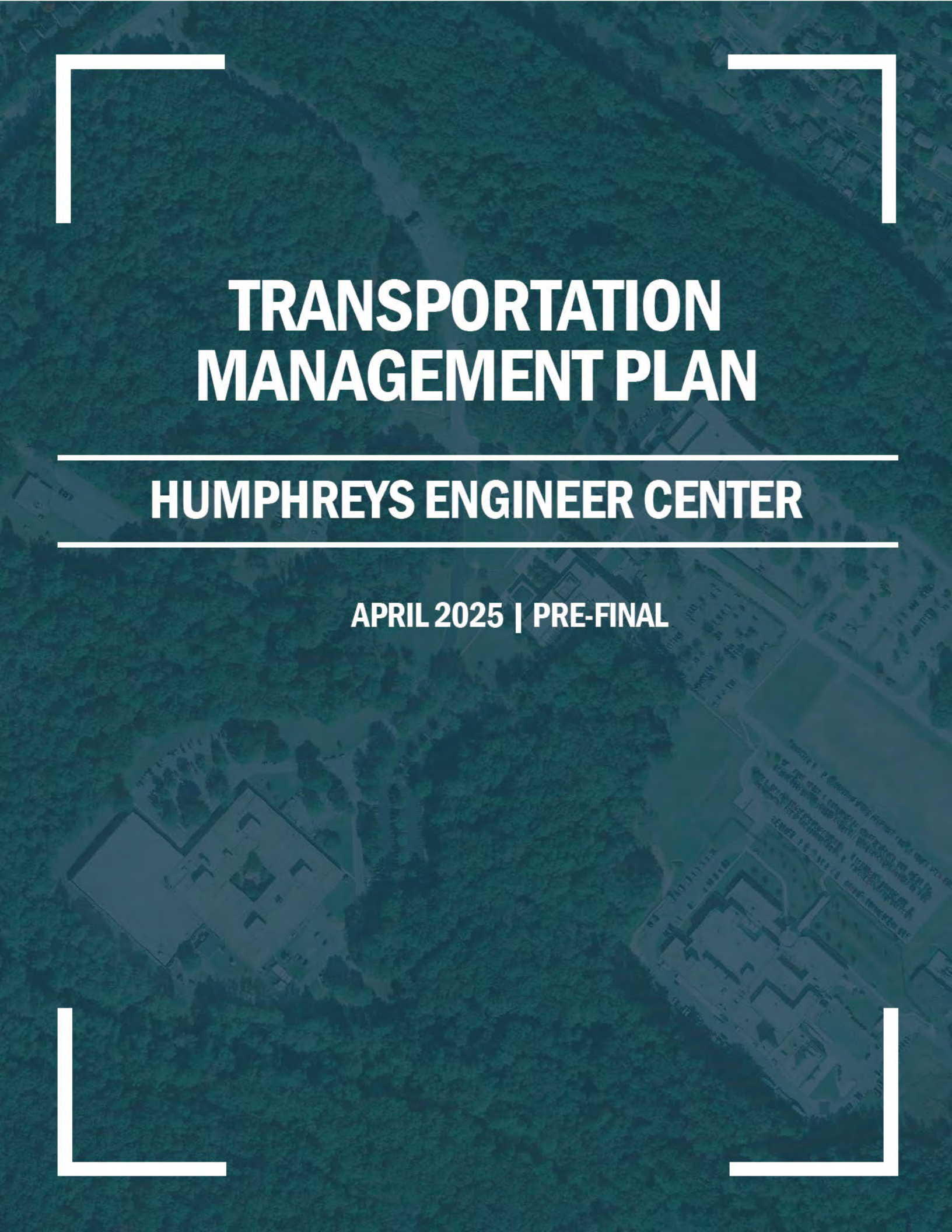

TRANSPORTATION MANAGEMENT PLAN

HUMPHREYS ENGINEER CENTER

APRIL 2025 | PRE-FINAL

HUMPHREYS ENGINEER CENTER

TRANSPORTATION MANAGEMENT PLAN

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TRANSPORTATION MANAGEMENT PLAN

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TRANSPORTATION MANAGEMENT PLAN

LIST OF ACRONYMS

Architectural Barriers Act	ABA
Americans with Disabilities Act	ADA
Area Development Plan	ADP
Automated Traffic Recorders	ATR
Battalion Operations Facility	BOF
Capabilities Integration Group	CIG
Department of Defense	DoD
Entry Control Point	ECP
Electric Vehicle	EV
Federal Highway Administration	FHWA
Government Owned Vehicle	GOV
Headquarters	HQ
Highway Capacity Manual	HCM
Humphreys Engineer Center	HEC
Humphreys Engineer Center Support Activity	HECSA
Institute for Water Resources	IWR
Level of Service	LOS
Metropolitan Planning Organization	MPO
Manual on Uniform Traffic Control Devices	MUTCD
National Capital Planning Commission	NCPC
National Capital Region	NCR
Operational Improvement Plan	OIP
Privately Owned Vehicle	POV
Rough Order of Magnitude	ROM
Resource Protection Area	RPA
Single Occupancy Vehicle	SOV
Transportation Demand Management	TDM
Turning Movement Count	TMC
Transporation Management Plan	TMP
Training and Support Facility	TSF
U.S Army Corps of Engineers	USACE
[redacted]	[redacted]
Unified Facilities Criteria	UFC
Virginia Department of Transportation	VDOT
Water Resources	WR

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EXECUTIVE SUMMARY

INTRODUCTION

Humphreys Engineer Center [HEC] is a 583-acre civil works installation owned by the U.S. Army Corps of Engineers [USACE]. It is operated and maintained by Humphreys Engineer Center Support Activity [HECSA], a field operating activity under USACE. HECSA is responsible for providing day-to-day installation management and support services to the Headquarters [HQ], USACE, and other Corps activities located in the National Capital Region [NCR]. HEC is located adjacent to Fort Belvoir in Fairfax County, Virginia, approximately nine miles southwest of Alexandria, Virginia, and 17 miles southwest of the USACE HQ in Washington, D.C. The key tenants at HEC include the [redacted] the Army Geospatial Center, and the Institute for Water Resources [IWR]. [redacted] [formally known as the 1st Capabilities Integration Group [CIG]] completed a Real Property Master Plan and a Space Utilization Plan in 2020, which have been incorporated into this assessment.

PURPOSE

This report captures the transportation management goals for HEC. It summarizes these goals into Strategies and Proposed Projects required to implement transportation policies aligned with U.S. Code and Department of Defense [DoD] directives. The HEC Transportation Management Plan [TMP] identifies strategic actions necessary to address current transportation needs at the Installation while preparing for future growth and operational requirements.

As part of this effort, comprehensive transportation studies were conducted to evaluate current road and traffic patterns, assess infrastructure conditions, and analyze the capacity of the existing transportation network. This report consolidates the findings from these studies and presents actionable recommendations to support responsible development and enhanced operational efficiency at HEC.

SUMMARY OF APPROACH

This TMP was developed using relevant federal planning policies and pre-established development plans as a framework to analyze the current transportation needs and future capacity of HEC. It follows the four key stages outlined in the Unified Facilities Criteria [UFC] 2-100-01 guidelines for Installation Master Planning:

- *Identification* of key issues through comprehensive traffic data collection, qualitative stakeholder interviews and collaborative workshops, and a detailed public survey.
- *Evaluation* of issues identified through data collection efforts to recommend strategies, planning actions, and projects in line with Installation goals and objectives.
- *Implementation* can commence with the completion of this TMP report. The report shall be utilized by Installation leadership as guidance for the pursuit of future projects and initiatives.
- *Monitoring and Amending* of the TMP will be an ongoing process as needs and priorities shift on the Installation.

This TMP adheres to the guidelines outlined in the National Capital Planning Commission [NCPC] TMP Handbook, which serves as a key resource for federal installations in the NCR. The Handbook emphasizes developing TMPs that align with NCPC's Transportation Element and Addendum, ensuring a complete approach to transportation planning and demand management. By integrating the TMP with HEC's operational and developmental objectives, this plan derives actionable projects and strategies to optimize transportation systems and work to reduce single-occupancy vehicle [SOV] travel. Close collaboration with stakeholders throughout the TMP process enabled the establishment of clear goals, strategies, and implementation actions tailored to HEC's unique needs.

GOALS

The goals outlined below were collaboratively established with Installation leadership and key stakeholders at HEC. Although broad in scope, they collectively aim to guarantee an optimal and safe transportation system for the installation's envisioned end state.

GOAL 1: MODERNIZE INFRASTRUCTURE AND IMPROVE TRAFFIC FLOW

GOAL 2: ENHANCE MULTIMODAL ACCESS/CIRCULATION

GOAL 3: IMPROVE TRANSPORTATION SAFETY INFRASTRUCTURE

GOAL 4: SUPPORT RESPONSIBLE GROWTH AND EXPAND MASS TRANSIT

GOAL 5: COORDINATE WITH EXTERNAL AGENCIES AND REGIONAL PARTNERS

STRATEGIES

Building upon the established goals, various strategies were formulated to include a diverse set of proposed projects tailored to address each strategy's intent. These strategies range from long-term, robust infrastructure projects to collaborative efforts aimed at enhancing coordination with regional agencies and stakeholders. The complete list of strategies, within each goal, is highlighted below in Table 1.

Table 1: *Proposed Strategies*

GOAL 1: Modernize Infrastructure And Improve Traffic Flow	**GOAL 2:** Enhance Multimodal Access/Circulation	**GOAL 3:** Improve Transportation Safety Infrastructure	**GOAL 4:** Support Responsible Growth and Expand Mass Transit	**GOAL 5:** Coordinate With External Agencies And Regional Partners
1: Enhance Existing ECP	***1: Enhance Pedestrian Connectivity***	***1: Improve Signage and Promote Awareness***	***1: Encourage Mass Transit and Ridesharing***	***1: Coordinate with VDOT and Regional MPOs***
2: Consider Alternative Options for ECPs	***2: Install and Upgrade Pedestrian Amenities***	***2: Upgrade Pedestrian Safety Infrastructure***	***2: Prepare Plan to Address Incoming EV Infrastructure***	***2: Maintain Coordination with Fort Belvoir***
3: Improve Internal Infrastructure	***3: Enhance Bicycle Infrastructure***		***3: Integrate Nature-Based Infrastructure into the Transportation System***	

OBJECTIVES

The goals and strategies have been broken down into achievable target objectives. These objectives should be monitored routinely to ensure progress is being made toward each strategy. Implementation of projects listed under each strategy are non-comprehensive steps towards achieving the targeted metrics. The projects and objectives will provide a framework that can be used for the determination of programming expenses and projects in the coming decades for the Installation. The complete list of objectives is highlighted below in Table 2:

Table 2: *Proposed Objectives*

Goal	Objective	Short-Range Metric [2026]	Mid-Range Metric [2029]	Long-Range Metric [2034]
GOAL 1: Modernize Infrastructure And Improve Traffic Flow	*Maintain ECP efficiency*	*Maintain within 5% of current levels*	*Maintain within 5% of current levels*	*Maintain within 5% of current levels*
	Ensure UFC compliance at existing ECP	*Completion of Project 1.1.1*	*Completion of Project 1.1.2*	*Completion of Project 1.1.3*
	Maintain a "B" or higher LOS at the Kingman Rd/Leaf Rd intersection	*Maintain "A" LOS*	*Maintain "A" LOS*	*Maintain "B" LOS*
GOAL 2: Enhance Multimodal Access/Circulation	*Connect all facilities with sidewalks or paths*	*N/A*	*100%*	*N/A*
	Achieve reduction in SOVs	*5%*	*10%*	*N/A*
GOAL 3: Improve Transportation Safety Infrastructure	*Implement 3 fully enhanced crosswalks*	*N/A*	*100%*	*N/A*
	Achieve compliance with lighting standards	*N/A*	*100%*	*N/A*
GOAL 4: Support Responsible Growth and Expand Mass Transit	*Increase mass transit ridership*	*10%*	*N/A*	*N/A*
	Increase POV charging capacity	*5%*	*10%*	*N/A*
	Reduce installation emissions from transportation	*N/A*	*10%*	*N/A*
GOAL 5: Coordinate With External Agencies And Regional Partners	*Improve LOS at Telegraph Rd and Kingman Rd*	*Identify existing LOS*	*Achieve "C" LOS*	*Maintain "A" LOS*
	Establish formal partnerships with regional agencies	*Partnership with 1 Agency*	*Partnership with 3 Agencies*	*N/A*

PROJECTS

The recommended actions or projects are highlighted in Table 3 on the following page. These projects are classified into Short-, Mid-, and Long-Range efforts. Certain projects were identified as high-priority projects by stakeholders during the collaborative workshop. These projects are highlighted in Table 3 with a marked icon in the far left column. These projects are detailed further in Appendix A, the Operational Improvement Plan [OIP], which provides more detailed project descriptions and, if applicable, high-level construction drawings.

Table 3: *Proposed Project List*

#	Project Title	Start Date	ROM Cost
★ 1.1.1	Upgrade existing ECP with signage and lane markings	Short-Range	$90K - $110K
1.1.2	Upgrade existing ECP with Commercial Vehicle Lane and bypass road	Mid-Range	$250K - $260K
★ 1.1.3	Fully construct a UFC compliant ECP at the existing ECP location	Long-Range	MILCON
★ 1.2.1	Improve Winslow Rd connection for secondary egress option	Mid-Range	$200K - $230K
1.2.2	Conduct feasibility study for implementing new ECP at Kingman Rd/Jeff Todd Way Intersection	Long-Range	No Construction Costs
1.3.1	Implement barrier in the Kingman parking lot	Short-Range	$850 - $1K
1.3.2	Widen Leaf Rd	Mid-Range	$130K - $150K
1.3.3	Construct dedicated turn lane on Kingman Rd	Mid-Range	$40K - $46K
1.3.4	Restore Kingman Rd	Long-Range	$1M
★ 1.3.5	Construct roundabout at the Kingman Rd/Leaf Rd intersection	Long-Range	$225K - $260K
1.4.1	Encourage carpooling and vanpooling	Short-Range	No Construction Costs
1.4.2	Continue and expand telework and flex scheduling	Short-Range	No Construction Costs
1.4.3	Consider structured parking facilities for long-term solutions	Long-Range	No Construction Costs
2.1.1	Construct a pedestrian trail along the Installation perimeter	Mid-Range	$290K - $350K
★ 2.1.2	Connect gaps in existing sidewalk network	Mid-Range	$890K - $1M
2.2.1	Improve pedestrian amenities in select locations	Short-Range	$1.5M - $1.7M
2.2.2	Implement pedestrian infrastructure along roadways	Mid-Range	$197K
2.3.1	Construct bicycle racks and infrastructure	Short-Range	$60K
★ 3.1.1	Implement traffic safety and wayfinding signage	Short-Range	$4K
★ 3.1.2	Improve wayfinding signage on roadways and the proposed trail	Mid-Range	$7K
3.2.1	Construct and enhance select crosswalks	Short-Range	$11K - $13K
3.2.2	Implement speed control measures	Mid-Range	$4K
3.2.3	Improve lighting in parking lots and other areas	Mid-Range	$51K
4.1.1	Establish a shuttle service between the Installation and the nearest metro stations	Long-Range	No Construction Costs
4.1.2	Designate premium parking spots for carpool and vanpool users	Short-Range	No Construction Costs
4.1.3	Offer incentives for carpooling and vanpooling	Short-Range	No Construction Costs
4.2.1	Implement additional POV EV charging capacity	Mid-Range	$500K
4.2.2	Consider relocation of primary GOV charging locations	Long-Range	No Construction Costs
4.3.1	Construct bioswales along primary roads and parking lots	Mid-Range	$175K
4.3.2	Install solar panel arrays on canopy structures over parking areas	Long-Range	MILCON
5.1.1	Monitor LOS impact of the “Green T” traffic improvement at the intersection of Telegraph Rd and Kingman Rd	Short-Range	No Construction Costs
5.1.2	Prepare a plan to improve LOS at the intersection of Telegraph Rd and Kingman Rd	Mid-Range	No Construction Costs
5.1.3	Establish coordination with VDOT and regional MPOs	Short-Range	No Construction Costs
5.2.1	Communicate transportation needs to Fort Belvoir	Short-Range	No Construction Costs

★ *Indicates project broken down in further detail in Appendix A: Operational Improvement Plan*

INTRODUCTION

HEC is a 583-acre civil works installation owned by the U.S. Army Corps of Engineers. It is operated and maintained by HECSA, a field operating activity under USACE. HECSA is responsible for providing day-to-day Installation management and support services to the HQ, USACE, and other Corps activities located in the NCR.

REGIONAL CONTEXT

HEC is located adjacent to Fort Belvoir in Fairfax County, Virginia, approximately nine miles southwest of Alexandria, Virginia, and 17 miles southwest of the USACE HQ in Washington, D.C., as shown in Figure 1. This location places it within the Washington Metropolitan Area, a hub of federal and defense-related activity. The site benefits from proximity to critical transportation corridors, including Interstate 95 [I-95] and the Capital Beltway [I-495], ensuring efficient connectivity to the surrounding urban centers and key government installations. The area is also notable for its integration of historical significance with modern infrastructure, offering both accessibility and strategic positioning for mission-critical operations.

Figure 1: *Regional Overview*

BACKGROUND

This report describes the necessary policies to bring the transportation network and facilities at HEC into compliance with both the U.S. Code and UFC 2-100-01, Installation Master Planning. It serves as a guide for the future development of HEC's transportation network.

FUNCTIONS OF A TMP

A TMP is intended to identify low-cost and near-term strategies that are expected to improve transportation efficiency as they prioritize responsible transportation options.

It is built on the basis of current data, including travel patterns, parking utilization, stakeholder guidance, and surveying techniques, in order to form an understanding of the current transportation network and its requirements. The existing transportation conditions are examined for compliance with standards to recommend programs and projects which improve transportation efficiency, encourage multimodal options, and incentivize shifts toward energy-efficient and high-occupancy vehicle use.

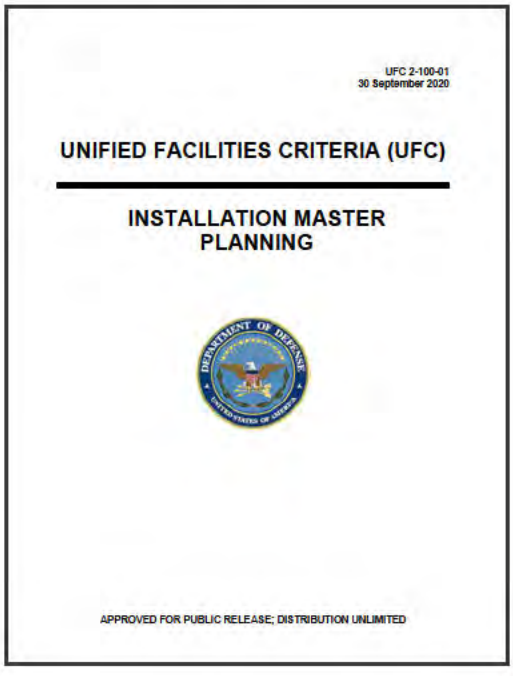
The recommendations also aim to reduce the hidden costs [environmental, economic, and health costs] of privately owned vehicles [POVs]. The TMP outlines recommendations and implementation strategies that will help the installation elevate the capacity of its transportation network in order to meet current and future demands.

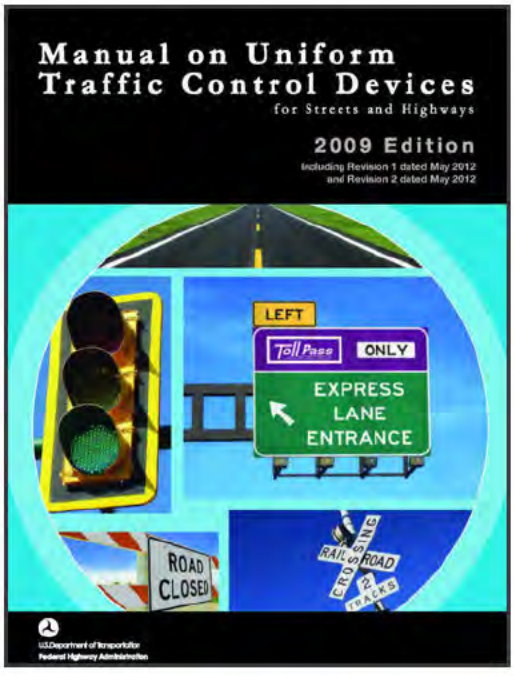
KEY COMPONENTS & PROCESS

The master planning process on U.S. military installations is required to adhere to various guidelines set forth in federal policy.

Title 10 of the U.S. Code § 2864 Master Plans for Major Military Installations outlines guidance for the transportation component of master planning at military installations. This federal policy requires military installations to create a Master Plan which identifies current needs and prepares for future development. This policy mandates the alignment of military master plans with existing local planning efforts.

UFC 2-100-01, Paragraph 3-6.4.3 Installation Street and Transit Plan outlines specific requirements which should be adhered to when planning for military installations. It provides the technical framework for the development process, planning actions, and evaluation criteria to be used in master planning. In addition, a 2020 update provides further support to comply with the transportation requirements in Title 10 of the U.S. Code Policy Guidance for Transportation on DoD Facilities.





The Manual on Uniform Traffic Control Devices [MUTCD] is the guiding document issued by the Federal Highway Administration [FHWA] which outlines standards for traffic control measures. These guidelines establish proper protocols for the selection, installation, placement, and maintenance of road signs, pavement markings, and traffic signage. The most current version of the standards is from 2009. The MUTCD standards are referenced by the UFC for civil engineering projects, and therefore, compliance is required for DoD facilities.

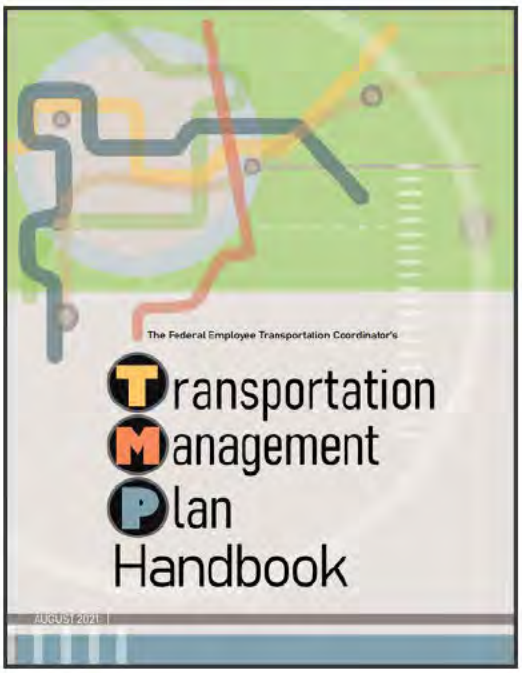
Access to DoD Facilities for Persons with Disabilities: Applicable Policies
The DoD is one of four federal agencies which adheres to the Architectural Barriers Act [ABA] guidelines. Prior to 2008, federal policy dictated the application of either the Uniform Federal Accessibility Standards [49 FR 31528] or the Americans with Disabilities Act [ADA] Accessibility Guidelines within the DoD – whichever was deemed more stringent.

In a 2008 memorandum, accessibility requirements were updated and expanded to ensure greater access for people with disabilities in DoD facilities. The standards which DoD facilities are now recommended to follow are those outlined in ABA Chapters 1 through 10, along with Section 504 of the Rehabilitation Act. All accessibility standards for DoD facilities are recommended by the Secretary of Defense to the maximum extent that they are reasonable and practical, barring any limitations to military utility. DoD contractors are more likely to be subject to standards under the ADA.

TMP GUIDANCE

The development of the TMP for HEC is rooted in diverse and complementary sources of guidance. The primary foundation for this TMP is the 2024 HEC Area Development Plan [ADP]. The TMP and ADP were developed concurrently, ensuring alignment in their transportation recommendations. Supplementary guidance was derived from the 2020 HEC Master Plan and the Fort Belvoir Installation Design Guide, both of which provide historical context and structural benchmarks for the refinement of HEC's transportation strategies.

Another source guiding this TMP is the NCPC. Their resources, such as the TMP Handbook, offer a framework for crafting federal installation TMPs, emphasizing multimodal connectivity and transportation demand management [TDM]. It guided the formulation of HEC's TMP goals, strategies, objectives, and proposed projects. Specifically, the handbook's focus on reducing SOV trips, enhancing regional mobility, and aligning with environmental policies directly shaped some of HEC's transportation strategies.



INSTALLATION PROFILE

HEC is a specialized research and administrative campus in Alexandria, Virginia, established to support various missions of USACE. The installation's mission is centered around four primary functions: engineering and construction management for development projects, nature-based advancements and hazardous waste cleanup, research and development in engineering, and training and professional development. HEC operates under a unique funding model, relying on tenant reimbursements instead of Congressional appropriations, which underscores its self-sustaining operational framework.

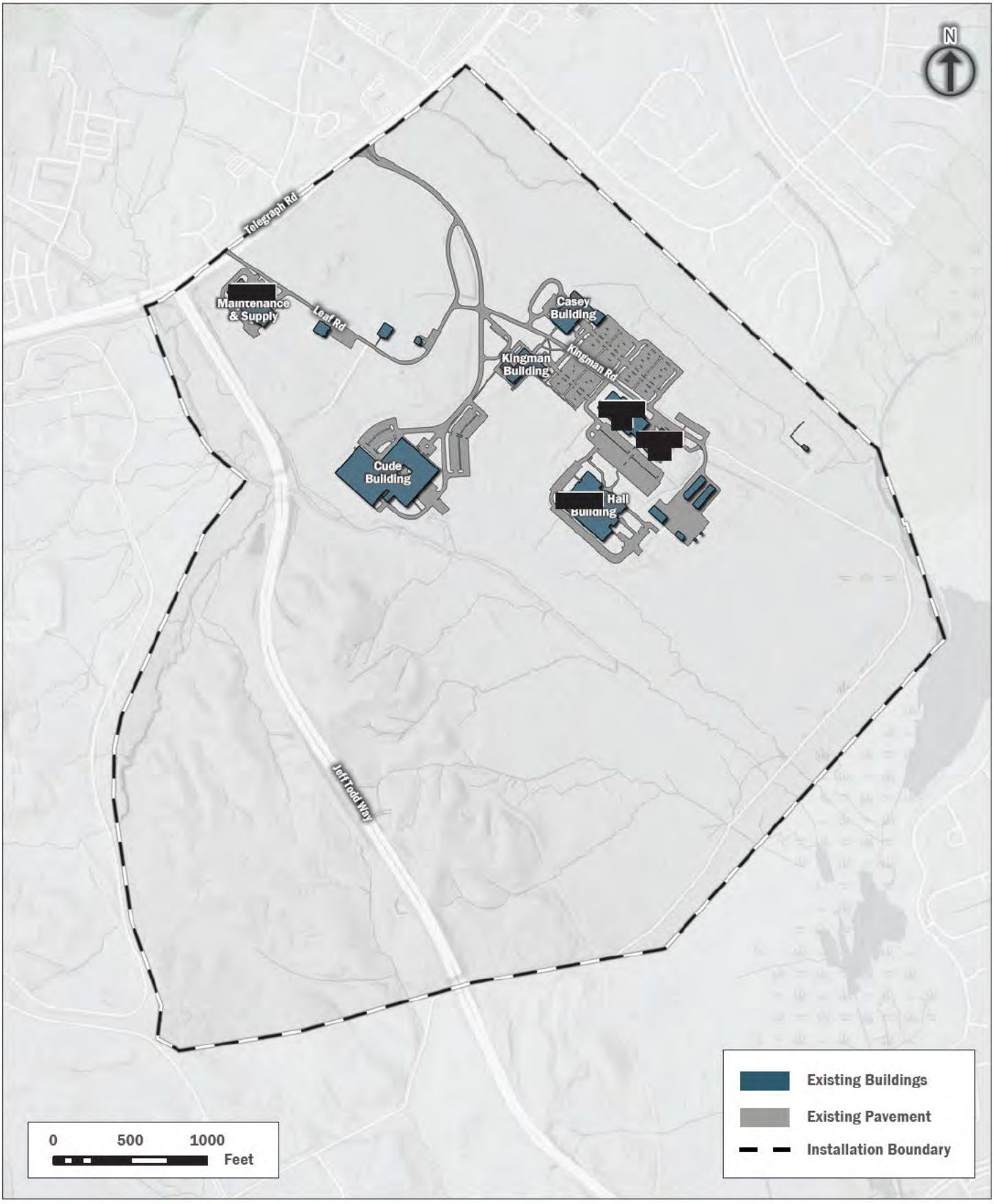
TENANTS

Key tenants at HEC include the [redacted] the Army Geospatial Center, and the IWR. Developed primarily in the 1980s, the campus features modern office buildings, research laboratories, and conference facilities equipped with the latest technology to support its diverse operational requirements. The Kingman Building, serving as the headquarters for HECSA, acts as the central administrative hub for various USACE divisions engaged in project management, planning, and administrative support. Additionally, the Kingman Building facilitates training programs designed to advance water resource engineering expertise, The Cude Building is integral to USACE's civil works mission, offering specialized administrative support and housing the Army Geospatial Center. The Casey Building, completed in 1981, initially served as a classroom training facility but now houses the USACE Finance Center and the IWR, a non-USACE tenant dedicated to research and development.

HEC expects a new tenant in 2026 that may have an influx of 200 - 300 additional population. [redacted] has planned construction ongoing. Building 2596 is identified within the HEC ADP as part of the proposed [redacted] campus, where planned construction includes secure offices, a warehouse/mailroom facility, and enhanced security features such as a distinct perimeter fence to support mission-critical operations and align with broader campus modernization efforts.

Together, these existing and planned facilities reflect HEC's mission-driven focus and its role as a premier center for innovation and professional development. Figure 2 provides an overview of HEC and its existing facilities.

Figure 2: *Installation Overview*



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EXISTING CONDITIONS & EXPECTED CHANGE

EXISTING CONDITIONS OVERVIEW:

HEC is comprised of several different land uses within the Installation. Based on its existing conditions, the natural and built environment can impact planning decisions. Constraints to future development are identified and noted below.

CLIMATE

Alexandria, Virginia, is situated within a humid subtropical climate that reflects the broader weather patterns of the Washington Metropolitan Area. Summers are hot and humid, with average high temperatures reaching around 87°F [31°C] and lows around 68°F [20°C]. The region experiences frequent thunderstorms during the summer, contributing to significant rainfall, with July typically being the wettest month.

Winters at Alexandria are mild to cold, with temperatures ranging from lows of 27°F [-3°C] to highs of 45°F [7°C]. Snowfall is relatively infrequent but can occur, particularly in January, which is generally the coldest month. The transitional seasons of spring and fall offer mild temperatures and lower humidity, making them ideal for outdoor activities. Rain is more common in the spring than in the fall, though both seasons are generally drier than the summer months. Overall, Alexandria's climate is marked by warm summers, mild winters, and a well-distributed rainfall pattern throughout the year, supporting its diverse natural surroundings.

ENVIRONMENT

Alexandria is located in the humid subtropical region of Northern Virginia, characterized by hot summers and mild winters. The area's climate presents challenges such as high humidity and seasonal rainfall, particularly during the summer months when thunderstorms are common. While the proximity to the Potomac River contributes to the humidity, it also provides a cooling effect in the surrounding areas. This balance between heat and moisture shapes the local environment, influencing both the lifestyle and activities of residents and visitors alike. The seasonal variations offer a blend of experiences, from warm, lush summers to crisp, cooler winters.

OTHER CONSTRAINTS

Constraints to future development within the HEC heavily revolve around the installation's wetlands and lack of a fully UFC-compliant Entry Control Point [ECP] entrance into the Installation. While existing buildings are not located in areas considered wetlands, the presence of wetlands or protected land is a major factor that must be considered in future expansion within the Installation. Notably, large swaths of HEC's southern open space are considered wetland, and expansion into this area will be difficult. Figure 3 showcases the Installation's wetlands and flood-prone areas.

Future expansion will also be heavily reliant on improvements made to the existing ECP on Leaf Rd. This ECP is generally sufficient in handling the current vehicle load entering and exiting HEC; however, the lack of fully UFC-compliant design and infrastructure could constrain future development. The desire to build more secure space within HEC may rely on improving the ECP and ensuring that it meets current standards where possible.

Figure 3: *Environmental Constraints*

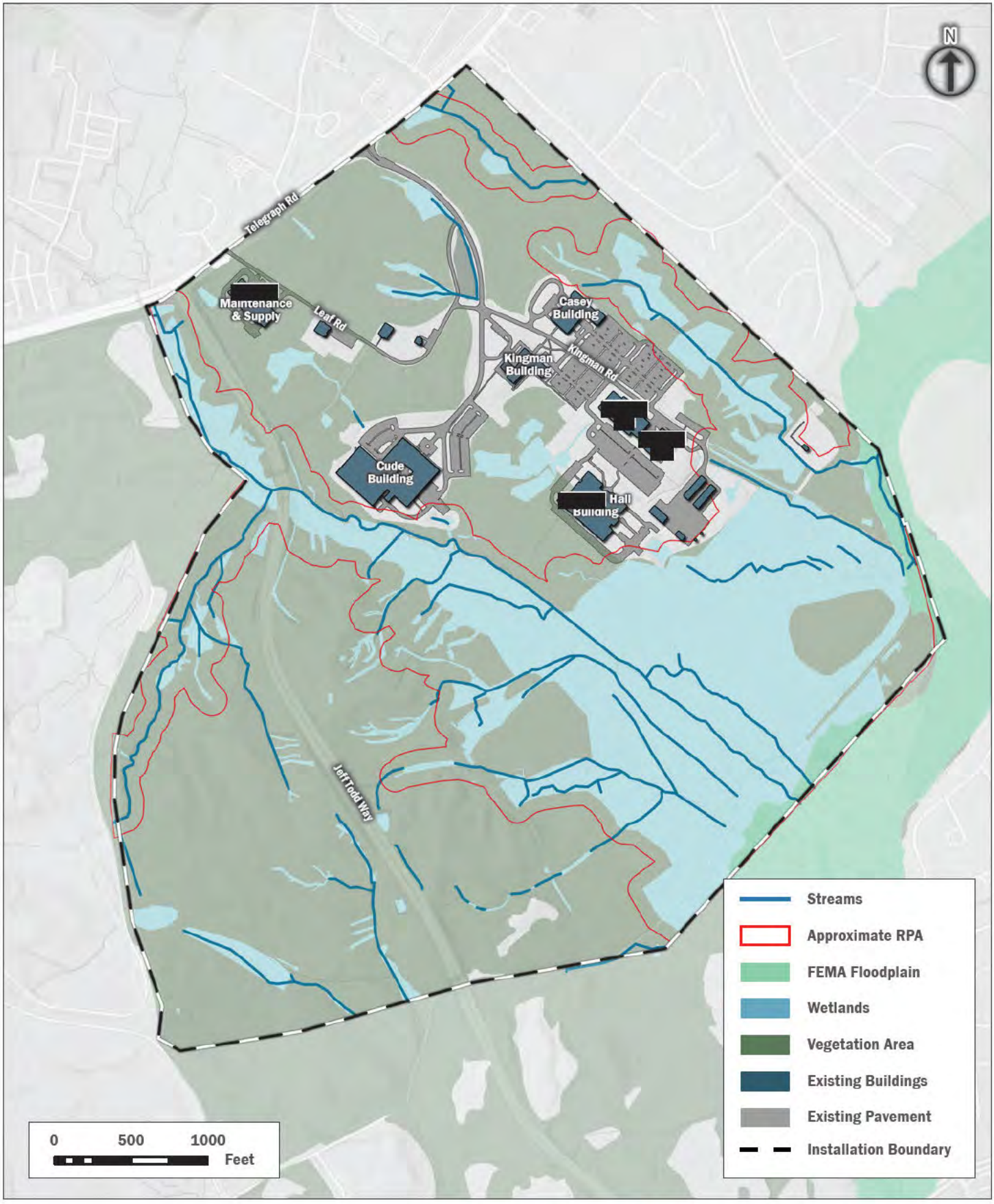
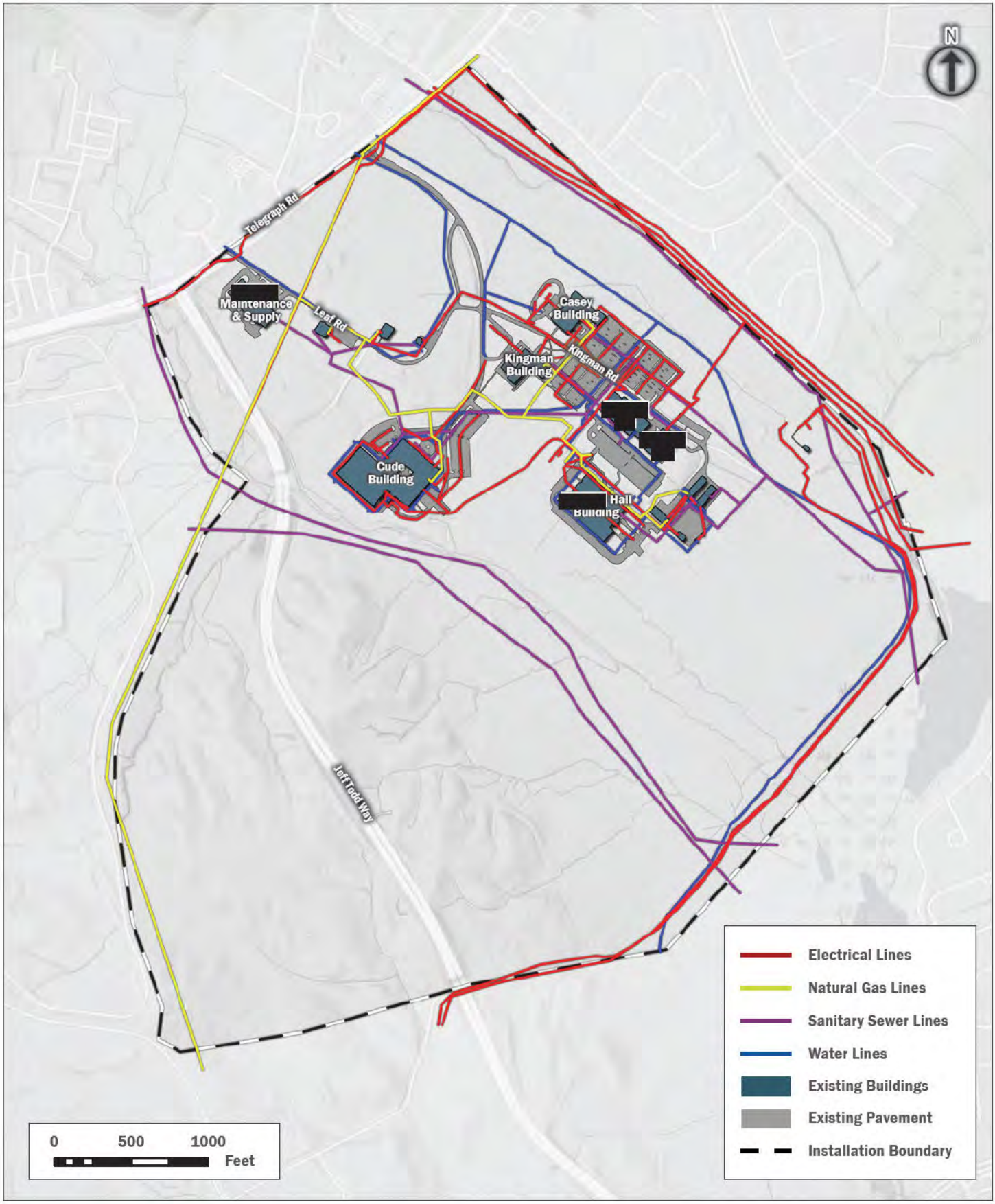


Figure 4: *Utility Constraints*



INFRASTRUCTURE AND VEHICULAR CIRCULATION:

HEC is conveniently located within Northern Virginia, adjacent to Alexandria, providing easy access to important regional destinations within the Washington, D.C. region.

SURROUNDING ROADWAY NETWORK

Given HEC's location within Northern Virginia, there are multiple arterial roadways that employees take to travel to and from the installation. Perhaps most importantly is Telegraph Rd, that runs from Richmond Hwy in the south all the way into Alexandria in the north. Telegraph Rd is also the lone entrance into and exit out of HEC and allows for immediate dispersion of workers onto other collector and local roadways. These other roadways include Jeff Todd Way, Hayfield Rd, and Beulah St to name a few. Major roadways around HEC include I-95 and I-495, which provide connections to other major cities and states along the east coast.

INTERNAL ROADWAY NETWORK & CIRCULATION

Internally, HEC contains two major roadways: Leaf Rd and John J Kingman Rd. These roadways allow for vehicular travel within the Installation and are shown in Figure 5.

While not the preferred or used method of transportation, both pedestrian and bicycle traffic exist within HEC. The overall connection of sidewalks is in need of improvement and greater continuity across the Installation. Crosswalks, both mid-block and at intersections, are dispersed across the Installation; however, the quality and quantity may be disconnected or lacking curb cuts.

A traffic construction project was recently completed at the primary ingress and egress intersection for HEC. The "Green T" intersection configuration at Telegraph Rd and Leaf Rd addresses a significant conflict point for vehicles turning left into or out of HEC. The new design significantly improves traffic flow and safety at this critical junction, enhancing both ingress and egress for the Installation.

ENTRY CONTROL POINT

Entry and exit from HEC takes place at the Leaf Rd ECP located off of Telegraph Rd. Hours for this ECP are 24 hours.

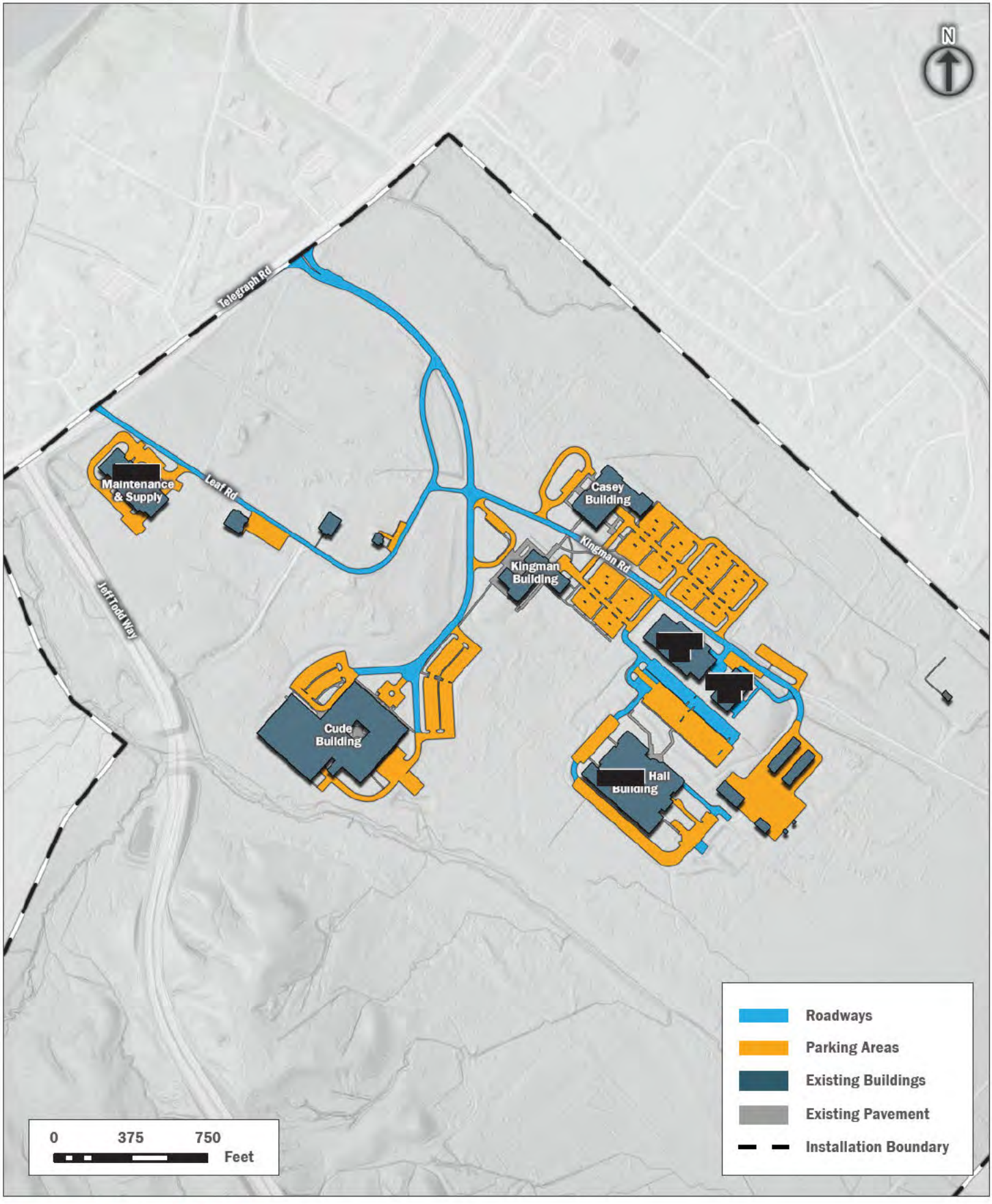
PARKING FACILITIES

HEC has 17 total parking lots that are located across the Installation. These lots are predominantly located next to buildings and are in close proximity to each other. Some lots may reach capacity at peak times; however, the abundance of parking facilities may just require personnel to park further away from their destination and walk. Parking areas are highlighted in Figure 5.

AIR & RAIL CONNECTIONS

Both Washington Dulles International Airport and Ronald Reagan Washington National Airport are located within an hour's drive of HEC and serve as the main airports for commercial travel in the region. The Washington Metro serves as Washington, D.C. and the surrounding metro area's main form of public transportation. The Blue Line has a station located 3 miles from HEC and is the closest Metro stop to the Installation.

Figure 5: *Vehicular Infrastructure*



MULTIMODAL INFRASTRUCTURE AND CIRCULATION:

Multimodal infrastructure is present in certain parts of the Installation; however, there is room for improvements to help support and incentivize non-POV travel.

PEDESTRIAN

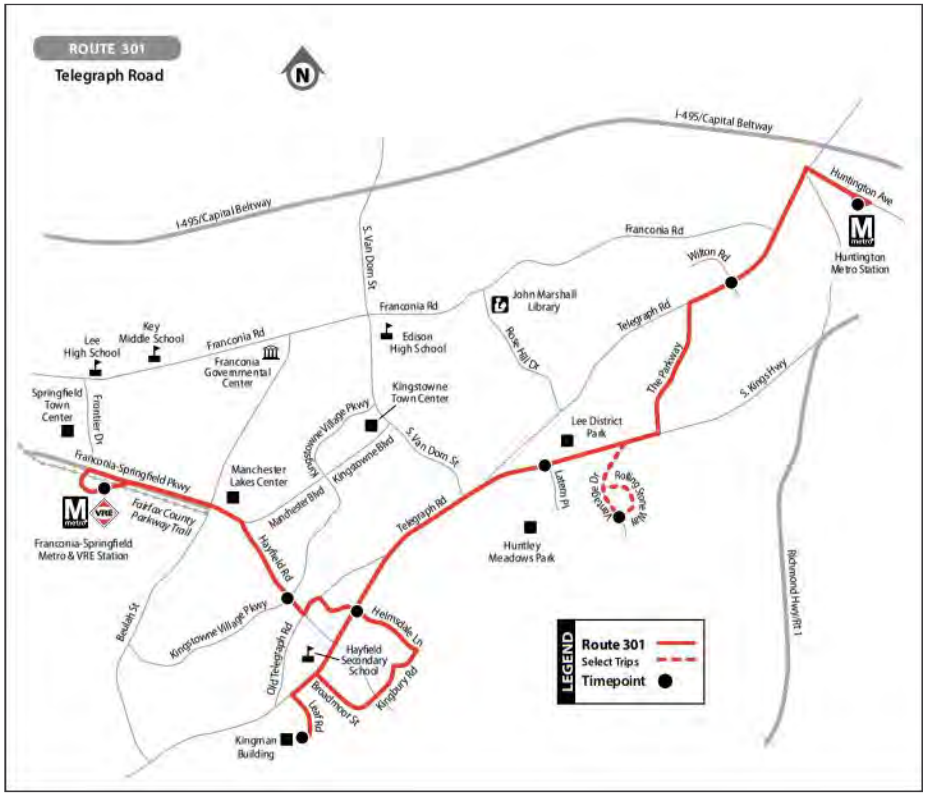
At HEC, pedestrian access between facilities is key for the campus-style developments on the Installation that prioritize walkability. One of the major constraints on the Installation is the lack of connection within the installation's sidewalk network as well as the deteriorated condition of some crosswalks. This issue is evident throughout the Installation, and improvements to better connect sidewalks with each other will be addressed in the implementation chapter of this report. While on-site, existing sidewalks as well as gaps within the sidewalk network were identified. Figure 6 highlights these features.

BICYCLE

Bicycle usage at HEC is low due to a general lack of bicycle infrastructure and interest across the Installation. There are not individual bicycle lanes along major roadways, and cyclists are instead required to ride on the main road alongside other vehicles. Along with this, the lack of bicycling interest among those on the Installation does not necessitate drastic change; however, additional bicycle infrastructure, such as bike racks, would be a useful improvement.

MASS TRANSPORTATION

There is a bus route, Route 301, offered by Fairfax Connector that comes into the Installation and ends at the Kingman Building. This route is the most direct connection from the Installation to public transportation and connects up to the Blue Line station nearby. When entering HEC, the riders on the bus are forced to get off the bus at the ECP, which can slow down travel times.

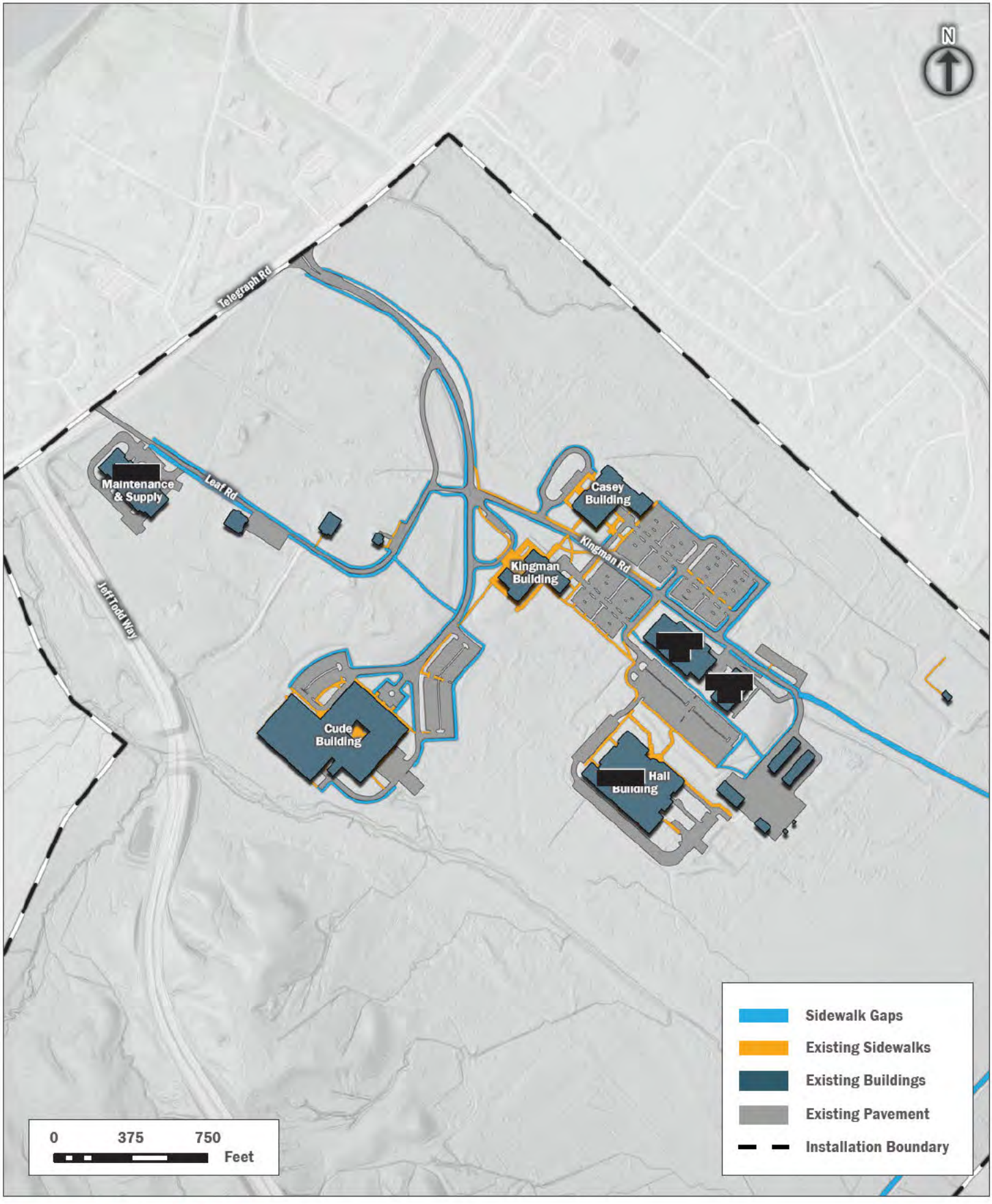


EXPECTED CHANGE:

Change within HEC and the greater Northern Virginia region is expected. This section highlights notable projects and plans expected to significantly impact HEC's transportation network.

HEC projected growth includes a new tenant in 2026, that may have an influx of 200 - 300 additional population.

Figure 6: *Pedestrian Infrastructure*



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DATA COLLECTION & STAKEHOLDER INPUT

DATA COLLECTION:

Central to the development of the HEC TMP report is the mixture of quantitative data collection of the existing transportation network and qualitative data gathered from stakeholders at HEC.

QUANTITATIVE DATA

During the September 2024 site visit, quantitative data was collected as part of this TMP. Daily traffic volumes were collected at 4 total data collection points. For the 1 ECP, gate queuing was collected during peak morning and afternoon hours. Two data points were collected utilizing traffic cameras set up by field technicians to collect intersection Turning Movement Counts [TMCs] during the morning, afternoon, and evening peak hours. The final data point was collected over a 13-hour period during the week of the site visit to get a full understanding of how the location operates on a given day.

The use of Automated Traffic Recorders [ATRs] and TMCs enables a comprehensive analysis of the entire road network. This approach identifies the level of service [LOS] at collected data points and supports decision making for the most heavily used transportation components throughout the Installation. Intersection capacity analyses and evaluations for LOS were conducted using methodologies from the Highway Capacity Manual [HCM]. This chapter includes summaries of the current LOS conditions at the 3 data collection points, as well as findings and recommendations to improve LOS at underperforming intersections.

Seventeen total parking lots were included as part of this study based on their proximity to key functional areas. Field technicians counted the total number of spaces, the total number of occupied spaces, and the distribution of POV/Government Owned Vehicles [GOV]/occupied reserved spaces. This allows for a snapshot of parking utilization, which can be used to inform decisions and ensure compliance with NCPC standards based on an estimation of parking capacity. Electric vehicle [EV] spaces or stations were also recorded to assess the installation's current infrastructure.

QUALITATIVE DATA

Qualitative inputs came from three sources: stakeholder interviews, the collaborative workshop, and the employee survey. Stakeholder interviews were held with targeted mission groups and leadership to provide insight on priorities, constraints, and needs and included activities such as site walks and issue identification exercises. The collaborative workshop was hosted on the Installation and was comprised of representatives from organizations across HEC. The Employee Survey received 164 responses, which were taken into consideration by the TMP team in producing this report.

INTERSECTION LEVEL OF SERVICE OVERVIEW:

Three intersections were studied as part of the TMP's larger data collection effort. Each of these intersections is vital to HEC's daily operation, and identifying the existing LOS is a necessary step towards creating intersection improvements. Figure 7 highlights the LOS intersections where data was collected.

INTERSECTION 1: TELEGRAPH RD & LEAF RD

Intersection 1, located at Telegraph Rd & Leaf Rd, is the most heavily used intersection in or around HEC, and as a result, the LOS grades reflect an area for improvement. Currently, the intersection operates from a "B" to an "F" LOS depending on the direction and movement of traffic. Turning left from Leaf Rd onto Telegraph Rd has been identified as the only "F" LOS across the three intersections studied. The heavy vehicle traffic along Telegraph Rd makes the left turn both difficult and dangerous for vehicles leaving HEC. Improvements to this intersection, in particular to the left-turn movement, can be made and were analyzed as a part of the HCM collection. The addition of a traffic signal to the intersection would improve the overall LOS to a "B" grade, while the construction of a roundabout would only improve it to a "C" grade. Both of these potential improvements should be considered with respect to the newly constructed "Green T" road layout, which may make further improvements unnecessary. Table 4 displays these findings.

Table 4: *Telegraph Rd & Leaf Rd*

Type of Control	Movement	AM	PM	Midday
		LOS / Delay [Seconds]		
Two-Way Stop	WB L	F / 102.6	F / 199.3	F / 207.9
	WB R	C / 19.9	D / 26.2	D / 25.9
	SB L	B / 11.6	B / 12.5	B / 10.9
Traffic Signal	Overall	B / 11.6	B / 13.7	B / 17.8
	WB Approach	D / 41.4	D / 40.1	D / 42.7
	NB Approach	B / 16.8	B / 16.8	C / 21.5
	SB Approach	A / 4.8	A / 6.7	A / 4.6
Roundabout	Overall	C / 19.3	C / 15.5	C / 15.3
	WB Approach	A / 9.8	B / 11.0	B / 11.7
	NB Approach	C / 24.7	C / 17.1	C / 20.2
	SB Approach	B / 12.7	B / 14.4	A / 7.8

INTERSECTION 2: LEAF RD & KINGMAN RD

Intersection 2, located at Leaf Rd & Kingman Rd, operated at both "A" and "B" LOS grades during the collection period. Considering this intersection's location in relation to the HEC ECP, the LOS collected highlights the fact that this intersection is operating on a level more than sufficient for the existing traffic flow within HEC. The overall AM and PM LOS grades are shown in Table 5.

Table 5: *Leaf Rd & Kingman Rd*

Type of Control	Movement	AM	PM
		LOS / Delay [Seconds]	
Two-Way Stop	NB L	A / 0.0	A / 0.0
	EB LTR	B / 14.7	A / 9.6
	WB LTR	B / 10.4	A / 9.1
	SB L	A / 7.6	A / 7.3

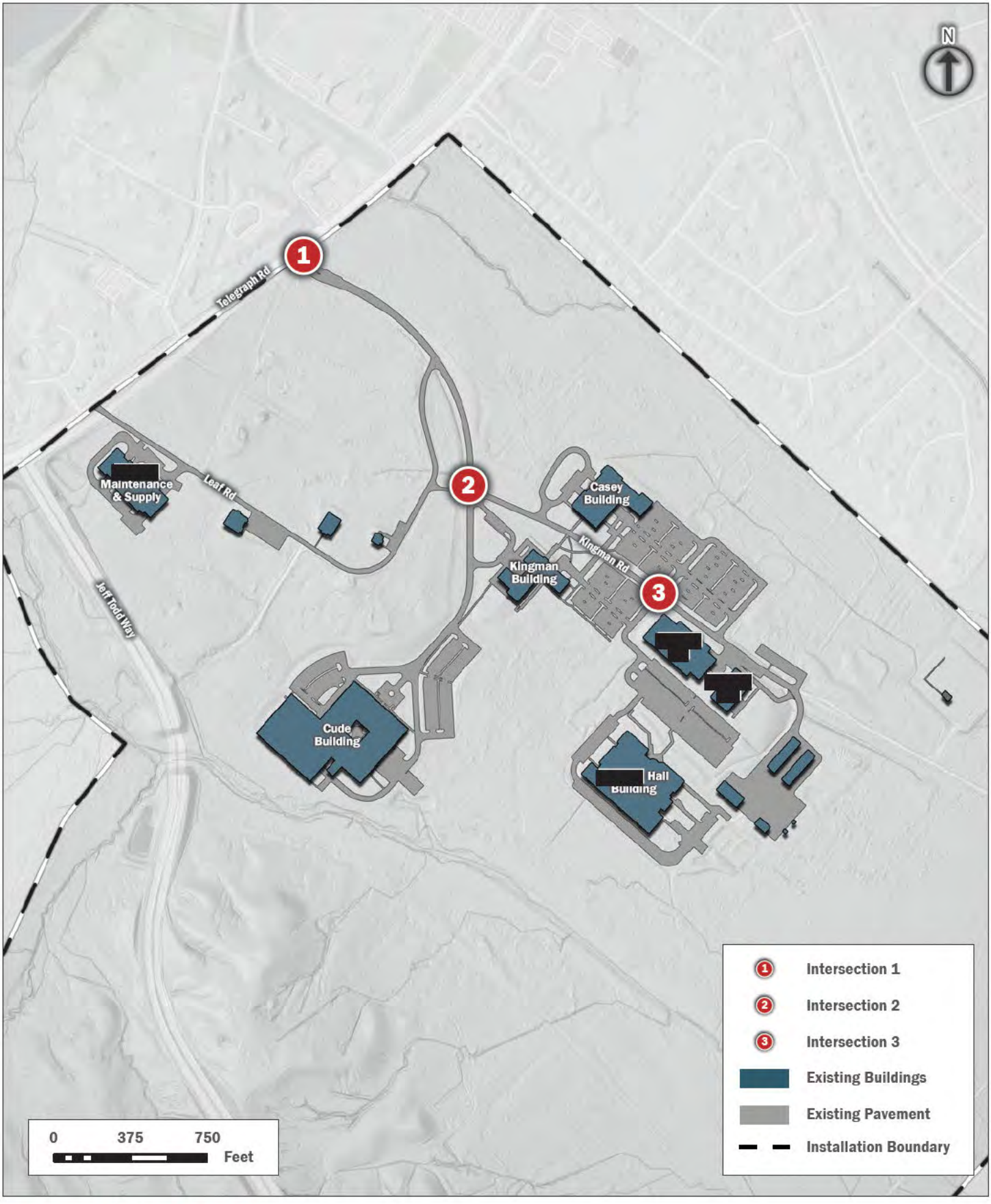
INTERSECTION 3: KINGMAN RD & HUMPHREYS CENTER ACCESS

Intersection 3, located at John J Kingman Rd [E/W] & Humphreys Center Access [N/S], operated at an "A" LOS during both AM and PM peak hours in all directions. The intersection's strong LOS rating can be attributed to numerous factors, including its location away from HEC's entrance and the general flow of vehicles utilizing the same direction when traveling through the intersection, thus limiting wait times. Table 6 displays these findings.

Table 6: *Kingman Rd & Humphreys Center Access*

Type of Control	Movement	AM	PM
		LOS / Delay [Seconds]	
All-Way Stop	EB LTR	A / 7.5	A / 7.8
	WB LTR	A / 7.3	A / 6.9
	NB LTR	A / 7.1	A / 7.2
	SB LTR	A / 6.7	A / 6.5

Figure 7: LOS Locations



PARKING OVERVIEW:

This section provides an overview of the existing parking conditions at HEC, detailing the data collection process used to obtain accurate counts and the implications these conditions have relative to NCPC's parking ratio goals.

SUMMARY

The data collection for HEC's parking conditions was conducted through a combination of on-site counts and Google Earth analysis to ensure accuracy and account for any potential variations in parking utilization. During the collection process, 17 individual parking lots were identified and assessed, resulting in a total inventory of 1,396 parking spaces. Of these, 621 spaces were occupied, yielding a parking utilization rate of 50% as shown in Table 7. While the on-site counts provided primary data, Google Earth was used to validate these findings, particularly for lots that were gated or restricted during the site visit. High utilization rates were observed near the [redacted] facility. Lot 6 was a gravel area with no striping, so no counts were included for that lot. The table below summarizes the counts per lot. Figure 8 highlights the parking utilization for each lot.

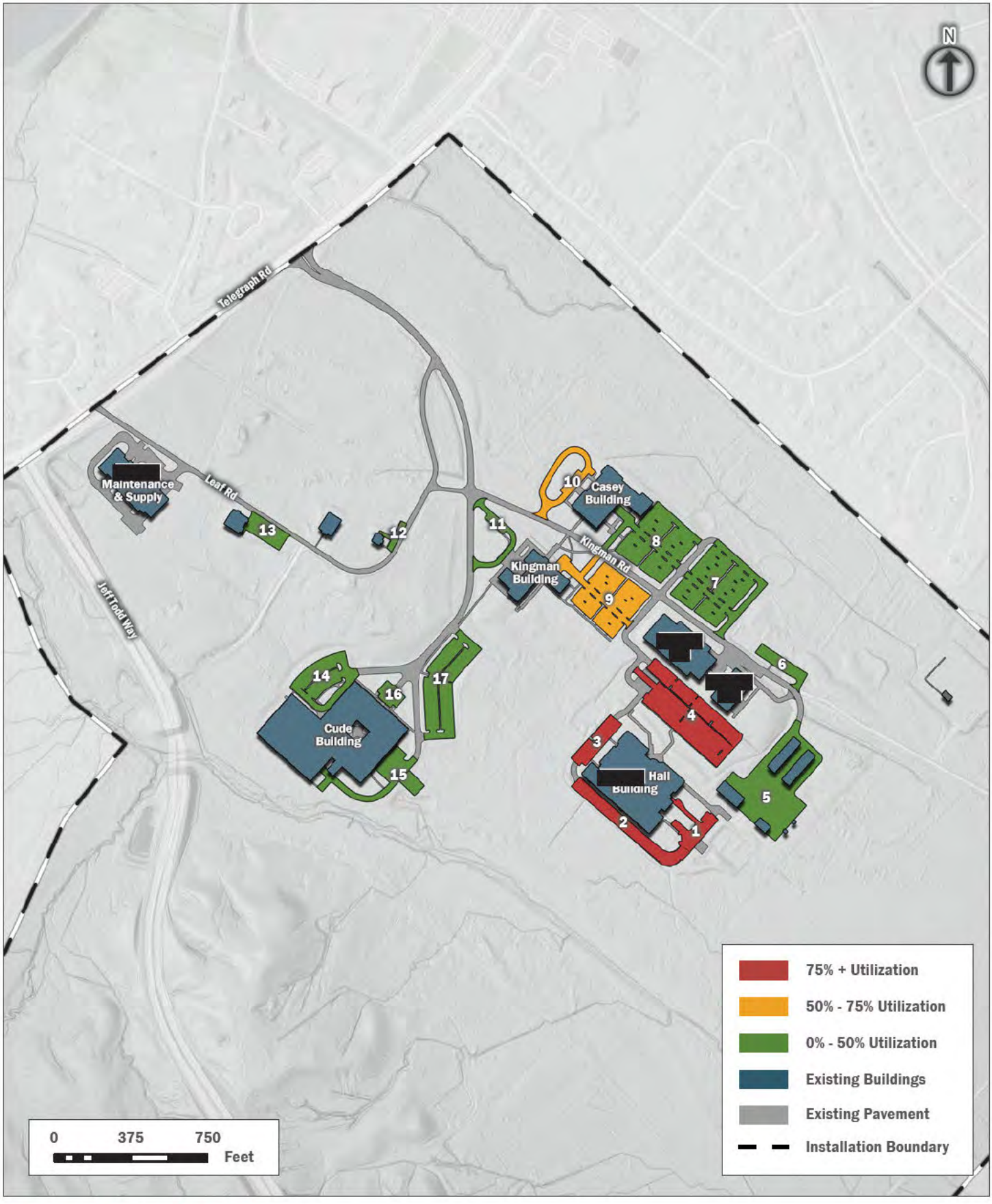
Table 7: *Parking Utilization*

Lot #	Capacity [Spaces]	Utilized [Spaces]	Utilized Percent [%]
1	26	25	96%
2	62	62	100%
3	56	56	100%
4	257	242	94%
5	76	31	41%
6	-	-	-
7	183	38	21%
8	186	52	28%
9	161	93	58%
10	13	7	54%
11	12	2	13%
12	11	4	32%
13	14	2	14%
14	90	42	47%
15	41	7	17%
16	18	8	42%
17	190	95	50%

NCPC IMPLICATIONS

The parking utilization findings at HEC have important implications in relation to NCPC's suburban parking ratio goals. NCPC outlines a target parking ratio of 1 space per 3 employees [1:3 or 0.33 spaces per person] for suburban federal installations in the NCR, intended to encourage alternative transportation modes and reduce single-occupancy vehicle dependency. Based on HEC's population of 1,535 personnel and parking inventory of 1,252 available parking spaces, the current parking ratio stands at approximately 0.815 spaces per person. This ratio significantly exceeds NCPC's goal, indicating a higher dependency on parking capacity than recommended for federal installations of HEC's type and location. However, the 50% utilization rate suggests that current demand is lower than the inventory, likely due to a considerable percentage of HEC personnel working remotely. The effective parking ratio is calculated at approximately 0.405 spaces per person based on current utilization, which is closer to the NCPC target ratio. This difference between available capacity and actual demand presents opportunities for HEC to adopt TDM strategies, such as promoting telework, carpooling, and vanpooling, to better align with NCPC standards. It's important to note that HEC expects a new tenant in 2026, that may have an influx of 200 - 300 additional population. Additionally, should operational needs evolve, options for repurposing underutilized lots or implementing structured parking could be considered to optimize land use in line with HEC's campus vision. Ultimately, the existing parking conditions do not justify the implementation of additional parking capacity.

Figure 8: *Parking Utilization*



STAKEHOLDER INPUT OVERVIEW

This section provides an overview of the stakeholder input that assisted in crafting the TMP. Included in this were two site visits and an employee survey that allowed all HEC employees and staff to share their feedback on the installation's transportation network.

SITE VISIT #1 - STAKEHOLDER INTERVIEWS

Interviews were conducted with key stakeholders at HEC during the September 2024 ADP site visit. This site visit helped guide the creation of ADP goals and objectives while simultaneously introducing the TMP to HEC. Information gathered during this process provided an initial background into the transportation-related issues that occur at HEC and where improvements can be made in the coming years. In partnership with the ADP, areas for improvement were discussed with various stakeholders to ensure that there was a well-rounded input group.

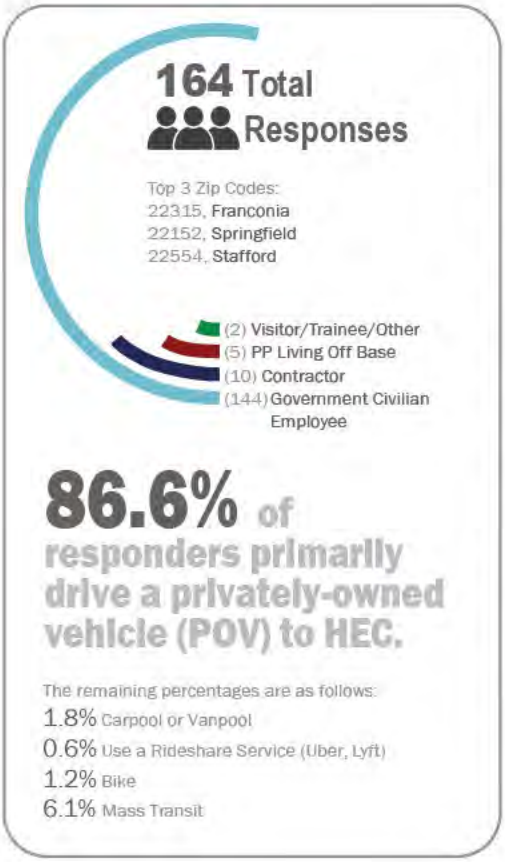
SITE VISIT #2 - COLLABORATIVE WORKSHOP

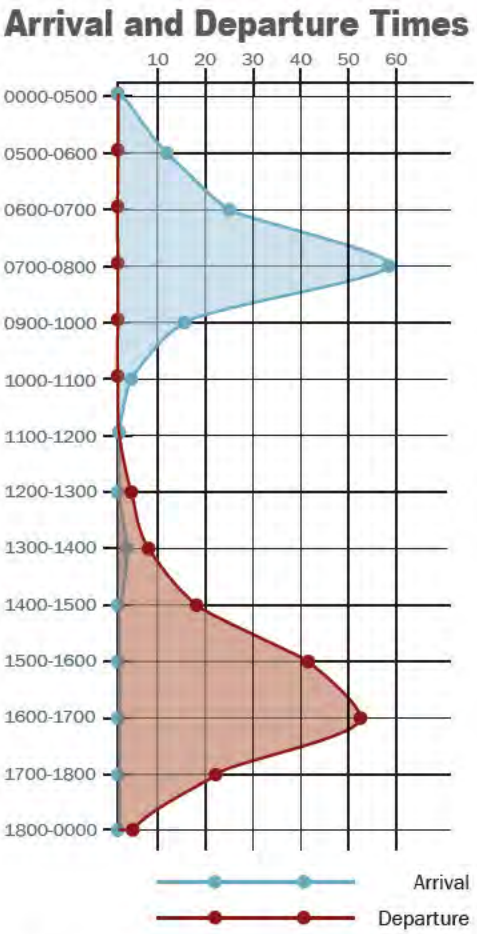
The collaborative workshop took place in October 2024 and built off of the identified areas for improvement from Site Visit #1. During the collaborative workshop, sessions were held to discuss the areas for improvement and how HEC can work towards an improved transportation system. These discussions led to the development of specific projects and COAs that the TMP is built around.

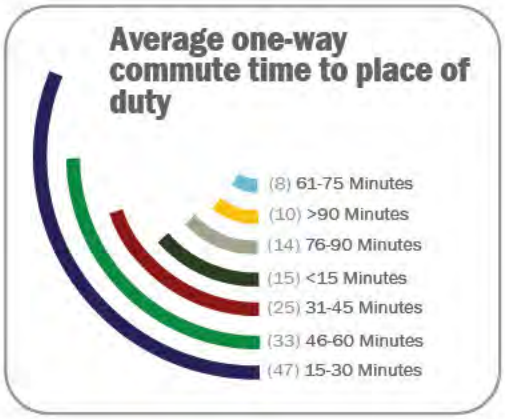
EMPLOYEE SURVEY

As part of gathering stakeholder input, an Employee Survey was created and launched in September 2024 following Site Visit #1. The employee survey covered topics related to commuting habits and experiences, safety concerns, and feedback on the overall transportation network at HEC. 164 people living, working, or otherwise visiting the Installation answered the survey, and the results can be seen on the adjacent page.

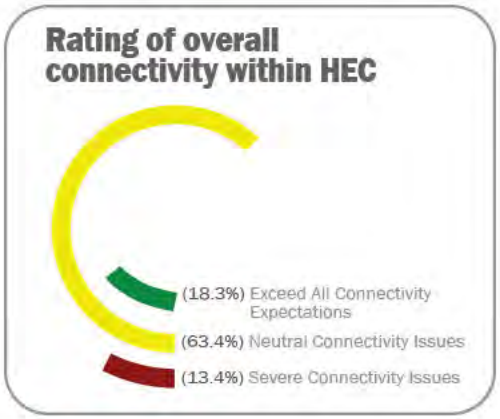
Overall, the combined information and data collected from Site Visits #1, #2, and #3 as well as the subsequent information collected by the Employee Survey have proved successful in bringing direct feedback from HEC personnel into the TMP report compilation.


164 Total Responses
Top 3 Zip Codes:
22315, Franconia
22152, Springfield
22554, Stafford
(2) Visitor/Trainee/Other
(5) PP Living Off Base
(10) Contractor
(144) Government Civilian Employee
86.6% of responders primarily drive a privately-owned vehicle (POV) to HEC.
The remaining percentages are as follows:
1.8% Carpool or Vanpool
0.6% Use a Rideshare Service (Uber, Lyft)
1.2% Bike
6.1% Mass Transit

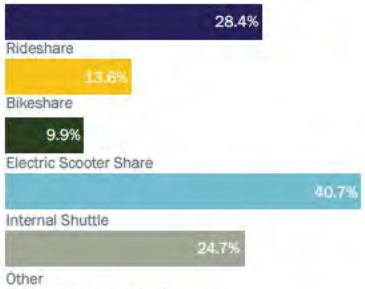

Arrival and Departure Times
10 20 30 40 50 60
0000-0500
0500-0600
0600-0700
0700-0800
0900-1000
1000-1100
1100-1200
1200-1300
1300-1400
1400-1500
1500-1600
1600-1700
1700-1800
1800-0000
Arrival
Departure


Average one-way commute time to place of duty
(8) 61-75 Minutes
(10) >90 Minutes
(14) 76-90 Minutes
(15) <15 Minutes
(25) 31-45 Minutes
(33) 46-60 Minutes
(47) 15-30 Minutes


How would you rate your overall safety during your commute to/from HEC?
55.5%
Acceptable Standard of Safety
20.1%
Severe Safety Concerns
18.9%
Exceeds All Safety Expectations
How would you rate your overall safety while traveling within HEC?
54.9%
Acceptable Standard of Safety
37.8%
Exceeds All Safety Expectations
1.8%
Severe Safety Expectations


Rating of overall connectivity within HEC
(18.3%) Exceed All Connectivity Expectations
(63.4%) Neutral Connectivity Issues
(13.4%) Severe Connectivity Issues

What alternative transportation options would you most likely use if they were available?

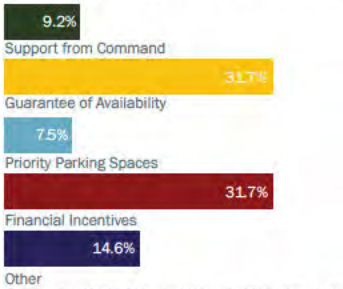


Other responses include:

Train/Metro/Lightrail

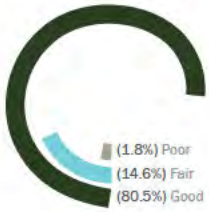
Still others specify that they would not utilize alternate options due to time constraints or unfeasibility due to mission demands.

What incentives would make you want to use carpool/vanpool? (Choose Multiple)

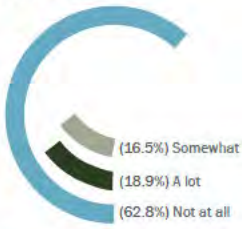


Others specify that they would not utilize alternate options due to time constraints or unfeasibility due to mission demands.

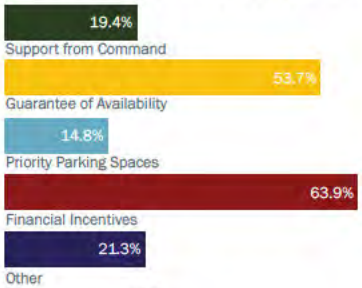
How would you rate the ease of finding parking?



How much does parking facility availability affect your travel decision?



What incentives would make you want to use an alternate transportation method? (Choose Multiple)



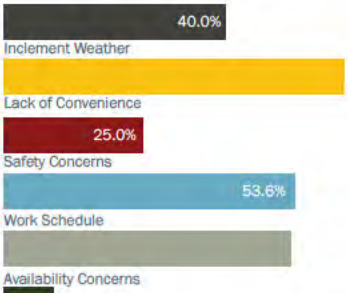
Other responses include:

Added bike lanes

Safety

Timeliness

What factors would lead you to not use an alternate transportation method?



Other responses include:

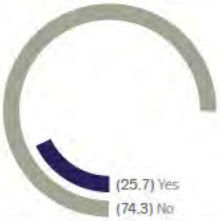
Lack of convenience

Distances to some destinations

Do you utilize existing public bus stops?

Of Those who answered yes, 50% use exisiting public bus stops more than once a week.

Would you utilize a paid off-base shuttle service to and from regional destinations?



Of those who answered yes, the following were top responses:

Metro Station

Pentagon

D.C.

GAO

8% of responders currently own an electric POV, but

25% plan to purchase an electric POV over the next 5 years.

The following are quotes from responding individuals:*

- "Traffic signal would be helpful at Leaf Rd and Telegraph Rd, even if it operated only during rush hour. If nothing else, better signage viewable from Telegraph Rd would be helpful (so drivers expect an intersection as they're driving on Telegraph Rd)."
- "Would like to see shuttle between HECSA and GAO."
- "The main issue is the Telegraph/Leaf Rd intersection. Electric charging stations will definitely be needed in the next decade or so. I do have some concern over possibility of return to office directive + new tenants = more traffic issues."
- "Speeding is a problem. Speed tables need to be installed at intersections and crosswalks. Bigger law enforcement presence to deter speeding and running stop signs."
- "Do need more than one access road to HEC, but not sure how possible with current layout. At the moment leaving afternoons can be troublesome and having the Police support our exists is good for now."

*Some responses have been edited for clarity

IMPLEMENTATION

OVERVIEW:

This chapter presents the implementation of the goals, objectives, strategies, and projects recommended for the HEC TMP. The process for establishing these elements was guided by the NCPC TMP Handbook, which provides a structured framework for developing TMPs for federal installations in the NCR.

ADP COHESION

This TMP was developed in tandem with the HEC ADP, ensuring that the proposed strategies and projects align seamlessly with the transportation recommendations outlined in the ADP. While the ADP explores multiple alternatives for proposed recommendations, this TMP incorporates only the applicable projects selected as part of the preferred alternative. For reference, Figure 9 on the following page illustrates the preferred alternative from the HEC ADP.

GOALS

The goals were collaboratively established with Installation leadership and key stakeholders at HEC. Although broad in scope, they collectively aim to guarantee an optimal and safe transportation system for the installation's envisioned end state.

STRATEGIES

Building upon the established goals, various strategies were formulated to include a diverse set of proposed projects tailored to address each strategy's intent. These strategies range from long-term, robust infrastructure projects to collaborative efforts aimed at enhancing coordination with regional agencies and stakeholders.

OBJECTIVES

The goals and strategies have been broken down into achievable target objectives. These objectives should be monitored routinely to ensure progress is being made toward each strategy. Implementation of projects listed under each strategy are non-comprehensive steps towards achieving the targeted metrics. The projects and objectives provided will provide a framework that can be used for the determination of programming expenses and projects in the coming decades for the Installation.

PROJECTS

Proposed projects are recommended to address the intents of each strategy. These projects are presented in tables under each presented strategy. These projects are proposed on various timelines, ranging from short-range to mid-range to long-range. These ranges reflect the level of effort needed to complete each project, while some projects hinder the completion of others.

During the collaborative workshop, stakeholders were asked to identify high-priority projects for HEC. The selected projects are noted in the project tables with a star. These projects are further highlighted in Appendix A: Operational Improvement Plan. These include more detailed project summaries that outline processes needed for construction, as well as high-level technical drawings if applicable.

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Figure 9: *HEC ADP Preferred Alternative*

GOAL 1: MODERNIZE INFRASTRUCTURE AND IMPROVE TRAFFIC FLOW

OVERVIEW

The first primary transportation goal, "Modernize Infrastructure and Improve Traffic Flow," was established to address the installation's evolving operational needs and potential for improvements to the installation's vehicular infrastructure. The workshop emphasized the importance of efficient and safe ingress and egress processes, the need to update existing ECP infrastructure for UFC compliance, as well as the optimization of internal vehicular circulation.

STRATEGY DEVELOPMENT

The formulation of this goal led to the formulation of four targeted strategies: enhancing the existing ECP to ensure UFC compliance, exploring alternative ECP locations to manage emergency egress, upgrading internal infrastructure to meet modern standards, and implementing parking management to maintain optimal parking capacity and utilization.

Figure 10 highlights some of the proposed projects recommended under these strategies.

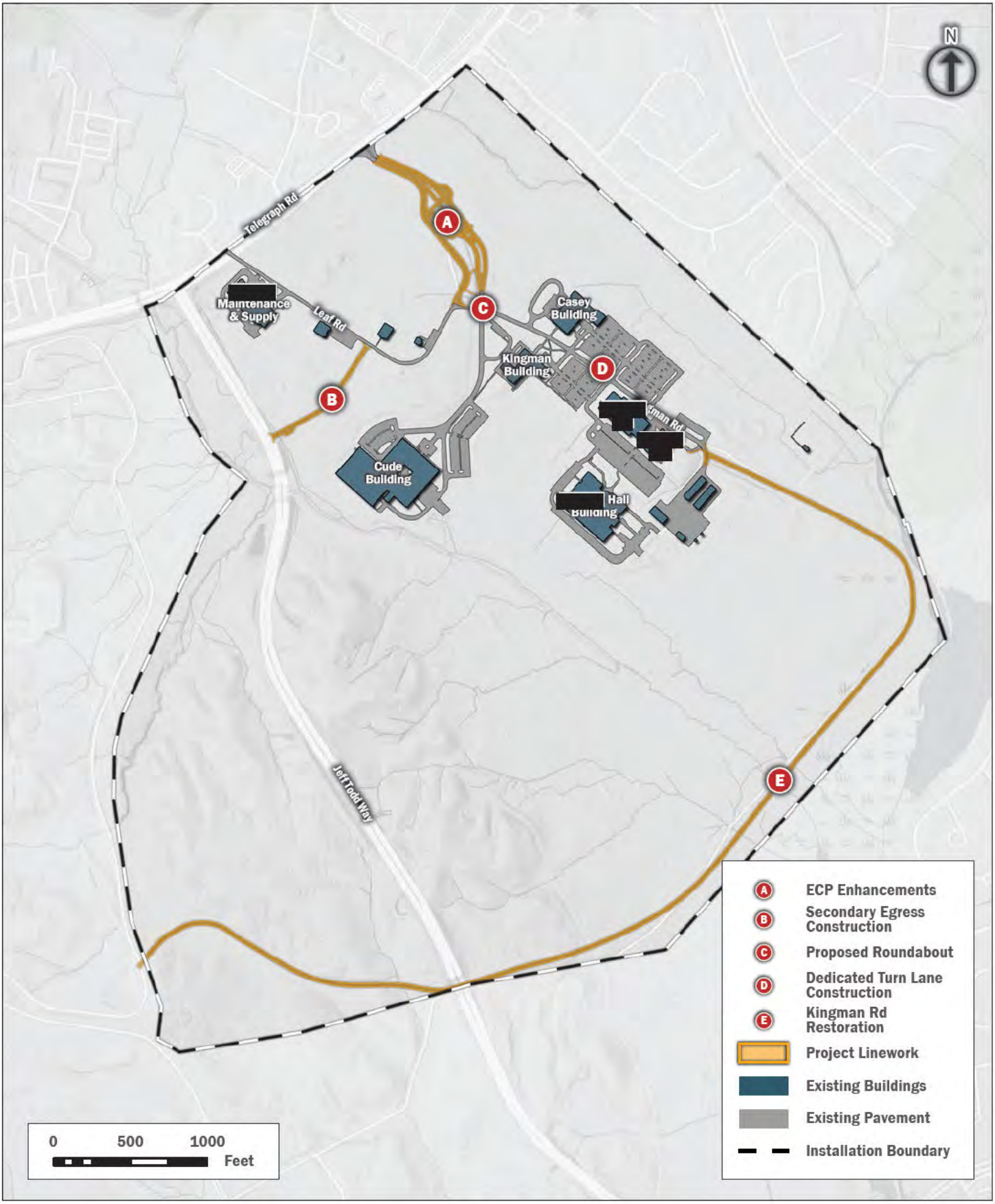
Strategies
1.1: Enhance Existing ECP
1.2: Consider Alternative Options For ECPs
1.3: Improve Internal Infrastructure
1.4: Parking Management

OBJECTIVE DEVELOPMENT

During the collaborative workshop, stakeholders developed specific, measurable objectives to support the first transportation goal. The objective to "Maintain ECP efficiency" emerged as a priority to reduce peak-period backups and support effective processing at the primary entry point. Additionally, the workshop highlighted the necessity of "Enhancing UFC Compliance at the existing ECP," which would address both security and operational requirements critical for HEC's evolving needs. The objective to "Maintain a 'B' LOS at the Kingman Rd/Leaf Rd intersection" was formulated after the workshop by the AE Consultant Team to ensure this intersection continues to operate efficiently, as it directs the majority of internal vehicular traffic across the Installation.

Objective	Short-Range Metric [2026]	Mid-Range Metric [2029]	Long-Range Metric [2034]
Maintain ECP efficiency	*Maintain within 5% of current levels*	*Maintain within 5% of current levels*	*Maintain within 5% of current levels*
Ensure UFC compliance at existing ECP	*Completion of Project 1.1.1*	*Completion of Project 1.1.2*	*Completion of Project 1.1.3*
Maintain a "B" or higher LOS at the Kingman Rd/Leaf Rd intersection	*Maintain "A" LOS*	*Maintain "A" LOS*	*Maintain "B" LOS*

Figure 10: *Goal 1 Highlighted Projects*



1.1 ENHANCE EXISTING ECP

SUMMARY

This strategy focuses on enhancing the existing ECP at HEC to address current security deficiencies and improve traffic flow. The ECP is currently not compliant with UFC standards, lacking essential features such as a vehicle inspection area, adequate queuing space, and robust traffic control measures, which are critical for safe and efficient processing, especially during peak hours. To address these issues, the following projects were developed to incrementally upgrade the ECP, moving it toward full UFC compliance while minimizing operational disruptions.

#	Project Title	Start Date	ROM Cost
1.1.1	Upgrade existing ECP with signage and lane markings	Short-Range	$90K - $110K
1.1.2	Upgrade existing ECP with Commercial Vehicle Lane and bypass road	Mid-Range	$250K - $260K
1.1.3	Fully construct a UFC compliant ECP at the existing ECP location	Long-Range	MILCON-Level

★ *Indicates project broken down in further detail in Appendix A: Operational Improvement Plan*

** *Costs will be provided with the prefinal submission*

PROJECT DESCRIPTIONS

Project 1.1.1 will implement updated signage and lane markings at the ECP to streamline traffic flow, delineate vehicle paths, and improve safety. Existing signage is insufficient to manage peak traffic effectively, leading to driver confusion and queuing delays. The addition of lane markings to provide clear directional guidance and signage designating specific lanes [e.g., for commercial vehicles] serves as a foundational improvement, setting the stage for subsequent ECP enhancements.

Project 1.1.2 will implement a dedicated commercial vehicle lane and bypass road at the ECP, streamlining access and inspection for commercial vehicles. Currently, commercial vehicles share lanes with general traffic. A commercial lane allows more efficient processing, improving queuing times and enhancing security with thorough inspections. The bypass road ensures separation of commercial vehicles from general traffic after entering the Installation.

Figure 11: *Fully Constructed ECP*

Project 1.1.3 involves a complete reconstruction of the ECP to achieve UFC compliance, with a focus on enhancing security to address existing deficiencies. This upgrade will integrate essential UFC-compliant features, such as blast protection and an active barrier system. The current ECP configuration lacks these UFC-mandated elements; therefore, this project, alongside Projects 1.1.1 and 1.1.2, is essential to align HEC's entry control point with federal security standards, ensuring operational integrity.

These three projects are structured as a phased approach to progressively advance the ECP toward full UFC compliance while supporting uninterrupted operational efficiency. Implementing each project in sequence allows HEC to enhance ECP functionality and security incrementally, minimizing disruption to daily operations. Each phase builds upon prior improvements, creating a safer and more secure ECP. A high-level drawing of the completed ECP is highlighted in Figure 11 and can be further referenced in the OIP.

1.2 CONSIDER ALTERNATIVE OPTIONS FOR ECPS

SUMMARY

This strategy examines alternative options for establishing secondary egress and a potential new primary ECP at HEC, addressing critical needs for emergency access, peak-hour congestion relief, and the potential for Installation growth. Currently, HEC lacks a secondary egress, relying solely on the Telegraph Rd/Kingman Rd intersection for both ingress and egress. This single access point creates a bottleneck during peak hours and poses challenges for emergency scenarios. Establishing a secondary egress would not only enhance emergency preparedness but could also alleviate congestion during peak hours. The following projects have been developed to fulfill this strategy.

#	Project Title	Start Date	ROM Cost
1.2.1	Improve Winslow Rd connection for secondary egress option	Mid-Range	$200K - $230K
1.2.2	Conduct feasibility study for implementing new ECP at Kingman Rd/Jeff Todd Way Intersection	Long-Range	No Construction Costs

Indicates project broken down in further detail in Appendix A: Operational Improvement Plan

PROJECT DESCRIPTIONS

Project 1.2.1 involves constructing a new roadway along the Winslow Rd alignment to establish a secondary egress route connecting Jeff Todd Way to Leaf Rd, which is within the Installation. Leveraging existing curb cuts along Jeff Todd Way, this project will require excavation, road construction, and associated security infrastructure to form a secure connection with Leaf Rd. The new roadway will serve as an egress-only route, with ingress limited to emergency personnel, and will include a guard post and secure fencing to manage access. This route can serve multiple operational needs: in addition to emergency egress, it could also function as a peak-hour egress for commuter traffic, helping to reduce afternoon congestion at the Telegraph Rd/Kingman Rd intersection. Figure 12 highlights the location of the Winslow Rd connection project.

Figure 12: *Secondary Egress Option*

Project 1.2.2 consists of conducting a feasibility study to explore the potential for a new primary ECP at the Kingman Rd/Jeff Todd Way intersection. This project supports HEC's long-term planning objectives by assessing the infrastructure, security, and traffic flow requirements necessary to establish a new main ECP that could either supplement or eventually replace the current ECP, depending on the installation's future needs. Establishing a new ECP at this location would enable flexible access for regular and emergency traffic, supporting potential installation expansion and future mission requirements further discussed in the ADP. This feasibility study is also dependent upon the restoration of Kingman Rd, detailed further in Project 1.3.4 of the subsequent strategy.

1.3 IMPROVE INTERNAL INFRASTRUCTURE

SUMMARY

This strategy is focused on modernizing HEC's internal roadways and intersections to improve traffic flow, safety, and connectivity. As HEC expands and adapts to new operational needs, the existing infrastructure requires targeted upgrades to support efficient internal circulation and optimize ingress and egress within the Installation. Key projects include modifications to the Kingman Rd and Leaf Rd corridors, the addition of traffic management features, and enhanced roadway configurations to support future growth.

#	Project Title	Start Date	ROM Cost
1.3.1	Implement barrier in the Kingman parking lot	Short-Range	$850 - $1K
1.3.2	Widen Leaf Rd	Mid-Range	$130K - $150K
1.3.3	Construct dedicated turn lane on Kingman Rd	Mid-Range	$40K - $46K
1.3.4	Restore Kingman Rd	Long-Range	$1M
★ 1.3.5	Construct roundabout at the Kingman Rd/Leaf Rd intersection	Long-Range	$225K - $260K

★ *Indicates project broken down in further detail in Appendix A: Operational Improvement Plan*

PROJECT DESCRIPTIONS

Project 1.3.1 involves adding a barrier in the Kingman parking lot, necessary to close off ingress access from the southern entrance. Currently, vehicles entering from this side create a safety issue by intersecting with internal parking circulation. Limiting ingress to the northern entrance will streamline traffic flow, mitigate potential conflicts, and improve driver safety within the parking lot.

Project 1.3.2 will widen Leaf Rd west of the Kingman Rd intersection. This addresses the existing constraints posed by its narrow lanes. If HEC's operations expand, this road will likely see an increase in two-way and commercial truck traffic. The widening will support safe and efficient vehicle movement, particularly for larger vehicles accessing the northern Installation areas.

Project 1.3.3 includes adding a dedicated turn lane on Kingman Rd, located just after the Kingman parking lot, to improve access to the [redacted] areas and designated parking. This lane will streamline traffic flow for personnel accessing these areas.

Project 1.3.4 will restore Kingman Rd, providing multiple benefits, including serving as a secondary access route and potentially integrating with HEC's perimeter trail project for recreational connectivity. In the future, this road could also support ingress and egress if installation needs evolve. This phased restoration aligns with HEC's long-term infrastructure plans and the ADP, allowing for flexible adaptation to mission requirements.

Project 1.3.5 calls for the construction of a roundabout at the Kingman Rd/Leaf Rd intersection, as recommended during the ADP workshop. This intersection is central to HEC's traffic circulation, and maintaining a high LOS here is key to supporting efficient movement across the Installation. A roundabout is a long-term solution that aligns with other long-term reconfigurations, such as the potential new ECP and road realignments.

1.4 PARKING MANAGEMENT

SUMMARY

This strategy is aimed at optimizing HEC's parking resources through enhanced parking management practices and demand reduction initiatives. It's important to note that HEC expects a new tenant in 2026, that may have an influx of 200 - 300 additional population. With current parking utilization at 50%, HEC has an opportunity to continue lowering its dependency on parking supply by encouraging alternative transportation and flexible work arrangements, without recommendations for additional parking infrastructure to be constructed. These efforts directly support HEC's long-term goal of aligning with the NCPC suburban parking ratio target of 1:3 spaces per person, as well as promoting responsible land use. Additionally, a structured parking facility is considered a potential long-term solution, allowing HEC to manage future parking needs while preserving the campus aesthetic and maintaining the installation's open space and land use vision.

#	Project Title	Start Date	ROM Cost
1.4.1	Encourage carpooling and vanpooling	Short-Range	No Construction Costs
1.4.2	Continue and expand telework and flex scheduling	Short-Range	No Construction Costs
1.4.3	Consider structured parking facilities for long-term solutions	Long-Range	No Construction Costs

PROJECT DESCRIPTIONS

Project 1.4.1 involves encouraging carpooling and vanpooling as short-term and ongoing approach to reduce SOV use and overall parking demand. This project supports HEC in working toward the NCPC parking ratio goal by lowering the need for parking spaces. By incentivizing shared rides through preferential parking or other benefits, HEC can further alleviate parking pressures, making efficient use of its available spaces and reducing environmental impact.

Project 1.4.2 recommends continuing and expanding telework and flexible scheduling options to significantly reduce the number of on-site personnel at any given time, decreasing dependency on the existing parking supply. With current data showing 50% utilization of available spaces, maintaining or expanding remote work arrangements can help HEC stay aligned with the NCPC parking ratio target, even if on-site work levels increase. These flexible arrangements not only support parking management goals but also contribute to improved employee satisfaction and productivity.

Project 1.4.3 involves considering a structured parking facility as a long-term solution to provide flexibility if HEC's operational needs evolve and demand additional parking capacity. Structured parking conserves land and optimizes space utilization, making it a practical option for managing increased demand while preserving developable land for other prioritized uses. If future requirements necessitate additional parking, a parking garage at the location of the Kingman parking lot would be strategically positioned to serve the Installation efficiently while aligning with HEC's vision for maintaining its campus feel and land use goals.

GOAL 2: ENHANCE MULTIMODAL ACCESS/ CIRCULATION

OVERVIEW

The second transportation goal centers on improving multimodal access and circulation within HEC. This goal addresses the need for a more integrated and accessible campus by prioritizing infrastructure that supports pedestrian and bicycle use while reducing dependency on SOVs. Stakeholders emphasized the importance of closing connectivity gaps, such as missing sidewalks, and enhancing amenities to encourage alternative transportation options. These initiatives align with federal transportation goals and promote a safer, more efficient transportation network.

STRATEGY DEVELOPMENT

Strategies
2.1: Enhance Pedestrian Connectivity
2.2: Install and Upgrade Pedestrian Amenities
2.3: Enhance Bicycle Infrastructure

The strategies to enhance multimodal access were developed to address specific challenges identified through data collection and stakeholder input. These include improving pedestrian connectivity, upgrading pedestrian amenities, and expanding bicycle infrastructure. Workshop discussions emphasized the importance of a holistic approach, focusing on closing existing gaps in the sidewalk network, improving pedestrian safety and comfort through targeted upgrades, and providing adequate facilities to support bicycling as a viable commuting option. These strategies collectively aim to create a more accessible, integrated transportation system while encouraging a shift away from SOV dependence.

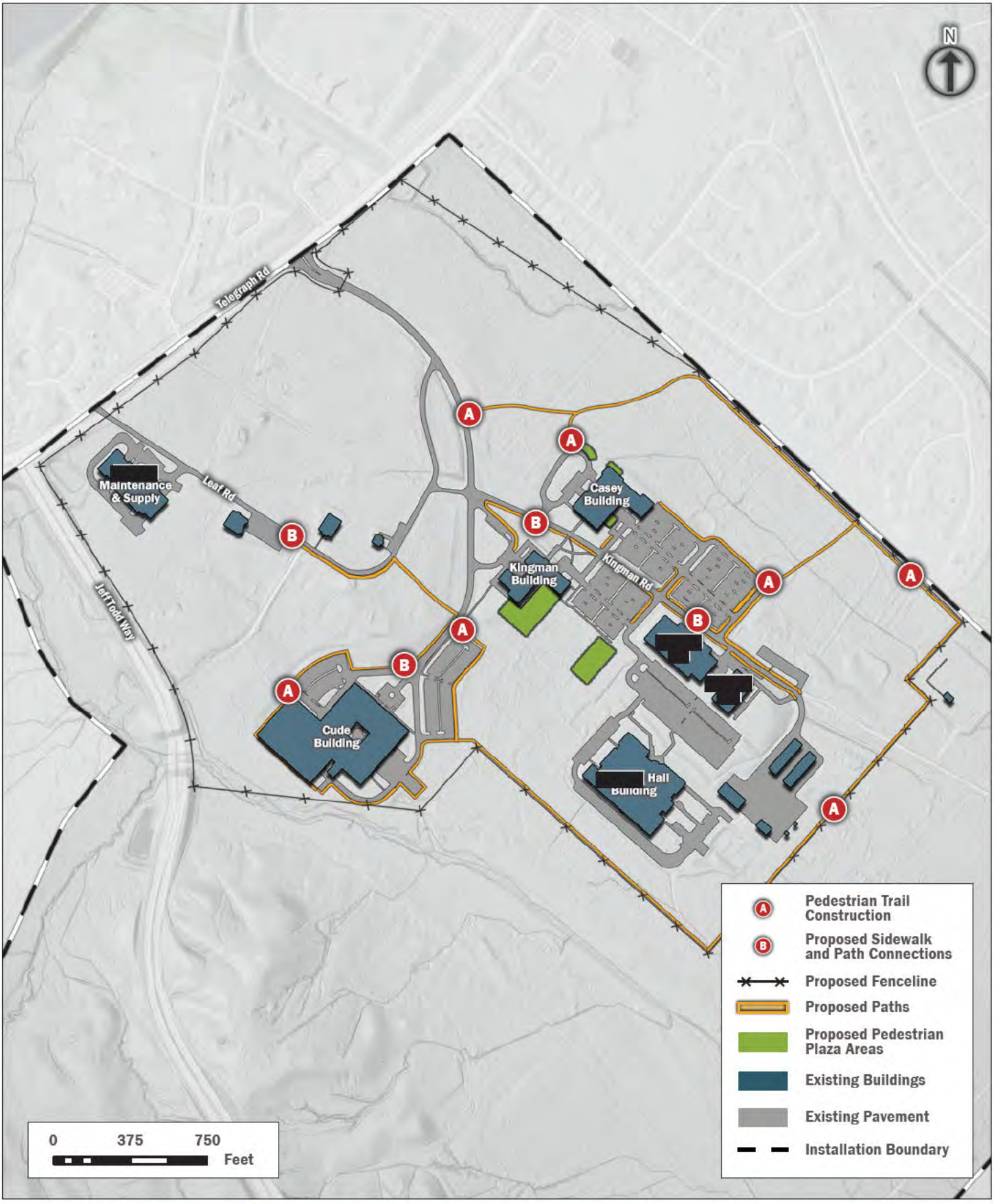
Figure 13 highlights some of the proposed projects recommended under these strategies.

OBJECTIVE DEVELOPMENT

The objectives for this goal are structured to deliver measurable progress toward achieving a fully connected multimodal transportation network. The primary objective is to connect all facilities with sidewalks by 2029, addressing existing gaps in pedestrian access. The second objective focuses on achieving reductions in SOV usage, with milestones of 5% and 10% by 2026 and 2029, aligning with HEC's long-term commitments.

Objective	Short-Range Metric [2026]	Mid-Range Metric [2029]	Long-Range Metric [2034]
Connect all facilities with sidewalks or paths	*N/A*	*100%*	*N/A*
Achieve reduction in SOVs	*5%*	*10%*	*N/A*

Figure 13: *Goal 2 Highlighted Projects*



2.1 ENHANCE PEDESTRIAN CONNECTIVITY

SUMMARY

This strategy focuses on developing a comprehensive pedestrian network that prioritizes safety, accessibility, and connectivity across HEC. By addressing gaps in the existing sidewalk network and constructing a new pedestrian trail along the Installation perimeter, this strategy supports HEC's goals of creating a walkable campus and reducing reliance on single-occupancy vehicles. Both identified projects fall within the mid-range timeframe, given the investment and coordination required to complete their various components.

#	Project Title	Start Date	ROM Cost
2.1.1	Construct a pedestrian trail along the Installation perimeter	Mid-Range	$290K - $350K
★ 2.1.2	Connect gaps in existing sidewalk network	Mid-Range	$890K - $1M

★ *Indicates project broken down in further detail in Appendix A: Operational Improvement Plan*

PROJECT DESCRIPTIONS

Project 2.1.1 will implement a pedestrian trail along the Installation perimeter, which will provide a dedicated, safe, and accessible path for walking and recreational use. This project is recommended to align with the perimeter fence construction project identified in the HEC ADP, offering an opportunity to coordinate funding and achieve both objectives simultaneously. The trail will connect key facilities, enabling users to navigate the Installation without interacting with vehicular traffic. It is expected to feature three primary access points: one near the north side of the Casey building, another at the end of Kingman Rd by the [redacted] facility currently under construction, and a third connection at Winslow Rd, on the west side of the Cude Building.

Project 2.1.2 involves filling gaps in the existing sidewalk network, which ensures seamless pedestrian access to all facilities, addressing mobility needs. Current disconnections force pedestrians to traverse unsafe or inconvenient paths, often leading to conflicts with vehicular traffic. Key locations for sidewalk construction include both sides of Kingman Rd, a connection between lot 14 and the main installation area, and paths linking the Casey Building parking lot and the Winslow Rd access point to the proposed perimeter trail.

2.2 INSTALL AND UPGRADE PEDESTRIAN AMENITIES

SUMMARY

This strategy aims to enhance the pedestrian experience across HEC by developing inviting, functional spaces and improving infrastructure along key routes. Central to this effort are the creation of pedestrian plazas and spaces that encourage outdoor use, as well as upgrades to amenities along primary walkways and roadways. The pedestrian plazas, located near the Casey and Kingman buildings, will serve as hubs for social interaction and relaxation, while additional features, such as shaded seating and green spaces along Kingman Rd, will improve overall walkability. These projects align with HEC's nature-based goals by integrating natural shading and linking with bioswale construction efforts, creating a balanced approach to environmental and user-focused improvements.

#	Project Title	Start Date	ROM Cost
2.2.1	Improve pedestrian amenities in select locations	Short-Range	$1.5M - $1.7M
2.2.2	Implement pedestrian infrastructure along roadways	Mid-Range	$197K

PROJECT DESCRIPTIONS

Project 2.2.1 involves the creation of two enhanced pedestrian plazas located adjacent to the Casey Building and Kingman Building, as well as two additional pedestrian spaces identified in the HEC ADP. The plazas will feature shaded seating, tables, and covered pavilions to encourage outdoor gathering and provide comfortable spaces for pedestrians. Additional amenities include improved lighting, trash receptacles, and integrated landscaping to enhance usability and aesthetics.

Project 2.2.2 will install spaced benches along Kingman Rd and key walkways, which will create rest points for pedestrians, improving walkability and convenience. This project will also integrate tree shading and green spaces to enhance comfort and reduce heat exposure for pedestrians. Additionally, this initiative will be coordinated with [Project 4.3.1], which involves constructing bioswales along primary roads and parking lots to maximize environmental and infrastructure benefits. These improvements will align with Installation goals while creating a safer and more inviting pedestrian environment.

2.3 ENHANCE BICYCLE INFRASTRUCTURE

SUMMARY

This strategy aims to strengthen HEC's bicycle infrastructure to promote cycling as an alternative and accessible transportation option. By providing secure, weather-protected storage at key locations across the Installation, this strategy addresses current deficiencies in bicycle amenities and encourages broader adoption of active transportation. These efforts align with recommendations from the ADP and support HEC's long-term multimodal access goals.

#	Project Title	Start Date	ROM Cost
2.3.1	Construct bicycle racks and infrastructure	Short-Range	*$60K*

PROJECT DESCRIPTIONS

Project 2.3.1 involves installing covered bicycle racks at strategic locations, including the Cude Building, Kingman Building, and Casey Building, to provide secure, weather-protected storage for cyclists. Additionally, a potential bike shelter near the Hall Building is proposed to accommodate increased demand and offer a centralized storage solution for employees and visitors. These enhancements align directly with ADP recommendations and reflect stakeholder priorities from the TMP workshop.

GOAL 3: IMPROVE TRANSPORTATION SAFETY INFRASTRUCTURE

OVERVIEW

The third transportation goal focuses on enhancing safety across HEC's transportation network by addressing existing safety hazards and implementing infrastructure improvements to protect both pedestrians and drivers. Stakeholders emphasized the importance of creating a safer, more accessible environment, particularly in spaces where pedestrians and vehicles intersect. This goal directly supports HEC's commitment to fostering a secure and well-connected Installation while aligning with federal safety and accessibility standards.

STRATEGY DEVELOPMENT

Strategies
3.1: Improve Signage and Promote Awareness
3.2: Upgrade Pedestrian Safety Infrastructure

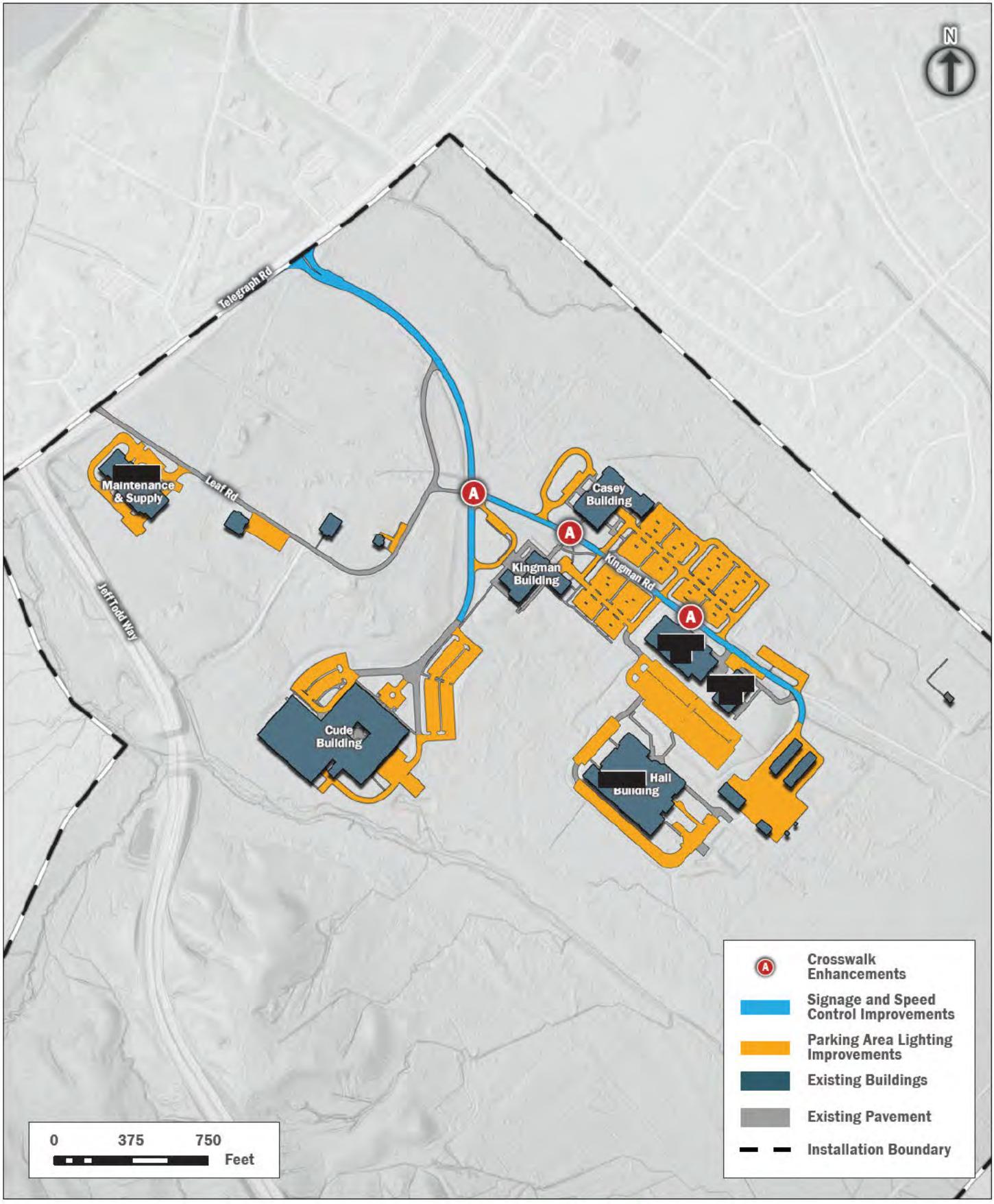
To achieve this goal, two targeted strategies were identified: improving signage and promoting awareness and upgrading pedestrian safety infrastructure. These strategies address specific safety challenges across the Installation, including the need for better visual cues for drivers and pedestrians, as well as enhanced crosswalks and lighting. Stakeholder discussions during the workshop emphasized the importance of integrating both low-cost, short-term measures and longer-term infrastructure upgrades to deliver meaningful safety improvements.

OBJECTIVE DEVELOPMENT

The objectives for this goal focus on measurable and impactful outcomes to improve transportation safety at HEC. The implementation of three fully enhanced crosswalks by 2029 will address critical pedestrian safety needs, reducing risks at high-traffic intersections. Additionally, achieving full compliance with lighting standards by 2029 will ensure that all pedestrian pathways, intersections, and parking lots are adequately illuminated, improving visibility and safety during low-light conditions.

Objective	Short-Range Metric [2026]	Mid-Range Metric [2029]	Long-Range Metric [2034]
Implement 3 fully enhanced crosswalks	*N/A*	*100%*	*N/A*
Achieve compliance with lighting standards	*N/A*	*100%*	*N/A*

Figure 14: *Goal 3 Highlighted Projects*



3.1 IMPROVE SIGNAGE AND PROMOTE AWARENESS

SUMMARY

This strategy focuses on improving safety and navigation throughout HEC by addressing deficiencies in existing signage and implementing new signage where needed. Some current traffic safety signage is faded or difficult to read, reducing its effectiveness and posing safety risks. By enhancing traffic signage and introducing cohesive wayfinding elements, this strategy aims to create a safer, more navigable environment for all users. Wayfinding signage will also support a unified campus identity, as outlined in the HEC vision and ADP, while providing clear guidance on the proposed perimeter trail to integrate it seamlessly into the transportation network.

#	Project Title	Start Date	ROM Cost
3.1.1	Implement traffic safety and wayfinding signage	Short-Range	$4K
3.1.2	Improve wayfinding signage on roadways and the proposed trail	Mid-Range	$7K

Indicates project broken down in further detail in Appendix A: Operational Improvement Plan

PROJECT DESCRIPTIONS

Project 3.1.1 involves enhancing and adding speed limit signs throughout the Installation, which will improve driver compliance and reduce safety risks. Additional updates to traffic safety signage, including stop signs and reflective markers at key intersections like Kingman Rd and Leaf Rd, will address areas where signage has faded or become less effective. These enhancements are essential for improving safety and navigation, particularly in high-traffic zones.

Project 3.1.2 will implement wayfinding signage throughout the Installation. This will promote a cohesive campus feel by connecting facilities and transportation elements with a unified visual language. This signage will reflect the goals of the HEC vision and ADP, emphasizing usability and clarity. Wayfinding signs will also be incorporated into the proposed perimeter trail project [Project 2.1.1] to guide users to trailheads and other key points along the path. These additions will enhance the overall user experience and support broader connectivity and safety objectives.

3.2 UPGRADE PEDESTRIAN SAFETY INFRASTRUCTURE

SUMMARY

This strategy focuses on enhancing pedestrian safety by addressing safety deficiencies that pose risks to those navigating HEC's transportation network. It emphasizes creating a safer, more accessible environment by prioritizing improvements that promote visibility, reduce conflicts between pedestrians and vehicles, and ensure compliance with safety standards. By advancing these initiatives, HEC aims to foster a secure campus that meets both current and future needs for pedestrian-focused infrastructure.

#	Project Title	Start Date	ROM Cost
3.2.1	Construct and enhance select crosswalks	Short-Range	$11K - $13K
3.2.2	Implement speed control measures	Mid-Range	$4K
3.2.3	Improve lighting in parking lots and other areas	Mid-Range	$51K

PROJECT DESCRIPTIONS

Project 3.2.1 involves upgrading crosswalks to include high-visibility markings, flashing beacons, and pedestrian refuge islands. While general crosswalk improvements are recommended wherever the Installation deems applicable, this project specifically aims to construct fully enhanced crosswalks at two locations along Kingman Rd and one location on Leaf Rd. These enhancements address safety concerns at high-traffic intersections and align with stakeholder priorities identified during workshops and site visits.

Project 3.2.2 focuses on implementing speed control measures in pedestrian-heavy zones, such as near the Kingman parking lot and other primary access points. It includes constructing speed bumps or rumble strips to slow vehicular traffic. Additionally, integrating elements from Project 3.2.1, such as raising or elevating crosswalks, could serve to address both the visibility and speed control deficiencies targeted by these projects.

Project 3.2.3 involves implementing additional lighting across all parking lots on the Installation, addressing visibility concerns noted during the collaborative workshop. Lighting improvements will also be applied to identified problem areas, such as pedestrian pathways and intersections with limited visibility, ensuring comprehensive coverage to enhance safety and accessibility.

GOAL 4: SUPPORT RESPONSIBLE GROWTH AND EXPAND MASS TRANSIT

OVERVIEW

The fourth transportation goal emphasizes advancing HEC's growth objectives and expanding its mass transit options to align with federal mandates. Stakeholders identified the need to reduce dependency on SOVs, integrate responsible growth practices into the transportation network, and prepare the Installation for increased demand for EV infrastructure. These initiatives aim to improve HEC's environmental footprint, foster a culture of shared transportation, and establish resilient systems to meet future Installation goals.

STRATEGY DEVELOPMENT

To achieve this goal, three targeted strategies were developed. The first strategy focuses on encouraging mass transit and ridesharing through incentives, enhanced infrastructure, and new services like shuttle operations. The second strategy addresses the growing need for EV infrastructure by implementing plans for expanding charging capacity and relocating existing resources. The third strategy integrates green infrastructure elements, such as bioswales and solar energy systems, into the transportation system to align with nature-based goals identified in the HEC ADP and federal planning guidelines.

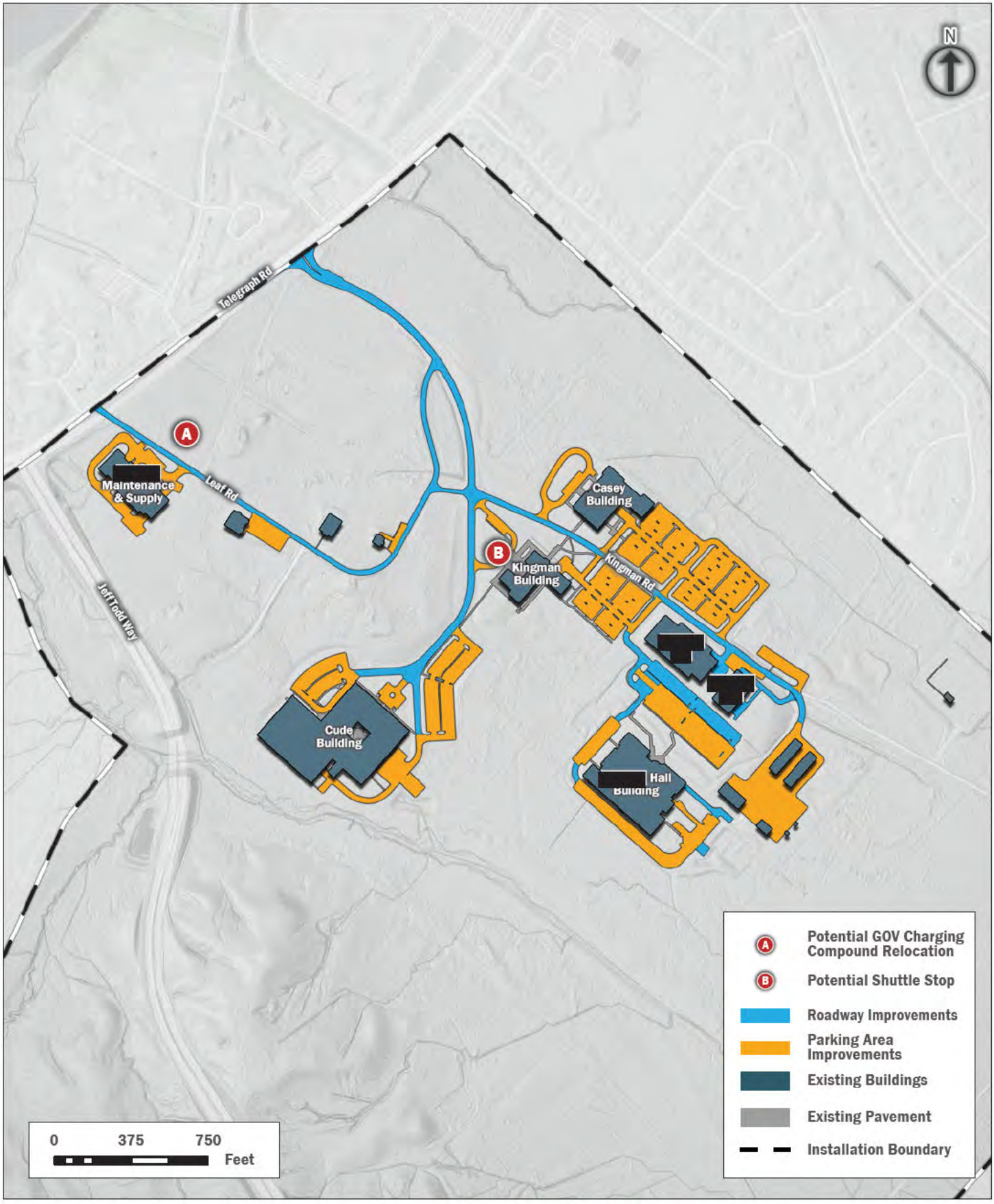
Strategies
4.1: Encourage Mass Transit and Ridesharing
4.2: Prepare Plan to Address Incoming EV Infrastructure
4.3: Integrate Nature-Based Infrastructure into the Transportation System

OBJECTIVE DEVELOPMENT

Objectives for this goal are designed to deliver measurable outcomes in nature-based improvements and multimodal accessibility. Increasing mass transit ridership is a key focus, targeting a 10% increase by 2026 through initiatives such as shuttle service and rideshare incentives. Expanding EV charging capacity for POVs by 5% in the short term and 10% in the midterm is also prioritized. The final objective is to achieve a 10% reduction in transportation-related carbon emissions by 2029, aligning with federal climate action benchmarks.

Objective	Short-Range Metric [2026]	Mid-Range Metric [2029]	Long-Range Metric [2034]
Increase mass transit ridership	*10%*	*N/A*	*N/A*
Increase POV charging capacity	*5%*	*10%*	*N/A*
Reduce installation emissions from transportation	*N/A*	*10%*	*N/A*

Figure 15: *Goal 4 Highlighted Projects*



4.1 ENCOURAGE MASS TRANSIT AND RIDESHARING

SUMMARY

This strategy focuses on reducing SOV use and increasing mass transit and ridesharing adoption at HEC. By addressing the current lack of convenient mass transit connections and encouraging carpooling and vanpooling, this strategy seeks to reduce congestion and offer cost-effective commuting alternatives. Stakeholders emphasized the need for both infrastructural and policy changes to support this shift, including shuttle services to nearby Metro stations and premium parking for shared-ride users.

#	Project Title	Start Date	ROM Cost
4.1.1	Establish a shuttle service between the Installation and the nearest metro stations	Long-Range	*No Construction Costs*
4.1.2	Designate premium parking spots for carpool and vanpool users	Short-Range	No Construction Costs
4.1.3	Offer incentives for carpooling and vanpooling	Short-Range	No Construction Costs

PROJECT DESCRIPTIONS

Project 4.1.1 involves initiating a shuttle service connecting the Installation with the Franconia-Springfield Metro Center to enhance transit accessibility and reduce single-occupancy vehicle use. The service will begin with scheduled routes during peak commuting hours. Based on demand, additional routes to other nearby metro stations may be implemented to expand coverage and support a broader commuter installation.

Project 4.1.2 entails reserving parking spaces exclusively for carpool and vanpool participants, as well as marking these spaces with clear and visible signage to ensure accessibility and compliance.

Project 4.1.3 involves offering financial or non-monetary incentives to employees who participate in vanpooling or carpooling programs, to encourage ridesharing as an alternative to SOV usage.

4.2 PREPARE PLAN TO ADDRESS INCOMING EV INFRASTRUCTURE

SUMMARY

This strategy positions HEC to address the growing demand for EV infrastructure while ensuring efficient resource allocation. As federal mandates for energy use continue to expand and HEC advances its efforts to reduce its carbon footprint, the focus will be on increasing EV charging capacity and optimizing the placement of GOV charging stations to align with evolving operational requirements. Additionally, it is acknowledged that projects or improvements related to POV charging stations will likely be implemented only after clear policies are established regarding compensation for POV charging, ensuring compliance and equitable resource use.

#	Project Title	Start Date	ROM Cost
4.2.1	Implement additional POV EV charging capacity	Mid-Range	$500K
4.2.2	Consider relocation of primary GOV charging locations	Long-Range	No Construction Costs

PROJECT DESCRIPTIONS

Project 4.2.1 involves deploying POV EV charging stations across HEC parking areas, prioritizing high-use lots such as the Kingman Building parking area. This project is designed to meet the growing demand for EV infrastructure while supporting HEC's transportation goals. The initial implementation will focus on high-traffic lots to maximize impact and utility, with future phases expanding charging capacity across additional parking areas. The ROM cost estimate for this project is based on implementing 5 POV charging stations at the installation over time.

Project 4.2.2 recommends relocating the primary GOV charging compound and motor pool for HEC in alignment with the preferred alternative identified in the HEC ADP. If industrial uses are shifted toward the west side of the Installation, it is ideal to situate the primary GOV EV motor pool in proximity to these relocated functions. Consolidating industrial and logistical operations in one area improves operational efficiency and reduces unnecessary vehicle movement across the Installation.

4.3 INTEGRATE NATURE-BASED INFRASTRUCTURE INTO THE TRANSPORTATION SYSTEM

SUMMARY

Integrating nature-based infrastructure into HEC's transportation network will work to improve the quality of life for employees and visitors. This strategy focuses on using bioswales and solar panel arrays to manage stormwater runoff, reduce heat islands, and generate renewable energy, aligning with the broader goals of the HEC ADP and the federal Climate Action Plan.

#	Project Title	Start Date	ROM Cost
4.3.1	Construct bioswales along primary roads and parking lots	Mid-Range	$175K
4.3.2	Install solar panel arrays on canopy structures over parking areas	Long-Range	MILCON-Level

PROJECT DESCRIPTIONS

Project 4.3.1 involves implementing bioswales along key roadways, particularly Kingman Rd and Leaf Rd, to support HEC's transportation goals. These bioswales will serve dual purposes: managing stormwater runoff efficiently and enhancing the overall pedestrian experience.

Project 4.3.2 entails constructing solar panel canopy structures over existing parking lots throughout HEC. These canopies will serve multiple purposes: advancing HEC's energy goals by generating renewable electricity and providing shaded parking for vehicles, enhancing the user experience by reducing heat exposure for parked vehicles. The project reflects a phased implementation approach, gradually equipping parking lots with canopy systems to balance Installation priorities and funding.

GOAL 5: COORDINATE WITH EXTERNAL AGENCIES AND REGIONAL PARTNERS

OVERVIEW

The fifth primary transportation goal was developed to support HEC's strategic objectives by fostering collaborative efforts with local and regional entities. Effective coordination with agencies like VDOT, regional MPOs, and neighboring installations such as Fort Belvoir will be key to addressing regional traffic challenges, optimizing infrastructure planning, and enhancing the overall connectivity and functionality of HEC's transportation network. Stakeholder discussions underscored the importance of joint efforts to manage traffic flow, reduce congestion, and align HEC's transportation initiatives with broader regional goals.

STRATEGY DEVELOPMENT

Achieving this goal resulted in the development of two targeted strategies: coordinating with VDOT and regional MPOs to align transportation projects and policies and maintaining consistent communication and collaboration with Fort Belvoir to improve transportation operations at HEC.

Strategies
5.1: Coordinate with VDOT and regional MPOs
5.2: Maintain coordination with Fort Belvoir

OBJECTIVE DEVELOPMENT

The measurable objectives for this goal align with NCPC's overarching objectives for interagency coordination and effective traffic management. During the workshop, stakeholders emphasized the importance of improving the LOS at the key intersection of Telegraph Rd and Kingman Rd. Monitoring and enhancing LOS at this intersection has been established as projects under the first strategy with the objectives of identifying the existing intersection LOS by 2026, achieving a "C" LOS by 2029, and ultimately reaching an "A" LOS by 2034. Additionally, the objective to "Establish formal partnerships with regional agencies" aligns with NCPC's guidance to foster cooperative relationships with local and regional stakeholders. HEC aims to seek partnerships where applicable amongst regional agencies to coordinate on regional transportation projects that could affect HEC.

Objective	Short-Range Metric [2026]	Mid-Range Metric [2029]	Long-Range Metric [2034]
Improve LOS at Telegraph Rd and Kingman Rd	*Identify existing LOS*	*Achieve "C" LOS*	*Maintain "A" LOS*
Establish formal partnerships with regional agencies	*Partnership with 1 Agency*	*Partnership with 3 Agencies*	-

Figure 16: *Goal 5 Highlighted Projects*

5.1 COORDINATE WITH VDOT AND REGIONAL MPOS

SUMMARY

HEC's coordination with VDOT and regional MPOs is key to managing traffic flow and improving transportation infrastructure both on and around the Installation. By establishing partnerships with these agencies, HEC can ensure that its transportation priorities align with regional growth and infrastructure initiatives. This strategy encompasses monitoring traffic performance at a key intersection external to the installation and preparing for potential improvements that support both HEC's operational needs and regional connectivity. Regular communication and collaboration will allow HEC and its partners to respond proactively to evolving transportation demands and ensure mutual support for long-term transportation goals.

#	Project Title	Start Date	ROM Cost
5.1.1	Monitor LOS impact of the "Green T" traffic improvement at the intersection of Telegraph Rd and Kingman Rd	Short-Range	No Construction Costs
5.1.2	Prepare a plan to improve LOS at the intersection of Telegraph Rd and Kingman Rd	Mid-Range	No Construction Costs
5.1.3	Establish coordination with VDOT and regional MPOs	Short-Range	No Construction Costs

PROJECT DESCRIPTIONS

Project 5.1.1 involves monitoring the LOS impact of the "Green T" traffic improvement at the Telegraph Rd/Kingman Rd intersection. This project will establish a baseline LOS upon completion of the improvement, with a focus on assessing whether afternoon queuing delays on the southbound leg have been effectively reduced. By monitoring the intersection's LOS, HEC will be able to determine the immediate impact of the "Green T" and identify whether additional improvements will be necessary to meet HEC's traffic flow goals.

Project 5.1.2 will prepare a plan to further improve the LOS at the Telegraph Rd/Kingman Rd intersection if monitoring data indicates that additional measures are needed. The necessity of this project depends largely on the outcomes of Project 5.1.1. Should the "Green T" yield insufficient improvements, further actions such as advocating for a traffic signal or other enhancements will need to be considered. As regional growth continues and HEC's needs expand—particularly with the construction of a new ECP—proactive planning for future intersection improvements will help mitigate traffic congestion and ensure seamless ingress and egress for the installation.

Project 5.1.3 involves establishing consistent coordination between HEC, VDOT, and regional MPOs. This ongoing project aims to ensure that HEC and regional partners remain informed of transportation projects that may impact or overlap with the installation. This coordination will support mutual understanding of regional transportation objectives.

5.2 MAINTAIN COORDINATION WITH FORT BELVOIR

SUMMARY

HEC's close coordination with Fort Belvoir is important to ensuring that essential services are effectively extended to support its operational needs. As Fort Belvoir provides security and various logistical services to HEC, ongoing communication between the two Installations will ensure that HEC's specific requirements are consistently addressed. Strengthening this partnership allows HEC to access the resources and expertise of Fort Belvoir.

#	Project Title	Start Date	ROM Cost
5.2.1	Communicate transportation needs to Fort Belvoir	Short-Range	No Construction Costs

PROJECT DESCRIPTIONS

Project 5.2.1 involves establishing a consistent line of communication to convey HEC's transportation needs to Fort Belvoir. This includes a request for Fort Belvoir's military police to extend their patrol coverage to HEC, enhancing security and ensuring a visible, coordinated security presence across both installations. Additionally, this communication will address other essential services HEC relies on, such as emergency response, facility support, and transportation logistics. Consistent updates and dialogue with Fort Belvoir will enable HEC to align its operations with Fort Belvoir's support capabilities, fostering an integrated and responsive approach to HEC's ongoing and future needs.

APPENDIX A: OPERATIONAL IMPROVEMENT PLAN

HUMPHREYS ENGINEER CENTER

APRIL 2025 | PRE-FINAL

HUMPHREYS ENGINEER CENTER

OPERATIONAL IMPROVEMENT PLAN

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Task Order #: W912DR23F0383

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OPERATIONAL IMPROVEMENT PLAN

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OPERATIONAL IMPROVEMENT PLAN

ACKNOWLEDGMENTS LIST

ACKNOWLEDGMENTS

- Franklin Barrett
- Valerie Carney
- Ryan Coleman
- Randy Covington
- Richard Hinze
- Rodney Roberts
- Victor Stephenson
- Harry Wesh

OPERATIONAL IMPROVEMENT PLAN

LIST OF ACRONYMS

Area Development Plan	ADP
Battalion Operations Facility	BOF
Entry Control Point	ECP
Humphreys Engineer Center	HEC
Manual on Uniform Traffic Control Devices	MUTCD
Operational Improvement Plan	OIP
Rough Order of Magnitude	ROM
To Be Determined	TBD
Training and Support Facility	TSF
U.S Army Corps of Engineers	USACE
[redacted]	[redacted]
Unified Facilities Criteria	UFC
Virginia Department of Transportation	VDOT

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PROPOSED PROJECTS

PRIORITY PROJECTS

The Operational Improvement Plan [OIP] contains certain projects that were identified as high-priority projects by stakeholders during the collaborative workshop. These projects are highlighted in Table 1 below, and they are classified into Short-, Mid-, and Long-Range efforts. This document provides more detailed project descriptions for these priority projects and, if applicable, high-level construction drawings.

Table 1: *Priority Project List*

#	Project Title	Start Date	ROM Cost
1.1.3	Fully construct a UFC compliant ECP at the existing ECP location	Long-Range	MILCON
1.2.1	Improve Winslow Rd connection for secondary egress option	Mid-Range	$200K - $230K
1.3.5	Construct roundabout at the Kingman Rd/Leaf Rd intersection	Long-Range	$225K - $260K
2.1.1	Construct a pedestrian trail along the installation perimeter	Mid-Range	$290K - $350K
2.1.2	Connect gaps in existing sidewalk network	Mid-Range	$890K - $1M
3.1.1	Implement traffic safety and wayfinding signage	Short-Range	$4K
3.1.2	Improve wayfinding signage on roadways and the proposed trail	Mid-Range	$7K

1.1.3 FULLY CONSTRUCT A UFC COMPLIANT ECP AT THE EXISTING ECP LOCATION

Fast Facts	
Start	Long-Range
Classification	Construction
Funding	Operations
ROM Cost	MILCON-Level

Planning Strategy Supported

S1.1 Enhance Existing ECP

Project Description

Figure 1 highlights high level linework for the proposed project. This linework aligns with the projected end state as shown in the ADP. This project consists of furnishing all labor, materials, and equipment necessary to:

- Construct a fully Unified Facilities Criteria [UFC] compliant Entry Control Point [ECP] at the existing Leaf Rd ECP.
- Construct all necessary infrastructure [processing, scanning, etc.] while utilizing existing infrastructure where possible, including:
  - Blast protection barriers.
  - Active vehicle deterrence systems.
  - Secure processing and scanning zones for vehicles and personnel
- Construct dedicated lane for commercial vehicles
- Coordinate with internal stakeholders for the creation and implementation of this project.
- Assess and make necessary infrastructure upgrades to Telegraph Rd and Leaf Rd in partnership with Virginia Department of Transportation [VDOT].
- Ensure that the newly constructed ECP is in accordance with UFC standards.
- Ensure roadway markings follow the Manual on Uniform Traffic Control Devices [MUTCD] for Streets and Highways, current edition.
- Provide traffic control throughout construction to ensure safety of workers and a safe, smooth traffic flow.

Figure 1: *Proposed Gate Construction*

1.2.1 IMPROVE WINSLOW RD CONNECTION FOR SECONDARY EGRESS OPTION

Fast Facts	
Start	Mid-Range
Classification	Construction
Funding	Operations
ROM Cost	$200K - $230K

Planning Strategy Supported

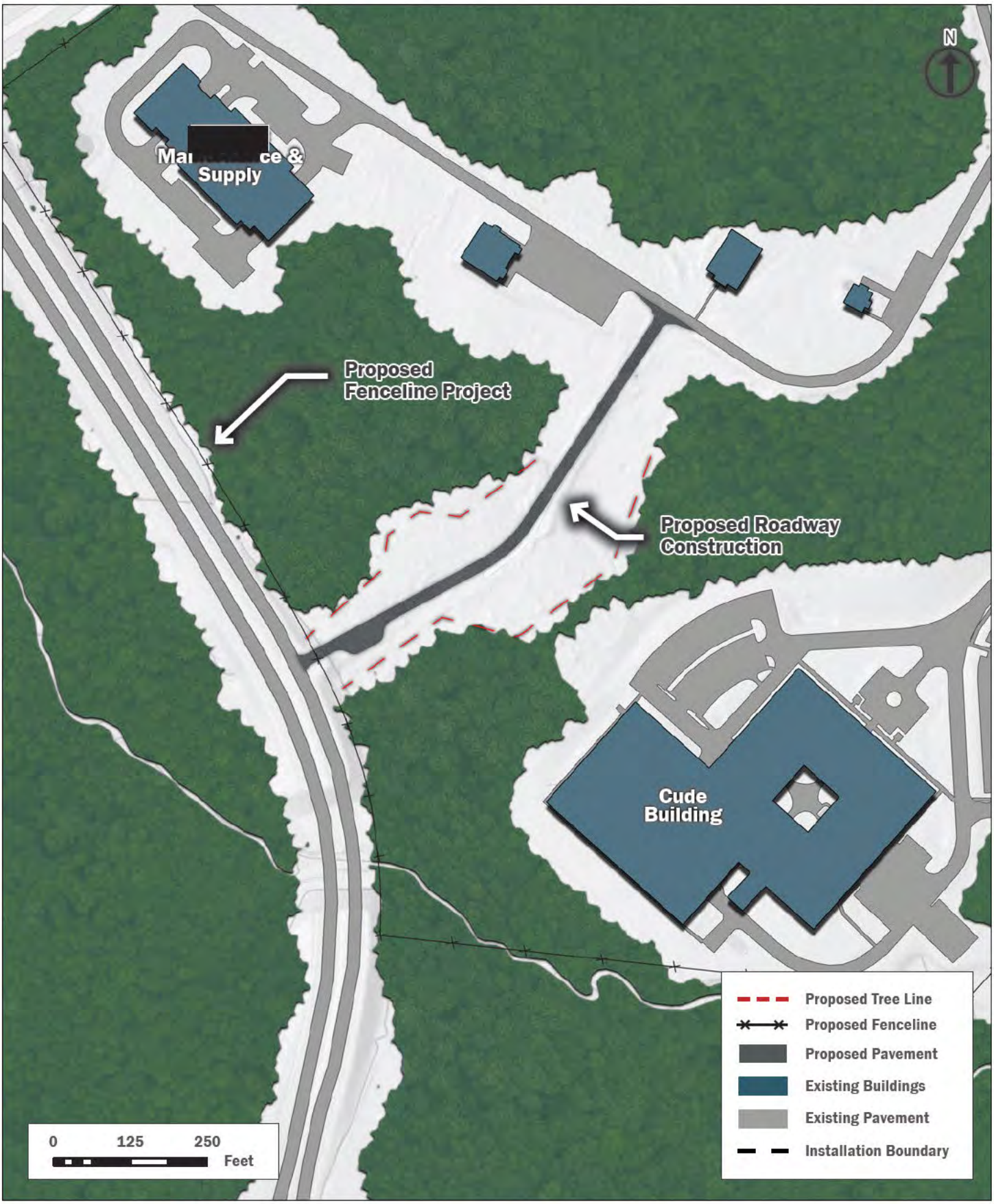
S1.2 Consider Alternative Options for ECPs

Project Description

This project consists of furnishing all labor, materials, and equipment necessary to:

- Improve Winslow Rd in an effort to create a secondary egress-only option.
- Coordinate with internal stakeholders for the creation and implementation of this project.
- Assess and make necessary infrastructure upgrades to Jeff Todd Way in partnership with VDOT.
- Ensure newly added crosswalk markings follow the MUTCD for Streets and Highways, current edition.
- Ensure that there are ample sightlines from vehicles to any newly added signage.
- Provide traffic control throughout construction to ensure the safety of workers and safe, smooth traffic flow.

Figure 2: *Proposed Secondary Egress Construction*



1.3.5 CONSTRUCT ROUNDABOUT AT THE KINGMAN RD/LEAF RD INTERSECTION

Fast Facts	
Start	Long-Range
Classification	Construction
Funding	Operations
ROM Cost	$225K - $260K

Planning Strategy Supported

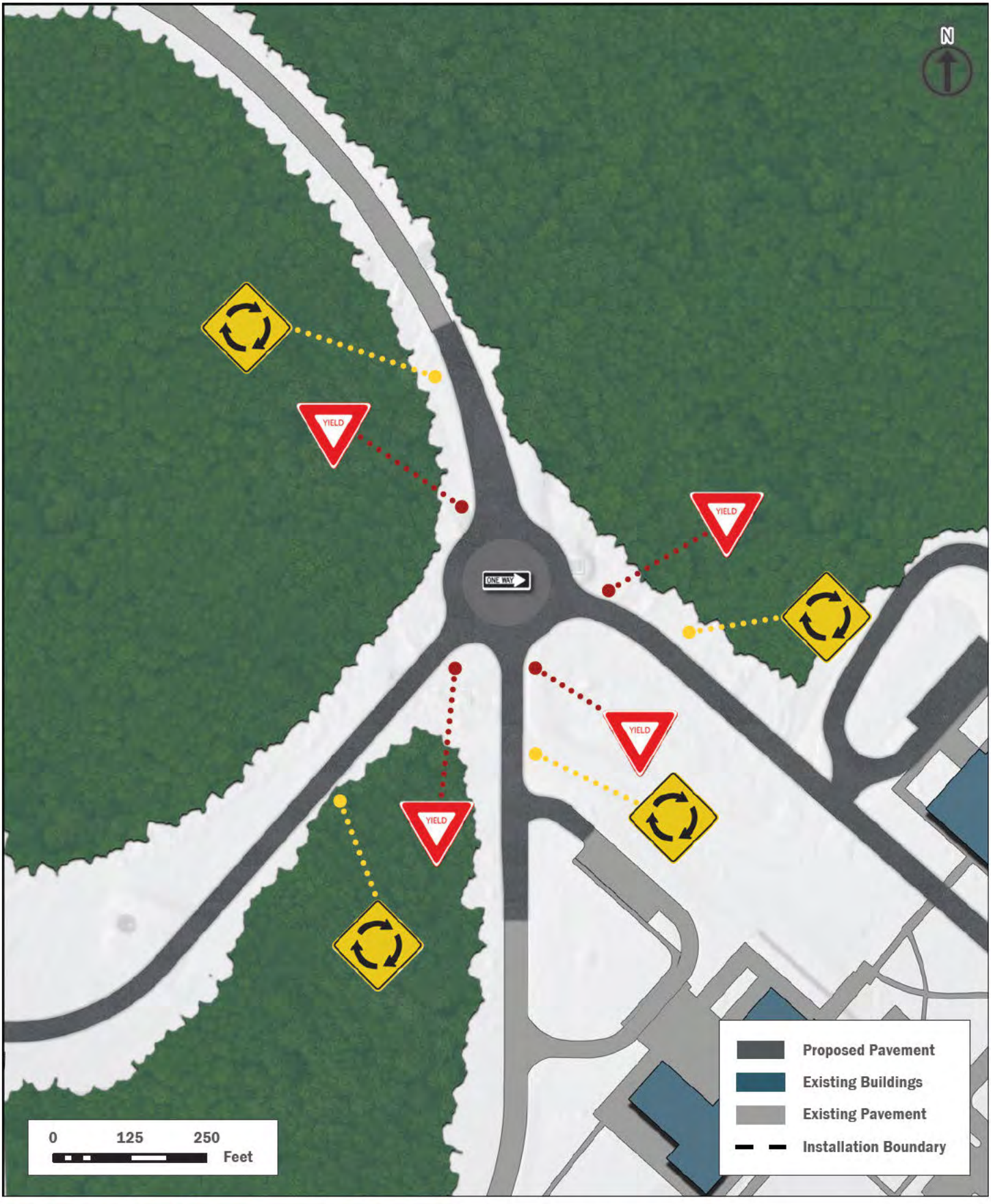
S1.3 Improve Internal Infrastructure

Project Description

This project consists of furnishing all labor, materials, and equipment necessary to:

- Construct a roundabout at the intersection of Kingman Rd and Leaf Rd in an effort to improve efficiency for vehicles entering and exiting HEC.
- Ensure that there are ample sightlines from all angles in the new intersection design.
- Match construction to existing street standards. Construction of new roadway may be required due to the new intersection layout.
- Ensure crosswalk markings follow the MUTCD for Streets and Highways, current edition; provide white markings along the edge of the sidewalk and white lines at a 90-degree angle within the edge lines.
- Provide and install sensor-activated pedestrian rectangular rapid-flashing beacons.
- Conduct functionality tests to ensure proper operation of the installed beacons.
- Provide traffic control throughout construction to ensure safety of workers and a safe, smooth traffic flow.

Figure 3: *Proposed Roundabout Construction*



2.1.1 CONSTRUCT A PEDESTRIAN TRAIL ALONG THE INSTALLATION PERIMETER

Fast Facts	
Start	Mid-Range
Classification	Construction
Funding	Operations
ROM Cost	$290K - $350K

Planning Strategy Supported

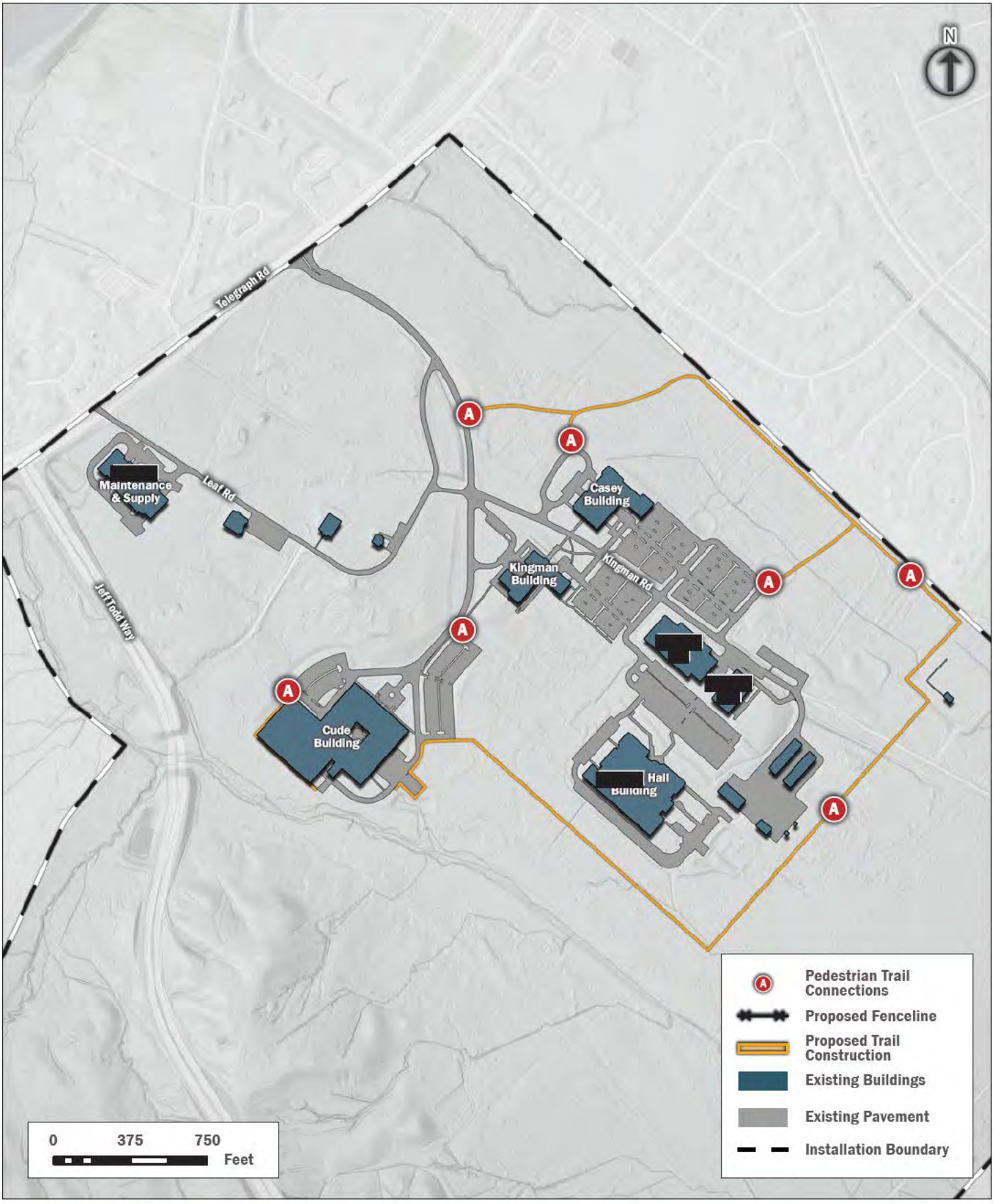
S2.1 Enhance Pedestrian Connectivity

Project Description

This project consists of furnishing all labor, materials, and equipment necessary to:

- Construct a pedestrian trail along the perimeter of the Installation.
- Coordinate with internal stakeholders for the creation and implementation of this project.
- Construct pedestrian amenities along the trail. Encourage input from HEC personnel on specific amenities they would like to see on the trail.
- Ensure newly added crosswalk markings follow the MUTCD for Streets and Highways, current edition.
- Ensure that there are ample sightlines from vehicles to any newly added pedestrian crossings.
- Provide traffic control throughout construction to ensure the safety of workers and safe, smooth traffic flow.

Figure 4: *Proposed Pedestrian Trail Construction*



2.1.2 CONNECT GAPS IN EXISTING SIDEWALK NETWORK

Fast Facts	
Start	Mid-Range
Classification	Construction
Funding	Operations
ROM Cost	$890K - $1M

Planning Strategy Supported

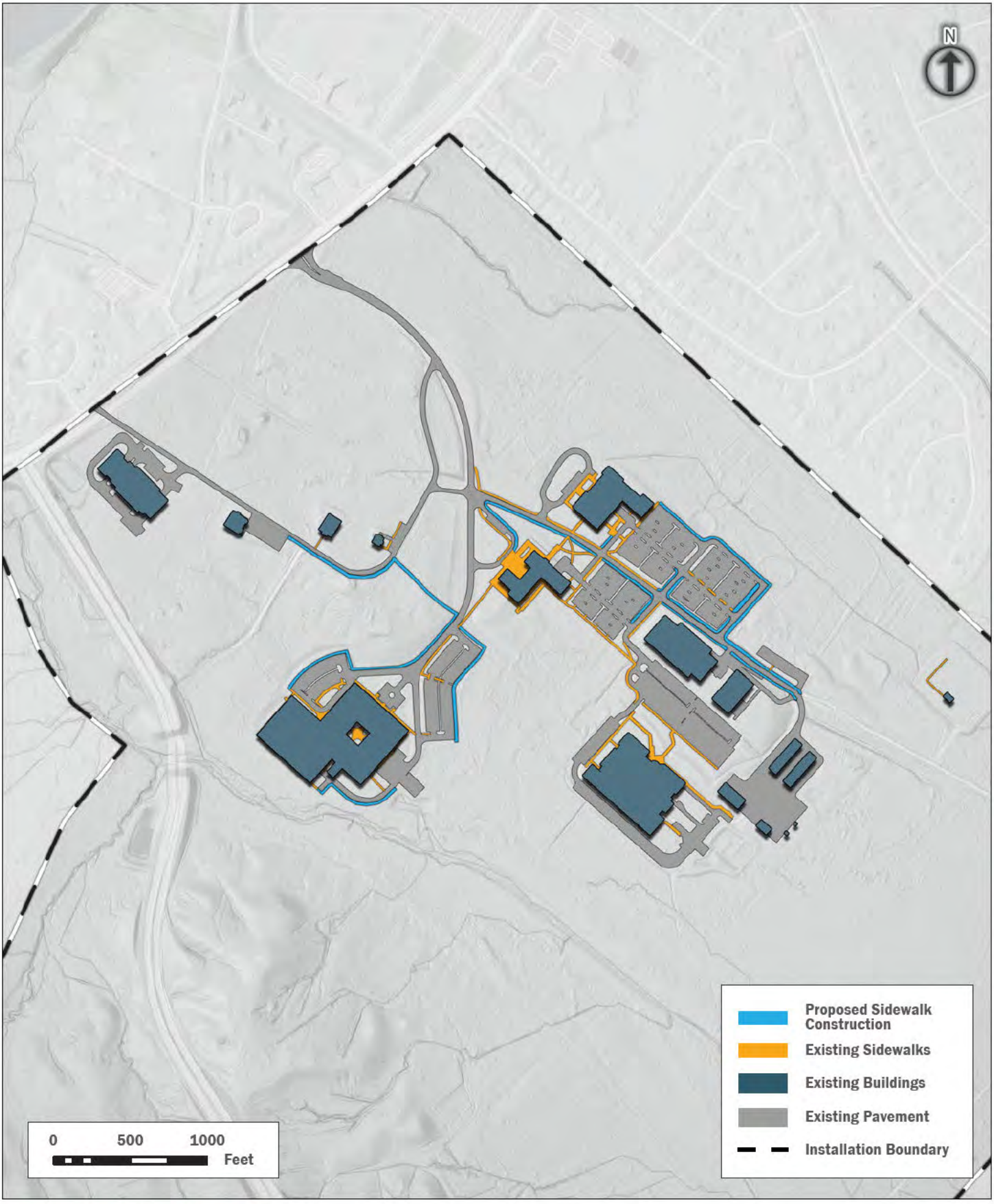
S2.1 Enhance Pedestrian Connectivity

Project Description

This project consists of furnishing all labor, materials, and equipment necessary to:

- Connect gaps in existing sidewalk network throughout the Installation.
- Coordinate with internal stakeholders for the creation and implementation of this project.
- Ensure crosswalk markings follow the MUTCD for Streets and Highways, current edition; provide white markings along the edge of the sidewalk and white lines at a 90-degree angle within the edge lines.
- Ensure that there are ample sightlines from vehicles to any newly added signage.
- Provide traffic control throughout construction to ensure the safety of workers and safe, smooth traffic flow.

Figure 5: *Proposed Sidewalk Construction*



3.1.1 IMPLEMENT TRAFFIC SAFETY AND WAYFINDING SIGNAGE

Fast Facts	
Start	Short-Range
Classification	Construction
Funding	Operations
ROM Cost	$4K

Planning Strategy Supported

S3.1 Improve Signage and Promote Awareness

Project Description

This project consists of furnishing all labor, materials, and equipment necessary to:

- Provide and install traffic safety and wayfinding signage throughout the Installation.
- Coordinate with internal stakeholders for the creation and implementation of this project.
- Where possible, ensure that signage characteristics are uniform.
- Ensure that there are ample sightlines from vehicles to any newly added signage.
- Provide traffic control throughout construction to ensure the safety of workers and safe, smooth traffic flow.

Figure 6: *Proposed Traffic Signage*

3.1.2 IMPROVE WAYFINDING SIGNAGE ON ROADWAYS AND THE PROPOSED TRAIL

Fast Facts	
Start	Short-Range
Classification	Construction
Funding	Operations
ROM Cost	$7K

Planning Strategy Supported

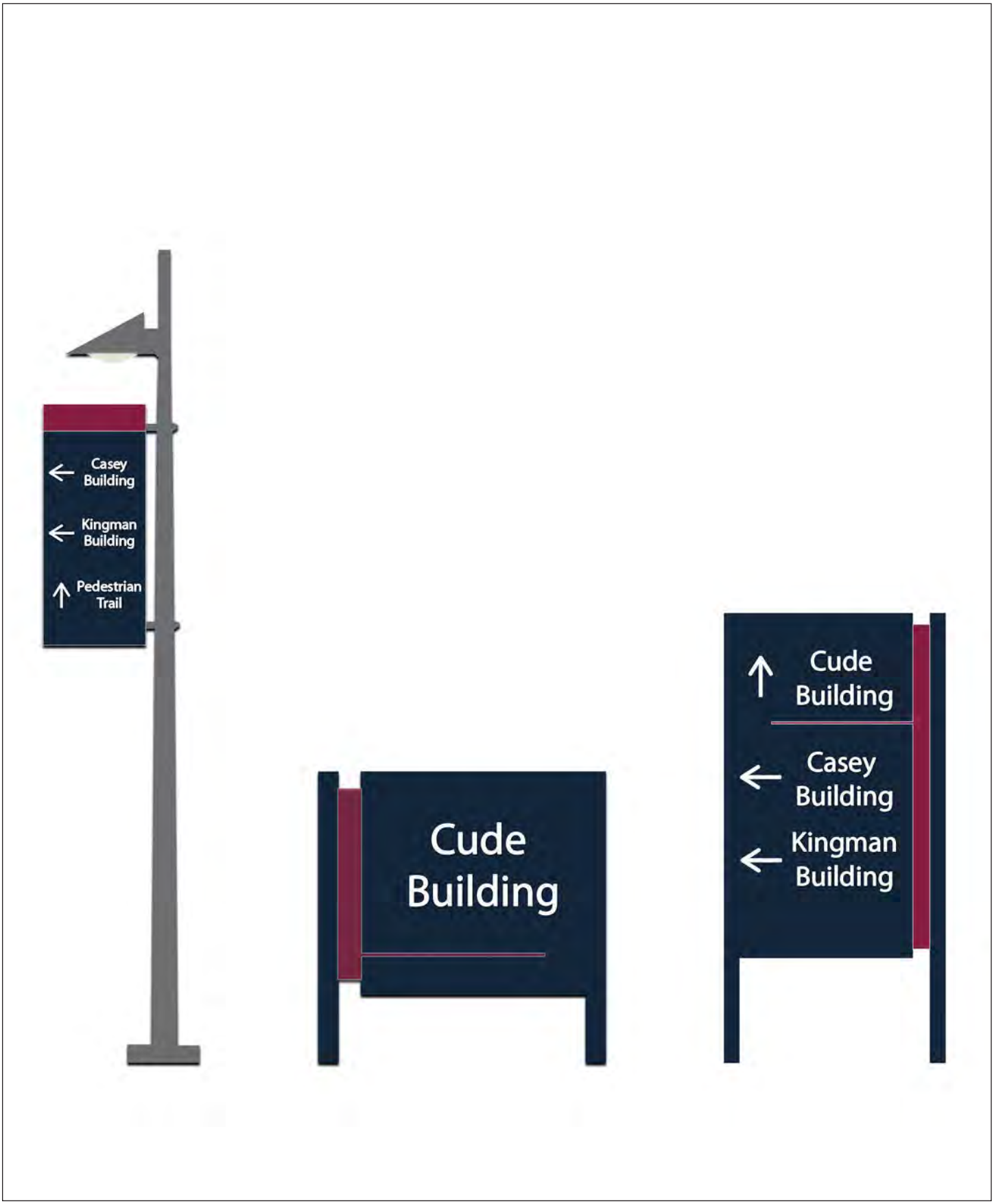
S3.1 Improve Signage and Promote Awareness

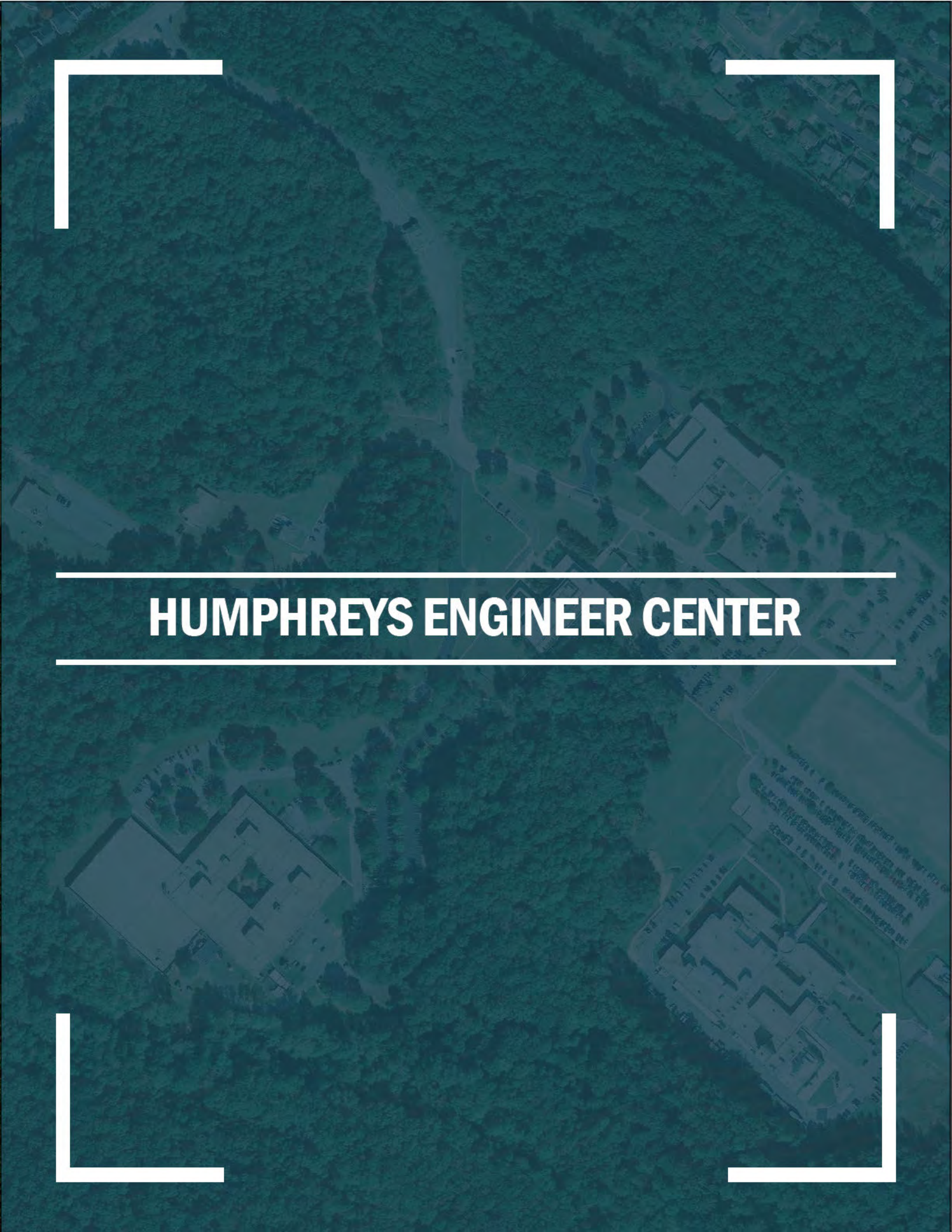
Project Description

This project consists of furnishing all labor, materials, and equipment necessary to:

- Provide and install wayfinding signage throughout the Installation.
- Identify key locations within HEC that should be included in wayfinding signage.
- Coordinate with internal stakeholders for the creation and implementation of this project.
- Where possible, ensure that signage characteristics are uniform.
- Ensure that there are ample sightlines from vehicles to any newly added signage.
- Provide traffic control throughout construction to ensure the safety of workers and safe, smooth traffic flow.

Figure 7: *Proposed Wayfinding Signage*





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