition will be required to offset the construction of EF ALOF and will be performed later.

EF ALOF will consolidate multiple existing structures into one modern, energy-efficient facility. ALOF will improve the longevity of sensitive components, boost operational efficiency, and lessen safety and security issues related to the warehouse and office areas located in multiple buildings at EF. The building structure is a pre-engineered metal building. The building consists of an open concept utilizing moment frames spanning the entire width of the building to maximize efficiency of the interior space and lessen the weight on the foundation. The building will be clad in metal panels with punched glazing mixed in to allow for natural light in the building. The entrance will feature a recessed curtain wall glazed system to provide a semi-private building entry.

The site layout (see Appendix A, Site Plans) provides access and space for turning movements for emergency vehicles, delivery trucks, WB-67 interstate semitrailers, and shop maintenance vehicles per vehicle templates provided by the American Association of State Highway and Transportation Officials (AASHTO) and NASA Operations and Maintenance (O&M) personnel. A Vehicle

Tracking Analysis for the largest emergency service vehicle and WB-67 semitrailer was completed to ensure proper maneuverability throughout the loading dock area.

Approximately 19,000 SF of paving will be provided for the ALOF. The paving will consist of heavy-duty concrete paving 6.5 inches thick to account for 250,000 equivalent single axle loads (ESALs). Additionally, approximately 2,200 SF of reinforced concrete sidewalk will be provided throughout the site to connect to ramps and stairs, ensuring seamless circulation around the building.

The design includes the conversion of the existing parking lot to Astronaut Parking. There is existing additional parking South of Building E125, near the guard shack, and near Building E280. The parking stalls were designed to meet or exceed the City of Houston standards for 90-degree stalls (8.5 ft). Each parking space is 10 feet wide and 20 feet long, providing ample room for various vehicle sizes, including larger cars and trucks. This design maximizes the number of parking spaces while ensuring that drivers and passengers have enough space to comfortably enter and exit their vehicles.

New drainage inlets will collect runoff from all on-site impervious areas, including pavements, walkways, and building roof drains, and convey the runoff to the existing underground drainage box culvert that runs diagonally through the site and empties into Horsepen Bayou. The project's drainage patterns will mimic existing conditions to prevent substantial impacts.

The Proposed Action was identified in the 2019 revised JSC Master Plan SPEA. The JSC Master Plan includes a redevelopment strategy, implemented over 20 years, that would replace aging buildings in poor condition with new, sustainable water and energy-efficient buildings and infrastructure with improved working environments, better functional relationships, and reduced operating costs. The Proposed Action will support JSC's overall human space exploration mission and provide the building and infrastructure necessary to support current and future mission requirements.

2.3 No-Action Alternative

Under the No-Action Alternative, NASA would not construct the EF ALOF, and would continue to operate and maintain the buildings and infrastructure currently in use on EF property (Building E125 is not occupied). the No-Action Alternative would not improve the infrastructure deemed necessary to meet the current and future initiatives of NASA and JSC, and, as a result, NASA JSC's active and planned missions may be impacted due to the age and deterioration of some of the structures (up to 50 years old) and the escalating costs for maintenance of the failing support systems. Additionally, the No-Action Alternative would not support the overall JSC Master Plan PEA goals and requirements for developing resilient buildings, reliable infrastructure, safe and secure access, and a livable, sustainable campus. As a result, NASA JSC has opted to not implement the No-Action Alternative.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The affected environment includes those environmental resources potentially impacted by the construction of EF ALOF. An impact assessment is provided for construction activities associated with the various phases of the Proposed Action for each environmental resource area. Impacts are defined in general terms and are characterized as adverse or beneficial, and as short-term or long-term. Beneficial impacts would improve resources and conditions to meet the purpose of this TEA. The project plans to demolish 125% of the new square footage of the building to offset the new construction. This would be a beneficial effect in that there will more permeable surfaces for groundwater recharge than prior to the project implementation. Adverse impacts could deplete or negatively alter environmental resources/conditions.

3.1 Resources Eliminated from Further Analysis

Resources determined unlikely to be impacted by the adoption of either the Proposed Action or the No-Action Alternative were not evaluated in this TEA. These include:

A. Land Use;
B. Geology, Soils, and Seismicity;
C. Topography;
D. Wild and Scenic Rivers;
E. Coastal Zone Management;
F. Groundwater;
G. Wetlands;
H. Floodplains;
I. Vegetation;
J. Terrestrial Wildlife and Migratory Birds;
K. Threatened and Endangered Species;
L. Marine mammals and fish;
M. Population; and
N. Employment and Income.

Table 1 identifies resources that were evaluated and describes the rationale for elimination from further study in this TEA.

Table 1. Resource Evaluation Summary			
Resources		**Detailed Analysis Provided in this TEA?**	**If *Yes*, TEA Section If *No*, Rationale for Elimination**
Physical Environment	Land Use	No	The proposed EF ALOF location will be built on previously disturbed land.
	Geology, Soils, and Seismicity	No	No impact to Geology, Soils, and Seismicity
	Topography	No	No impact to topography is anticipated because of the Proposed Action.
	Wild and Scenic Rivers	No	No impact to Wild and Scenic Rivers.
	Coastal Zone Management	No	No impact to coastal resources.
	Stormwater	Yes	Section 3.2.1
	Groundwater	No	No impact to groundwater. EF receives its potable water from the City of Houston and the Southeast Water Treatment Plant.
	Wetlands	No	No impact to wetlands.
	Floodplains	No	NASA's EF tracts are not located within either the 100-year or the 500-year floodplain.
	Air Quality	Yes	Section 3.2.2
	Greenhouse Gas	Yes	Section 3.2.2.5
	Noise and Traffic	Yes	Section 3.2.2.6
	Hazardous Materials/Waste	Yes	Section 3.2.3.
Biological Environment	Vegetation	No	No impact to vegetation as the proposed area is previously disturbed.
	Terrestrial Wildlife and Migratory Birds	No	No impact to terrestrial wildlife and minimal impact to migratory birds.
	Threatened and Endangered Species	No	No impact to threatened and endangered species. None are in the proposed area.
	Marine Mammals/Fish	No	No impact to Marine Mammals and Fish.
	Cultural Resources	Yes	Section 3.2.5
	Population	No	Temporary, minimal impact to population due to construction in the proposed area.
	Employment and Income	No	Minor, short-term beneficial impacts during construction are anticipated due to the creation of short-term jobs.

3.2 Physical Resources

3.2.1 Stormwater

Stormwater from NASA tracts at EF Airport drains to the south and into Horsepen Bayou, which drains into Armand Bayou, which eventually drains into Clear Lake via storm sewers, culverts, drainage ditches, and swales. NASA owns seven defined tracts at EF Airport. The construction of the EF ALOF primarily impacts Tract 4 on the southwestern portion of the property and covers approximately 0.93 acres and includes a warehouse. It drains to the south to an internal storm sewer that discharges near the southern end of the property to Horsepen Bayou.

Construction activities that could impact stormwater are covered under the Texas Construction General Permit (Permit No. TXR150000). In compliance with this permit, the construction contractor shall develop a Storm Water Pollution Prevention Plan (SWPPP), which includes best management practices to protect stormwater during construction, inspection requirements, corrective actions, and recordkeeping. Best Management Practices include silt fences, hay bales, stormwater inlet covers, and soil stabilization measures. The contractor shall submit the SWPPP to NASA for approval prior to mobilization of construction activities.

Historically, the Texas Commission on Environmental Quality (TCEQ) has authorized NASA tracts at EF Airport to discharge stormwater associated with industrial activities under the terms and conditions of the Texas Pollutant Discharge Elimination System (TPDES) Multi-Sector General Permit MSGP. The primary Standard Industrial Classification (SIC) code for activities conducted at EF is 9661, "Space Research and Technology." This SIC code is not referenced in the permit. However, per discussions with the TCEQ, federal facilities, such as EF, must obtain authorization under the provisions of this general permit if they conduct industrial activities described in the general permit. The secondary SIC code for EF is 4581, "Airport, Flying Fields, and Services," which is listed in the permit under Sector S, Air Transportation. EF falls under Sector S of the MSGP due to its air transportation activities. Sector S includes areas used for aircraft and vehicle maintenance (including aircraft and vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or deicing. Requirements governing air transportation specific to Sector S would be followed throughout the site in addition to general permit conditions for all industrial activities if materials, activities, or wastes were exposed to stormwater.

On November 10, 2021, the TPDES General Permit (Permit No. TXR050000) was reissued under state authority. This general permit provides authorization for point source discharges of stormwater associated with industrial activity to waters of the state (including direct discharges and discharges to a municipal separate storm sewer system (MS4)). The MSGP requires development and implementation of a SWPPP for normal industrial operations. The objective of the SWPPP is to provide EF personnel with a tool to effectively prevent potential pollutants from entering stormwater runoff conveyances and inlets, such as roadside or stormwater drains. The SWPPP defines specific measures to prevent contamination of stormwater from industrial activities. The plan identifies BMPs that are appropriate for the activity and includes a description of how each BMP will minimize pollution. The plan also discusses how controls and practices relate to each other to comprise an integrated, site-wide approach for stormwater pollution prevention.

As part of compliance with this permit, discharge monitoring is required for the NASA tracts at EF. The most recent Discharge Monitoring Report is summarized in Table 2 and show that EF operations are well below discharge limits.

Table 2.
EF Storm Water Discharge Monitoring Report for 2024

Parameter and Units	Discharge Limit (mg/L)	Number of Samples	Result (mg/L)
Arsenic	0.3 Daily Maximum	1	0.00177
Barium	4.0 Daily Maximum	1	0.0564
Cadmium	0.3 Daily Maximum	1	ND (0.001)
Chromium	5.0 Daily Maximum	1	0.0104
Copper	2.0 Daily Maximum	1	0.00864
Lead	1.5 Daily Maximum	1	0.00514
Manganese	3.0 Daily Maximum	1	0.0231
Mercury	3.0 Daily Maximum	1	ND (0.0002)
Nickel	3.0 Daily Maximum	1	ND (0.002)
Selenium	0.3 Daily Maximum	1	ND (0.005)
Silver	0.2 Daily Maximum	1	ND (0.0005)
Zinc	6.0 Daily Maximum	1	0.339

Source: EF Discharge Monitoring and Analytical Report, per Permit No. TXR05AZ56 for 2024.

JSC Ellington Field's non-industrial stormwater discharges fall under the jurisdiction of the City of Houston's MS4 permit, which also includes the Harris County Flood Control District, Harris County, and the Texas Department of Transportation (referred to as the Stormwater Management Joint Task Force. This requires the JSC Ellington Field operations to comply with pre-existing stormwater flowrates for any new development or significant redevelopment as to not overwhelm the storm system and downstream entities. JSC has an internal requirement to offset new construction by demolishing/divesting 125% of the square footage of the building footprint. To meet this requirement, multiple buildings will be demolished which will result in a net increase of pervious surfaces for stormwater recharging.

3.2.1.1 Environmental Consequence

The proposed action will impact the current stormwater discharge system. The project must adhere to the Texas Construction General Permit, which requires that a Storm Water Pollution Prevention Plan (SWPPP) be developed for projects larger than one acre, such as EF ALOF. BMPs, such as filter fabric fences, hay bales, concrete washouts, and inlet covers, will be implemented to reduce stormwater contamination from the project during construction.

Industrial operations and related stormwater requirements are not expected to change, since these functions are currently ongoing and accounted for in the EF SWPPP under the current MSGP. The construction of ALOF will just allow for some of these existing functions to be relocated to a newer facility. ALOF will be integrated into the existing EF SWPPP per requirements of the

MSGP once construction is complete during required annual updates. No impacts are expected to result from moving these existing operations to the new ALOF facility.

For non-industrial activities post-construction, storm discharges, flow directions, and flows were calculated to determine the best stormwater management for continued operations at the facility. Calculations have been performed to determine the rate of run-off from the site, along with demolition offsets for the construction of the proposed action. An evaluation of the pre-development versus post-development stormwater calculations determined that no additional stormwater permitting was required. These tracts previously held buildings and impermeable surfaces (e.g., parking lots and roads) The impact to stormwater has been minimized and considered less than significant since the area was previously disturbed, and there will be an increase of permeable surfaces to reduce stormwater flows with the 125% decrease in building footprints.

3.2.2 Air Quality

The Clean Air Act (CAA) was implemented to ensure acceptable and nonhazardous air quality for the people of the United States. Subsequently, the EPA established the National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment, referred to as criteria pollutants. Standards exist for carbon monoxide (CO), nitrogen oxides (NO_x), ozone (O_3), particles smaller than 10 microns and 2.5 microns (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), and lead (Pb). While not listed as a NAAQS pollutant, Volatile Organic Compounds (VOCs) contribute to ground-level O_3 generated when emissions of nitrogen oxides (NO_x) and VOCs mix in the presence of sunlight.

The U.S. EPA has established pollutant concentration standards monitored over specific time frames to limit atmospheric concentration of criteria air pollutants. The area may be classified as a nonattainment area if the concentration of one or more criteria pollutant in a geographic area is found to violate the NAAQS. Areas with concentrations of criteria pollutants that are below the levels established by the NAAQS are considered either attainment or unclassifiable areas. JSC and the associated proposed action is in Houston, Harris County, which is subject to NAAQS standard designations in the Houston-Galveston-Brazoria (HGB) designation area.

The HGB area is currently designated as severe nonattainment under the 2008 eight-hour O_3 standard (0.075 parts per million (ppm)) and serious nonattainment under the 2015 eight-hour O_3 standard (0.070 ppm) with attainment deadlines of July 20, 2027, and August 03, 2027, respectively. All other NAAQS applicable to HGB are classified as "Unclassifiable/Attainment."

JSC generates both VOC and NO_x, which may contribute to O_3. Table 3 provides the current NAAQS applicable to JSC by pollutant.

Table 3. Houston-Galveston-Brazoria Area Attainment Status by Pollutant*					
Pollutant	**Primary NAAQS Standard**	**Averaging Period**	**Designation**	**Counties**	**Attainment Deadline**
Ozone (O_3)	0.070 ppm (2015 standard)	8-hour	Serious Nonattainment	Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery	August 3, 2027
Ozone (O_3)	0.075 ppm (2008 standard)	8-hour	Severe Nonattainment	Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, Waller	July 20, 2027
Lead (Pb)	0.15 µg/m^3 (2008 standard)	Rolling 3-Month Average	Unclassifiable/ Attainment	All HGB counties	Not Applicable
Carbon Monoxide (CO)	9 ppm	8-hour	Unclassifiable/ Attainment	All HGB counties	Not Applicable
Carbon Monoxide (CO)	35 ppm	1-hour	Unclassifiable/ Attainment	All HGB counties	Not Applicable
Nitrogen Dioxide (NO_2)	0.053 ppm	Annual	Unclassifiable/ Attainment	All HGB counties	Not Applicable
Nitrogen Dioxide (NO_2)	100 parts per billion (ppb)	1-hour	Unclassifiable/ Attainment	All HGB counties	Not Applicable
Particulate Matter (PM_{10})	150 µg/m^3	24-hour	Unclassifiable/ Attainment	All HGB counties	Not Applicable
Particulate Matter ($PM_{2.5}$)	9.0 µg/m^3 (2024 standard)	Annual (Arithmetic Mean)	Official Designation in Process	All HGB counties	Not Applicable
Particulate Matter ($PM_{2.5}$)	12.0 µg/m^3 (2012 standard)	Annual (Arithmetic Mean)	Unclassifiable/ Attainment	All HGB counties	Not Applicable
Particulate Matter ($PM_{2.5}$)	15.0 µg/m^3 (1997 standard)	Annual (Arithmetic Mean)	Unclassifiable/ Attainment	All HGB counties	Not Applicable
Particulate Matter ($PM_{2.5}$)	35 µg/m^3	24-hour	Unclassifiable/ Attainment	All HGB counties	Not Applicable
Sulfur Dioxide (SO_2)	0.03 ppm	Annual (Arithmetic Mean)	Unclassifiable/ Attainment	All HGB counties	Not Applicable
Sulfur Dioxide (SO_2)	0.14 ppm	24-hour	Unclassifiable/ Attainment	All HGB counties	Not Applicable
Sulfur Dioxide (SO_2)	75 ppb	1-hour	Unclassifiable/ Attainment	All HGB counties	Not Applicable

*See 40 CFR §50 for codified NAAQS Standards. See 40 CFR §81.344 for codified designations of Texas counties.

On February 7, 2024, EPA finalized its revision of the annual $PM_{2.5}$ NAAQS to 9.0 $\mu g/m^3$ and published the revision in the Federal Register on March 6, 2024, and the standard subsequently became effective May 6, 2024. State designations were due to EPA by February 7, 2025, and the anticipated final designations are due by February 6, 2026. The HGB area may be designated as non-attainment for $PM_{2.5}$ in the near future. Designation of Harris County as non-attainment for $PM_{2.5}$ may result in potential for applicable rule revisions or new rules in accordance with potential revision of the Texas State Implementation Plan (SIP), including Air Conformity thresholds discussed later in this section. Currently, Harris County is designated in attainment with the 2012 $PM_{2.5}$ annual standard of 12.0 $\mu g/m^3$, the 1997 $PM_{2.5}$ annual standard of 15.0 $\mu g/m^3$, and the 24-hour $PM_{2.5}$ standard of 35 $\mu g/m^3$.

3.2.2.1 Background on Stationary Sources at EF

EF is classified as a *Minor Source* of air pollutants under Title V of the 1990 CAA, due to JSC having the *potential* to emit less than 25 tons per year (TPY) or more of VOC or NO_X in a "severe" O_3 nonattainment area, in accordance with Title 30 Texas Administrative Code §122.10 (D). In accordance with the Texas Clean Air Act, Chapter 382 of the Texas Health and Safety Code, and 30 Texas Administrative Code §122, JSC operates under Title V Permit O1552, initially issued November 17, 2004, and last renewed on December 22, 2021. The construction and emissions of onsite stationary emission sources are authorized and limited under several New Source Review (NSR) Permits, Standard Permits, and Permit by Rule authorizations. Stationary onsite emission sources at EF include an engine test stand, steam boilers; gas turbines; heating, ventilation, and air conditioning systems; generators; stand-by pump engines; surface coating operations; storage tanks; oil-water separators; solvent cleaning operations; cooling towers; loading operations; abrasive blasting booths; laboratory hood vents; test equipment; autoclaves; and fugitive emission area sources. During 2024, stationary emission sources, including all fugitive emissions, at EF emitted approximately 6.21 TPY of VOCs, 28.86 TPY of CO, 2.61 TPY of NO_x, 0.41 TPY of SO_2, 0.84 TPY of PM_{10}, and 0.82 TPY of $PM_{2.5}$.

3.2.2.2 Background on Mobile Sources at EF

Mobile emission sources at EF include employee vehicles (commuters), government fleet vehicles, delivery trucks, construction equipment, and non-road engines. Hundreds of vehicles may enter EF each day, the vast majority of which are commuters. Emissions from mobile sources are assessed at the HGB level by the designated Metropolitan Planning Organization (MPO) for the 8-county HGB Transportation Management Area (TMA). Federal Transportation Air Conformity assessment is conducted, which includes JSC employees and commuters as part of the metropolitan area. Various transportation emission reduction measures (TERMs) are implemented by the MPO. In addition, JSC conducts TERMs through programs, such as encouraging carpooling and utilizing low-emission vehicles.

EF also maintains several registered fuel tanks for diesel fuel and gasoline for use in mobile equipment, such as government fleet vehicles, ground services equipment (i.e., lawn mowers), and as backup fuel for boilers and generators located in critical buildings. Fuel transfers from fuel transport vehicles occur intermittently. Vapor recovery units are used to capture VOC emissions during high VOC transfers, Fuel tank throughputs and estimated vapor losses are monitored or estimated and reported within the annual air emissions inventory report for stationary emission sources, as described in the previous section.

3.2.2.3 Prevention of Significant Deterioration and Visibility Impairment

Prevention of Significant Deterioration (PSD) is a CAA permitting program for new major sources or major modifications of existing sources of air pollution that are in attainment areas for one or more pollutants. The TCEQ may require additional analysis to ensure that the attainment status of the area is not impacted for stationary sources of significant emissions. This project does not propose installation of stationary sources above the PSD thresholds for significant emissions. In addition, under PSD regulations, the EPA classifies areas as either Class I, Class II, or Class III. There are currently no designated Class III areas. A Class I area is a designation under the CAA aimed at providing special protection to certain national parks, wilderness areas, and other natural areas. These areas receive the highest level of air quality protection to preserve their natural beauty, visibility, and ecological integrity. No areas designated as Class I areas are present in the Project Area, and no visibility or ecological impairments are expected at any such areas due to the proposed project. The nearest Class I area is the Caney Creek Wilderness located approximately 400 miles to the north of the project location.

3.2.2.4 General Air Conformity

The TCEQ has adopted EPA's NAAQS as criteria pollutants for Texas in accordance with the Texas SIP. Areas that fail to meet federal standards for ambient air quality are considered to be nonattainment areas. The project construction and operation will be within the JSC-owned portion of EF located in Harris County, Texas. Harris County is currently designated as non-attainment for O_3, with designations of Moderate Nonattainment for O_3 regarding the 2015 8-hour standard and Severe Nonattainment for O_3 regarding the 8-hour 2008 standard. The remaining NAAQS pollutants are currently designated as Attainment within Harris County.

3.2.2.5 Environmental Consequences

EF ALOF construction itself is expected to be a negligible source of stationary source emissions under the CAA during and upon completion of construction. However, one or more stationary emergency generators may be constructed adjacent to the building, and such generators will be authorized through TCEQ's NSR program. In accordance with 40 CFR §93.153(d)(1), conformity determination is not required for sources that may require a permit under the NSR program, such as paint booths. Other stationary sources within ALOF include small natural gas fired water heaters for personal use, which may be authorized by Permit by Rule(s) (PBRs), which do not require registration or authorization. The water heaters are expected to contribute negligible amounts of emissions. Note that certain activities, such as the routine, recurring transportation of material and personnel, do not require conformity determination, in accordance with 40 CFR §93.153(c).

40 CFR §93, Determining Conformity of Federal Actions to State or Federal Implementation Plans, establishes rules for determining conformity of federal actions to state or federal implementation plans for air quality. Specifically, 40 CFR §93 Subpart A establishes air conformity rules for federal highway and Federal Transit Act funded projects, and 40 CFR §93 Subpart B establishes air conformity rules for all other federal projects.

Construction activities may be divided into different construction phases, each with their own timing, duration, and type of air pollutants. The initial phase of site disturbance may include demolition and removal of debris and topsoil, site grading, and subsequently excavating and

trenching in preparation for the construction phase. The building construction phase may utilize numerous pieces of construction equipment, such as cranes, forklifts, and loaders. Emissions from those activities are primarily vehicle exhaust, with more limited particulate emissions resulting from traffic on bare ground. The final phase includes building finishing and coating. Emissions result from the application of surface coatings (e.g., primer, paint), off-gassing of asphalt, pavement markers and/or coatings, as well as other potential applied materials, sealants, and waterproofing.

Motor vehicle emissions, including road and non-road vehicle emissions related to the project, were determined in accordance with 40 CFR §93.159(b)(1). Specifically, emission factors derived from the latest version of the EPA Motor Vehicle Emission Simulator (MOVES4 and applicable references) were utilized in conjunction with available planning assumptions. On-road vehicle planning assumptions include parameters including but not limited to on-road vehicle type, fuel-type, total vehicle miles traveled, and corresponding pollutant specific emission factors. Non-road vehicle planning assumptions include but are not limited to the following parameters: vehicle/equipment type, total hours of use for project, and corresponding pollutant-specific emission factors. Non-road vehicle planning assumptions also include equipment unable to move under their power, including gensets, and welding machines. In addition, particulate emissions from transport on paved and/or non-paved roads were assessed and calculated.

Area source emissions (40 CFR §93.159(b)(2)) from the site disturbance and preparation area were calculated utilizing EPA's method from AP-42 Chapter 32.2.3 Heavy Construction Operations. The acreage of site preparation and months of site preparation per the Planning Assumptions were assessed to calculate resulting particulate (Total PM/PM10/PM2.5) emissions. Other non-particulate pollutants resulting from earth moving equipment were accounted for under the non-road vehicle planning assumptions and emission factors. Site disturbance may include several construction phases, including site grading, excavating, and trenching.

Other miscellaneous emission sources during the construction process were accounted for, including paving materials, paints, thinners, solvents, and other materials. Emissions were calculated per EPA conformity guidance, utilizing coating surface area and average VOC content of coatings and other materials. In addition, emissions were calculated from potential use of temporary portable fuel containers and trailers. Emissions from portable fuel containers were calculated utilizing AP-42 Loading Operations calculation methodology to calculate emissions from loading and unloading of fuel.

Table 4 below provides the results of the analysis for General Conformity Applicability. Thresholds for applicability are provided directly from 40 CFR §93.153(b)(1), in accordance with Harris County's non-attainment for O_3 status. Additionally, the lowest thresholds for all other NAAQS pollutants were selected for comparative purposes and as an additional precaution. Emissions presented in Table 4 are reported as mitigated, therefore emission control or efficiency factors were applied in accordance with the procedures specified in applicable references. . There were no emissions from Pb.

Applied mitigation, or reduction of emissions was only accounted for particulate matter emissions from three categories of emissions during the analysis: Site Disturbance/ Preparation Fugitives, Material/ Storage Piles Wind Erosion, and Material Handling (On-Site Haul; Off-Site Haul). For Site Disturbance/ Preparation Fugitives, reductions of expected particulate emissions were based

on maintaining a minimum of 12% soil moisture, with water as necessary and seeding of disturbed areas as appropriate (Countess Environmental 2006). Emissions reductions from Material/ Storage Piles Wind Erosion were accounted by soil moisture, coverings, and/or regular watering to maintain a minimum soil moisture level (Countess Environmental 2006). Emissions from Material Handling (On-Site Haul; Off-Site Haul) were reduced by accounting for soil particle size, climatological wind speed, moisture content of topsoil, and control efficiency of truck transports utilizing equipment, such as truck covers (Countess Environmental 2006).

Table 4. Air Quality Analysis for General Conformity Applicability, Harris County, with Mitigation Efforts								
Total Emissions by Activity (tons):	**NO_X**	**VOC**	**O_3**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**Pb**
Site Disturbance/ Preparation Fugitives:	0.00	0.00	0.00	0.00	0.00	0.91	0.09	0.00
Material/ Storage Piles Wind Erosion:	0.00	0.00	0.00	0.00	0.00	0.90	0.90	0.00
Material Handling (On-Site Haul; Off-Site Haul):	0.00	0.00	0.00	0.00	0.00	4.66	1.03	0.00
Construction Equipment Operation:	1.27	0.60	1.86	1.36	0.00	0.05	0.05	0.00
Worker Trips (Motor Vehicles, Heavy-Duty Vehicles):	0.56	0.19	0.75	2.70	0.00	0.01	0.01	0.00
Miscellaneous Fugitive Sources:	0.00	4.01	4.01	0.00	0.00	0.00	0.00	0.00
Sum of Total Emissions with Mitigation as Applicable:	1.83	4.80	6.63	4.06	0.00	6.54	2.08	0.00
Maximum Threshold for Conformity Determination (40 CFR §93.153) in Harris County (tons):	25	25	25	100	100	70	70	25
Below Conformity Determination Threshold?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

3.2.2.6 Environmental Consequences

The project emissions are below the maximum thresholds established by 40 CFR §93.153(b)(1) based on the total tons of potential of direct and indirect emissions per 40 CFR §93.159(d) respective to each NAAQS criteria pollutant. Accordingly, further conformity determination is not required, and the project has been demonstrated to be a de minimis source of emissions in the context of General conformity rules within 40 CFR §93. General conformity non-applicability has been demonstrated regarding this action. Consequently, this action is not expected to contribute significantly to the adverse air quality issues in Harris County, Texas.

3.2.2.7 Greenhouse Gas Emissions

The JSC Main Campus is subject to the Mandatory Reporting of Greenhouse Gases (GHGs) rule, 40 CFR §98, which requires annual reporting for installations that exceed 25,000 metric tons per year of Carbon Dioxide Equivalent (CO2e) emissions. A Greenhouse Gas Monitoring Plan (GHGMP) has been prepared and is maintained onsite in accordance with EPA GHG reporting

requirements. Each year, JSC submits the previous year's GHG Emissions to the EPA as required, and for 2024, a total of 59,988 metric tons of CO2e were reported from the JSC Main Campus. EF was below the 25,000 metric tons per year of CO2e threshold in 2024 and was not required to report annual CO2e emissions.

3.2.2.8 Environmental Consequences

The proposed construction of the new ALOF will not have long-term adverse impacts on regulated GHG emissions. Construction and renovation activities will likely increase short-term, regulated GHG emissions due to fossil-fuel use from heavy equipment. JSC requires construction equipment to be properly certified and maintained to reduce emissions from construction activities. The CO2e one-time project emissions are expected to total 624 metric tons. Ongoing CO2e emissions at the time of ALOF completion are expected to contribute 17 metric tons per year.

The new ALOF replaces the older, less efficient structures across EF with an energy-efficient facility that provides maximum space efficiency for office spaces, and modular spaces for development, testing, and maintenance. EF ALOF will provide a heating and cooling system and lighting energy systems that are more energy-efficient than a conventional building of the same size using traditional materials and practices. Overall, the impact of the construction and operation of the proposed project to CO2e emissions could be considered short-term and minor.

3.2.3 Noise and Traffic

Noise is sound that disturbs routine activities or quiet, and/or causes feelings of annoyance. Whether sound is interpreted as pleasant (e.g., music) or unpleasant (e.g., jackhammer) depends largely on the listener's current activity, past experience, and attitude toward the source of the sound. People are normally more sensitive to intrusive sound events at night, and the background sound levels are normally lower at night because of decreased human activity. Therefore, noise events during the nighttime hours are likely to be more annoying than noise events at other times. To account for these factors, the Day-Night Average Sound Level (DNL) adds a 10-decibel (dB) penalty to sound levels occurring during the nighttime period (10:00 PM to 6:59 AM). This 10-dB penalty means that one nighttime sound event is equivalent to ten (10) daytime events of the same level. The EPA identifies DNL as the principal metric for airport noise analysis. DNL is expressed as an average noise level based on annual aircraft operations for a calendar year.

DNL is used to describe the existing and predicted cumulative noise exposure for communities in airport environs in most of the United States and to estimate the effects of airport operations on land use compatibility. DNL has been widely accepted as the best available method to describe aircraft noise exposure and is the noise descriptor required by the Federal Aviation Administration for use in aircraft noise exposure analyses and noise compatibility planning. The federal threshold of "significance" is an increase of DNL 1.5 dB, resulting in an exposure level of at least DNL 65 dB in a noise-sensitive area.

Figure 3 depicts the DNL contours within a 1-mile buffer around the EF Airport. The 75 dB noise level contour (red) for NASA flight operations lies close to the runways, but aircraft noise at this level does extend over the airfield property boundary and encroach on open areas beyond Runways 4, 17R, and 3L. The 65 dB noise exposure contour (blue) for NASA flight operations extends well beyond airport property into surrounding residential and commercial communities. The contour generally follows the departure flight tracks for Runways 4, 17R, and 35L. Most of the land within

the 65 dB contour is undeveloped and has no sensitive noise receptors. Because EF rarely, if ever, conducts flight operations after 10:00 PM or before 6:00 AM, NASA's potential contribution to nighttime noise levels is expected to be minimal. A complete log of NASA's aircraft operations is available by contacting the Aircraft Operations Division stationed at EF.

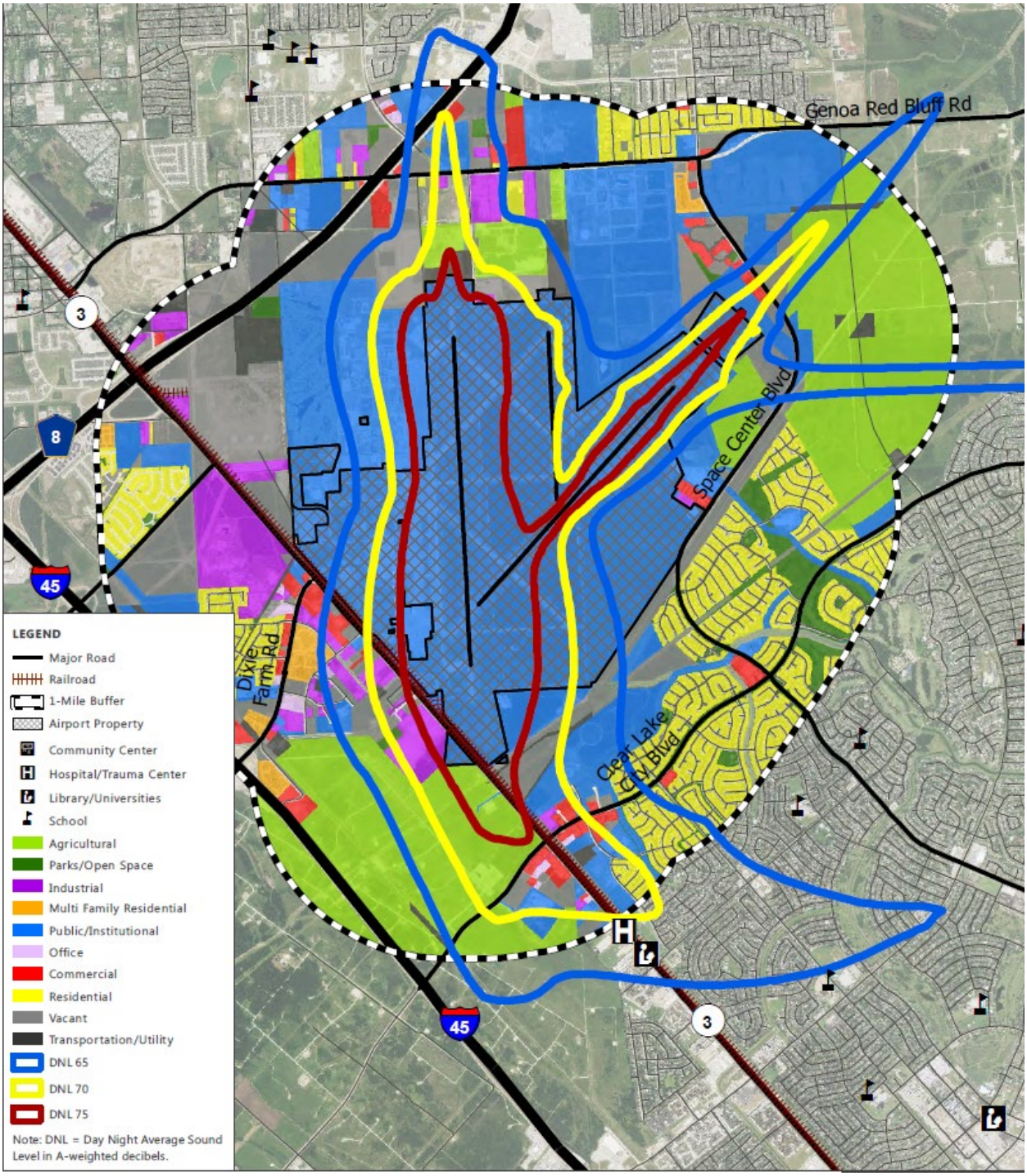
3.2.3.1 Noise Generated by Facilities

Table 5 provides major noise sources at EF and the associated 8-Hour Time Weighted Averages (TWAs) in A-weighted decibels [dB(A)].

Table 5.
Noise Sources at EF Airport and Associated 8-Hour TWA

EF Noise Hazard Inventory	Maximum 8-Hour TWA in dB(A)
EF Flightline	105.4
Fuel Nozzle Test Stand in E135 Room 160A	96.2
Paint Shop and Bicarbonate Soda, Plastic, and Aluminum Oxide Blasting in E136	93.4
Jet Engine Test Cell at E140	129
Sound Suppression Facility for T-38 In-Plane Engine Tests in E151	111.7
Firewater Pump Operations at E245	91.1
Plastic Media Blasting at E276	92.6

Figure 3. EF Noise Contours and Noise-Sensitive Land Uses



Source: Ellington Airport Master Plan, dated September 2015, Exhibit 2-34, available at: [Master Plans | Business and Partnerships | Houston Airport System]

NASA is responsible for a portion of the noise generated at EF Airport by equipment and airplanes. The Engine Test Complex (Building E140) and the Sound Suppression Facility (Building E151) generate the most noise of the stationary sources. These sources produce noise of variable duration and frequency, which is more noticeable than constant noise.

The Engine Test Complex tests engines out of the airplane for up to four to six hours each day during normal working hours. Each engine is tested in idle, military thrust, and afterburner modes. In a study performed in 2007 by NASA's Occupational Health Support Contractor, tests in the afterburner mode generated up to 147 dB(A) in the building. Monitors recorded 90 dB(A) twenty meters (60 feet) from the facility. The nearest receptor to the Engine Test Complex is a commercial development approximately 200 meters (670 feet) to the southwest, beyond State Highway 3, so it is unlikely that an offsite receptor would be adversely affected by this noise.

The Sound Suppression Facility tests engines in the airplane after they are tested in the test complex. Tests are conducted twice per week for 30 minutes to two hours. Noise studies were conducted at this facility in 2006. The contours show noise at 90 dB extending 40 to 60 meters (140 to 190 feet) from the test site. The nearest receptor from the Sound Suppression Facility is the previously mentioned commercial development, approximately 400 meters (1,300 feet) to the southwest. Since engine testing is not routinely performed after normal business hours, there is minimal potential effect on nighttime receptors associated with the engine testing activities performed at EF.

3.2.3.2 Environmental Consequences

Aircraft operations at EF include general aviation, commercial, and military aircraft. NASA aircraft at EF Airport include twenty T-38N trainers for astronaut training, three high-altitude research WB-57F airplanes, two Gulfstream airplanes (one G-3 and one G-5), and an occasional stopover of the NASA Guppy aircraft.

The existing noise contours at the Airport are largely influenced by the tactical jet operations conducted by the Texas Air National Guard and NASA. Per the Houston Airport System EF Master Plan, forecasted growth in aviation activity would not result in a "significant" increase in noise exposure as defined by federal guidelines. Information regarding noise levels generated at EF and compatible land use for the surrounding area was obtained from the EF Airport Master Plan Comprehensive and Technical Reports, available at the following website: https://fly2houston.com/airport-business/resources/master-plans/.

The proposed action will result in a temporary, short-term increase in noise at Ellington Field for construction related activities. The existing facilities that generate noise will not be impacted by the construction of the EF ALOF nor the Building demolition. The Ellington Field area is considered a high noise area and proper protective equipment, such as ear plugs or muffs, is required.

Traffic impacts are expected to increase during construction activities (operations and equipment). The EF ALOF will be constructed primarily outside of the fence line where parking is available for the additional traffic from the construction and/or demolition activities. O&M personnel from the existing buildings will be relocated to the new facility, which will require personnel to relocate near the new site. There is an existing parking where part of the area will be re-striped for astronaut parking.

3.2.4 Industrial Solid Waste

EF is registered as a large quantity generator for hazardous waste. JSC has implemented a procedure to comply with applicable federal and state requirements, JSC Procedural Requirements (JPR) 8550.1. All contractors must adhere to the requirements set forth in the document contractually. Proper management of Industrial Solid Waste (ISW) and hazardous waste at JSC includes requirements for notification, accumulation, pickup, disposal, and training. The Center also generates regulated non-hazardous waste that must meet applicable federal and state requirements for management, handling, transportation, and disposal. Table 6 provides a list of Hazardous Materials Usage/Storage Locations at EF and SCTF.

Table 6.
Hazardous Material Usage/Storage Locations at EF

Building Name	Building Number	Toxic/Hazardous Material(s)
Hangar Maintenance	E135	Oils/lubricants and refrigerants
Paint Shop	E136	Paints, solvents, cleaners, adhesives, epoxies, and oil/lubricants
Aircraft Tire & Wheel Maintenance Shop	E137	Oils, solvents, cleaners, and cryogenics
Engine Test Complex No. 1	E140	Oil/lubricants and chemical dyes
Fuel Cell Maintenance Facility	E150	Chemicals, dye penetrants, and solvents
Sound Suppression Facility	E151	Oils/lubricants and chemical solvents
Hazardous Waste Storage Facility	E152	Oil/lubricants, solvents, and chemicals
Deluge Pump Station	E245	Diesel, lead acid batteries, and chemicals/solvents
CTS Building	E260	Solvents, oils, leaners, lead acid batteries, and fuel
Management Support Facility	E267	Oils and cleaners
Warehouse Supply and Maintenance	E270	Oils/lubricants
Aviation Support Facility	E271	Oils/lubricants
Hangar Maintenance	E276	Oil/lubricants and cryogenics
Aircraft Ground-Support Equipment Shop	E278	Adhesives, oil/lubricants, lead acid batteries, paints, solvents, and diesel
Welding Shop	E279	Pressurized gases and lubricants
Welding Shop	E280	Solvents, oils, and test chemicals
Hangar Maintenance	E990	Fuels, oils/lubricants, pressurized gases, and refrigerants

3.2.4.1 Environmental Consequences

The Proposed Action would increase the waste generated at this location; however, since most of the anticipated operations are a consolidation of activities from across the existing site, impacts relating to waste generation are considered minor.

Construction debris would cause negative, short-term impacts to local landfills, including any asbestos debris from the demolition of Building E125. The interior wood removed from Building E125 will be reclaimed for reuse in the EF ALOF building. Construction projects are required to divert at least 50 percent of nonhazardous construction debris from landfill, and the EF ALOF project is expected to exceed the 50 percent diversion rate. Construction projects at JSC typically divert around 75 to 98 percent from landfill. All construction and demolition waste will be disposed of at a TCEQ authorized/registered facility. Prior to construction, the requirements for the waste vendor will be evaluated and contractually defined to meet federal and state regulations. An Environmental Protection Plan and Waste Management Plan are required for review prior to construction and demolition to prevent or minimize any impacts from releases or discharges during the construction of the EF ALOF and the demolition of Building E125.

3.2.5 Toxic Substances

3.2.5.1 Emergency Planning and Community Right-to-Know

NASA requires all personnel to account for all hazardous and toxic materials used and stored at EF annually. The JSC EMO compiles the information to determine whether formal reporting is necessary. NASA activities at EF use relatively small quantities of regulated hazardous substances. However, at EF, there are a few chemicals that exceed the Tier II reporting thresholds, specifically for jet fuel and diesel. The JSC EMO maintains Emergency Planning and Community Right-to-Know Act (EPCRA) related documentation to substantiate compliance with the EPCRA reporting requirements. JSC's Space and Occupational Medicine Branch maintains an annual inventory by building of toxic substances and hazardous materials and keeps a searchable database at the following website: http://ks.jsc.nasa.gov/haz/hazmat/recsearch.cfm#.

3.2.5.2 Environmental Consequences

The Proposed Action will result in a temporary, short-term increase in hazardous materials for the construction of the facility, such as paints, solvent, adhesives, degreasers, caulking, etc.). Materials are required to be submitted to the Occupational Health and Medicine Branch for review for restricted and prohibited chemical and included in the JSC Hazardous Material Inventory. The materials are assigned a unique Safety Data Sheet identifier number, and the usage is tracked by the location and/or project. Some materials may require disposal after construction is completed; the onsite environmental services contractor will be manage this. It is anticipated that the hazardous material usage will return to previous quantities once construction has been completed and normal operations have resumed.

3.2.5.3 Asbestos-Containing Materials

Regulated asbestos-containing materials (RACM) may be found in pipe lagging, boiler insulation, and fireproofing materials for buildings owned by NASA at EF. Table 7 provides descriptions and locations of RACM at EF. NASA performs asbestos surveys for any planned renovation or

building demolition immediately prior to and in conjunction with those projects to ascertain if they have any RACM that could be disturbed. As necessary, NASA follows proper asbestos control procedures, including filing the required 10-business day National Emission Standards for Hazardous Air Pollutants notification of regulated asbestos abatement and/or building demolition projects per 40 CFR §61 (and corresponding state rules administered by the Texas Department of State Health Services). NASA is a federal facility subject to notifying the Texas Department of State Health Services of the abatement of RACM amounts that exceed 160 square feet, 260 linear feet, or 35 cubic feet. Chapter 11 of JPR 1700.1, JSC Safety and Health Requirements, describes procedures for removal, controlling incidental exposure, and management of RACM. NASA, through the Occupational Health and Medicine Branch, routinely monitors air quality in asbestos-containing areas to ensure the safety of building occupants.

Table 7.
Typical RACM and Locations at EF

Description	Building Numbers
Beams and Plenum	E135
Pipes and vessels (e.g., boilers) in mechanical rooms	E135, E136, E990 cementitious potable water pipes throughout EF
Ceilings	None identified
Walls	E276, E993
Floors	E135, E267, E276

Source: JSC Asbestos Database, 2019.

In 1989, the EPA issued a final rule under Section 6 of the Toxic Substances Control Act (TSCA) banning many asbestos-containing products in the United States and prohibiting new uses due to the great human health risk caused by exposure to asbestos. The court's decision limited the ban to specific asbestos-containing products, including flooring felt, rollboard, and corrugated, commercial, or specialty paper, and to new uses of asbestos initiated after 1989. Building E125 was constructed prior to the asbestos ban and may require asbestos abatement prior to its demolition.

3.2.5.4 Environmental Consequences

The Proposed Action will not result in any additional asbestos-containing materials for the construction. The existing Building E125 and the offset buildings were constructed prior to the asbestos ban. Any asbestos-containing materials that are found will be handled in accordance with required procedures and safety protocols and disposed of through the on-site environmental services contractor. A NESHAP notification for demolition activities will be required to be sent to the Texas Department of State Health Services (TDSHS).

3.2.5.5 Polychlorinated Biphenyls

Polychlorinated biphenyls (PCBs) were commercially manufactured from 1929 until production was banned in 1979 by the Toxic Substances Control Act (TSCA). PCBs are contained in electrical heat transfer, and hydraulic equipment, such as transformers, capacitors, and switches. Ellington Field has several pad-mounted and pole-mounted transformers that support JSC operations. The existing Building E125 was surveyed for environmental concerns, and it was determined that the building has PCB ballasts and fluorescent light bulbs and ballasts.

3.2.5.6 Environmental Consequences

The PCB ballasts and fluorescent light bulbs from Building E125 will be removed and disposed of through the environmental services contractor prior to demolition. The existing transformers will be replaced with non-PCB equipment at the end of their service life in coordination with the City of Houston and Centerpoint Energy. The new EF ALOF building will be constructed with non-PCB materials, where required. Procedures are in place to ensure the proper removal and disposal of PCB materials, which mitigates any impacts to the environment to a minimal level.

3.2.6 Cultural Resources

In 2006, the Texas Historical Commission (THC) recognized the contributions of EF Airport to the World War I and, particularly, World War II aviation training programs. At the dedication ceremony, THC Commissioner and architect of the Texas in World War II initiative, Thomas Alexander, stated, "The Ellington Field marker dedication is especially significant. Ellington Field's record of service has ranged from World War I to the present, and yet until last year, the airfield remained officially unrecognized in terms of its contributions to America's war effort." A historical marker at the entrance to Ellington Field (Figure 17) includes the following inscription:

ELLINGTON FIELD

IN 1917, DURING WORLD WAR I, THE HOUSTON CHAMBER OF COMMERCE LOBBIED THE FEDERAL GOVERNMENT TO ESTABLISH AN AIRFIELD HERE. NAMED FOR LT. ERIC LAMAR ELLINGTON, AN ILLINOIS AVIATOR KILLED IN A CALIFORNIA PLANE CRASH IN 1913, IT OPENED IN NOVEMBER 1917.

THE SITE TRANSFERRED TO THE NATIONAL GUARD DURING THE 1920s, AND FOLLOWING A FIRE AND DEMOLITION, ALL THAT REMAINED BY THE 1930s WAS A CONCRETE WATER TANK. THE GOVERNMENT RETAINED OWNERSHIP, LEASING THE SITE FOR GRAZING CATTLE. BY THE 1940s, THE THREAT OF ANOTHER WORLD CONFLICT CAUSED THE U.S. TO REACTIVATE THE BASE. ELLINGTON WAS VITAL TO AMERICAN WAR PLANNING DURING WORLD WAR II DUE TO ITS STRATEGIC LOCATION NEAR OIL REFINERIES AND THE HOUSTON SHIP CHANNEL. CONSTRUCTION BEGAN IN 1940, AND AMONG THE FIRST IMPROVEMENTS WAS A SERVICE APRON BELIEVED TO BE THE LARGEST CONCRETE SLAB IN THE WORLD AT THE TIME. TROOPS BEGAN ARRIVING AT THE MODERNIZED FACILITY IN APRIL 1941.

ELLINGTON WAS PRIMARILY A PILOT TRAINING CENTER, BUT NAVIGATORS AND BOMBARDIERS, AS WELL AS AVIATORS FROM OTHER COUNTRIES, ALSO TRAINED HERE. BECAUSE THE FIELD WAS OPERATIONAL PRIOR TO THE ATTACK ON PEARL HARBOR, DECEMBER 7, 1941, ONE OF EVERY TEN ARMY PILOTS WENT THROUGH ITS FLYING SCHOOL IN THE FIRST TWO YEARS OF THE WAR. LATER, THE ARMY AIR FORCE RAN AN ADVANCED NAVIGATOR TRAINING SCHOOL HERE.

AFTER THE WAR, ELLINGTON WAS HOME TO A TEXAS AIR NATIONAL GUARD UNIT. DURING THE COLD WAR, IT AGAIN BECAME AN ACTIVE AIR FORCE BASE, PRIMARILY FOR NAVIGATOR TRAINING. THE AIR FORCE ABANDONED THE BASE IN 1976, AND THE SITE HAS SINCE BEEN SHARED BY THE TEXAS AIR NATIONAL GUARD, THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, THE TEXAS ARMY GUARD, THE U.S. COAST GUARD, AND THE CITY OF HOUSTON, WHICH, SINCE 1984, HAS USED MUCH OF IT FOR A MUNICIPAL AIRPORT.

TEXAS IN WORLD WAR II, V+60 (2005)

Figure 4. Historical Marker at the Entrance of EF Airport

Source: THC, 2005.

EF has various facilities along with the KC-135 aircraft on display (pictured in Figure 4) that are eligible for listing in the National Register of Historic Places (NRHP), and are located within the JSC Historic District, the lines of which are discontinuous at EF Airport. A link to the National Historic Registry database for Harris County is available at the following website: https://nationalregisterofhistoricplaces.com/tx/harris/state.html. A current list of eligible and registered historic places and landmarks within the JSC Historic District is available by contacting the JSC Historic Preservation Officer (HPO).

There are several historic sites and markers north and east of EF Airport that are associated with the Texas War for Independence (e.g., San Jacinto Monument). Historic markers located in the vicinity of EF are summarized here: http://earlytexashistory.com/Pasadena/hismkr.html.

3.2.6.1 Environmental Consequences

JSC has a delineated Historic District that is eligible for listing on the NRHP and includes many listed and eligible sites of historic significance. Consultation with the Texas State Historic Preservation Office (SHPO) is required for all federal actions or undertakings that would impact

the listed and eligible structures at these facilities, including new construction, renovations of existing facilities, and demolition of existing structures. The JSC HPO evaluates proposed designs for impacts to historic resources, coordinates with designers to reduce impacts to those resources, and coordinates with SHPO to determine required mitigation measures to minimize adverse impacts on historic resources.

NASA JSC submitted the project for review in accordance with Section 106 of the National Historic Preservation Act, 36 CFR §800: Protection of Historic Properties. Based on the proposed building design, SHPO determined that the proposed action of construction of the EF ALOF and demolition of Building E125 will have no adverse effect on the Historic District.

4.0 REASONABLY FORESEEABLE IMPACTS

Future actions that are reasonably foreseeable include both federal and non-federal acts that have not yet been carried out but are anticipated to take place such that a Responsible Official with ordinary prudence would take them into account prior to reaching a decision. Existing decisions, funds, or initiatives identified by the agency are examples of government operations that need to be considered. Future activities that are highly speculative or indeterminate are not considered.

4.1 Future Actions Proposed for EF

NASA tracts at EF are space-limited, and as a result, there is not much new development planned, according to the JSC Master Plan. In 2023, NASA acquired four buildings from the City of Houston: E125, E129, E130, and E131. These buildings were demolished except for Building E125 (scheduled for this year). There are several buildings that are scheduled for demolition and/or divestment and will be considered as offsets for the construction of the EF ALOF. These include E265, E266, E267, E270, E272, and E273. The new EF ALOF will be located within the footprints of E129, E130, and E131,`` and a small portion of the existing surrounding area. The demolition areas will be turned into green space. Table 8 describes future proposed actions for EF from the JSC Master Plan 2019 SEA.

Table 8.
Existing Environment

Building	Gross Square Feet	Planned Change	Description
E129	N/A	Short-Term Demo/Divest	Demo/Divest Property
E130	N/A	Short-Term Demo/Divest	Demo/Divest Property
E131	N/A	Short-Term Demo/Divest	Demo/Divest Property
E135A	4,548	Short-Term Demo	Demolish Building
E135D	180	None	No Planned Change
E135	65,592	None	No Planned Change
E136	6,368	None	No Planned Change
E137B	544	None	No Planned Change
E137C	182	None	No Planned Change
E137	1,200	None	No Planned Change
E139	64	None	No Planned Change
E140	N/A	None	No Planned Change
E140A	N/A	None	No Planned Change
E140B	N/A	None	No Planned Change

Table 8. Existing Environment			
Building	**Gross Square Feet**	**Planned Change**	**Description**
E142	160	None	No Planned Change
E150	8,750	None	No Planned Change
E151A	96	None	No Planned Change
E245	1,430	None	No Planned Change
E260	492	None	No Planned Change
E261	50	Short-Term Demo	Demolish Building
E263	N/A	Short-Term Demo	Demolish Building
E264	N/A	Short-Term Demo	Demolish Building
E265	9,267	Short-Term Demo	Demolish Building
E266	9,267	Short-Term Demo	Demolish Building
E267	9,268	Short-Term Demo	Demolish Building
E270	9,492	Short-Term Demo	Demolish Building
E271	1,638	None	No Planned Change
E272	1,040	None	No Planned Change
E273	9,267	Short-Term Demo	Demolish Building
E276	51,283	None	No Planned Change
E277	N/A	None	No Planned Change
E278	3,040	Short-Term Demo	Demolish Building
E279	1,620	Short-Term Demo	Demolish Building
E280	N/A	Long-Term Demo	Demolish Building
E380	20,848	Short-Term Divest	Divest Building
E98	N/A	Short-Term Divest	Divest Building
E990	56,567	Long-Term Divest	Divest Building
E991	N/A	Long-Term Divest	Divest Building
E992	N/A	Long-Term Divest	Divest Building
E993	3,000	Long-Term Divest	Divest Building
E994	3,000	Long-Term Divest	Divest Building

4.2 Mitigation Measures

NASA is committed to conforming to all applicable federal and state regulations, Executive Orders, and management policies and directives. This commitment includes complying with regulatory agency permits and associated permit conditions, such as implementing applicable BMPs to prevent pollution and incorporating environmental requirements into all construction specifications. Construction contractors for this project are required to comply with permit conditions and NASA contractual requirements, including BMPs that are required during construction activities to mitigate and reduce impacts. In accordance with applicable local, State, and Federal regulations, the applicant would be responsible for acquiring any necessary permits prior to commencing construction at the proposed project site. Table 9 summarizes the environmental impacts for the construction of the EF ALOF.

Table 9.
Summary of Impacts

Affected Environment	Impact(s)	Mitigation
Stormwater	Potential impact from pollutants affecting stormwater conveyances and nearby navigable waters from construction activities	NASA will adhere to permit (MSGP and SWPPP) requirements to reduce any stormwater impacts from the proposed action. BMPs will be utilized where necessary to prevent pollution from stormwater discharges.
Air Quality	Potential impact of increased air emissions from construction activities, including painting, regulated GHGs, and fugitive emissions	EF has a NSR permit for painting operations, as well as several PBRs for boilers and the engine test stand. BMPs will be used as necessary to ensure compliance.
Noise and Traffic	Potential impact of increased noise and traffic from the proposed action	The proposed action is located at EF Airport, which currently requires hearing protection due to aircraft operations. The EF ALOF will be constructed primarily outside of the fence line where parking is available for the additional traffic from the construction and/or demolition activities.
Hazardous Materials	Potential impact from hazardous materials release to the environment from the proposed action	NASA has policies and procedures in place to ensure proper storage, handling, and disposal of hazardous materials. An Environmental Protection Plan and Waste Management Plan are required for review prior to construction and demolition to prevent or minimize any impacts from releases or discharges.

Table 9. Summary of Impacts		
Affected Environment	**Impact(s)**	**Mitigation**
Cultural Resources	Potential degradation of historic and cultural resources impacts from the construction/demolition activities	Through the Section 106 Consultation process, the SHPO concurred that the proposed action will result in no adverse effect for the construction of EF ALOF and the demolition of Building E125; therefore, no mitigation is required.

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5.1 List of Preparers

Organizations listed below contributed to the preparation and review of this document by writing portions of the text, contributing background, and supporting information, or providing technical review/comments on the EA.

A. Straughan Environmental, Inc.
B. NASA JSC EMO
A. NASA-HQ NEPA Manager
B. NASA-JSC Facilities Management and Operations Division
C. NASA JSC Planning and Integration Office

APPENDIX A
SITE PLANS

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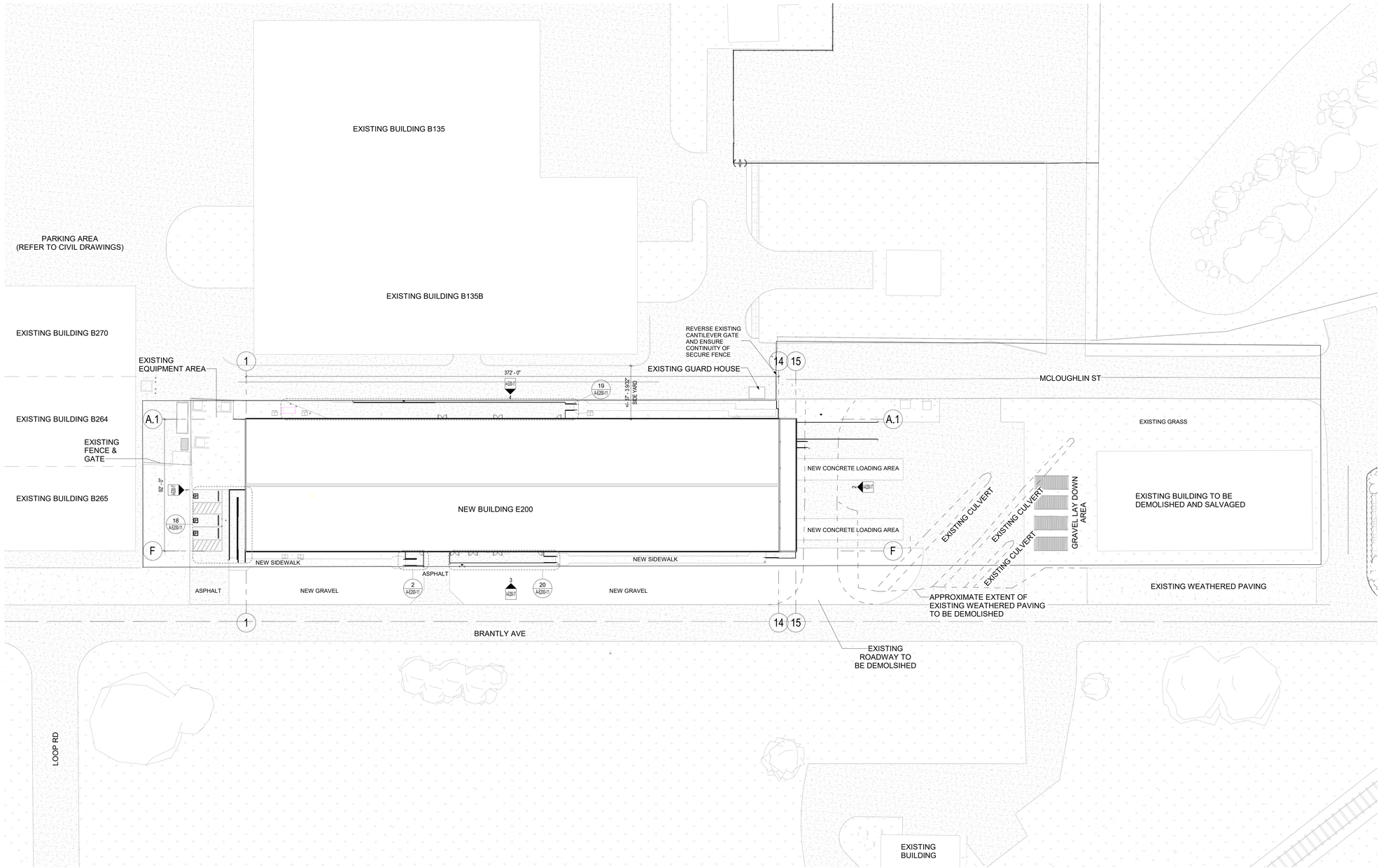


1 OVERALL SITE PLAN
1" = 30'-0"

SITE PLAN NOTES

A. DO NOT SCALE DRAWINGS OR DETAILS. USE GIVEN DIMENSIONS. REFER TO ENLARGED PLANS FOR LOCATION OF ALL ITEMS NOT DIMENSIONED ON PLANS.

B. GRIDLINES VISIBLE ON SITE PLANS INDICATE THE OUTSIDE DIMENSIONS OF THE STRUCTURE..

C. NEW ASPHALT AND CONCRETE PAVING IS SHOWN FOR GENERAL INFORMATION ONLY. REFER TO CIVIL DRAWINGS FOR SPECIFIC DESIGN, DIMENSIONING AND DETAILS REGARDING PAVING AND OTHER SITE IMPROVEMENTS.

D. PROVIDE DETECTABLE WARNING SURFACES AT ALL TRANSITIONS BETWEEN WALKING SURFACES AND DRIVE AISLES IN ACCORDANCE WITH ABAAS, TAS AND ADA. REFER TO ACCESSIBILITY SHEETS FOR GENERAL DETAILS REGARDING ACCESSIBILITY.

E. ALL GUARD RAILS, STAIR RAILS AND HAND RAILS ARE TO BE INSTALLED IN COMPLIANCE WITH THE ACCESSIBILITY REQUIREMENTS OF THE ABAAS, TAS AND ADA. REFER TO ENLARGED PLANS, DETAIL CALLOUTS AND GENERAL ACCESSIBILITY DETAILS FOR FURTHER INFORMATION. ALL RAILS ARE TO BE SECURED IN ACCORDANCE WITH STRUCTURAL DESIGN AND DETAILS TO MEET THE SAFETY REQUIREMENTS OF ALL APPLICABLE CODES.

F. ALL STAIRS AND RAMPS ARE TO BE CONSTRUCTED TO COMPLY WITH THE ACCESSIBILITY REQUIREMENTS OF THE ABAAS, TAS AND ADA. REFER TO STRUCTURAL DRAWINGS FOR DESIGN AND REINFORCEMENT. REFER TO THE GENERAL ACCESSIBILITY DETAILS FOR ILLUSTRATIONS TO ASSIST IN UNDERSTANDING THE ACCESSIBILITY NEEDS.

G. REFER TO ELECTRICAL DRAWINGS FOR SITE RELATED ELECTRICAL SCOPE.

H. FOUNDATIONS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SET OUT IN THE STRUCTURAL DRAWINGS AND PROTECTED FROM THE ELEMENTS ACCORDING TO THE FOUNDATION AND WATERPROOFING DETAILS SET OUT IN THE ARCHITECTURAL DRAWINGS.

I. ENLARGED PLANS AND SECTIONS INDICATED PROVIDE ADDITIONAL INFORMATION ABOUT THE SITE DESIGN AND CONSTRUCTION.

J. CONTRACTOR SHALL TIE NEW GRADING AND PAVING TO EXISTING GRADING AND PAVING WITH SMOOTH TRANSITIONS.

K. ALL PAVEMENT MARKINGS ARE TO MADE USING LOW VOC PAINTS SPECIFICALLY DESIGNED FOR TRAFFIC MARKING.

L. COORDINATES ARE APPROXIMATE AND SHOULD BE CONFIRMED WITH CIVIL ENGINEER.

LEGEND

VEGETATION

CONCRETE

TRUE NORTH

0 30' 60"

Scale: 1" = 30'-0"

90% DESIGN DEVELOPMENT
NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
4	2025-03-14	Design Development 90%
3	2025-01-08	Design Development 60%
2	2024-08-23	Schematic Design 30%
1	2024-04-11	Concept Revision 1

SIGNATURES		DATE
DR AD SA KW EH	ENG AM SA KW	
CH AM SA	APPR AM	
REV Design Development 90%		2025-03-14
DISCP ARCHITECTURAL		
PE Arnold Morrison		
APPR		

Salas O'Brien

National Aeronautics and Space Administration
LYNDON B. JOHNSON SPACE CENTER ELLINGTON FIELD

Building E200 Aviation Logistics and Operations Facility

OVERALL SITE PLAN

PROJECT NO. 2023-03226
PROJECT ID. 80JSC023F0118
CODE IDENT. NO.
WBS
RDT. E1

SHEET NO. 12 of 86

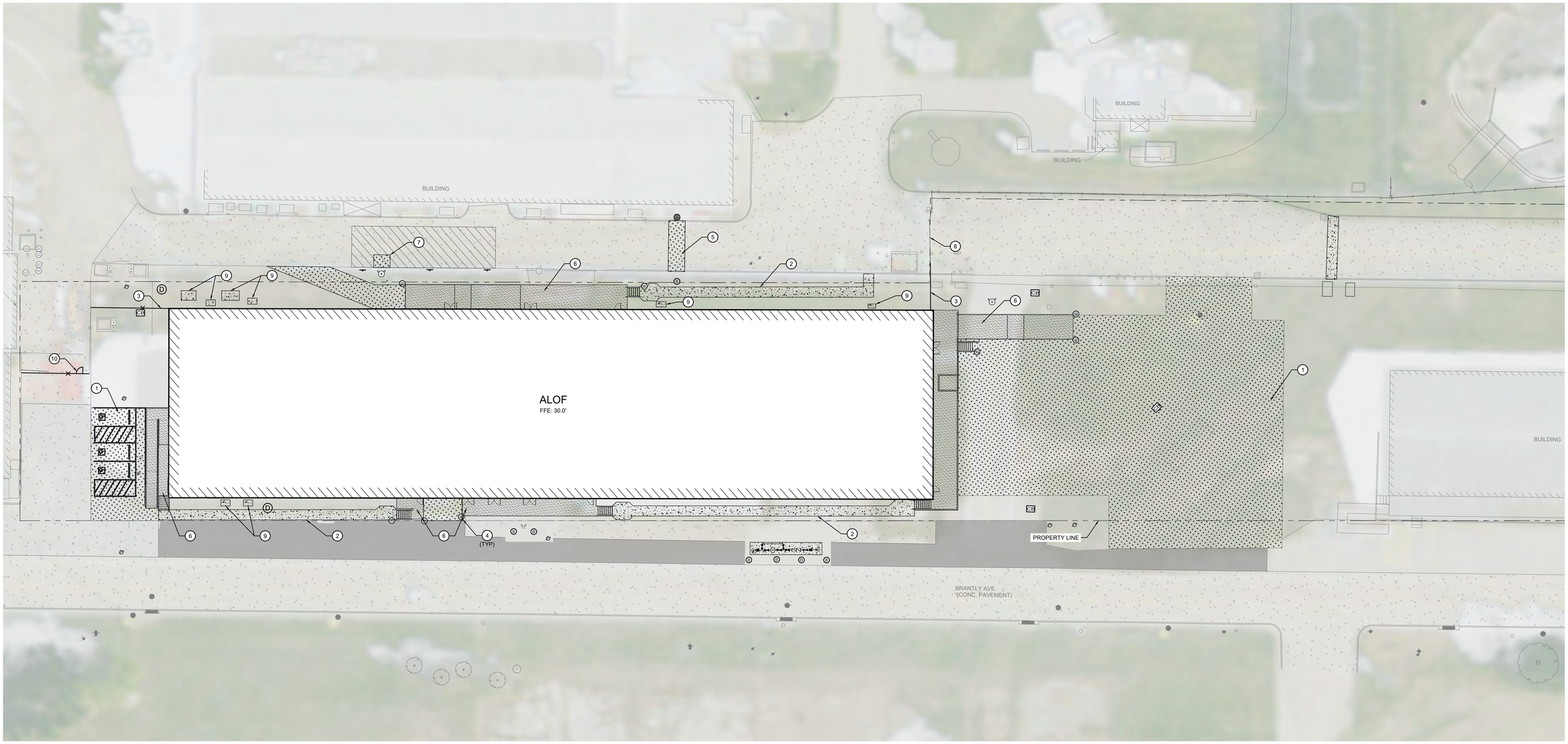
DWG NO. **A-E200-10**

LEGEND:

- PROPOSED HANDICAP PARKING SYMBOL
- PROPOSED WHEEL STOP
- EXISTING CONCRETE
- NEW CONCRETE
- NEW ELEVATED CONCRETE
- NEW HEAVY DUTY CONCRETE
- NEW GRAVEL
- EXISTING ASPHALT PAVEMENT
- NEW BUILDING
- EXISTING POWER POLE
- PROPOSED POWER POLE
- EXISTING METAL POST
- EXISTING SANITARY SEWER MANHOLE
- EXISTING STREET LIGHT
- PROPOSED SANITARY CLEANOUT
- PROPOSED STORM MANHOLE
- EXISTING BOLLARD
- PROPOSED BOLLARD
- PROPOSED FIRE DEPARTMENT CONNECTION
- PROPOSED FIRE HYDRANT
- PROPOSED SANITARY SEWER MANHOLE
- EXISTING PIV
- PROPERTY LINE
- EXISTING FENCE
- PROPOSED FENCE

KEYNOTES

1. INSTALL APPROXIMATELY 18,495 SF OF HEAVY DUTY CONCRETE PAVEMENT.
2. INSTALL APPROXIMATELY 2,200 SF OF 4.5 INCH THICK CONCRETE SIDEWALK.
3. INSTALL APPROXIMATELY 120 LF OF HIGH SECURITY FENCE.
4. INSTALL 14 SIX-INCH DIA BOLLARD.
5. INSTALL APPROXIMATELY 200 SF OF THICK HEAVY DUTY CONCRETE PAVEMENT AFTER INSTALLATION OF NEW UTILITIES.
6. STAIRS, RAMPS AND ELEVATED CONCRETE TO BE DESIGNED BY OTHERS. REFER TO ARCHITECTURAL AND STRUCTURAL SHEETS.
7. INSTALL APPROXIMATELY 50 SF OF EIGHT HEAVY DUTY CONCRETE PAVEMENT AFTER INSTALLATION OF NEW UTILITIES.
8. REVERSE CANTILEVER GATE TO OPEN TO THE EAST. MODIFY AS NEEDED TO MAINTAIN EXISTING COMPONENTS. REUTILIZE CURRENT GATE/GATE OPERATOR IF POSSIBLE. IF GATE AND/OR GATE OPERATOR ARE NOT SALVAGEABLE FOR REUSE, PROVIDE A TYMETAL CANTILEVER GATE WITH A HYSECURITY 222 GATE OPERATOR. RETURN OLD COMPONENTS NOT USED TO PSD.
9. INSTALL CAST-IN PLACE CONCRETE PAD FOUNDATION TO SUPPORT NEW EQUIPMENT. COORDINATE FINAL DIMENSIONS AND ANCHORING WITH EQUIPMENT SUPPLIER.
10. INSTALL APPROXIMATELY 30 LF OF NEW HIGH SECURITY FENCING. PROVIDE AN ACCESSIBLE PEDESTRIAN GATE EQUIPPED WITH PANIC HARDWARE AND KEYCARD READER.



2 C-E200-05 SITE PLAN
SCALE: 1:20

N

0 10' 20' 40' 60'
SCALE: 1" = 20'

REV	DATE	DESCRIPTION
4	2025-03-14	Design Development 90%
3	2025-01-08	Design Development 60%
2	2024-08-23	Schematic Design 30%

90% DESIGN DEVELOPMENT
NOT FOR CONSTRUCTION

SIGNATURES			DATE
DR S. JONES	ENG		2025-03-14
CH J. KOCI	APPR J. LONGSHORE		2025-03-14
REV Design Development 90%			2025-03-14
DISCP CIVIL			
PE J. LONGSHORE			2025-03-14
APPR. ---			---

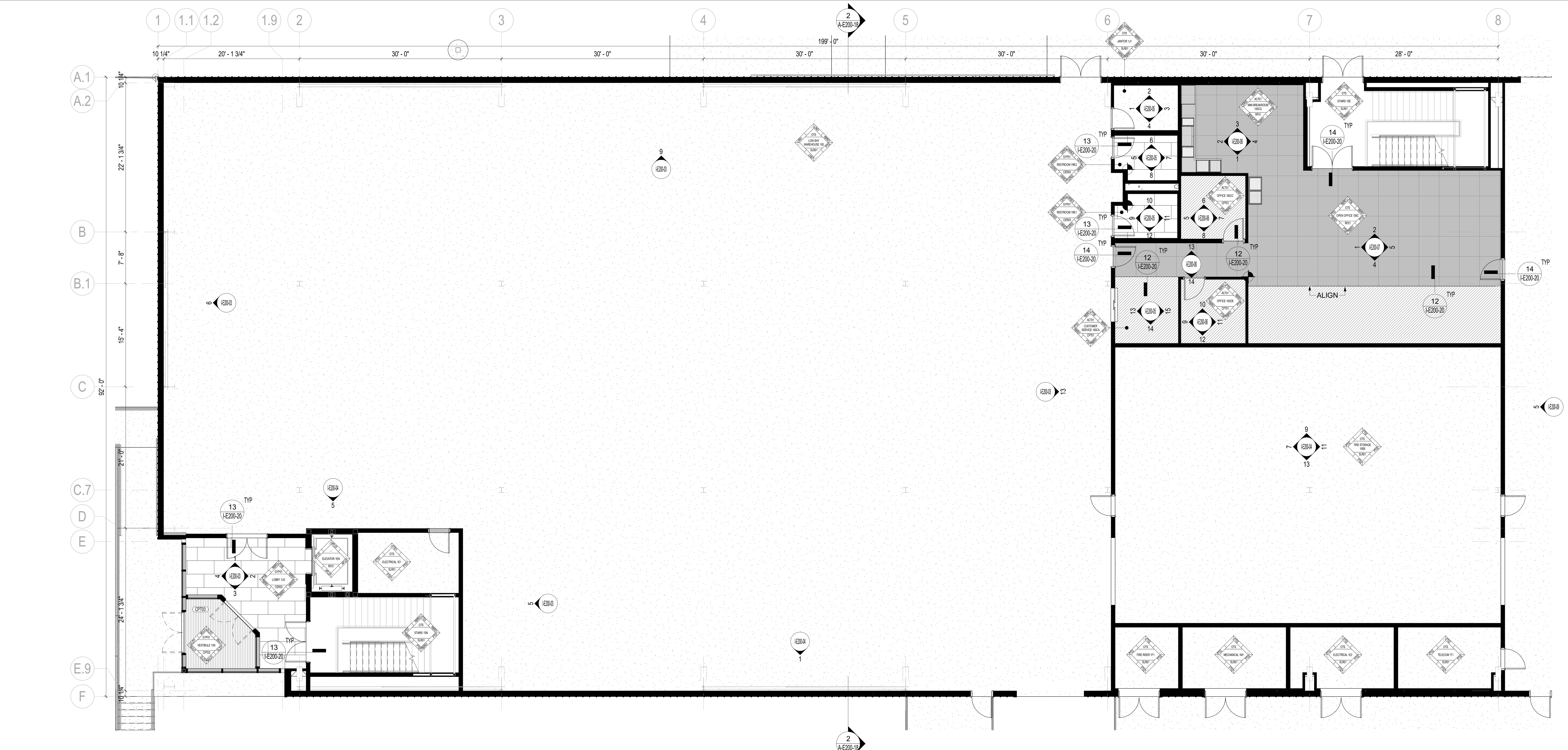
National Aeronautics and Space Administration
LYNDON B. JOHNSON SPACE CENTER ELLINGTON FIELD
Building E200 Aviation Logistics and Operations Facility

SITE PLAN

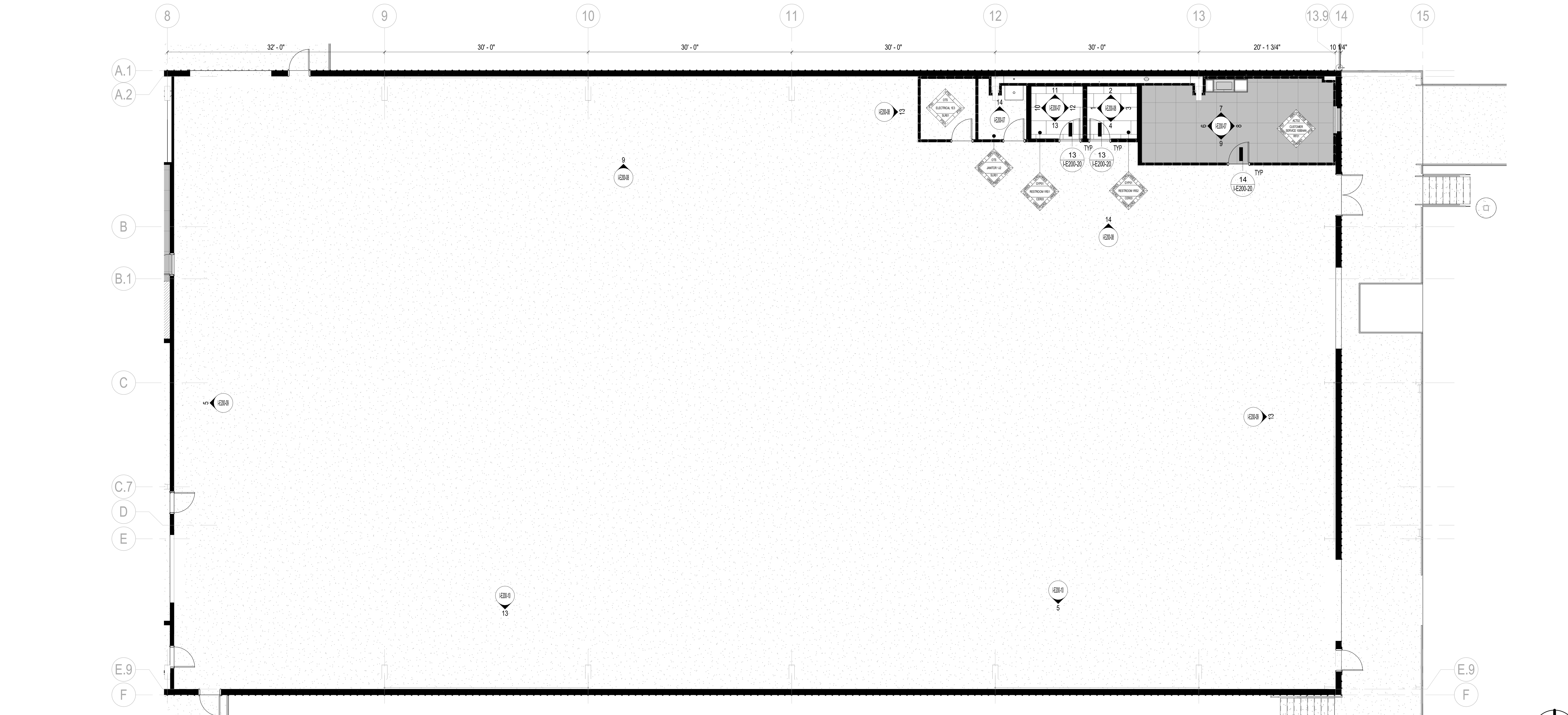
Salas O'Brien

PROJECT NO. 2023-03226
PROJECT ID: BUSC023F0116
CODE IDENT. NO. ---
SIZE E1
SHEET NO.
DWG NO. **C-E200-07**

N:\BIM\Healtheon\2023 JSC ALOF Ellington Field\Drawings\C-102 SITE PLAN.dwg 3/14/2025 3:09 PM



1 FINISH PLAN - MAIN LEVEL - NORTH
1/8" = 1'-0"



2 FINISH PLAN - MAIN LEVEL - SOUTH
1/8" = 1'-0"

TRUE NORTH

0 4' 8' 16'
Scale: 1/8" = 1'-0"

INTERIOR FINISH PLAN NOTES

A. REFER TO THE MATERIALS INDEX AND SPECIFICATIONS FOR FURTHER INFORMATION ABOUT MATERIALS AND FINISHES.

B. REFER TO THE INTERIOR ELEVATIONS FOR ADDITIONAL WALL FINISH INFORMATION.

C. REFER TO THE ROOM FINISH SCHEDULE FOR FURTHER ROOM FINISH INFORMATION.

D. REFER TO THE DOOR SCHEDULE FOR DOOR, FRAME AND HARDWARE FINISHES.

E. SUBSTRATES SHALL BE SMOOTH, FREE OF DEFECTS AND PREPARED TO CONFORM WITH MANUFACTURER'S RECOMMENDATIONS PRIOR TO THE APPLICATION OF FINISHES.

F. CONTRACTOR AND ALL TRADES ARE TO ENSURE THAT ADHESIVES, SEALERS AND OTHER APPLICATION SUBSTANCES ARE COMPATIBLE WITH FINISH MATERIALS AND WITH THE SURFACES TO RECEIVE THE FINISH MATERIALS, AND THAT THEY ARE IN ACCORDANCE WITH THE DESIGN INTENT AS SET OUT IN THESE DRAWINGS.

G. ALL PLASTERED SURFACES AND GYPSUM MUDDING SHALL BE PAINTED.

H. ALL CUT EDGES OF GYPSUM SHALL RECEIVE PROTECTIVE EDGE OR CORNER TRIM, PLASTERING AND BE PAINTED.

I. SEAL ALL GROUTING WITH TWO COATS OF CLEAR GROUT SEALER.

J. WHERE ABUTTING CEILING IS PRESENT, ALL WALL FINISHES AND PAINTING SHALL EXTEND 6" ABOVE THE CEILING HEIGHT UNLESS SPECIFICALLY NOTED OTHERWISE. WHERE CEILING ABUTTING CEILING IS NOT PRESENT, ALL WALL FINISHES AND PAINT SHALL EXTEND TO THE FULL HEIGHT OF THE WALL UNLESS SPECIFICALLY NOTED OTHERWISE.

K. ALL TRANSITIONS ARE TO MEET ACCESSIBILITY REQUIREMENTS FOR SURFACE TRANSITION HEIGHTS. WHERE THE FINISH FLOORING THICKNESS OR OTHER CONSTRUCTION FACTORS WOULD CAUSE TRANSITION TRIMS TO EXCEED THE MAXIMUM HEIGHT, REPORT THE CONDITION TO THE ARCHITECT AND COORDINATE WITH THE ARCHITECT TO SUBSTITUTE THE TRANSITION ALLOW FOR ACCESSIBILITY REQUIREMENTS.

L. FLOOR TRANSITIONS SHALL OCCUR AT THE CENTERLINE OF THE DOOR UNLESS OTHERWISE INDICATED BY THE DRAWINGS.

M. PAINTED SURFACES SHALL BE PRIMED IN ACCORDANCE WITH THE MATERIALS INDEX AND SHALL RECEIVE AS MANY COATS AS REQUIRED TO ENSURE CONSISTENT COLOR COVERAGE, WITH A MINIMUM OF THREE COATS REQUIRED.

N. ALL GYPSUM BOARD CEILINGS AND SOFFITS ARE TO BE PAINTED CEILING BRIGHT WHITE AS INCLUDED IN THE INTERIOR FINISH SCHEDULE UNLESS NOTED OTHERWISE.

O. ALL RECEPTACLES, SWITCHES, COVERPLATES, ETC ARE TO BE WHITE.

P. ALL CEILING MOUNTED MECHANICAL AND ELECTRICAL GRILLES, SENSORS, EQUIPMENT, ETC, ARE TO BE WHITE.

Q. ANY WALL MOUNTED GRILLES AND DIFFUSERS ARE TO BE PAINTED TO MATCH THE WALL FINISH.

R. ANY ELECTRICAL PANELS LOCATED OUTSIDE OF ELECTRICAL ROOMS OR CLOSETS SHALL BE PAINTED TO MATCH THE COLOR OF WALL ON WHICH IT IS MOUNTED.

S. ALL PRODUCTS AND MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

T. INTERIOR WALLS, PARTITIONS, MODULAR PARTITIONS, AND CEILING FINISH MATERIALS SHALL BE CLASS A WITH THE FOLLOWING INDEXES:
   a. FLAME SPREAD LESS THAN 25, IN ACCORDANCE WITH ASTM E84
   b. SMOKE DEVELOPMENT LESS THAN 450, IN ACCORDANCE WITH ASTM E84
   c. NO CONTINUED PROPAGATION OF FIRE AS DETERMINED BY THE TEST METHOD DESCRIBED IN NFPA 255.
   d. INTERIOR FLOOR FINISH MATERIALS SHALL BE CLASS I HAVING A CRITICAL RADIANT FLUX VALUE OF 0.45 W/CM2 OR ABOVE IN ACCORDANCE WITH NFPA 253.

U. AFTER PROJECT COMPLETION, ALL FINISHES AND SURFACES ARE TO BE THOROUGHLY CLEANED.

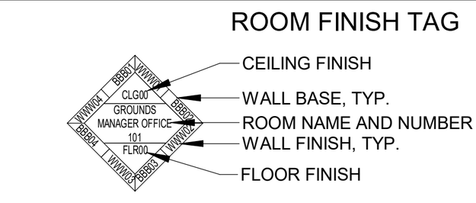
V. ALL FINISH SUBSTITUTIONS ARE TO BE APPROVED BY THE ARCHITECT PRIOR TO INSTALLATION.

W. ALL WALL MOUNTED ACCESSORIES AND CONTROLS ARE TO BE MOUNTED IN ACCORDANCE WITH THE ACCESSIBILITY REQUIREMENTS OF THE ABAAS, TAS AND ADA. REFER TO ACCESSIBILITY DETAILS FOR ADDITIONAL INFORMATION.

X. TILED FINISHES, INCLUDING BUT NOT LIMITED TO CERAMIC TILE, PORCELAIN TILE, VINYL TILE, CARPET TILE AND RUBBER TILE, SHALL HAVE THEIR PATTERN AND INSTALLATION PATTERNS AND METHODS VERIFIED WITH THE DRAWINGS AND ARCHITECT PRIOR TO INSTALLATION.

LEGEND

ROOM FINISH TAG



CARPET TILE - CPT01

CARPET TILE - CPT02

WALK OFF MAT - CPT03

PORCELAIN TILE - CER03

RESILIENT FLOOR TILE - RF01

SEALED CONCRETE - SLR01

REV.	DATE	DESCRIPTION
4	2025-03-14	Design Development 90%
3	2025-01-08	Design Development 60%
2	2024-08-23	Schematic Design 30%

90% DESIGN DEVELOPMENT
NOT FOR CONSTRUCTION

PROFESSIONAL SEAL

Salas O'Brien

LOGO

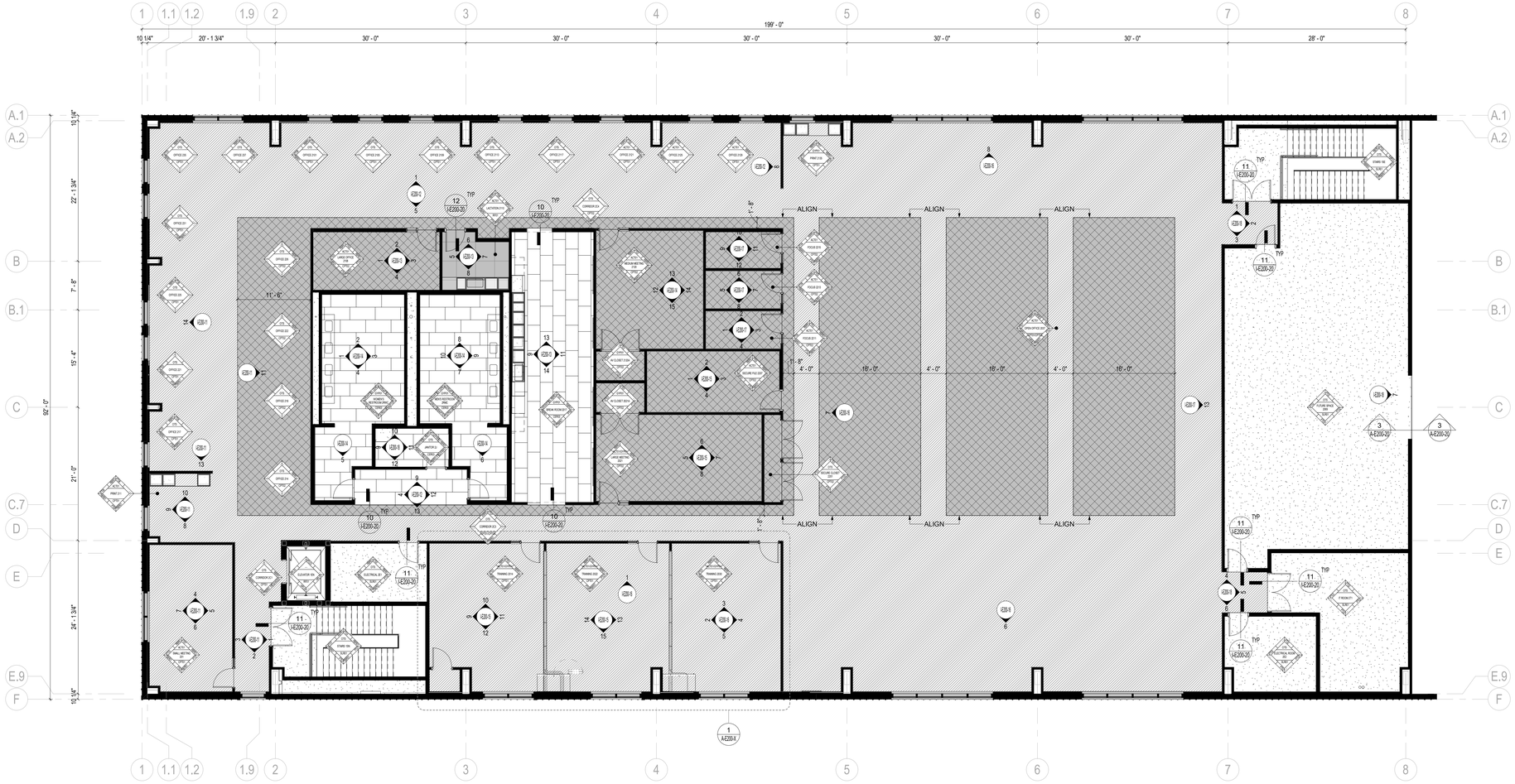
SIGNATURES		DATE
DR AD SA KW EH	ENG AM SA KW	
CH AM SA	APPR AM	
REV Design Development 90%		2025-03-14
DISCP INTERIORS		
PE Arnold Morrison		
APPR		

National Aeronautics and Space Administration
LYNDON B. JOHNSON SPACE CENTER ELLINGTON FIELD

Building E200 Aviation Logistics and Operations Facility

FINISH PLAN - MAIN LEVEL

PROJECT NO. 2023-03226		SHEET NO.	58 of 86
PROJECT ID. 80JSC023F0118	WR	DWG NO.	I-E200-01
CODE IDENT. NO.	SIZE E1		



1 FINISH PLAN - SECOND LEVEL - NORTH
A08-15.dwg 1/8" = 1'-0"

INTERIOR FINISH PLAN NOTES

A. REFER TO THE MATERIALS INDEX AND SPECIFICATIONS FOR FURTHER INFORMATION ABOUT MATERIALS AND FINISHES.

B. REFER TO THE INTERIOR ELEVATIONS FOR ADDITIONAL WALL FINISH INFORMATION.

C. REFER TO THE ROOM FINISH SCHEDULE FOR FURTHER ROOM FINISH INFORMATION.

D. REFER TO THE DOOR SCHEDULE FOR DOOR, FRAME AND HARDWARE FINISHES.

E. SUBSTRATES SHALL BE SMOOTH, FREE OF DEFECTS AND PREPARED TO CONFORM WITH MANUFACTURER'S RECOMMENDATIONS PRIOR TO THE APPLICATION OF FINISHES.

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J. WHERE ABUTTING CEILING IS PRESENT, ALL WALL FINISHES AND PAINTING SHALL EXTEND 6" ABOVE THE CEILING HEIGHT UNLESS SPECIFICALLY NOTED OTHERWISE. WHERE CEILING ABUTTING CEILING IS NOT PRESENT, ALL WALL FINISHES AND PAINT SHALL EXTEND TO THE FULL HEIGHT OF THE WALL UNLESS SPECIFICALLY NOTED OTHERWISE.

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L. FLOOR TRANSITIONS SHALL OCCUR AT THE CENTERLINE OF THE DOOR UNLESS OTHERWISE INDICATED BY THE DRAWINGS.

M. PAINTED SURFACES SHALL BE PRIMED IN ACCORDANCE WITH THE MATERIALS INDEX AND SHALL RECEIVE AS MANY COATS AS REQUIRED TO ENSURE CONSISTENT COLOR COVERAGE, WITH A MINIMUM OF THREE COATS REQUIRED.

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LEGEND

ROOM FINISH TAG
- CEILING FINISH
- WALL BASE, TYP.
- ROOM NAME AND NUMBER
- WALL FINISH, TYP.
- FLOOR FINISH

CARPET TILE - CPT01

CARPET TILE - CPT02

WALK OFF MAT - CPT03

PORCELAIN TILE - CER03

RESILIENT FLOOR TILE - RF01

SEALED CONCRETE - SLR01

TRUE NORTH

0 4' 8' 16'
Scale: 1/8" = 1'-0"

90% DESIGN DEVELOPMENT
NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION
4	2025-03-14	Design Development 90%
3	2025-01-08	Design Development 60%
2	2024-08-23	Schematic Design 30%

SIGNATURES		DATE
DR AD SA KW EH	ENG AM SA KW	
CH AM SA	APPR AM	
REV. Design Development 90%		2025-03-14
DISCP INTERIORS		
PE Arnold Morrison		
APPR		

Salas O'Brien

National Aeronautics and Space Administration
LYNDON B. JOHNSON SPACE CENTER ELLINGTON FIELD

Building E200 Aviation Logistics and Operations Facility

FINISH PLAN - SECOND LEVEL

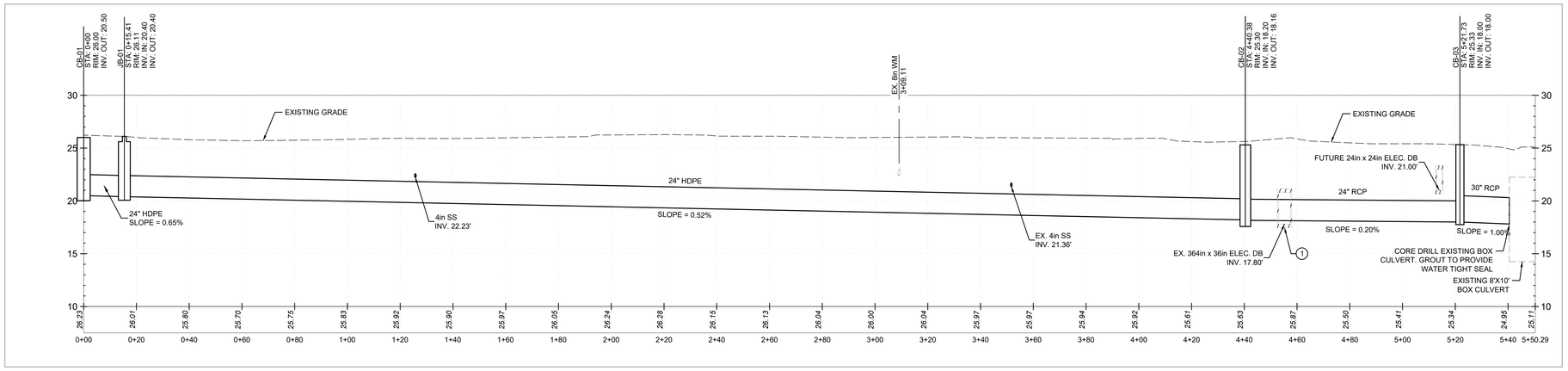
PROJECT NO. 2023-03226
PROJECT ID 80JSC023F0119
CODE IDENT. NO.
DR
SIZE E1

SHEET NO. 60 of 86

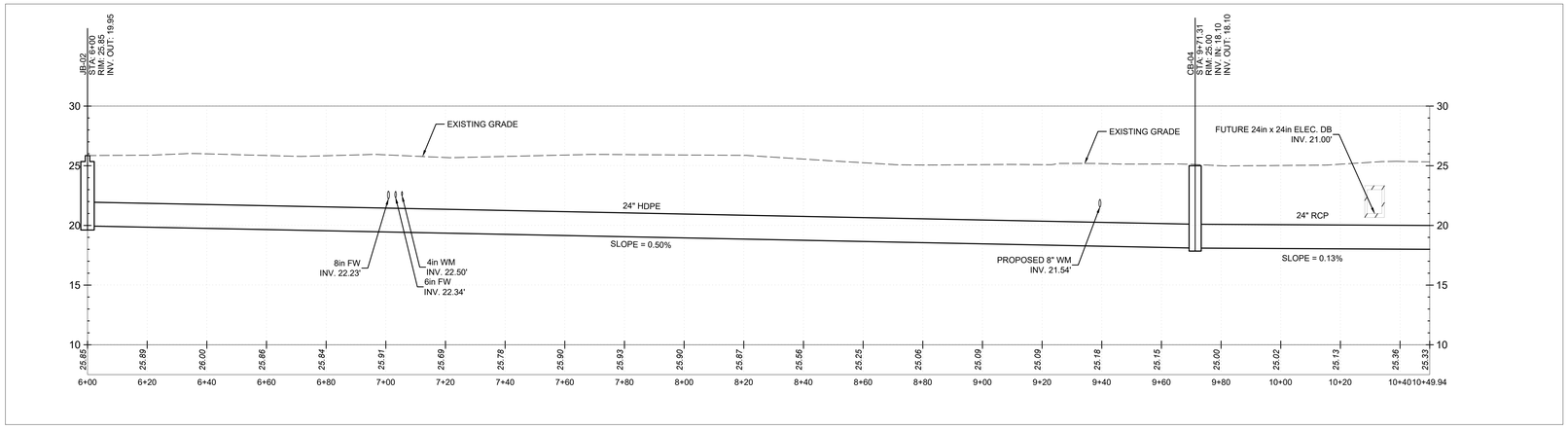
DWG NO. **I-E200-02**

KEYNOTES

1. EXISTING DUCT BANK TO BE ABANDONED, ELEVATION ESTIMATED. IF CONFLICTING WITH STORMWATER LINE, SELECTIVELY DEMOLISH DUCT BANK.



1 C-E200-15 **STORM PROFILE**
SCALE: 1:20 H 1:5 V



2 C-E200-15 **STORM PROFILE**
SCALE: 1:20 H 1:5 V

0 5' 10' 15'
VERTICAL SCALE: 1" = 5'

0 10' 20' 40' 60'
HORIZONTAL SCALE: 1" = 20'

60% DESIGN DEVELOPMENT
NOT FOR CONSTRUCTION

PROFESSIONAL SEAL

Salas O'Brien

REV	DATE	DESCRIPTION
4	2025-03-14	Design Development 90%
3	2025-01-08	Design Development 60%
2	2024-08-16	Schematic Design 30%

SIGNATURES			DATE
DR	S. JONES	ENG	2025-03-14
CH	J. KOCI	APPR	J. LONGSHORE 2025-03-14
REV	Design Development 90%		2025-03-14
DSGP	CIVIL		
PE	J. LONGSHORE		2025-03-14
APPR	----		----

National Aeronautics and Space Administration
LYNDON B. JOHNSON SPACE CENTER ELLINGTON FIELD
Building E200 Aviation Logistics and Operations Facility

UTILITY PROFILES I

PROJECT NO.	2023-03226
PROJECT ID	BUSC023F0116
CODE IDENT. NO.	----
SIZE	E1
SHEET NO.	
DWG NO.	C-E200-16

3/14/2025 3:13 PM

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APPENDIX B
PUBLIC COMMENTS AND RESPONSES

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Comments will be included here after the public review period has ended.