TRI-COUNTY COUNCIL
for SOUTHERN MARYLAND

Indian Head Transportation Corridor Study

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Prepared for
Tri-County Council for Southern Maryland

Prepared for:

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Acronyms

- AA&E – Arms, Ammunition, and Explosives
- ABP – Aviation Business Park
- ADT – Average Daily Traffic
- AFB – Air Force Base
- AT/FP – Anti-Terrorism / Force Protection
- BP – Business Park
- BRAC – Base Realignment and Closure
- BRIC – Building Resilient Infrastructure and Communities
- CAD/PAD – Cartridge Actuated Devices / Propellant Actuated Devices
- CBIRF – Chemical Biological Incident Response Force
- CCPS – Charles County Public Schools
- CCSFS – Cape Canaveral Space Force Station
- CCSO – Charles County Sheriff's Office
- CMAQ – Congestion Mitigation and Air Quality Improvement Program
- CUP – Compatible Use Program
- DAR – Defense Access Roads
- DoD – Department of Defense
- DOT – U.S. Department of Transportation
- ECF – Entry Control Facility
- ECMP – Energetics Comprehensive Modernization Plan
- EMS – Emergency Medical Services
- EPA – Environmental Protection Agency
- ESQD – Explosive Safe-Quantity Distance
- EXU-1 – Expeditionary Exploitation Unit One
- FHWA – Federal Highway Administration
- FDOT – Florida Department of Transportation
- FEMA – Federal Emergency Management Agency
- GI – General Industrial

- GIS – Geographic Information System
- HCM – Highway Capacity Manual
- HMP – Hazard Mitigation Plan
- HSIP – Highway Safety Improvement Program
- ILS – Integrated Logistics Support
- INFRA – Infrastructure for Rebuilding America
- IR – Installation Readiness
- JLUS – Joint Land Use Study
- LOS – Level of Service
- LRSP – Local Roadway Safety Plan
- MAC – Military Alliance Council
- MCAS – Marine Corps Air Station
- MD 210 / MD 225 – Maryland Route 210 / Maryland Route 225
- MDEM – Maryland Department of Emergency Management
- MDOT – Maryland Department of Transportation
- MDOT SHA / SHA – Maryland Department of Transportation State Highway Administration
- MEMS – Micro-Electro-Mechanical Systems
- NCR – National Capital Region
- NEPA – National Environmental Policy Act
- NOSSA – Naval Ordnance Safety and Security Activity
- NSF – Naval Support Facility
- NSA – Naval Support Activity
- NSWC IHD – Naval Surface Warfare Center, Indian Head Division
- ODOT – Ohio Department of Transportation
- OLDCC – Office of Local Defense Community Cooperation
- OMFA – Office of Military and Federal Affairs (Maryland Department of Commerce)
- POV – Privately Owned Vehicle
- RAISE – Rebuilding American Infrastructure with Sustainability and Equity

- ROW – Right-of-Way
- RPT – Recreation, Parks & Tourism
- SCDOT – South Carolina Department of Transportation
- SCTPO – Space Coast Transportation Planning Organization
- STBG – Surface Transportation Block Grant
- STIP – State Transportation Improvement Program
- TAP – Transportation Alternatives Program
- TCCSMD – Tri-County Council for Southern Maryland
- UFC – Unified Facilities Criteria
- USPS – United States Postal Service
- WCD – Watershed Conservation District

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Executive Summary

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Naval Support Facility (NSF) Indian Head is a nationally significant Department of Defense installation whose energetics, testing, and response missions depend on safe, reliable, and secure transportation access. The main transportation corridor is centered on Maryland Route 210 (Indian Head Highway), which also serves the Town of Indian Head and surrounding areas of Charles County, supporting daily travel, emergency response, and community life. As future mission growth, workforce changes, and evolving security standards place increasing demands on the corridor, coordinated transportation planning has become essential. This Transportation Corridor Readiness Study provides a shared, actionable framework for evaluating risks, aligning priorities, and advancing improvements that support both mission readiness and community needs.

Executive Summary

Naval Support Facility (NSF) Indian Head and the surrounding community rely on a shared transportation corridor to support mission operations, public safety, and daily mobility. This Transportation Corridor Readiness Study evaluates how current and future transportation conditions affect installation readiness, community safety, and emergency preparedness, and identifies practical, implementable actions to improve corridor performance.

The study was initiated following a series of gate-running incidents at the NSF Indian Head Main Gate, which highlighted both physical and operational vulnerabilities at the interface between the installation and the public roadway network. Building on that immediate concern, the study examines broader risks associated with traffic growth, planned mission expansion, limited network redundancy, and cross-jurisdictional constraints affecting the corridor.

Study Context and Needs

Planned mission growth at NSF Indian Head, including the Energetics Comprehensive Modernization Plan (ECMP), expansion of the Chemical Biological Incident Response Force (CBIRF), and the reduction of telework, is projected to significantly increase commuter, contractor, and commercial traffic. Heavy vehicle activity associated with construction and expanded manufacturing is also expected to increase substantially. Although overall roadway capacity along MD 210 is generally sufficient to accommodate forecast traffic volumes, congestion and safety concerns are concentrated near the installation gates. In these locations, access control processing, rather than roadway throughput, is the primary limiting factor.

The corridor's vulnerability is further heightened because there are few viable alternative routes. MD 210 serves as the sole major regional access route to the Indian Head Peninsula, and even modest disruptions can complicate access, delay emergency response, and affect mission operations. Stakeholder discussions and a tabletop exercise confirmed that, while a complete loss of MD 210 is unlikely, routine incidents, peak-period congestion, and coordination gaps can quickly degrade corridor performance.

Key Findings

The risk and vulnerability analysis identified several readiness-relevant challenges:

- **Gate operations and approach conditions** are the dominant source of congestion and spillback, driven by processing limits, constrained space, and overlapping traffic movements near the Main Gate and Pass and ID area.
- **Driver expectations and speeds** remain inconsistent with the transition from a public highway to a secured installation entrance, increasing the risk of confusion and unsafe maneuvers.
- **Commercial vehicle processing** interacts with private vehicle queues in ways that reduce predictability and stability under peak or disrupted conditions.
- **Procedural and coordination gaps**, rather than roadway deficiencies, limit the ability to manage access and priority movements during emergencies.
- **Jurisdictional and ownership uncertainties**, particularly near the gate area and Post Office parcel, complicate planning, design, and implementation of improvements.

Recommendations

Guided by these findings, the study evaluated a range of alternatives and, through a stakeholder policy committee process, advanced a focused set of recommendations that can be implemented within existing constraints and authorities. Key recommendations include:

- **Conducting a boundary and right-of-way survey** to establish a shared, reliable baseline for planning and implementation.
- **Preparing a Transportation Master Plan** to integrate town, installation, county, and state transportation priorities within a single, coordinated framework.
- **Advancing pedestrian safety and connectivity improvements**, aligned with recent state-led bicycle and pedestrian planning efforts.
- **Strengthening speed management and enforcement** to improve safety and stabilize operations near sensitive access points.
- **Implementing wayfinding and driver navigation improvements** to reduce confusion and erratic maneuvers.
- **Introducing a shifting taper lane reconfiguration** near the Main Gate to provide a clear physical cue that drivers are entering a controlled access environment.

Additional concepts were documented for future consideration if conditions change, along with alternatives that were evaluated but not advanced to preserve transparency and the decision record.

Path Forward

This study provides a practical, readiness-focused framework for improving the Indian Head transportation corridor. Its recommendations emphasize near- and mid-term actions that address real vulnerabilities without requiring unrealistic assumptions or major new corridors. Successful implementation will depend on continued coordination among NSF Indian Head, the Town of Indian Head, Charles County, the Maryland Department of Transportation, and regional partners. Taken together, the recommended actions will enhance access reliability, safety, and operational control—supporting both mission readiness and community quality of life.

1 Introduction

Inside Chapter 1...

This Town of Indian Head Transportation Corridor Readiness Study examines the critical challenges and opportunities for improving transportation connectivity, mission readiness, and emergency preparedness for Naval Support Facility (NSF) Indian Head and the surrounding community. It provides actionable strategies to enhance safety, operational continuity, and the overall quality of life for residents and military personnel.

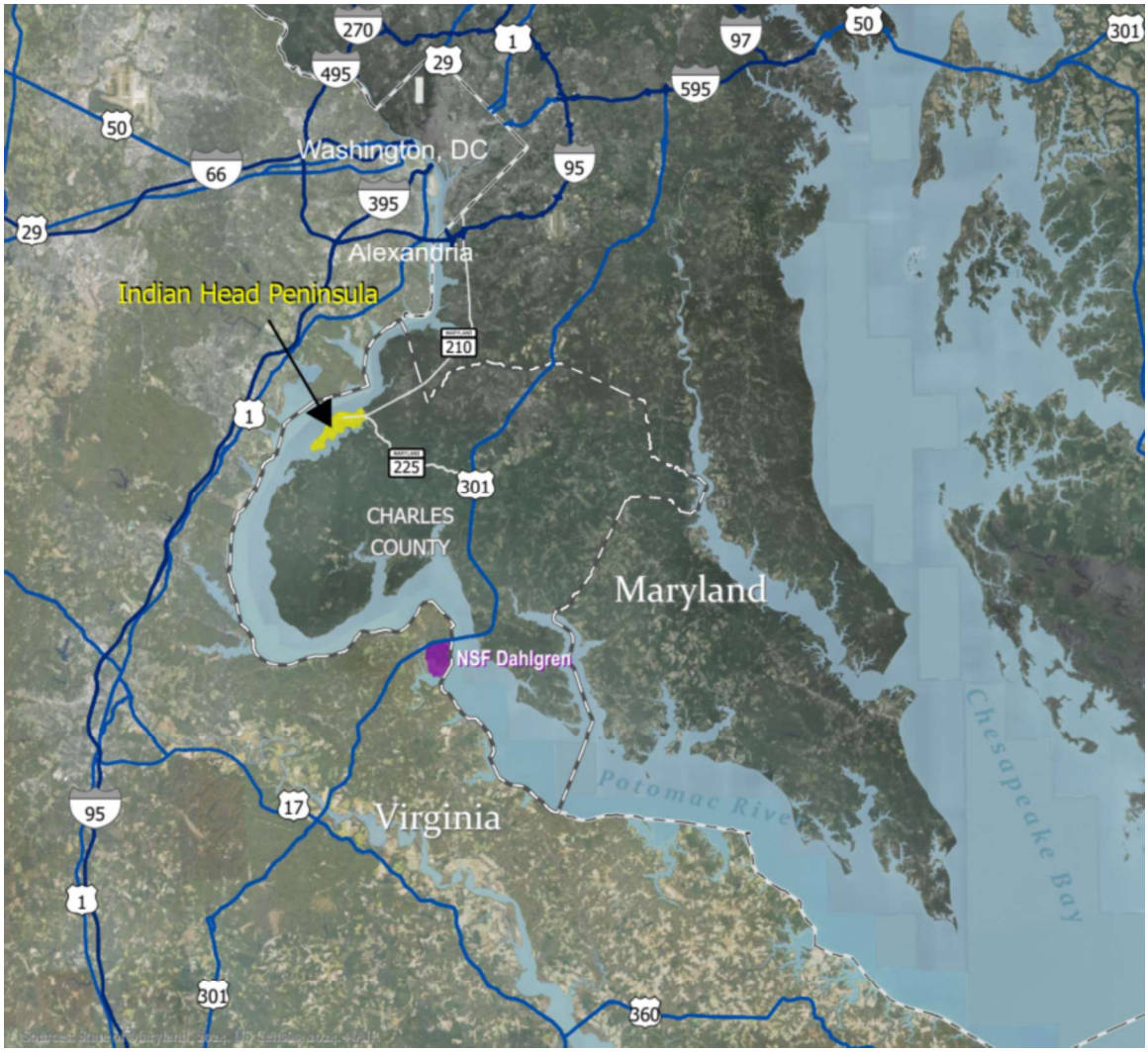
Report Organization

The report is organized into the following chapters:

- **Chapter 1: Introduction** describes the study's goals, objectives, scope, study area, and partner roles, and explains how the report is organized.
- **Chapter 2: NSF Indian Head** describes the installation's mission context, strategic value, and key dependencies with the surrounding transportation system and community.
- **Chapter 3: Readiness Partners** describes the agencies and organizations that shape corridor performance and readiness outcomes, and how coordination affects access, safety, and response.
- **Chapter 4: Programs and Initiatives** summarizes relevant transportation, resilience, and funding programs and prior initiatives that inform what is feasible in the corridor.
- **Chapter 5: Risk and Vulnerability Analysis** identifies corridor failure conditions and vulnerabilities affecting access, reliability, emergency response, and mission support under routine and disrupted conditions.
- **Chapter 6: Recommendations** documents the alternatives evaluated and the stakeholder policy committee's disposition of each alternative as approved as recommendations, retained for possible future consideration, and not advanced.

This report is a framework to support NSF Indian Head, the Town of Indian Head, Charles County, and other stakeholders in building an effective transportation corridor, ensuring long-term mission readiness, and fostering sustainable community development.

Figure 1-1 General Region



Goal

The Town of Indian Head Transportation Corridor Readiness Study examines the safety, connectivity, and resilience of transportation infrastructure serving NSF Indian Head and the surrounding community with the intent of crafting actionable recommendations. The study assists stakeholders in effectively managing transportation network challenges of gate security in the context of a planned mission expansion. Also, this effort aims to safeguard both operational continuity and the well-being of the surrounding community.

The study evaluates the how traffic infrastructure in the corridor encourages safe and efficient mobility. It further analyzes how the projected increase in military and civilian traffic resulting from NSF Indian Head's Energetics Comprehensive Modernization Plan, which is anticipated to amount to over $2.1 billion and will significantly expand personnel and logistical requirements. The analysis highlights the urgency of addressing the drivers of congestion, as limited traffic capacity along the Indian Head Highway and the installation interface hinders commuter mobility and emergency response. With traffic volumes increasing alongside the installation's modernization efforts, the study evaluates strategies to reduce delays, enhance multimodal connectivity, and provide alternative routes to ensure accessibility during emergencies or high-demand periods.

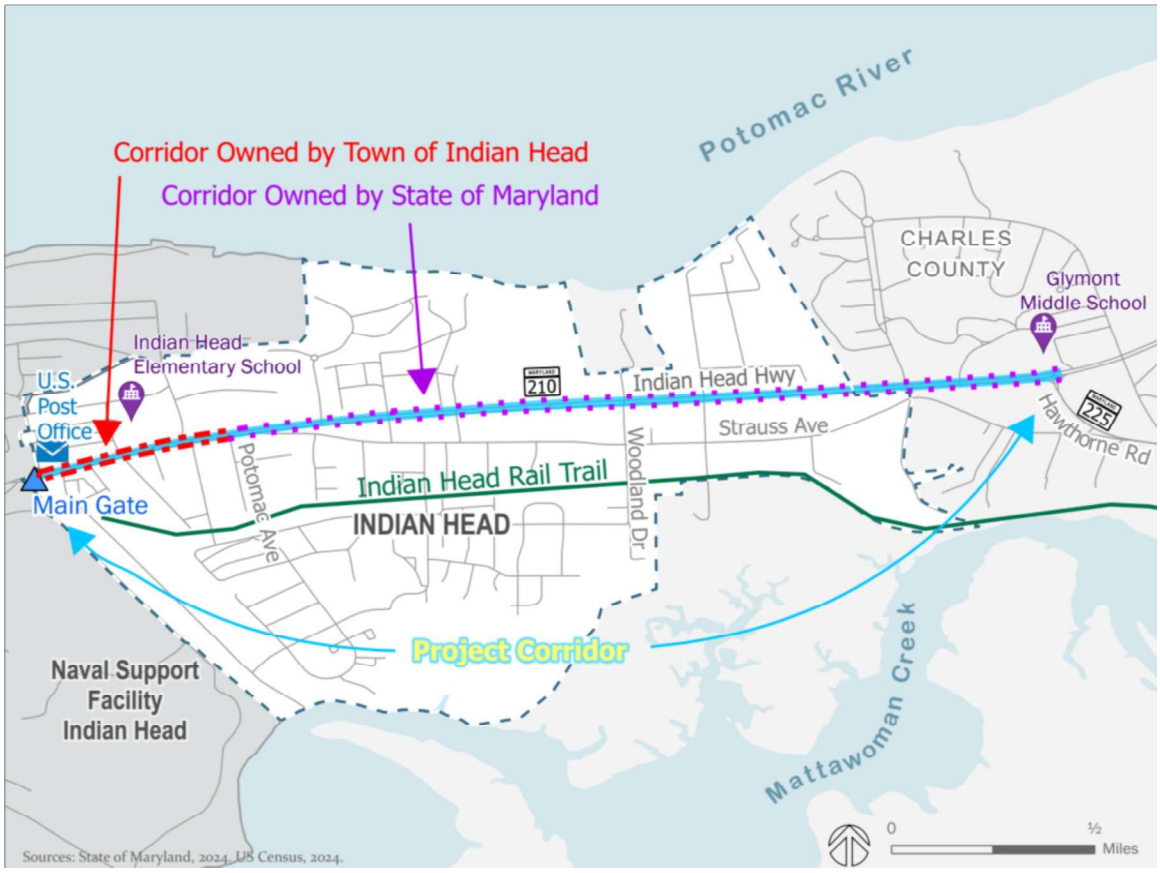
NSF Indian Head, which contributes $700 million annually to the regional economy, relies on a dependable transportation system to perform its mission. The planned mission expansion and workforce growth require proactive measures by all stakeholders to mitigate congestion and infrastructure vulnerabilities, ensuring the installation continues to operate effectively and support regional prosperity. Collaboration underpins the study's approach. Partnerships between NSF Indian Head, the Town of Indian Head, Charles County, state agencies, and other stakeholders enable the crafting and implementation of coordinated, long-term strategies. These collaborations safeguard shared resources, advance sustainable transportation solutions, and ensure that military missions and civilian populations thrive amidst evolving challenges.

This report presents a comprehensive strategy for a resilient, adaptable, and high-capacity transportation network that addresses current issues, anticipates future demands, and enhances the quality of life for residents while supporting NSF Indian Head's critical operations and mission.

Project Area

The project area for the study is the transportation corridor around the Indian Head Highway between the Main Gate of NSF Indian Head and the intersection with Maryland Route 225 (MD 225), also known as Hawthorne Road. It includes the Town of Indian Head and a portion of unincorporated Charles County, Maryland, on the Indian Head Peninsula.[1] The area includes the state-owned Maryland Route 210 (MD 210) between Potomac Avenue and MD 225, the Town-owned boulevard that is also named the Indian Head Highway from Potomac Avenue to the Main Gate, and adjacent roads, all of which connect NSF Indian Head and the Town to the broader region. This corridor's connectivity directly supports the readiness of NSF Indian Head's missions and the broader economic and social vitality of Southern Maryland. Figure 1-1 depicts the regional context of the study, while Figure 1-2 illustrates the study area.

Figure 1-2 Study Area



[1] *The Indian Head Peninsula is also called the Cornwallis Neck Peninsula. This study refers to it as the Indian Head Peninsula throughout for consistency.*

Stakeholders

Organizational stakeholders for this study share the goals of supporting the mission of NSF Indian Head, enhancing emergency response, and supporting quality-of-life improvements in the local community. These stakeholders were called upon to share their expertise on transportation planning, infrastructure needs, and community integration, ensuring that this plan reflects a balanced and collaborative approach to enhancing military readiness and community well-being. They actively engaged in the process, participating in interviews, meetings, and a tabletop exercise. Stakeholder expertise and insights were critical to the development of a comprehensive and actionable plan.

A key stakeholder group was the steering committee for this study, which comprised representatives of:

- The Tri-County Council for Southern Maryland (TCCSMD);
- The Town of Indian Head;
- The Government of Charles County, Maryland;
- Naval Support Activity (NSA) South Potomac;
- The Charles County Military Alliance Council (MAC);
- The Maryland Department of Transportation's State Highway Administration (MDOT SHA); and
- The Maryland Department of Commerce's Office of Military and Federal Affairs (OMFA).

Challenges Addressed

The study addresses critical challenges that impact the readiness and functionality of the transportation network serving NSF Indian Head and the surrounding community.

These challenges are organized into the following core focus areas:

Transportation System Challenges

The study identifies challenges in the current transportation corridor, including traffic congestion, limited multimodal options, and lack of redundancy. These issues hinder military traffic, emergency access, and commuter mobility, creating inefficiencies that impact mission readiness and quality of life. Addressing bottlenecks is critical to enhancing the network's capacity and functionality.

Growth and Future Demands

The planned mission expansion at NSF Indian Head, driven by the $2.1 billion Energetics Comprehensive Modernization Plan, is expected to significantly increase commuter traffic. This growth will place additional pressure on the transportation corridor. Ensuring the corridor can support future demands is vital to the installation and the broader community.

Emergency Preparedness and Response

The limited connectivity of the transportation network is a challenge for emergency response and evacuation planning on the Indian Head Peninsula. MD-210 and alternate routes are critical lifelines for accessing NSF Indian Head and surrounding areas during emergencies. Ensuring connectivity in the face of disruptions will protect lives, maintain military readiness, and support disaster recovery efforts.

Environmental and Infrastructure Readiness

Flooding and severe storms threaten the transportation infrastructure that supports NSF Indian Head and the surrounding area. While these risks are not as immediate as others, addressing vulnerabilities related to aging infrastructure and limited climate resilience is critical for maintaining long-term functionality. Extreme weather events further emphasize the need for infrastructure improvements and forward-looking design.

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2 NSF Indian Head

Inside Chapter 2...

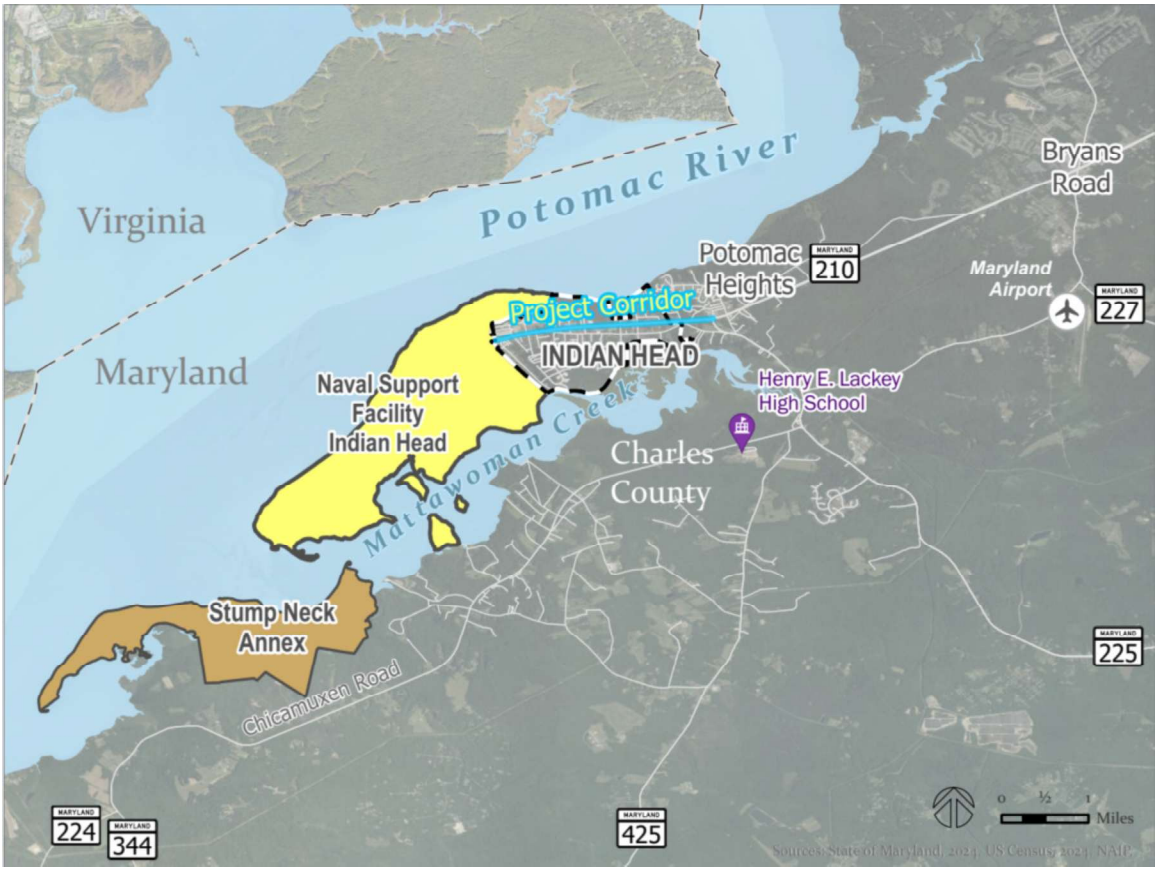
NSF Indian Head is a critical hub for national defense, playing an essential role in advancing military readiness and technological innovation. Strategically located near the nation's capital, it supports rapid response needs and joint training across multiple branches of the Department of Defense (DoD). NSF Indian Head houses the nation's most advanced energetics and ordnance capabilities, serving as a cornerstone in the development and production of technologies that directly enhance U.S. military effectiveness and readiness.

Location

The Indian Head Peninsula is in Charles County, Maryland, approximately 30 miles south of Washington, D.C. The peninsula is between the Potomac River to the north and west and Mattawoman Creek to the south. The Town of Indian Head occupies most of the base of the peninsula while NSF Indian Head occupies the end of the peninsula. This study identified disagreement between Navy and community Geographic Information Systems (GIS) datasets regarding the location of the Town/installation boundary; the disagreement is detailed in Chapter 3.

The Stump Neck Annex of NSF Indian Head is located across Mattawoman Creek to the south. Activities at Stump Neck Annex include field testing and training. Stump Neck Annex and its access routes are geographically separate from the main installation on the Indian Head Peninsula and therefore outside the study area. The study team inquired about potential mission increases or planned actions at Stump Neck Annex that may create a significant transportation impact in the area, and particularly within the study corridor. No such impact was identified, and Stump Neck Annex is not further discussed in this study.

Figure 2-1 NSF Indian Head, Including Stump Neck Annex



Economic Impact

NSF Indian Head is a major economic engine in Charles County and, more generally, the Southern Maryland region. In Fiscal Year (FY) 2021, NSF Indian Head had a budget authorization of $1.163 billion. The installation employed nearly 4,000 individuals, including 2,762 federal civilian personnel, 670 active-duty military members, and 554 contractors, making it one of the largest single employers in Southern Maryland.

Payroll expenditures highlight NSF Indian Head's substantial contribution to household incomes and consumer spending within the region. In FY21, federal civilian payroll totaled $381.22 million, complemented by an additional $42.9 million in military payroll. The installation's contracting activity amplifies its economic reach. NSF Indian Head awarded contracts totaling nearly $498 million in FY21, including $39.4 million to businesses within the local area.

Installation Mission and Operations

NSF Indian Head is one of two installations under NSA South Potomac, along with NSF Dalhgren. Established in 1890, the installation is the venue for cutting-edge research, development, testing, and production of energetic materials and systems that are essential for the readiness of the U.S. military.

Naval Surface Warfare Center, Indian Head Division

The Naval Surface Warfare Center, Indian Head Division (NSWC IHD) is the largest command at NSF Indian Head and serves as the U.S. Navy's premier center for energetics research, development, production, and sustainment. Energetics includes explosives, propellants, pyrotechnics, reactive materials, and associated fuels and chemicals and is foundational to military propulsion systems and ordnance. With a workforce of nearly 2,700, NSWC IHD plays a mission-critical role in delivering next-generation munitions and weapons systems across all service branches. In 2014, the Secretary of the Navy designated NSWC IHD as a Center for Industrial and Technical Excellence for Energetics and Ordnance Systems Depot Maintenance and Arsenal activities. It is the only naval arsenal with this distinction.

NSWC IHD is responsible for:

- **Research and Development** Advancing energetics technology, including propellants, explosives, pyrotechnics, and reactive materials used across all branches of the U.S. military;
- **Testing and Evaluation:** Conducting rigorous testing of energetic systems to ensure reliability and effectiveness in operational environments;
- **Production and Manufacturing:** Delivering critical materials such as warheads, cartridges, and propulsion systems; and
- **Logistical and Life-cycle Support:** Providing end-to-end life-cycle management for munitions and ordnance systems, including maintenance, modernization, and demilitarization.

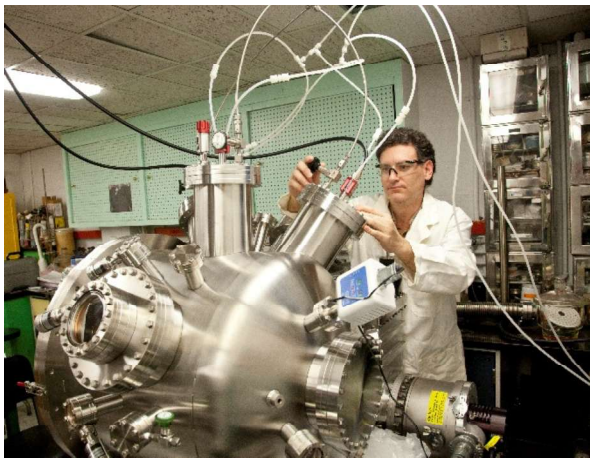


Image 2-1. A scientist at NSWC IHD adjusts the flow of argon gas into a custom designed vacuum deposition chamber used to make novel energetic materials. (U.S. Navy/Matthew Poynor)

NSWC IHD features state-of-the-art laboratories, specialized testing facilities, and advanced manufacturing centers that support both legacy and emerging energetics capabilities. Its mission extends well beyond traditional energetics, with expertise in additive manufacturing (3D printing), advanced diagnostics, and cutting-edge materials science. Among its other capabilities, NSWC IHD is the sole manufacturer and provider of Otto Fuel II, a liquid torpedo monopropellant. The command can manufacture up to 250,000 pounds of Otto Fuel II annually. Furthermore, it is the nation's only design and development agent for underwater warheads and explosives. NSWC IHD also is the Navy's sole provider of Cartridge Actuated Devices/Propellant Actuated Devices (CAD/PAD) used in aircraft ejection systems, emergency escape mechanisms, and other critical equipment.

Key facilities include:

- **Scale-up laboratories** that accelerate the transition from laboratory research to industrial production;
- **The nation's only energetics-certified Micro-Electro-Mechanical Systems (MEMS) development lab**, enabling miniaturized energetic device innovation; and
- **Next-generation twin-screw extrusion processing systems**, which enable precise mixing and shaping of advanced energetic materials.

NSWC IHD also includes Expeditionary Exploitation Unit One (EXU-1), a specialized operational unit. EXU-1 platoons deploy globally to collect, process, exploit, and analyze conventional and improvised threats. They support Fleet and Joint commanders, the intelligence community, interagency stakeholders, and allied forces by enhancing countermeasure development, preventing technical surprise, and enabling threat attribution in complex operational environments.

Other Tenant Commands and Units

In addition to NSWC IHD, NSF Indian Head supports other tenant commands and units with critical roles in national defense. These include the following:

- **Marine Corps Chemical Biological Incident Response Force (CBIRF)** provides rapid-response capabilities during terrorist incidents involving chemical, biological, radiological, nuclear, or explosive (CBRNE) weapons of mass destruction. CBIRF can deploy as a battalion task force consisting of two Initial Response Forces (IRFs) of about 150 personnel each. One IRF is maintained on a constant 24-hour alert, with the second IRF prepared to deploy within 48 hours. An IRF is capable of self-deploying to any crisis within driving distance, which includes the entire National Capital Region (NCR). CBIRF supports local, state, and federal agencies, as well as designated military commanders, by conducting post-incident mitigation operations. These operations include:
  - Agent detection and identification,
  - Casualty extraction and extrication,
  - Personnel decontamination, and
  - Emergency medical care and stabilization of contaminated individuals.

Image 2-2. CBIRF Marines evaluate radiation hazards in an abandoned car at Technology Experimentation and Characterization Field Trials that were co-hosted with NSWC IHD

- **Naval Ordnance Safety and Security Activity** manages and administers U.S. Navy explosives safety programs to include ammunition and explosives safety and security; weapons, platforms, and combat systems; ordnance environmental support; insensitive munitions; ordnance quality evaluation; and arms, ammunition, and explosives physical security.
- **Naval Sea Logistics Center, Indian Head** provides information technology products and services and integrated logistics support for Naval Sea Systems Command and its program executive offices.

Planned Changes

Energetics Comprehensive Modernization Plan

As part of a plan to modernize and increase the capacity of its organic defense industrial base, the Navy has begun a $2.7 billion, 15-year Energetics Comprehensive Modernization Plan (ECMP) for NSWC IHD. The Navy estimated that combined demand for the energetics manufactured at Indian Head from DoD customers and commercial partners is 11 times the installation's current capacity. The cost to entirely replace the capacity at Indian Head at a different location is estimated at $5 billion to $6 billion, making modernization of the existing facility the most cost-effective option for the Navy.

The ECMP consists of more than 500 projects to renovate 180 facilities. This will increase traffic by vehicles carrying construction materials and workers compared to the last decade. The increased capacity will then enable increased manufacturing capacity, which will necessitate increased traffic on- and off-base.

NSWC IHD anticipates that modernization may include adding 500 to 700 government civilians and/or contractors to manufacturing operations alone, representing a 20% increase to the NSWC IHD workforce. This does not include additional administrative or other personnel that may be required. The ECMP will enable two, or even three, shifts for energetics manufacturing. A 16- or 24-hour schedule would be new to the area and create significant traffic at times when it does not currently occur. NSWC IHD estimates that the volume of commercial vehicles will increase to 200% to 300% of current levels by the completion of the modernization.

In summary, the ECMP will have four main impacts:

- **Surge of construction traffic:** The enormous amount of construction needed to complete the ECMP will ramp up as the projects that require the least preparation begin, creating a years-long period of heightened construction-related traffic. It will then tail off as the last projects are gradually completed. The ECMP is currently in the initial stages of the ramp-up. Construction-related traffic in the study area will steadily increase through at least the next five years.
- **Higher traffic steady state:** The 20% increase in workforce after the ECMP is completed is estimated to result in a roughly equivalent increase in commuter traffic, barring measures to shift commuters from privately owned vehicles (POVs) to other forms of transportation. However, the post-ECMP increase in commercial vehicle traffic may be up to 300% greater than the current level, which would be 15 times larger than the increase in workforce commuter traffic.
- **Shift in traffic times:** The ECMP will enable double shifts and, as needed, triple shifts on a 24/7 schedule. This may create traffic patterns that do not currently

exist, such as incoming commuters in the evening, workforce turnover in the middle of the night, and outgoing commuters in the morning.

- **Parking scarcity on the installation:** NSA South Potomac has estimated that there is insufficient parking on NSF Indian Head to accommodate both the modernization and the end of telework (described below). Building additional parking lots may reduce developable land for future mission growth.

CBIRF Expansion

CBIRF is transitioning to a joint command. Within 10 years, the command is estimated to expand by an additional 250 personnel from about 500 currently. The transition of CBIRF will increase its importance and the sensitivity of any impacts to its ability to respond rapidly within the National Capital Region. The increased commuter traffic from the additional personnel adds to the need for transportation planning and potential new traffic solutions.

Some Marines live with their families in on-base housing, and new personnel are also expected to take advantage of any unutilized base housing. While Marines living in currently unused on-base housing will not add to commuter pressures, families housed on the installation would add to the traffic along the MD-210 corridor.

In summary, the CBIRF transition will have a single significant impact:

- **Increase total number of commuters:** New personnel who live off-base will add to commuter traffic. Dependents living in previously unused base housing will similarly add to traffic.

End of Remote Work

In January 2025, executive branch departments were directed to terminate remote work arrangements to the extent practicable. Because laboratory testing and energetics manufacturing must be conducted in person, NSF Indian Head's workforce is affected by this directive less than many other DoD installations. However, a minority of employees use telework options, either full-time or in a hybrid model. Local interviewees noted that it was common before the acceleration of remote work during the COVID-19 pandemic for installation employees to have Friday group lunches at restaurants in the Town of Indian Head. This became uncommon after 2020, as hybrid workers are typically not in person on Fridays.

In summary, the elimination of remote work will have three main impacts:

- **Increase total number of commuters:** The minority of employees who were entirely remote and have not added to local traffic in recent years will be converted to commuter traffic.
- **Increase traffic on "shoulder" workdays:** Employees with hybrid work schedules typically work from home on days adjacent to the weekend. Traffic volumes on

those days will increase toward the average on other days. As a secondary effect, it may also encourage activities like the end-of-week group lunches in the Town that used to be more common, which can also increase usage of the transportation corridor.

- **Create parking scarcity on the installation:** NSA South Potomac has estimated that there is insufficient parking on NSF Indian Head to accommodate both the ECMP and the end of telework.

Transportation as Mission Support

Transportation assets and capabilities within the study area directly support the ability of NSF Indian Head and its tenant commands to conduct their missions. Those of relevance to this study are:

- Routine workforce commuting, including after planned workforce increases;
- Commercial traffic inspection and throughput, including for the construction phase of the ECMP and for new energetics manufacturing capacity;

Image 2-3. Aerial view of NSF Indian Head from the south (U.S. Navy)

- Emergency response across the installation boundary, including Navy emergency response to community calls, CBIRF response to the NCR, and local and regional response to emergencies on NSF Indian Head; and
- Emergency evacuation of personnel and residents off the Indian Head Peninsula.

Additionally, if the Navy requires an off-installation solution due to a lack of parking, the transportation corridor may include a transit service that directly supports mission capability.

These critical mission support capabilities were identified through document review and stakeholder input and form the foundation of the vulnerability and risk assessment in Chapter 5.

3 Readiness Partners

Inside Chapter 3...

This chapter describes the non-defense governmental, institutional, and regional partners that influence transportation, infrastructure, and land management within the Indian Head corridor. It provides an overview of current responsibilities, jurisdictions, and priorities. The intent is to establish a clear picture of existing conditions and organizational roles. It concludes with a section examining existing and projected vehicle traffic along the study corridor.

Governments Within the Study Corridor

The Indian Head corridor involves three levels of government: municipal, county, and state. Each has distinct but interrelated responsibilities for transportation, infrastructure, and land management. The Town of Indian Head administers local zoning and public services within its boundaries; the Charles County Government oversees unincorporated areas and coordinates regional planning and emergency management; and the State of Maryland manages the highway system and associated regulatory programs. Together, these entities provide the framework for how facilities are maintained, projects are implemented, and public services are delivered throughout the study corridor.

The Navy is not listed among the governmental stakeholders below. The characteristics of NSF Indian Head are discussed in detail in Chapter 2.

Town of Indian Head

The Town of Indian Head, Maryland, occupies 1.5 square miles on the Indian Head Peninsula between unincorporated Charles County and NSF Indian Head. As of 2023 Census data, the Town has an estimated population of 3,982. Nestled between the Potomac River and Mattawoman Creek, Indian Head is known for its scenic waterfronts, ecological diversity, and access to outdoor recreation, including at the Rail Trail, Slavins Dock, the Town Green, and the Indian Head Riverwalk.

The Town's earliest residents arrived to work at the Naval Proving Ground (now NSF Indian Head), which was created in 1890. The Town was incorporated in 1920. In its early years, the area was reliant upon steamboats for shipment of people and materials. World War I prompted the construction of a rail line to the outside network in 1919, while World War II prompted the construction of the Indian Head Highway (MD 210) in the mid-1940s. At this time, the start point of MD 210 was designated as the intersection with Potomac Avenue, resulting in the Indian Head Highway continuing through the Town to the installation as a municipal boulevard. The Federal government transferred the former military housing area to the Town, which has developed into the Town Green. Car and truck traffic replaced river and rail transportation, with the Navy's last use of the rail line occurring in the late 1980s. In 2006, the rail corridor was donated to Charles County as part of the Federal Lands-to-Parks program.

The connectivity provided by personal vehicles led to challenges that started in the 1950s. Local businesses struggled to compete with large retail chains opening elsewhere in Charles County, an increasing proportion of base workers chose to live outside of Town, and defense contractors moved their operations onto the installation. Between 1990 and 2000, the installation downsized from about 3,000 employees to 1,800. Local and State concerns were compounded by the installation's appearance in the 1995 and 2005 Base Realignment and Closure (BRAC) documents, raising fears that the Town's main economic engine would be lost.

The implementation of modern physical security infrastructure separated the installation and the Town, which had grown together since the late 19th century. Long-time residents of the Town recount how the community and base shared assets such as stores and cinemas, with hardly any thought to whether a specific asset was on the military side or not. The complicated gate infrastructure and road network around the installation boundary reflects this shared history.

Table 3-1 Indian Head Resident Commuting Methods

Method of Travel to Work	Percent of 2,102 workers
Drove Alone	76.7%
Carpooled	7.3%
Worked From Home	12.4%
All Other Methods	3.6%

Source: *2023 American Community Survey, U.S. Census Bureau*

According to 2023 Census data, 40.7% of employed residents of Indian Head reported that they worked in Charles County, 31.3% reported that they worked outside of Maryland, and 28.1% reported that they worked in Maryland outside of Charles County. The mean travel time to work was 46.8 minutes. Fewer than 10% of workers traveled less than 20 minutes to work, meaning that at least 90% of workers who reside on the Indian Head Peninsula are almost certainly not working on the peninsula. In contrast, 35% of workers stated that it took 60 minutes or more to travel to work. In summation, the average worker from Indian Head commutes alone in a private vehicle, likely north to an employment center in or near the D.C. Beltway.

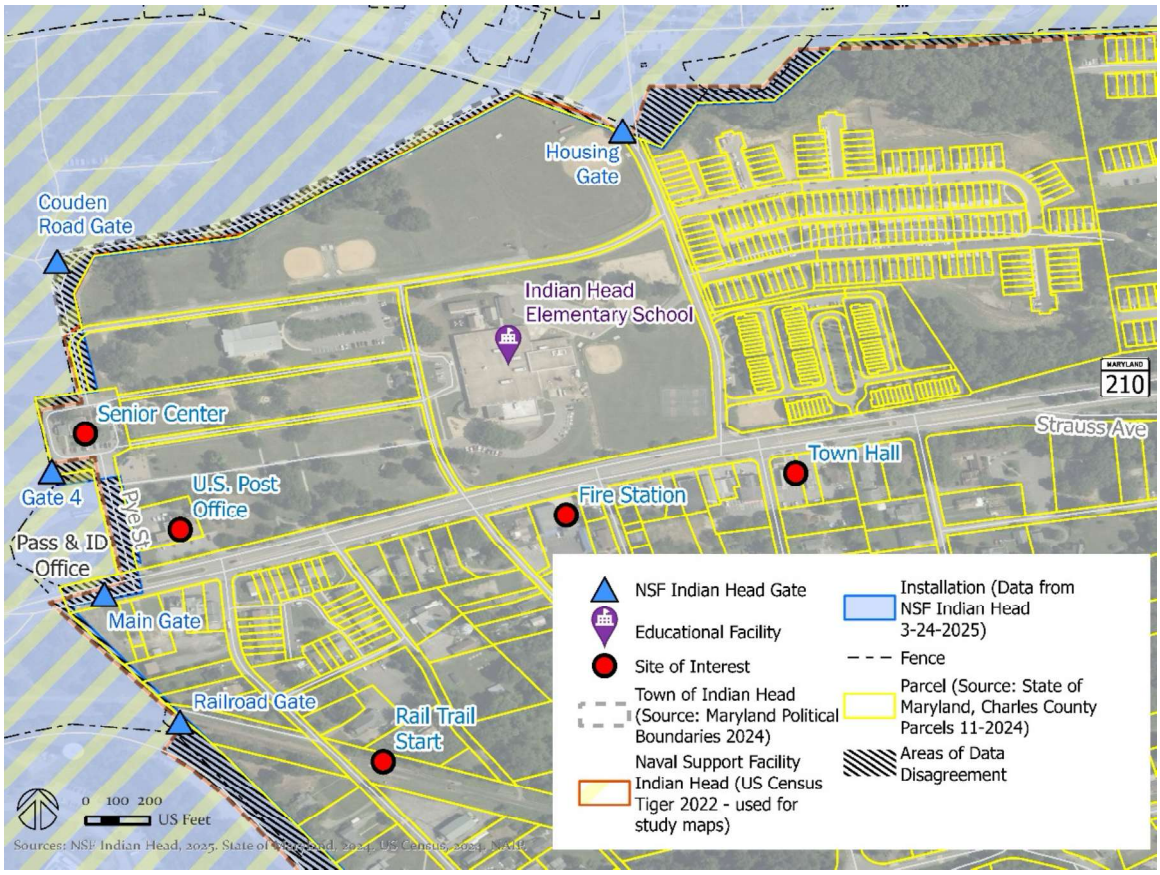
Boundary Disagreement with NSF Indian Head

The study team identified discrepancies in the boundary of the Town of Indian Head and NSF Indian Head between publicly available Geographic Information System (GIS) data and Navy-supplied GIS data. After consulting with Charles County and NSA South Potomac Public Works, the study team was able to discard the possibility that the discrepancies were the result of corrupted data or human error. Consulted stakeholders concurred that the discrepancies were the result of an actual disagreement in datasets. Navy stakeholders speculated that the last boundary survey may have occurred in the 1980s, but they could not provide related documentation.

The lack of an agreed-upon boundary also complicates planning related to base access and interfaces. For this study, the main concern was a disagreement between Navy and community GIS data about the ownership of the Main Gate, as well as Pye Street between the Pass & ID Office and the Post Office. Figure 3-1 depicts regions in which there is disagreement between datasets as hatched areas. Besides part of MD 210 proper, the disagreement also encompasses egress from the Pass & ID Office and

potential options to reconfigure access. As the owner of Indian Head Highway immediately outside the installation, as well as roads within the Town Green, the Town of Indian Head would be the assumed community owner if the community GIS data are correct. Mr. Ryan Hicks, current Town Manager of Indian Head, informed the study team that the Town does not contest that the Navy owns the areas around the Main Gate, regardless of the GIS data. Therefore, this study proceeds under the assumption that these areas are Navy property.

Figure 3-1 Boundary Disagreement and Installation Gates



There are two related concerns. The first and less significant concern is that a small area along the northeast corner of the Pass & ID Office does not fall within any dataset so, according to the data, has no owner. This grassy fringe appears to be maintained by the Navy so, for the purposes of this study, the study team assumed that the Navy was acting as the owner. The second concern involves Cornwallis Road outside of the Couden Road maintenance gate, north of the Senior Center. Here, there appears to be a disagreement, with Mr. Hicks noting that the Town has been operating as if this segment of road was its responsibility. However, no critical challenge or potential solution has been identified with respect to the Couden Road Gate. If this changes, resolution of this boundary disagreement would become more pressing.

Priorities and Plans

Development Pressures

The Town of Indian Head experiences the development pressures inherent in the region, particularly the demand for additional housing. However, opportunities for large-scale housing developments are limited because most parcels in the Town are relatively small. This forces developers to limit the size of their projects, go outside the Town, or acquire adjacent parcels to make a single developable area.

In the past few years, a new multifamily housing development was constructed along Dr Andrews Way, across from Indian Head Elementary School and outside of the installation's Housing Gate. The Town's largest remaining undeveloped parcels are located near River Lane, north of MD 210. In 2024, 24 acres were acquired by a developer who was seeking to acquire an adjacent eight acres; the developer had engaged with the Town about developing multifamily housing.

The ECMP of NSWC IHD facilities may also increase the attractiveness of commercial or industrial development near NSF Indian Head. In 2020, the College of Southern Maryland opened the 13,000-square-foot Velocity Center in Indian Head as "a place of innovation, learning, and collaboration among academia, business, the Navy, and the community" to encourage development along Indian Head Highway. The Velocity Center is cited as a factor in convincing the U.S. Bomb Technician Association (USBTA), a group of explosives disposal professionals, to move its headquarters to Indian Head. While the USBTA building was acquired in 2022, the headquarters' grand opening occurred in 2025. County officials responsible for economic development noted that, since the announcement of the ECMP, there has been increased interest by defense-related industries in the region. However, the lack of large undeveloped parcels for commercial and industrial use in the Town may push those developments into the nearby areas of unincorporated Charles County or, potentially, into redeveloped unused or underused commercial properties in Indian Head.

Bicycle and Pedestrian Feasibility Study

The MD 210 Bicycle and Pedestrian Feasibility Study was recently completed. It evaluates opportunities to expand infrastructure for active transportation, specifically walking and bicycling, along Indian Head Highway. It focuses on bridging gaps in the sidewalk network to improve pedestrian access and safety between residential neighborhoods, schools, commercial areas, and transit stops.

Improved sidewalks reduce conflict points between vehicles and pedestrians and encourage the replacement of short vehicle trips with walking, easing localized congestion. An unbroken pedestrian system also supports connections to bus stops, which can relieve some traffic pressure on MD 210. At the same time, the construction of sidewalks and curb ramps will require adjustments to the built environment. These may include drainage modifications, right-of-way acquisitions, and coordination with existing utilities.

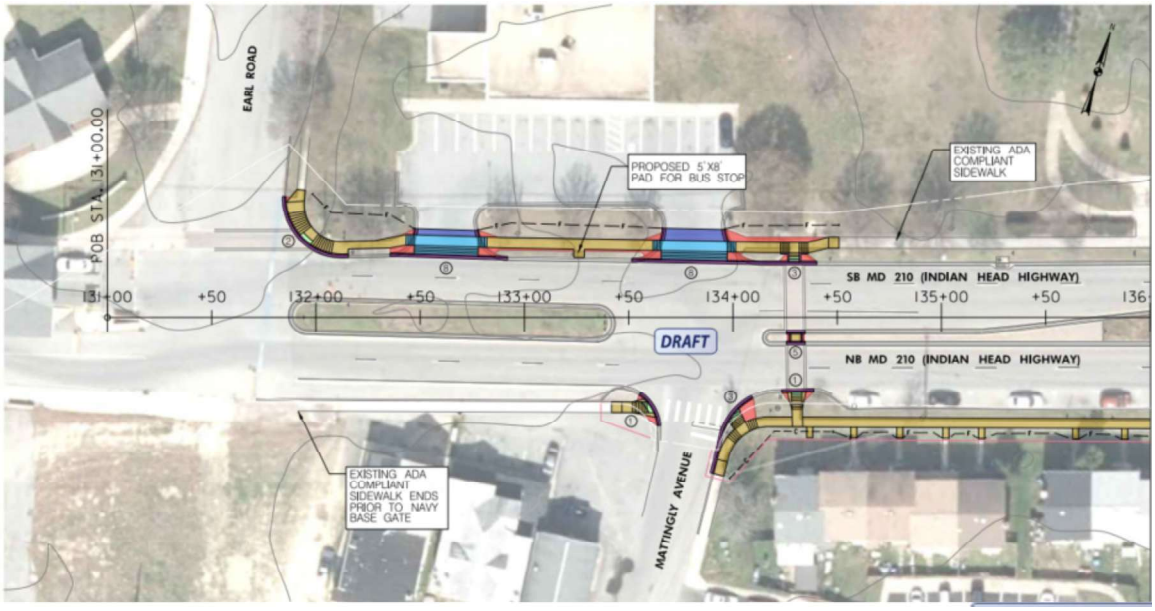


Image 3-1: A recently concluded study includes concept designs for improvements along the Indian Head Highway, including directly outside the Main Gate. (**Source:** 2024 MD 210 Bicycle and Pedestrian Feasibility Study)

The Bicycle and Pedestrian Feasibility Study begins a process to apply for and receive State funds to implement the recommended improvements. The Town of Indian Head does not want the Transportation Corridor Readiness Study to impede the State grant process. The goals and recommendations of the two studies largely align; where appropriate, this study discusses potential interactions with the MD 210 Bicycle and Pedestrian Feasibility Study.

Charles County

Charles County has jurisdiction over northern and eastern portions of the area, as well as connecting transportation infrastructure. One of Maryland's fastest-growing counties, Charles County covers 457.8 square miles and has a population of 168,710. The County's Department of Planning and Growth Management and Department of Economic Development were engaged throughout the study. Charles County has identified transportation improvements as a priority in its Comprehensive Plan and Transportation Strategy, emphasizing connectivity, safety, and sustainability. The County has also supported initiatives such as the Western Parkway Extension, Complete Streets policies, and transit-oriented development near key corridors. These efforts align with broader goals to reduce vehicle dependency, improve air quality, and enhance mobility for all users.

The County's transportation network is heavily influenced by commuter flows to and from the Washington, D.C., metropolitan area, including traffic generated by NSF Indian Head. MD 210 and MD 225 are critical corridors within the County, connecting the western portion of Charles County to Washington, D.C., and population centers in the central part of the County. These routes are frequently congested during peak hours, and their performance directly affects access to employment centers, emergency services, and commercial facilities.

Priorities and Plans

Much of Charles County does not directly affect the Indian Head Peninsula. While many County agencies and plans affect the study corridor in general, those listed below have a specific, identified interaction with the study corridor and its access roads.

Public Works

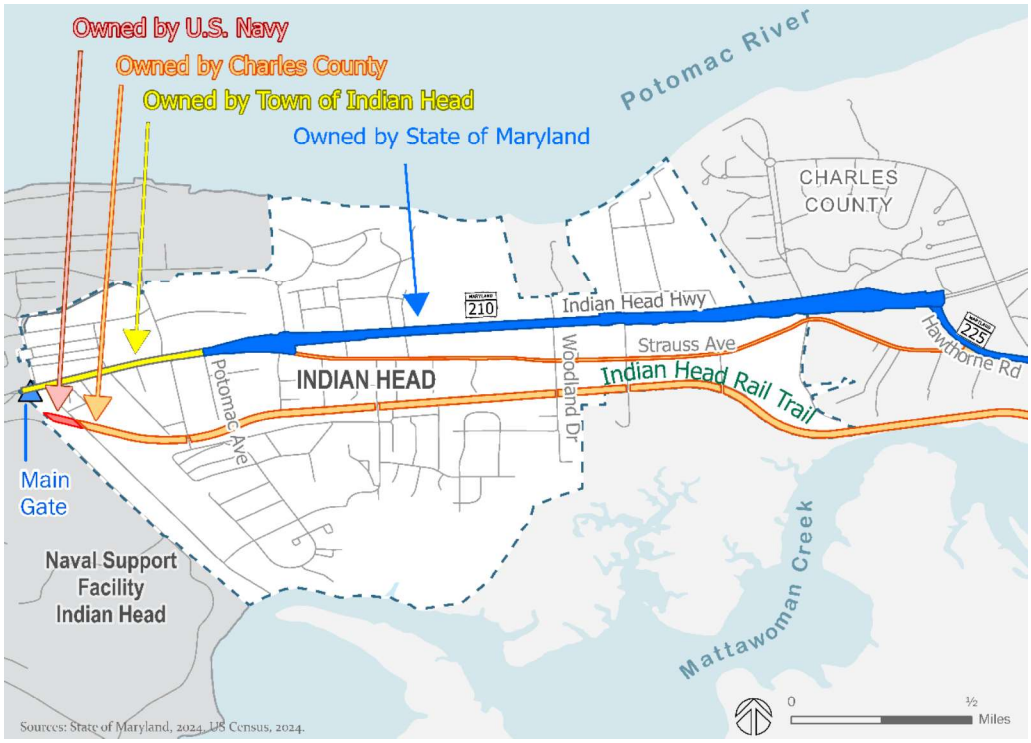
The Roads Division of the Department of Public Works-Facilities maintains and improves County roads, as well as stormwater management and drainage that may cross State and County rights-of-way, such as for MD 210. It does not provide the same services to the section of Indian Head Highway owned by the Town of Indian Head, which are solely the responsibility of the Town.

Any improvements to MD 210 that cross County-owned drainage infrastructure need to be coordinated with the Roads Division. Among the Roads Division's responsibilities is Strauss Avenue, the primary alternative to Indian Head Highway from the Town of Indian Head to MD 225.

Recreation and Parks

Charles County owns the Indian Head Rail Trail, which was gifted by the U.S. Department of the Interior's Federal Lands-to-Parks Program and stretches across half of the County. Rail Trail maintenance and improvements are handled by the Department of Recreation, Parks & Tourism (RPT). The portion of the Rail Trail within the study corridor is depicted on Figure 3-2. Figure 3-2 shows the actual width of the rights-of-ways, rather than the simple centerline used in other figures. This allows visualization of the potential capacity of the various rights-of-ways if fully developed with similar infrastructure.

Figure 3-2 Charles County Corridors Within the Study Corridor



Parking for the Rail Trail is on the Town Green. This requires cyclists to cross Indian Head Highway to Mattingly Avenue before accessing the trailhead. The trail crosses multiple neighborhood roads, and at each crossing, vehicle access is blocked by bollards. The center bollard is removable through a lock box system, with keys provided to emergency services and RPT. While this system permits emergency entry, removing bollards sequentially along the corridor would be too time-consuming to allow for rapid evacuation. In addition, the narrow clearance left between the fixed bollards may not accommodate larger emergency or maintenance vehicles.

The most remote segment of the trail within the study corridor follows Mattawoman Creek across County-owned lands to the southeast. This stretch, regarded as both the most scenic and the most popular, also traverses highly sensitive habitat. As a result, any efforts to increase capacity or upgrade it for heavier vehicles would face increased environmental study and permitting constraints. Several bridges are in this area; while stakeholders believe they could support limited emergency use, it remains uncertain whether they could accommodate routine passage of larger or heavier vehicles if the corridor was adopted for regular use.

Additionally, the ball fields along the northern edge of the Town Green near the installation boundary are owned by Charles County Public Schools but maintained by RPT. Regular maintenance not only enables community use of the ball fields and contributes to the appeal of the Town Green, but also improves installation line of sight along its boundary.

Development Pressure and Maryland Airport

As noted in the Town of Indian Head section above, Charles County is affected by regional housing demand as well as commercial and industrial demand. As the Town has few large, undeveloped parcels, private commercial or industrial developments to provide services to NSF Indian Head are more likely to happen in the County.

An area discussed for defense-related development is around Maryland Airport. In 2024, approximately 202 acres around the airport were rezoned from Watershed Conservation District (WCD) and Business Park (BP) zones to Aviation Business Park (ABP) and General Industrial (GI) zones. The Charles County Department of Economic Development has identified 45 acres for defense-related services and is in active discussion with the airport owner and potential defense contractors. One reason given for the rezoning was: "The [ABP] zone will create opportunities for development to support operations at the Naval Surface Warfare Center (NSWC) at Indian Head and initiatives announced by the Department of Defense." If this area is developed, installation-related traffic is anticipated to travel southeast along Livingstone Road (MD 224) to MD 225 and then into the study corridor, rather than north to Bryans Road.

Western Charles County Technology Corridor and Bryans Road

Maryland Airport and NSF Indian Head are the two endpoints of the West Charles County Technology Corridor, as described by the Charles County Department of Economic Development. The technology corridor passes through the Bryans Road community center at the intersection of MD 227 and MD 210. This area, like the Town of Indian Head, grew after the establishment of the Navy installation in 1890 and has since largely become a bedroom community for job centers in Washington, D.C., and its suburbs, as well as in Waldorf and La Plata.

Image 3-2: A technology corridor is envisioned by the Charles County Department of Economic Development. (**Source:** Charles County website)

The area, including the airport, is subject to competing visions. In 2001, the County envisioned a "town center" at Bryans Road, creating a significant residential and commercial node connected to Waldorf by a four-lane Cross County Connector highway. In 2016, the Cross County Connector was removed from County plans, approximately 21,000 acres in the area were placed into a Watershed Conservation District, and new residential development was severely curtailed. In 2021, the County began to rethink economic development in the area, resulting in the 2024 airport rezoning described above.

State of Maryland

The State of Maryland has oversight of major transportation infrastructure, funding mechanisms, and policy frameworks. MDOT, particularly its State Highway Administration (SHA), is responsible for the planning, maintenance, and improvement of State roadways such as MD 210 and MD 225. MD 210 terminates at Potomac Avenue, while the Town of Indian Head owns the boulevard, which is also known as Indian Head Highway, between Potomac Avenue and the installation Main Gate.

MDOT's responsibilities include roadway maintenance, traffic operations, safety improvements, and long-range transportation planning. The agency also administers funding programs and coordinates with local governments on multimodal initiatives, including transit, pedestrian, and bicycle infrastructure.

As described in the Town of Indian Head section above, the MDOT-funded MD 210 Bicycle and Pedestrian Feasibility Study was recently completed. That study begins a process to apply for and receive State funds to implement the recommended improvements. The goals and recommendations of the two studies largely align.

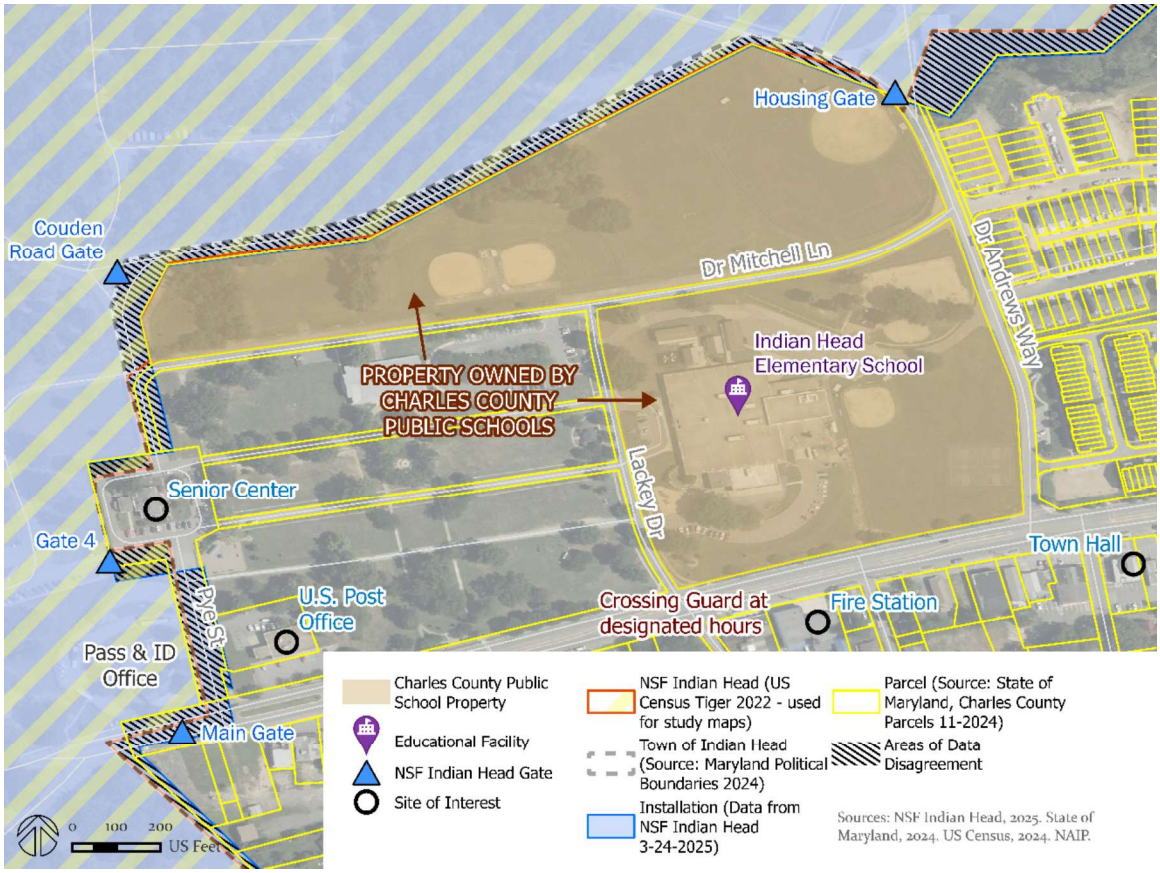
Landowning Stakeholders

Several organizations own facilities and parcels within the study corridor that were a focus for one or more challenges or potential solutions. These properties directly influence transportation access and infrastructure conditions and therefore potential solutions.

Charles County Public Schools

Charles County Public Schools (CCPS) operates two schools within the study corridor: Indian Head Elementary School and Glymont Middle School, which changed its name in 2025 from General Smallwood Middle School. School-related traffic, particularly during morning drop-off and afternoon pick-up periods, adds to peak-hour congestion along MD 210 and MD 225. CCPS owns not only Indian Head Elementary School, but also the ball fields along the northern edge of the Town Green. CCPS is thus not only a critical stakeholder for traffic along MD 210, but also for any potential solutions impacting NSF Indian Head's Housing Gate or Couden Road Gate, as depicted on Figure 3-2.

Figure 3-3 Indian Head Elementary School



Further, the presence of school buses, parent vehicles, and student pedestrians introduces safety and operational challenges. These include:

- Traffic delays and queuing near school entrances;
- Conflicts between vehicles and pedestrians at crossings;
- Limited sidewalk and bike infrastructure for students who walk or cycle to school; and
- Increased demand for traffic control measures such as signage, crossing guards, and speed enforcement.

United States Postal Service

The U.S. Post Office in Indian Head is located immediately outside the installation Main Gate, as shown on Figure 3-1 and 3-3. It services the entire Indian Head Peninsula, with the next nearest Post Offices located in Marbury and Bryans Road. Customer parking access is through Indian Head Highway to the south. Traffic stacking at the Main Gate, particularly use of the right lane as overflow parking by commercial drivers, negatively impacts access by Post Office customers. Similarly, customers exiting the Post Office

make a left-hand turn across the gate queuing lanes. Employee and delivery traffic enters and exits via Pye Street to the west, opposite the installation Pass and ID Office. Post Office traffic and installation traffic thus directly impact each other, with increased activity of one reducing ease of access for the other.

Ownership

The ownership of the parcel that the Indian Head Post Office is on is unclear. Charles County and State of Maryland websites list the owner of the parcel as the Town of Indian Head, while officials from the Town itself state that USPS owns the parcel.

The study team identified an error in the underlying State-hosted records, which point to a Quitclaim Deed, dated March 2, 1977, by the U.S. Navy for two parcels in the study corridor that are not the Post Office parcel. This 1977 Quitclaim Deed includes a figure showing the current Post Office parcel, which has the note "Proposed U.S. Postal Service parcel." Therefore, it appears that, at the time of this 1977 deed, there was a plan to transfer the parcel in question to the USPS. The Real Property office of NSA South Potomac searched through its physical records but was unable to locate a quitclaim specific to the parcel.

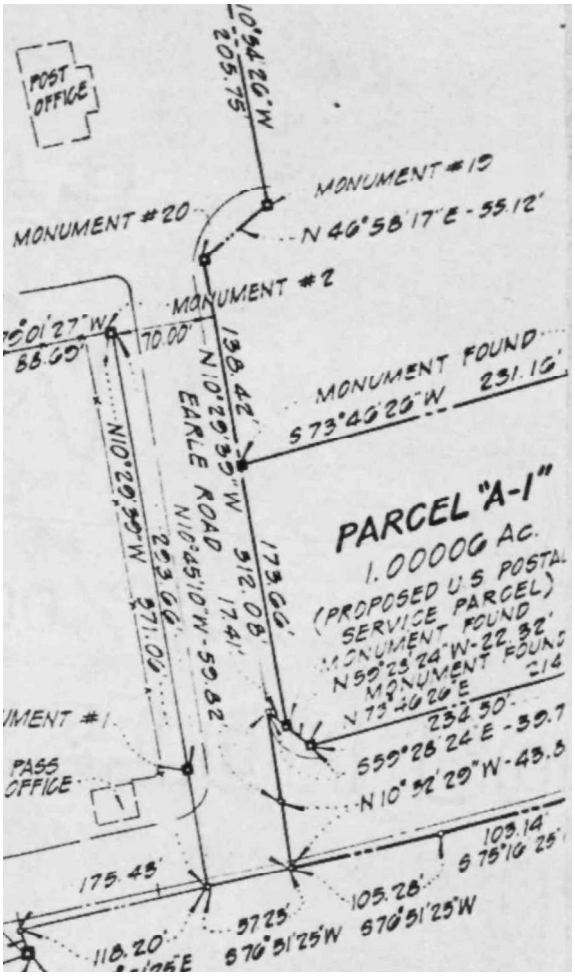


Image 3-3: A figure in a 1977 deed identifies the current location of the Indian Head Post Office as a "proposed" USPS parcel, but no document confirming current ownership has been found. (***Source**: Navy Quitclaim Deed, 2 March 1977*)

It is possible that physical documents are in storage, with the probable authority being the Charles County Court House. However, analysis of the traffic corridor and development of potential recommendations do not depend upon confirming ownership of the parcel, and in-depth research on the possible existence of physical records was not deemed to be in scope. Proposals that involve this parcel will require determining the owner.

Non-Landowning Stakeholders

In addition to property-holding entities, a range of regional, state, and federal organizations influence transportation planning, funding, and policy within the corridor. These partners do not own or maintain facilities in the study corridor but play key roles in program administration, coordination, and technical assistance. Their involvement provides access to planning resources, funding mechanisms, and interjurisdictional coordination that shape how projects advance across local and regional boundaries.

Tri-County Council for Southern Maryland

Tri-County Council for Southern Maryland continues to support regional transportation planning by establishing the Regional Infrastructure Advisory Committee (RIAC). The purpose of the Committee is to identify, unify and resolve transportation and land use issues in Charles, Calvert ad St. Mary's counties; to coordinate Southern Maryland regional and State transportation projects and issues through regional planning and communication; and, to provide a forum to discuss other planning and development issues within the Southern Maryland region.

The Regional Infrastructure Advisory Committee (RIAC) is responsible for providing a forum for elected officials to solve regional transportation problems and to formulate regional transportation policy; recommending to the Executive Board an Annual Regional Transportation Priority Letter in support of the Maryland Consolidated Transportation Program (CTP) Chapter 725, as amended; evaluating upcoming legislation that would affect the regional transportation system.

Charles County Military Alliance Council (MAC)

MAC is a nonprofit organization established in 2015 to support and advocate for the Town of Indian Head and NSF Indian Head. MAC fosters collaboration between military, civic, and business stakeholders to ensure the long-term viability of the installation and the surrounding community.

Beyond transportation, MAC supports initiatives that enhance compatible land use, economic development, and workforce readiness. It has contributed to the implementation of recommendations from the NSF Indian Head JLUS, which identified strategies to mitigate land use conflicts, improve interagency coordination, and promote military-community compatibility.

MAC's advocacy has helped attract defense-related businesses to the area, such as the relocation of the U.S. Bomb Technician Association from Denver to Indian Head, reinforcing the Town's role as a hub for energetics and ordnance expertise.

Charles County Sheriff's Office

The Charles County Sheriff's Office (CCSO) plays a vital role in traffic safety and enforcement within the Indian Head study corridor and the broader County. As the primary law enforcement agency in Charles County, CCSO is responsible for maintaining public safety, enforcing traffic laws, and responding to roadway incidents. Its Traffic Operations Unit is specifically tasked with addressing traffic-related concerns, including speeding, reckless driving, impaired driving, and crash investigations.

CCSO is a key member of the Charles County Traffic Safety Committee, a multiagency body that reviews and responds to roadway safety concerns submitted by the public and other stakeholders. The committee evaluates requests for new signage, traffic signals, crosswalks, and other safety interventions on County-maintained roads. CCSO's participation ensures that enforcement perspectives are integrated into planning decisions and that traffic control measures are supported by data on violations and crash patterns.

In addition to enforcement, CCSO contributes to strategic planning efforts such as the Charles County Local Roadway Safety Plan (LRSP). This plan, developed in partnership with the Tri-County Council of Southern Maryland and funded by the Maryland Highway Safety Office, outlines targeted strategies to reduce fatalities and serious injuries on County roads. CCSO's involvement in the LRSP emphasizes its commitment to proactive, data-driven approaches to traffic safety.

Federal Highway Administration

The Federal Highway Administration (FHWA) supports state and local transportation agencies through funding, technical assistance, and regulatory oversight. FHWA's Maryland Division works directly with MDOT and local jurisdictions to guide the development and delivery of highway transportation projects that enhance safety, mobility, and economic vitality.

FHWA's responsibilities include:

- Providing federal funding for eligible transportation projects through programs such as the Surface Transportation Block Grant Program (STBG), Highway Safety Improvement Program (HSIP), and Congestion Mitigation and Air Quality Improvement Program (CMAQ);
- Ensuring compliance with federal planning and environmental regulations, including the National Environmental Policy Act (NEPA), Title VI of the Civil Rights Act, and performance-based planning requirements; and
- Promoting innovation through initiatives like context-sensitive design, integrated planning, and multimodal coordination to improve system performance and community outcomes.

FHWA also supports Federal Lands Highway programs, which are relevant to Indian Head due to the presence of NSF Indian Head and surrounding federal lands. These programs facilitate coordination between federal land management agencies and state/local governments to ensure transportation access and infrastructure resilience.

In the context of the Indian Head corridor, FHWA's involvement is essential for:

- Securing federal funding for infrastructure upgrades and multimodal improvements;
- Ensuring project eligibility and compliance with federal standards; and
- Supporting interagency coordination among MDOT, Charles County, the Town of Indian Head, and NSF Indian Head.

Traffic Projections

To support corridor analysis and alternatives development, Matrix transportation engineers prepared traffic volume forecasts for the year 2040 using the most recent count data provided by the MDOT SHA and NSF Indian Head. These projections establish a planning baseline for understanding how background growth and site-specific development could influence daily travel volumes within the study corridor. Heavy vehicles were identified separately to account for truck and service-vehicle activity related to base operations, logistics, and regional freight movement. The resulting 2040 projections include both passenger and commercial traffic.

Projections were calculated for four locations: the installation Main Gate, where the Navy volunteered to perform a two-day traffic count to assist this study, and three locations centered on the intersection of MD 210 and MD 225 where MDOT periodically performs traffic counts. MDOT uses the following designations and location descriptions, which are depicted on Table 3-2:

- **B1711:** on MD 210, 1 mile south of MD 225
- **B1712:** on MD 210, 0.2 miles north of MD 225
- **B1720:** on MD 225, 0.2 miles east of MD 210

Assumptions

The estimates combine background growth, defined as the routine increase in regional traffic over time, with site-generated trips associated with anticipated development and mission changes.

- Background growth for traffic within the community was assumed to be 1% per year through 2040, consistent with regional planning assumptions and long-term observed trends on the MD 210 and MD 225 corridors.
- As development on the installation must be centrally approved, background growth was not applied to the traffic counts at the Main Gate, only to the community. Therefore, without applying any mission changes, the projected Main Gate traffic in 2040 is identical to the most recent actual traffic count.

Additional trip generation was applied to reflect traffic associated with the following three planned and anticipated changes, which are described in Chapter 2 or above:

- **Townhomes at River Lane:** Assuming construction of townhomes on 32 acres of undeveloped land north of MD 210 accessed by River Lane, at a typical dwelling-unit-per-acre ratio.
- **NSWC IHD:** Assuming an additional 700 personnel and a new steady state of 300% of current heavy vehicle traffic after the ECMP.
- **CBIRF:** Assuming the addition of 250 personnel by 2040.

The construction phase of the ECMP will entail significant commercial traffic to transport workers and materials. However, stakeholders did not provide an estimate of the vehicle traffic that would be required, nor the timing of the various construction projects. Therefore, the study team was unable to estimate the transportation impact of ECMP construction.

Further, a 200% increase in heavy traffic was applied at the Main Gate to develop a 2040 projection, based on the high-end estimate provided by NSWC IHD. While this is useful for planning purposes, the study team recognizes that the NSWC IHD mission comprises the majority, but not all, of the heavy vehicle traffic onto and off NSF Indian Head. Other undefined variables include whether the increase in CBIRF personnel will have an associated increase in heavy vehicle traffic and whether NSA South Potomac administrative and support personnel or traffic will rise along with expanded tenant missions. In cases where variables could not be credibly refined to a range useful for planning, the projection erred on the side of simplicity for ease of understanding.

Projections

Table 3-2 and Figure 3-4 summarize the most recent counts and projected 2040 volumes for combined two-way Average Daily Traffic (ADT), for only background growth assumptions, and for background growth combined with the three major anticipated changes defined above: townhome development at River Lane and expanded missions for NSWC IHD and CBIRF. They further identify the projected increase in heavy traffic at each location.

Table 3-2 Indian Head Highway - 2040 Traffic Projection Summary

Location	ADT – latest actual count	2040 ADT without planned changes	2040 ADT with planned changes	% Increase in Heavy Vehicles
Main Gate	7,264	7,264	10,034	200.0%
B1711 MD 210 – 1 mi S of MD 225	14,821	17,207	22,487	114.1%
B1712 MD 210 – 0.2 mi N of MD 225	14,454	16,781	21,005	78.7%
B1720 MD 225 – 0.2 mi E of MD 210	6,904	8,015	9,071	31.1%

Source: *Calculations based on MDOT SHA and NSF Indian Head traffic count*

The approximate locations of the traffic count stations and the projected ADT totals are depicted on Figure 3-4.

Figure 3-4 Projected (2040) Average Daily Traffic at Measured Stations

These figures document existing traffic volumes and composition, establishing the baseline conditions that subsequent analysis will build upon. A detailed breakdown of traffic projection calculations is included in the appendices. Analysis of traffic projections in the context of roadway capacity and neighboring uses will be presented in Chapter 5. Chapter 6 will recommend solutions to any identified constraints.

Roadway Level-Of-Service (LOS)

The Highway Capacity Manual (HCM) 7th Edition provides Generalized Daily Service Volumes for urban street facilities, establishing thresholds for different roadway classifications based on the number of lanes. The thresholds in HCM Exhibit 16-16 are useful for evaluating overall roadway performance. Projected long-term traffic volumes were reviewed by direction and peak hour to establish site-specific volume limits. Indian Head Highway consists of two lanes in each direction, separated by a median. The speed limit in the project's vicinity is 30 mph, and the Maryland Department of Transportation classifies this roadway as a minor arterial. The percentage of traffic traveling in the peak direction during the 30th highest hour (D-Factor) has ranged from 0.67 to 0.72, while the proportion of Annual Average Daily Traffic occurring in the 30th highest hour (K-Factor) has ranged from 0.898 to 0.95. Table 3-2 summarizes the ADT volumes and corresponding levels of service.

Table 3-3 Roadway Level of Service Thresholds by Functional Classification

	Level of Service				
	A	B	C	D	E
Minor Arterial					
4 Lanes	n/a	n/a	20,000	22,700	32,800

Source: *Highway Capacity Manual 7th Edition, Exhibit 16-16 Generalized Daily Service Volumes for Urban Street Facilities. K-Factor = 0.9. D-Factor = 0.60 were used for this analysis.*

As shown in Table 3-3, and based on the information provided in Table 3-2, Indian Head Parkway is anticipated to operate at an acceptable level of service (LOS) near the project in the long term. Acceptable operations are generally defined as any operation at or above LOS D, while the roadway capacity is determined at the LOS E threshold.

Programs and Initiatives

4

Inside Chapter 4...

This chapter outlines the transportation and infrastructure readiness programs and initiatives most relevant to the Indian Head Transportation Corridor Readiness Study. Federal, state, regional, and local programs offer tools to improve access, strengthen emergency response, and enhance overall corridor readiness. Chapter 5 examines the risks and vulnerabilities unique to the corridor, and Chapter 6 presents actionable recommendations. By cataloging available resources and highlighting best practices from other defense communities, this chapter provides a practical toolbox for decision-makers working to address identified needs.

Federal and DoD Programs

Federal policies and programs form the foundation of transportation and infrastructure resiliency planning for defense communities. Several long-standing DoD and federal civilian programs address access, safety, and resilience issues affecting installations and their surrounding communities.

Defense Access Roads (DAR) Program

The DAR program, administered by the Federal Highway Administration in cooperation with the DoD, provides funding to improve public highways that serve defense installations when installation-related traffic exceeds existing capacity or creates safety issues. Eligible projects include road widening, grade separations, and new access routes. For Indian Head, where MD 210 terminates at the Main Gate and functions as the sole access route, DAR offers a mechanism for addressing choke points and improving traffic safety during both routine operations and emergency evacuations.

Direct DoD and Service-Level Infrastructure Funding

DoD funds installation access improvements through Service-level appropriations and base real property budgets. These appropriations may be used to relocate facilities, construct new access control points, or reconfigure circulation when needed to maintain mission readiness.

An example is Andersen Air Force Base (AFB), Guam, where the location of a USPS facility on the installation impeded construction of military facilities that increased mission capacity. The DoD directly funded the relocation of the facility, removing a barrier and supporting both the military and USPS missions.

Office of Local Defense Community Cooperation

OLDCC administers several programs that are particularly relevant to transportation corridor planning. OLDCC's mission is to strengthen the readiness and resiliency of military installations and their host communities through coordinated planning and targeted investments.

- **Installation Readiness (IR):** Provides planning grants to evaluate vulnerabilities in transportation, land use, and infrastructure that affect mission readiness. This Transportation Corridor Readiness Study is funded through this program.
- **Compatible Use Program (CUP):** Supports land use and transportation compatibility planning to reduce conflicts between installations and surrounding communities. CUP projects can address roadway alignments, encroachment, and access issues that impact both mission operations and community quality of life.
- **Implementation Grants:** Offer financial support to carry out off-base projects recommended through its IR and CUS programs. Eligible projects include road relocations, intersection improvements, and circulation redesign where tied to mission sustainment.

Federal Emergency Management Agency

FEMA administers several Hazard Mitigation Assistance programs. These programs support projects that reduce risk to life and property from natural hazards, including those affecting transportation routes. Eligible projects include road elevations, intersection redesigns, and safety improvements that facilitate emergency evacuation. For NSF Indian Head, where MD 210 serves as the sole access corridor, FEMA programs could support improvements that reduce risks associated with flooding, congestion, or evacuation bottlenecks.

U.S. Department of Transportation

The U.S. DOT administers several discretionary grant programs that can support corridor improvements where transportation challenges overlap with safety, resilience, and access near defense installations. Each program serves a distinct scale and purpose but can complement DoD and FEMA resources when access improvements enhance both military readiness and community mobility.

- BUILD (Better Utilizing Investments to Leverage Development — previously known as the Rebuilding American Infrastructure with Sustainability and Equity [RAISE] and Transportation Investment Generating Economic Recovery [TIGER] discretionary grants): Provides competitive funding for surface transportation projects that improve safety, mobility, and access. BUILD has placed increasing emphasis on highway capacity and freight movement but continues to support multimodal and pedestrian safety projects when tied to broader corridor improvements. BUILD could be pursued for MD 210 enhancements that address congestion and emergency evacuation needs while also incorporating critical safety features such as improved pedestrian and school crossings near the installation gate and rail trail. To be competitive, such projects should be framed as part of a larger corridor package that improves both military readiness and community resilience.
- INFRA (Infrastructure for Rebuilding America): Focuses on nationally or regionally significant freight and highway projects that relieve bottlenecks and improve supply-chain efficiency. While primarily designed for major freight corridors, INFRA has supported projects that strengthen access to defense logistics facilities and could apply to MD 210 if the corridor is positioned as a critical defense and freight route linking regional supply networks to the installation.
- Mega (National Infrastructure Project Assistance): Funds very large, transformative projects that exceed the scale of traditional grant programs, such as major interchanges or bridge replacements. Although Indian Head's corridor may not independently meet Mega's minimum thresholds, components of the corridor could be incorporated into a larger regional package that addresses statewide mobility and defense access priorities.

State and Regional Programs

Maryland and Charles County have established a strong framework of state and regional programs that directly support transportation safety, corridor resilience, and climate adaptation. Many of these initiatives align with the goals of this study and can serve as additional funding or partnership pathways to complement federal and DoD programs.

Maryland State Highway Administration

The SHA oversees the design, operation, and maintenance of state highways, including MD 210 (Indian Head Highway). SHA routinely partners with county and municipal governments to improve traffic operations, address safety concerns, and coordinate infrastructure projects that support military installations and adjacent communities. SHA's Transportation Alternatives Program (TAP) and Highway Safety Improvement Program (HSIP) both offer opportunities for collaborative projects that improve multimodal safety, pedestrian crossings, and evacuation capacity along MD 210. Engagement with SHA will be essential for any future corridor modifications, particularly where federal funding mechanisms — such as the DAR or BUILD programs — require a state sponsor.

Maryland CoastSmart and Resiliency through Restoration Initiative

The CoastSmart Communities Program, administered by the Maryland Department of Natural Resources, provides technical and financial assistance to local governments for projects that enhance community resilience to flooding and climate-related hazards. Complementing CoastSmart, the Resiliency through Restoration Initiative supports nature-based solutions that stabilize shorelines and protect transportation assets from nuisance and tidal flooding. Although these programs focus primarily on coastal and flood resilience, they can provide co-benefits for transportation infrastructure located within low-lying or flood-prone areas near Indian Head, particularly where stormwater drainage and roadway flooding are recurring concerns.

Maryland Department of Emergency Management (MDEM)

MDEM coordinates statewide hazard-mitigation planning and administers federal mitigation funds, including FEMA's Flood Mitigation Assistance programs. MDEM can serve as a conduit for hazard-mitigation projects involving transportation corridors, evacuation routes, or critical access roads that support military installations. Aligning corridor improvements with MDEM's mitigation priorities can strengthen eligibility for federal and state cost-sharing.

Regional Planning Coordination

Regional transportation planning in Southern Maryland is guided by TCCSMD, which facilitates coordination across Calvert, Charles, and St. Mary's Counties. The Council's role in regional transportation, workforce, and resilience planning makes it a natural partner for any corridor-wide initiative. Coordination with TCCSMD can ensure that improvements along MD 210 align with regional mobility priorities, funding cycles, and state transportation improvement programs (STIPs).

County and Town Programs and Plans

Local plans and initiatives in Charles County and the Town of Indian Head provide a strong foundation for transportation, hazard mitigation, and resilience coordination. These documents establish the policy framework and implementation mechanisms that can guide future corridor improvements and align them with community goals.

Charles County Comprehensive Plan and Transportation Element

The Charles County Comprehensive Plan and its Transportation Element identify MD 210 as a vital north–south connector supporting both civilian and defense-related travel. The plan calls for improved multimodal facilities, enhanced intersection safety, and reduced congestion through coordinated planning with state and federal partners. The Transportation Element also identifies the need to integrate hazard mitigation and resilience considerations into future capital projects. Aligning this study's outcomes with the County's transportation priorities will help secure consistency across funding programs and capital improvement planning cycles.

Charles County Resilience Authority

Charles County established the Resilience Authority in 2021 to finance and implement infrastructure projects that address flooding, stormwater, and climate impacts. The first of its kind in Maryland, the Authority can issue bonds, enter public-private partnerships, and manage projects that improve community and transportation resilience. This entity could serve as a local implementation partner or financing intermediary for MD 210 drainage improvements, stormwater retrofits, or safety upgrades near the installation gate. By leveraging its ability to combine public funding with private capital, the Resilience Authority can extend the reach of limited federal and state resources.

Charles County Hazard Mitigation Plan

The Charles County Hazard Mitigation Plan (HMP), updated in 2024, identifies and prioritizes local strategies to reduce risks from natural and human-caused hazards. The plan recognizes transportation accidents, flooding, and extreme weather as critical risks affecting both public safety and infrastructure continuity. Because the HMP is the County's official vehicle for FEMA mitigation funding, any improvements to MD 210 or associated access roads that enhance evacuation or reduce hazard exposure should be incorporated into plan updates. Coordination with the County Department of Emergency Services will ensure that eligible corridor projects can compete for federal mitigation funds through FEMA and the Maryland Department of Emergency Management.

Charles County Nuisance and Urban Flooding Plan

The 2020 Charles County Nuisance and Urban Flooding Plan addresses the growing impacts of recurrent and storm-driven flooding on public infrastructure. The plan identifies specific roadways and drainage systems affected by backflow and inadequate stormwater conveyance, and outlines strategies for targeted improvements. For the Indian Head corridor, the plan provides a useful model for identifying and prioritizing road segments vulnerable to ponding or tidal flooding, and for integrating green infrastructure or stormwater retrofit solutions into transportation projects.

Town of Indian Head Comprehensive Plan

The Town of Indian Head Comprehensive Plan, adopted in 2021, establishes the Town's long-range land use and transportation policies. It emphasizes the importance of maintaining safe, efficient access to the naval installation and improving pedestrian and bicycle connectivity within the community. The plan's goals for revitalizing Main Street and enhancing community gateways align directly with potential MD 210 corridor improvements that balance security, safety, and community character. Incorporating the Town's objectives into regional and federal project proposals can strengthen competitiveness for state or federal funding and ensure consistent design outcomes.

Other Local Coordination Mechanisms

Charles County's Departments of Planning and Growth Management, Public Works, and Emergency Services all play roles in transportation planning and implementation. These agencies participate in regional coordination through the Tri-County Council and maintain partnerships with the Maryland State Highway Administration and the Maryland Department of Emergency Management. Their existing frameworks for project planning, permitting, and grant administration provide the local administrative capacity necessary to support implementation of corridor improvements once preferred alternatives are identified in later phases of this study.

Best Practice Examples and Lessons

Transportation and access issues similar to those in the Indian Head corridor have been addressed at other defense installations through a combination of planning, engineering, and interagency coordination. The examples below summarize projects that closely parallel the conditions at NSF Indian Head.

Highway Modification and Gate Access

Wright-Patterson Air Force Base – Dayton, Ohio

Wright-Patterson Air Force Base and its host community of Fairborn faced a persistent conflict between State Route 444 and the installation's secured areas. The state highway bisected the base between the military's Area A and the Kittyhawk Event Center, creating security vulnerabilities and operational inefficiencies. To resolve the issue, the Air Force, the Ohio Department of Transportation (ODOT), and the City of Fairborn coordinated the permanent closure of approximately 1.5 miles of Route 444 that crossed federal property. The project included construction of a new connector road to reroute civilian traffic around the installation, the extension of the base perimeter fence, and reconfiguration of gate operations.

The work was completed in 2012, funded primarily through Wright-Patterson's installation resources. ODOT oversaw public-roadway components of the reroute, while the base managed fencing and gate modifications. The project eliminated public access through the base and consolidated entry points to improve security control.

Patrick Space Force Base – Brevard County, Florida

Patrick Space Force Base, situated between the Banana River and the Atlantic Ocean along Florida's central coast, has access limitations due to being on a narrow land corridor near residential neighborhoods. The installation's South Gate, located near the eastern terminus of the Pineda Causeway, serves as a key entry point but has been constrained by limited queuing capacity and aging infrastructure.

In January 2025, the base announced the start of a $9.7 million South Gate reconstruction project designed to modernize the entry control facility and improve security operations. Funding is provided through a military construction appropriation. Project elements include the installation of new final-denial barriers, reconfiguration of approach lanes, and construction of an overwatch building. Construction is scheduled for completion in mid-2026. One inbound and one outbound lane will remain open throughout the project to maintain access. The project is part of a broader effort to enhance base security and readiness.

Residential and School Proximity

MCAS Cherry Point – Craven County, North Carolina

Marine Corps Air Station (MCAS) Cherry Point experiences access and circulation challenges. Specifically, mobilizing forces traveling on four-lane highways are funneled into a single inbound lane at the existing Slocum Road gate. During peak hours and elevated Force Protection conditions, the lack of queuing space and substandard inspection facilities cause traffic to back up onto U.S. Highway 70 and NC Highway 101, posing safety risks for both base and civilian motorists. Because the existing Entry Control Facility (ECF) had no dedicated Pass & ID office, most daily commercial inspections had to be performed at the separate Main Gate, adding to congestion at multiple points of entry.

According to a 2021 Environmental Assessment (EA), the Marine Corps proposed to demolish the existing Slocum Road ECF and construct a new facility to serve as the installation's Pass & ID Office and main entrance and exit. The project includes widening Slocum Road from two to four lanes, constructing a parallel bridge, and adding inspection facilities and controlled access points that meet current Anti-Terrorism/ Force Protection (AT/FP) standards. The planned improvements are designed to address these issues by separating inbound and outbound lanes, adding inspection capacity, and relocating Pass & ID functions to the new ECF. The project is funded through Marine Corps military construction appropriations and coordinated among MCAS Cherry Point, the North Carolina Department of Transportation, and Craven County.

MCAS Beaufort – Beaufort County, South Carolina

Marine Corps Air Station Beaufort lies within a suburb northwest of downtown Beaufort, where residential neighborhoods and wetlands closely border the installation's Main Gate on U.S. Highway 21 (Trask Parkway). To manage traffic flow and maintain safety at this constrained interface, the base has worked with the South Carolina Department of Transportation (SCDOT) and Beaufort County on a series of roadway and access-control improvements over the past decade. These have included traffic-signal coordination along U.S. 21 near the entrance, resurfacing and lane adjustments to improve turning movements, and installation of new signage and security barriers at the gate complex. The City of Beaufort's transportation and resilience planning documents also reference continued coordination with MCAS Beaufort to address congestion during shift changes and to maintain emergency access routes through the U.S. 21 corridor.

The Marine Corps has additionally implemented procedural and technology-based upgrades to improve entry processing, including the use of advanced identification systems and lane management protocols during peak travel hours. Together, these operational and incremental infrastructure measures have allowed the installation and surrounding community to sustain efficient traffic circulation without major roadway expansion.

Post Office Facility

Andersen Air Force Base – Yigo, Guam

On Andersen Air Force Base, a U.S. Postal Service facility was in a location prioritized for facilities that support future missions. With close collaboration with the U.S. Postal Service, sources relate that the Department of Defense funded relocation of the facility to a nearby site, freeing the area for mission-focused development. Coordination among base engineers and the Postal Service ensured continued service during the relocation.

Gate and Commercial Access Congestion

Cape Canaveral Space Force Station – Brevard County, Florida

Cape Canaveral Space Force Station (CCSFS) lies within a complex transportation setting shared with Port Canaveral and the surrounding municipalities. The installation's access routes — U.S. Highway 1, State Road A1A, and State Road 401 — serve overlapping military, commercial, and civilian traffic associated with launch operations, port logistics, and regional commuting. The Florida Department of Transportation (FDOT) and the Space Coast Transportation Planning Organization (SCTPO) identify these corridors as critical to both military and port functions. Projects listed in the SCTPO Transportation Improvement Program and Long Range Transportation Plan include resurfacing, intersection upgrades, and safety improvements implemented jointly by FDOT District 5, Brevard County, and municipal partners.

Congestion has grown around Port Canaveral and CCSFS as operations and visitor activity have expanded. The Port Authority has initiated a $500 million infrastructure program, including parking and traffic-flow redesigns, to alleviate roadway pressure, while FDOT and SCTPO continue to coordinate corridor improvements and resiliency planning. The 2024 Draft Environmental Assessment for Eastern Range Planning and Infrastructure Development at CCSFS notes related infrastructure coordination between the U.S. Space Force and state transportation agencies. Together, these ongoing, multi-agency efforts seek to manage access within a constrained coastal corridor.

Pedestrian and Multimodal Conflicts

Keesler Air Force Base – Biloxi, Mississippi

Keesler Air Force Base's former Main Gate intersected both a rail corridor and local streets near downtown Biloxi, creating safety conflicts and congestion during peak hours. The configuration forced drivers, pedestrians, and cyclists to share constrained crossings within a mixed-use area of homes, businesses, and transit routes. To address these issues, the City of Biloxi and Keesler AFB undertook a coordinated realignment project to construct a new Main Gate complex on Division Street, shifting the entry eastward to connect directly with Interstate 110 and removing the at-grade rail crossing from daily circulation.

The $37 million project included a new visitor control center, additional inspection lanes, and improved sidewalks and signalized intersections that tie into the City's street network. Funding came from Air Force military construction appropriations supplemented by Mississippi state contributions and BP settlement funds. The new gate opened in 2022, with both City and base officials highlighting improved safety and reduced traffic conflicts as key outcomes

Community Sensitivity and Character

Wright-Patterson AFB – Dayton, Ohio

When Wright-Patterson Air Force Base and the Ohio Department of Transportation closed a section of State Route 444 through the City of Fairborn in 2012, nearby residents expressed concern about the visual and physical separation that new fencing and access controls could create between the community and the installation. In response, the base worked closely with Fairborn city officials to realign local streets, add landscaping buffers, and ensure that the rerouted highway maintained local access to adjacent neighborhoods and commercial areas.

These coordination efforts were documented through public announcements and local reporting at the time of the Route 444 closure. The resulting configuration maintained community connectivity while improving installation security and traffic management. The City of Fairborn and Wright-Patterson's 88th Civil Engineer Directorate jointly oversaw the design of the new connector roadway and associated neighborhood access points.

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Risk and Vulnerability Analysis

5

Inside Chapter 5...

This chapter evaluates the risks and vulnerabilities that affect the Indian Head transportation corridor's ability to provide reliable, safe, and controlled access between the Town of Indian Head, NSF Indian Head, and the regional network. Building on conditions documented in Chapters 1 through 4, it identifies where routine operations or modest disruptions create readiness-relevant failure conditions, with emphasis on gate operations, corridor reliability, and operational control. The findings in this chapter provide the analytical basis for the alternatives and implementation actions presented in Chapter 6.

Risk Analysis Framework

The Town of Indian Head and NSF Indian Head rely on the Indian Head Highway corridor for reliable, safe, and controlled access to the regional transportation network. In this chapter, risk refers to the likelihood that routine operations or modest disruptions compromise essential access or mobility functions. The analysis focuses on conditions where routine operations or modest disruptions reduce reliability, safety, or operational control.

Isolated incidents are considered only to the extent that they indicate a systemic vulnerability. Gate-running events, which prompted the initiation of this study, are one such indicator. Building on the conditions documented in earlier chapters, this analysis evaluates the risks to readiness, recognizing the corridor's dual role as both a community transportation artery and a critical access route supporting installation operations.

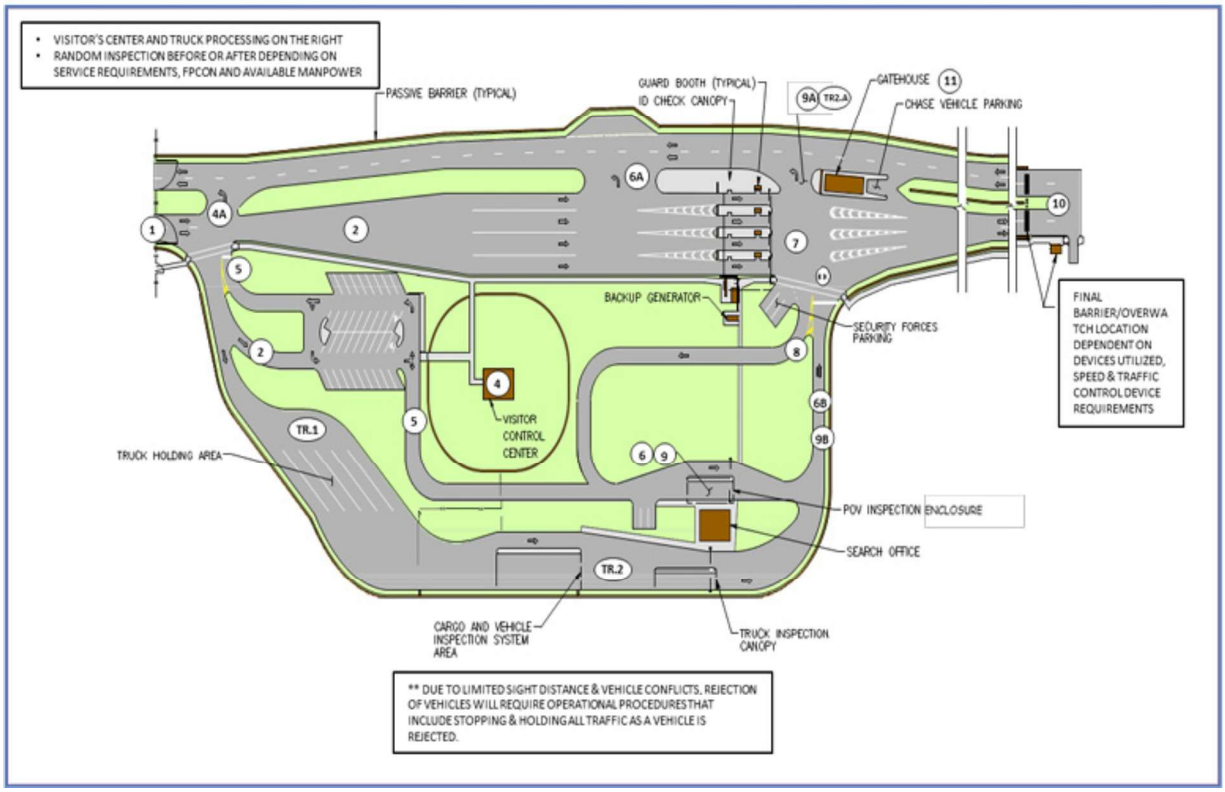
Gate and Approach Vulnerabilities

Like other major employment centers, NSF Indian Head experiences increased congestion during shift changes. However, this routine traffic pattern is further complicated by boundary and gate constraints shaped by the installation's long, intertwined history with the surrounding community, including decades of highly permeable boundaries.

Figure 5-1 shows the model layout for a new entry control facility at a military installation, according to Unified Facilities Criteria (UFC) 4-022-01, *Entry Control Facilities/Access Control Points* (2017). It assumes the presence of enough undeveloped land inside the installation boundary to create queuing lanes before the covered guardhouses and a commercial vehicle inspection process that entirely bypasses the security checks for private vehicles at guardhouses. Many installation gates constructed before the implementation of modern security standards cannot meet these ideal design conditions. Land outside the NSF Indian Head's Main Gate and most alternate gates are already developed with residential or public uses, while the remaining undeveloped land is highly valued recreational open space.

The study team examined how the outside community could support modern entry-control standards at the NSF Indian Head's Main Gate. While on-installation conditions are outside the scope of this study, the Navy is considering developing the parcel immediately behind the Pass and ID Office to increase capacity, which supports alternatives considered in Chapter 6. Areas northwest of the Main Gate contain existing administrative buildings, while areas southwest are limited by Explosive Safe-Quantity Distance (ESQD) arcs, limiting development options.

Figure 5-1 Illustration of the Modern Standard for a New Military Installation Gate From UFC 4-022-01, *Entry Control Facilities/ Access Control Points*



Gate Running and Physical Security

The gate running incidents that prompted this study involved both confused and impaired drivers, not hostile intent. Two corridor features contributed to these events:

- **Insufficient advance signage** warning drivers that they were approaching a military installation, leading some to mistake the gate complex for a toll booth; and
- **A lack of physical or visual changes** in the roadway to indicate that the public highway was ending. These conditions made it more likely that drivers would be surprised to learn that Indian Head Highway, a major thoroughfare from the boundary of Washington, D.C., essentially runs straight into the NSF Indian Head Main Gate.

In response to several incidents, the Town of Indian Head installed new signage in December 2023, and no new incidents have occurred since. However, there are opportunities for better wayfinding.

To date, no physical changes to the roadway geometry, cross section, or surface treatment have been implemented to signal the transition from a public highway to a controlled installation access point. As a result, the approach to the NSF Indian Head Main Gate continues to read as a continuous arterial roadway, with no visual or physical cues indicating that drivers are leaving a general-purpose transportation facility and entering a secured environment. Vehicle speeds along Indian Head Highway remain an ongoing concern within the Town, separate from but relevant to gate operations. Higher approach speeds reduce the time available for drivers to recognize and respond to access control features and increase the severity of consequences when confusion occurs.

Horizontal diversion and traffic calming measures could serve a dual function by reinforcing a perceptible change in roadway character as drivers approach the gate while also supporting broader community safety objectives. Measures that reduce speeds or alter driver expectations may provide benefits, especially near the school and the Town Green, where high speeds introduce safety concerns to the heightened pedestrian activity and where local circulation needs are greater.

Any such interventions would require careful calibration to avoid unintended consequences. Measures extending beyond the existing right-of-way may affect adjacent land uses, while overly restrictive designs could impact safety of transporting base-critical materials, interfere with traffic flow, and aggravate congestion. Given existing congestion and the corridor's limited redundancy, changes must preserve operational capacity and avoid introducing new bottlenecks or delay points.

Gate Efficiency and Queue Spillback

Analysis conducted by Matrix engineers indicates that the throughput capacity of Indian Head Highway itself is sufficient to accommodate existing traffic volumes as well as projected increases associated with new or expanded missions at NSF Indian Head. From a roadway capacity standpoint, the corridor is not operating at or near its structural limit.

The implication of this finding is that observed congestion in the vicinity of the Main Gate is not driven by insufficient roadway capacity, but rather by limitations in the ability to process vehicles at the point of access control. This finding is consistent with observed conditions documented in Chapter 2, where congestion is localized to the gate area rather than distributed along the corridor. This condition is most evident during periods with elevated volumes of contractor vehicles requiring credentialing or pass issuance, which slows processing and disrupts queue progression.

When processing capacity is exceeded, queues extend beyond the gate complex into adjacent community areas, including paved spaces not intended for sustained queuing. Under more constrained conditions, queues have extended into one travel lane of Indian Head Highway, creating operational and safety concerns beyond the installation boundary.

The limited space immediately in front of the guardhouse further compounds these issues. This area functions simultaneously as the intersection with Pye Street/Earl Roade, a location where drivers who do not intend to enter the installation may turn around, and a reentry point for vehicles who have completed processing at the Pass and ID facility. These overlapping movements interact with traffic circulating toward the alternate gate, the Senior Center, and the Post Office loading dock, creating a complex operational environment within a constrained footprint.

The Navy has considered the development of a new truck inspection facility located behind the existing Pass and ID area. While such a facility could improve certain inspection functions, it would require continued truck access along the right lane adjacent to the guardhouses, maintaining interaction between freight movements and general vehicle processing.

Matrix also evaluated potential approaches to further increase gate throughput, with particular attention to opportunities that could be implemented in coordination with installation-side improvements that are currently notional. These investigations focused on operational and spatial efficiencies rather than roadway widening, consistent with the finding that corridor capacity is not the primary constraint.

Commercial Cargo and Sensitive Material Movements

Commercial vehicle movements, including movements associated with sensitive commercial material, create a readiness risk primarily where they interact with access control processing at the Main Gate. The gate area is constrained by limited space immediately up the road from the guardhouses and by the circulation pattern around Earl Road and Pass and ID, which concentrates multiple vehicle decision points in a small area. Under conditions when commercial processing and general access processing occur concurrently, the result can be reduced queue stability and increased spillback into adjacent community paved areas and, in severe cases, into a travel lane of Indian Head Highway.

Because the corridor's roadway throughput is not the controlling constraint, the primary vulnerability for commercial movements is not route capacity but processing and separation. The study therefore treats traffic pattern alternatives for commercial cargo as a question of how commercial vehicles are processed and how their movements are separated, to the extent practicable, from private-vehicle queueing within the existing approach and gate footprint.

Stakeholders did not support introducing new access roads for commercial traffic, including concepts that would require creating a new roadway connection within the Indian Head Rail Trail right-of-way. The study's assessment of commercial cargo patterns is therefore limited to improvements and operational approaches that do not rely on new corridors.

Speeding

Vehicle speeding occurs both on approaches to the NSF Indian Head Main Gate and on outbound movements leaving the installation. This condition affects not only gate operations but also the broader community context in which the corridor functions.

Speeding is a direct concern for the Town's long-term objectives to support a walkable and active town center. Higher vehicle speeds are incompatible with pedestrian-oriented environments and undermine efforts to improve local circulation, safety, and public space quality. The issue is of particular concern in areas with heightened pedestrian and community activity, including the school and nearby recreational areas. Elevated speeds in these locations increase risk exposure for pedestrians and cyclists and reduce the margin for error in routine movements. The Indian Head Volunteer Fire Department and EMS reported a near collision by a vehicle exiting the Main Gate at speed and a fire apparatus exiting vehicle bays. They also report a vehicle that had stopped to allow a fire apparatus to exit a bay being rear-ended by a speeding vehicle exiting the installation, forcing the response team to split resources between the original call and the new accident. These incidents illustrate the potential for severe consequences when speeding coincides with emergency response activity.

Enforcement presence is intermittent and necessarily limited in duration. Sheriff patrols are observed periodically in one travel direction or the other; however, speeding behavior adjusts in response to visible enforcement and typically resumes once patrols are no longer present. This pattern suggests that sporadic enforcement alone has limited effectiveness as a speed management strategy.

Network Dependence and Disruption Management

The transportation corridor's vulnerability is shaped not only by conditions at the Main Gate, but also by the limited redundancy of the surrounding network and by how agencies manage disruptions when normal operations are degraded. The study area relies on a small set of routes and intersections to connect the Town and NSF Indian Head to the broader region, and even localized disruptions can constrain access, delay response, and complicate coordination across jurisdictions. This section summarizes the corridor's dependence on MD 210 and describes disruption management vulnerabilities identified through stakeholder engagement and the tabletop exercise, with emphasis on conditions that are plausible under routine or moderately adverse circumstances.

Reliance Upon MD 210

MD 210 functions as the sole major regional thoroughfare connecting NSF Indian Head and the Town of Indian Head to the broader transportation network. Other routes exist but do not serve a comparable role. Strauss Avenue, while providing local connectivity, is narrow and incorporates traffic calming measures that intentionally discourage through traffic and redirect regional movements to MD 210. The Indian Head Rail Trail corridor represents a continuous right-of-way that, in theory, could support additional transportation capacity, but it does not currently function as a vehicular alternative.

The implications of this reliance were explicitly tested through the project's tabletop exercise, which examined operational responses to disruptions affecting MD 210. These discussions included representatives from the installation, the Town, the County, and other stakeholders, and focused on both access constraints and response coordination.

The analysis identified that a worst-case access scenario would not be representative of routine or moderately adverse conditions. Specifically, the four lanes of MD 210 would need to be rendered entirely impassable along the critical segment between the Town and MD 225, and that disruption would require evacuation of the peninsula or coincide with a separate emergency that required such an evacuation. While such a scenario is theoretically possible, it requires a level of compounding failure that is unlikely under even moderately adverse conditions.

Based on the tabletop exercise and stakeholder feedback, this scenario was not considered maximally credible for the purposes of this study and was therefore not used as the sole or primary basis for recommendations. Instead, the analysis emphasizes more probable conditions that affect access reliability and operational performance without assuming complete loss of the MD 210 corridor.

Off-Installation Emergency Traffic Operations

Due to the unlikely event of catastrophic failure of the MD 210 corridor, the primary off-installation emergency vulnerability evaluated in this study is not the absence of a fully developed alternate evacuation route concept, but the ability to manage traffic access and control under more likely emergency conditions.

A separate operational gap identified during the tabletop exercise was the lack of an established method for installation or local operators to rapidly inform law enforcement which personnel or vehicles are approved to pass through an area that has been restricted or quarantined due to an emergency. This gap creates risk that perimeter control actions necessary for public safety could unintentionally delay mission-essential movement, emergency response access, or other time-sensitive traffic that requires controlled passage. This vulnerability is procedural rather than geometric. It affects readiness even when the corridor remains passable because it concerns how agencies coordinate access authorization and traffic control decisions in real time.

Enabling Conditions and Cross-Jurisdiction Constraints

Several vulnerabilities affecting the Indian Head corridor are not physical deficiencies in the roadway itself, but conditions that shape whether problems can be clearly defined and whether solutions can be implemented. These include jurisdictional and ownership uncertainties, fragmented planning responsibilities, and location-specific constraints that influence feasibility, sequencing, and coordination. While these issues do not always cause operational failures on their own, they can delay corrective action, complicate design and permitting, and weaken the ability of partners to pursue shared improvements. This section summarizes the cross-jurisdiction constraints identified during the study that must be resolved or managed to support effective corridor improvements.

Unclear Ownership and Boundary Definition

Two areas of disputed or unclear property ownership were identified that directly affect the analysis in this study and the feasibility of potential recommendations. These uncertainties have practical implications for access management, infrastructure planning, and implementation.

The first involves a disagreement regarding the boundary between NSF Indian Head and the Town of Indian Head. This uncertainty affects how certain roadway segments, access features, and adjacent areas are characterized for planning and operational purposes.

The second concerns the ownership of the parcel on which the Post Office is located. This parcel plays a functional role in the gate area context, and uncertainty regarding ownership complicates discussions related to access, circulation, and potential physical improvements.

A shared and documented understanding of property ownership is critical to defining the nature of existing challenges and to identifying viable solutions. It is also a prerequisite for any future construction, operational modification, or capital improvement, as ownership determines jurisdiction, authority, and responsibility.

Lack of Overall Plan and Coordination Forum

At present, there is no single, comprehensive transportation plan that addresses access, circulation, and operational issues affecting both the Town of Indian Head and NSF Indian Head. These efforts are coordinated through existing relationships and subject-specific reports, but they are not integrated within a single transportation framework. Instead, transportation-related issues are addressed through separate and partially overlapping efforts, including a standalone sidewalks plan, this readiness-focused transportation study, and a Town Center plan. Each of these documents serves a specific purpose, but none provides a unified framework for considering how community mobility, installation access, and corridor operations interact.

The absence of a consolidated plan means there is no single forum or reference point for the Town, the installation, and other stakeholders to jointly evaluate tradeoffs, coordinate priorities, or sequence actions related to transportation. As a result, issues that span jurisdictional boundaries or functional areas must be addressed incrementally rather than within a shared strategic context.

Stormwater and Localized Flooding

Stormwater and flooding were not identified by stakeholders as primary drivers of corridor vulnerability within the study area, in part because the Town's topography limits broad exposure to ponding that would block the primary approach to the installation. Stakeholders did identify a localized flooding condition between the Senior Center and nearby base buildings but did not describe it as impeding access, including access to the alternate gate.

Although stormwater was not identified as a major access constraint within the corridor, County hazard mitigation documentation identifies a storm-related flooding location on MD 210 at Lower Wharf Road, with reported depths of 1–2 feet and noted impacts including limited access for school buses. This location is immediately outside the study area, just east of the MD 210 and MD 225 junction, and is relevant as a near-junction condition that may affect corridor performance during major storm events.

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6 Recommendations

Inside Chapter 6...

This chapter documents the actions evaluated to address the corridor vulnerabilities identified in Chapter 5 and documents the stakeholder policy committee's disposition of each action. It presents the endorsed recommendations, summarizes items retained for future consideration, and documents other evaluated actions that were not advanced, to preserve transparency and the decision record.

How Alternatives Were Developed and Reviewed

Alternatives were developed to address the corridor risks and failure conditions identified in Chapter 5, with emphasis on actions that improve access reliability, safety, and controlled entry to NSF Indian Head while also supporting community mobility. Alternatives were informed by stakeholder input, field observations, technical review of corridor conditions, and review of relevant plans and programs that shape what can be advanced within existing authorities and constraints.

Alternatives were reviewed through a stakeholder policy committee process that considered feasibility under current conditions, effectiveness in addressing key corridor vulnerabilities, and the ability of responsible agencies to advance the action within reasonable time and resource limits. Each alternative was assigned to one of three outcomes: endorsed as a recommendation, retained for future consideration, or evaluated but not advanced.

To ensure transparency and consistent documentation, each alternative is presented in a standard format that includes:

- Issue addressed
- Description and intent
- Lead entity and coordination needs
- Key constraints, such as authority, right-of-way, security, funding, and ownership
- Recommended next steps

Recommendations

This section presents the actions endorsed by the stakeholder policy committee as the Study's recommendations. Each recommendation is intended to reduce one or more of the corridor vulnerabilities identified in Chapter 5 and to strengthen the reliability, safety, and manageability of access to NSF Indian Head while supporting the Town's transportation needs.

Recommendations are documented in a consistent format to support implementation. Each recommendation summary identifies the issue addressed, the intended outcome, the likely lead entity and required coordination partners, and key constraints that may affect timing or feasibility. Lead roles reflect current jurisdiction and typical responsibilities and may require confirmation by the responsible agencies.

Detailed implementation steps, estimated costs, and recommended funding pathways for each endorsed action are compiled in Appendix A, Implementation Matrix.

Boundary Survey

Issue Addressed

Several other recommendations depend on a clear understanding of jurisdictional boundaries, right-of-way limits, easements, and ownership near the gate approaches and within the Town street network. Uncertainty about these limits can delay design, permitting, funding applications, and construction coordination.

Description and Intent

Conduct a boundary survey (and compile available plats, right-of-way maps, and easement records) for the priority project areas identified in this Study. The intent is to establish a reliable "base map" of property lines and rights-of-way that all partners can use when scoping improvements, confirming responsibility, and identifying where permissions or agreements are required.

Lead and Coordination

- Lead: Town of Indian Head
- Coordination: NSF Indian Head (installation boundary and access control areas), Charles County agencies as applicable, and any affected private property owners.

Key Constraints

- Availability and quality of existing plats and right-of-way records.
- Access to survey control points and sensitive areas near the installation boundary.
- May align survey limits to the highest-priority project footprints to control cost.

Near-Term Next Steps

- Confirm the priority survey extents based on the endorsed recommendations and likely project footprints.
- Identify existing plats/right-of-way mapping that can reduce field effort.
- Coordinate access requirements for any areas adjacent to installation-controlled property.
- Procure survey services and deliver a GIS-compatible layer for shared use across project partners.
- Update County GIS information accordingly.

Transportation Master Plan

Issue Addressed

Several corridor and in-town needs identified in Chapter 5 require coordinated direction on priorities, design standards, and sequencing across the Town, NSF Indian Head, Charles County, and MDOT SHA. Without a current transportation master plan, near-term actions can advance in isolation, and larger investments can be harder to justify, scope, and fund.

Description and Intent

Prepare a Transportation Master Plan for the Town and its interfaces with the NSF Indian Head access routes. The plan should define near-, mid-, and long-term transportation priorities; document existing conditions and constraints; establish multimodal objectives; and identify a realistic program of projects that can be advanced through available funding pathways. The intent is to create a single, agreed-upon planning basis that supports project development, grant applications, interagency coordination, and future updates as conditions change.

Lead and Coordination

- **Lead**: Town of Indian Head
- **Coordination**: NSF Indian Head, Charles County, MDOT SHA, emergency response partners, and key community stakeholders

Key Constraints

- Need to align with state-controlled facilities and standards where applicable
- Coordination across multiple jurisdictions and decision processes
- Data availability for traffic, safety, and pedestrian conditions near installation access

Near-Term Next Steps

- Define plan scope, limits, and coordination partners.
- Assemble baseline data and prior planning products to avoid rework.
- Establish criteria for prioritization (safety, reliability, readiness support, feasibility).
- Develop a phased project list with order-of-magnitude cost ranges and candidate funding sources.

Pursue Pedestrian Improvement Funding

Issue Addressed

Pedestrian gaps and crossing constraints affect safety and multimodal access to community destinations and key readiness partner functions. Several priority improvements require external funding and a defined, fundable project scope.

Description and Intent

Pursue pedestrian improvement funding and visual cue enhancement funding by aligning this Study's endorsed pedestrian-related actions with the funding pathways enabled by the recently finalized bicycle and pedestrian planning work, including the MD 210 Bicycle and Pedestrian Feasibility Study. Visual cues to slow down vehicles approaching the gate can improve the pedestrian experience, create a "town feel", and help avoid sudden stops in the vicinity of the nearby elementary school, post office, and gate. The intent is to move from needs to implementable projects by packaging priority improvements into discrete scopes that match program eligibility, schedules, and documentation requirements.

Lead and Coordination

- **Lead**: Town of Indian Head
- **Coordination**: MDOT SHA where improvements affect MD 210, Charles County as applicable, and NSF Indian Head where improvements affect access

Key Constraints

- Program eligibility, match requirements, and application schedules vary and can drive project packaging.
- Right-of-way, drainage, and utility constraints may limit feasible concepts or increase cost.
- Coordination needs can extend timelines when improvements touch state facilities or the installation boundaries.

Near-Term Next Steps

- Confirm pursuit of MD 210 Bicycle and Pedestrian Feasibility Study recommendations or subset thereof
- Confirm jurisdiction and right-of-way needs early to avoid ineligible scopes.
- Prepare scoping-level descriptions and order-of-magnitude costs suitable for applications.
- Coordinate with SHA on appropriate program pathways and sponsorship.
- Maintain a funding calendar and assign responsibility for tracking and submissions.

Town Speed Enforcement

Issue Addressed

Vehicle speeds on key approach roads and Town streets increase crash risk, reduce driver compliance, and contribute to unstable traffic conditions under routine and disrupted operations.

Description and Intent

Strengthen speed management through a targeted enforcement approach focused on the highest-risk locations and times. The intent is to improve safety and predictability for all users, reinforce appropriate driver behavior near sensitive access areas, and reduce the likelihood that routine conditions may escalate into avoidable incidents.

Lead and Coordination

- **Lead**: Town of Indian Head (through its law enforcement arrangements)
- **Coordination**: Charles County Sheriff's Office, other enforcement partners as applicable

Key Constraints

- Enforcement authority and staffing availability
- Alternatively, funding for automated speed enforcement cameras
- Need to focus efforts where measurable safety and compliance gains are most likely
- Public communication needs to reduce confusion and support consistent compliance

Near-Term Next Steps

- Identify priority enforcement corridors, segments, and time windows based on observed speeding and conflict points.
- Coordinate enforcement coverage and reporting expectations with the responsible agency.
- Pair enforcement with simple communications (variable message, social, or community notices) to set expectations.
- Establish a basic before-and-after tracking approach (citations/warnings, observed speeds if available, and crash or near-miss indicators).

Wayfinding and Driver Navigation Improvements

Issue Addressed

Unclear routing cues and inconsistent driver expectations can increase last-minute lane changes, wrong turns, and hesitation near key decision points. These behaviors add friction to traffic flow, increase safety conflicts, and can worsen congestion during peak periods or disrupted conditions.

Description and Intent

Improve wayfinding and driver navigation guidance so that drivers receive clear, early, and consistent cues on where to go and what to expect as they approach the Town and NSF Indian Head access points. The intent is to reduce confusion-driven maneuvers, stabilize traffic operations, and support safer movements for all users, including commercial vehicles, visitors, and inexperienced drivers.

Lead and Coordination

- **Lead**: Town of Indian Head
- **Coordination**: NSF Indian Head (where messages relate to installation access), Charles County as applicable, and MDOT SHA where improvements affect state facilities or signage standards

Key Constraints

- Jurisdiction and control of signs and messages varies by roadway owner.
- Sign standards and approvals must be coordinated across Navy, Town, County, and MDOT SHA
- Messaging must remain consistent with installation access control requirements.

Near-Term Next Steps

- Identify the highest-impact decision points and “confusion locations” based on observed behavior and stakeholder input.
- Develop a coordinated wayfinding plan that aligns Town guidance with installation access needs and any state signage requirements.
- Implement quick improvements first (sign placement, consistency, advance warning) before more complex changes.
- Confirm a maintenance responsibility for signs and messaging so the system remains consistent over time.

Shifting Taper Lane Reconfiguration

Issue Addressed

Indian Head Highway approaches the Main Gate without a clear physical transition that signals to drivers that the public thoroughfare is ending and that controlled access conditions are beginning. Geometric cues that shape driver behavior are needed where roadway conditions can contribute to driver inattention or higher operating speeds.

Description and Intent

This recommendation advances a concept-level lane reconfiguration that uses a constructed shifting taper to create a self-enforcing alignment cue for drivers. The intent is to improve driver attentiveness through a clearer alignment path, support the existing operating context as drivers approach the gate area, and expand pedestrian refuge space between the Town Green and residential areas south of Indian Head Highway.

Figure 6-1 Shifting Taper

Concept Design and Options Evaluated

Multiple geometric options were considered. The concept presented introduces the strongest practical physical cue within the available roadway footprint, using large median islands and a shifting taper to emphasize that roadway conditions are changing as drivers approach the gate area. The layout was developed to fit largely within the existing right-of-way while maintaining critical access movements.

Order-of-Magnitude Construction Cost

The planning-level probable construction cost for the shifting taper concept is $673,738.50. Detailed line-item estimates and assumptions are provided in the construction estimate appendix and should be treated as planning-level information subject to refinement during design.

Key Constraints

Several geometric options were considered to introduce a clear physical cue that drivers are entering a more controlled access environment. A traditional chicane (a back-and-forth S-shape) would require multiple curb extensions and larger lane shifts than the available roadway width can accommodate without encroaching into adjacent lanes and increasing impacts on nearby features. A larger, smoother curve was also considered as a less-abrupt way to influence speeds and driver attention, but it would still require a greater horizontal shift and longer transition length than can be accommodated in this constrained area without increasing impacts, including encroachments onto the Town Green and conflicts with existing access points. The shifting taper concept was advanced because it provides a clear alignment cue almost entirely within the existing right-of-way while maintaining the ability to make left turns onto Town Street and Mattingly Avenue.

Lead and Coordination

- **Lead**: Town of Indian Head
- **Coordination**: MDOT SHA (if applicable) and other partners as required for approvals and implementation sequencing

Near-Term Next Steps

- Confirm the preferred concept option and the limits of work for implementation.
- Confirm ownership of affected properties and required approvals.
- Validate constraints that could materially change cost (utilities, drainage, ROW).

Items Retained for Future Consideration

This section documents alternatives that stakeholders viewed as potentially beneficial but that cannot be advanced under current conditions. Constraints may include implementation authority, cost, required coordination, operational impacts, or unresolved technical dependencies. These items are not recommendations of this Study and are not included in the implementation roadmap.

They are included to preserve the decision record and to support future planning if conditions change. For each item, the narrative summarizes what the action would entail, the primary barrier(s) to implementation, and the specific conditions that would need to change for the item to be reconsidered.

Automated Pass and ID Process

Issue Addressed

Manual or staff-intensive credentialing steps can contribute to delays and variability in processing time, which can increase queuing and reduce the predictability of access during peak periods or disruptions.

Description and Intent

This concept would use automation to streamline elements of the Pass and ID process, with the goal of reducing processing time per vehicle, improving consistency, and lowering the likelihood that access delays may propagate into broader corridor congestion. Automation could include preregistration, appointment or scheduling tools, document verification workflows, or other technology-enabled screening steps, subject to installation security requirements.

Lead and Coordination

- **Lead**: NSF Indian Head (Pass and ID and installation security functions)
- **Coordination**: Navy security policy stakeholders as applicable, the Town and County for coordination on traffic management impacts, and any supporting technology or credentialing partners

Primary Barriers to Implementation Now

- Security policy and compliance requirements that govern credentialing and verification methods
- Technology procurement, cybersecurity, and data management requirements
- Need to integrate any automated process with existing access control systems and staffing models
- Potential requirement for higher-level approvals beyond local implementation authority

Conditions That Could Support Reconsideration

- Adoption or authorization of an approved automated credentialing approach within applicable Navy security policy
- Identification of a feasible technology pathway that meets cybersecurity and privacy requirements
- Availability of funding and a responsible sponsor for implementation and long-term system support
- Agreement on an operational concept that avoids shifting congestion impacts on other locations

Add Commercial Vehicle Lane into Pass and ID

Issue Addressed

The current Pass and ID area has limited space to accommodate commercial vehicles for staging, processing, and turning movements. When trucks must share constrained space and circulation with other vehicles, commercial vehicle processing can become a bottleneck and can increase variability in queue operations.

Description and Intent

This concept would add a dedicated commercial vehicle lane into the Pass and ID process and provide additional space for commercial vehicle maneuvering. It would align with the notional Navy plan to improve truck inspection facilities. The intent is to create a clearer, more workable processing path for trucks, reduce conflicts within the constrained Pass and ID circulation area, and improve operational predictability.

Figure 6-2 Commercial Vehicle Lane Concept

Concept Design and Options Evaluated

The concept presented combines the shifting taper lane reconfiguration with a dedicated commercial lane. The layout balances two priorities: limiting impacts on the Town Green and providing a smooth turning path for commercial vehicles. Alignments closer to the Post Office would create sharper turning angles that force trucks to slow significantly to turn safely, which would create a new congestion point. The selected alignment also interacts with the existing pedestrian crosswalk, requiring a small shift in crosswalk location to maintain safe operations.

Order-of-Magnitude Construction Cost

The planning-level probable construction cost for the combined commercial vehicle lane and shifting taper concept is $1,073,842.00. Detailed line-item estimates and assumptions are provided in the construction estimate appendix and should be treated as planning-level information subject to refinement during design.

Lead and Coordination

- **Lead**: Town of Indian Head
- **Coordination**: NSF Indian Head (Pass and ID and installation access control functions), Charles County (traffic management interfaces), MDOT SHA where changes affect MD 210 or require state coordination, and USPS if concepts affect Post Office property access or operations

Primary Barriers to Implementation now

- Limited space near Pass and ID for commercial vehicle staging and maneuvering constrains feasible layouts and may require additional property coordination.
- The concept alignment passes through the Post Office employee parking area, which would require confirming parcel ownership and coordinating with USPS on access, operations, and any required approvals.
- The lane was not routed directly on the existing gravel road because the Town is planning for additional recreational facilities north of that road, and stakeholders viewed that setting as incompatible with a commercial lane.

Conditions That Could Support Reconsideration

- Confirmation that the commercial lane layout feeds into adequate commercial vehicle space for both processing and maneuvering on the installation without creating new bottlenecks or spillback risks
- Resolution of property ownership and access requirements, including USPS participation if needed
- Identified funding sponsor and a delivery path acceptable to the installation and roadway owners
- Agreement on operating procedures that align with installation security requirements and do not shift queuing problems to other locations

Evaluated but Not Advanced

This section documents alternatives that were evaluated during the Study but were not endorsed by the stakeholder policy committee for further advancement. These items are included to preserve the decision record and to show the range of options considered to address the corridor vulnerabilities identified in earlier chapters.

Items in this section are not recommendations and are not proposed for implementation. Each item briefly describes what was considered and the primary reason it was not advanced.

Off-Installation Park & Ride/Shuttle

Issue Addressed

Lack of parking for staff after the installation modernization plan is an operational concern. Peak-period congestion and queue spillback can affect travel time reliability within the corridor and can create conflicts at key decision points near the installation access area.

Description and Intent

This concept would establish an off-installation park-and-ride location with a shuttle service to reduce the number of vehicles traveling to the gate area during peak periods. It would also provide an off-site parking supply to address anticipated on-installation parking constraints associated with installation modernization. The intent is to shift some trips to shared rides, reduce parking pressure near the gate, and improve corridor flow during high-demand periods.

Lead and Coordination

- **Lead**: Charles County and regional transit partners, with Town support
- **Coordination**: NSF Indian Head (access, security, and user needs), major employers, and any private site owners that could host a park-and-ride

Key Constraints

- Identifying a suitable site with adequate capacity, safe access, and willing ownership
- Operating cost and long-term funding for shuttle service
- Ridership uncertainty and the need for sustained participation to achieve meaningful congestion reduction
- Service design challenges (hours, frequency, eligibility, and coordination with installation access procedures)

Basis for Not Advancing

Stakeholders did not endorse this concept for advancement because it requires a continuing operating program with sustained ridership participation, depends on identifying and securing an appropriate off-site location, and introduces ongoing funding and management requirements. While it could help address future parking constraints, stakeholders did not view the likely benefits as sufficient to justify the long-term operating complexity and cost under current conditions.

Relocate Post Office

Issue Addressed

The current Post Office location and its associated traffic patterns can create local circulation conflicts near the gate area and can constrain how space is used for other access, safety, or circulation improvements.

Description and Intent

This concept would relocate the Post Office to reduce traffic activity and circulation conflicts in the constrained area near the installation access environment. The intent is to simplify vehicle movements, reduce local turning and stopping activity near sensitive access areas, and potentially free space for other transportation or access management improvements.

Lead and Coordination

- **Lead**: USPS
- **Coordination**: Town of Indian Head, Charles County, NSF Indian Head, and any potential host site owners

Key Constraints

- USPS site selection, approval processes, and funding constraints
- Need to identify a suitable alternate site that meets USPS operational requirements and community access needs
- Potential community impacts if relocation reduces walkability or convenience for residents
- Long timelines and uncertainty for federal facility relocation

Basis for Not Advancing

Stakeholders did not endorse this concept for advancement because it is largely outside local control, would require federal decisions and funding, and has uncertain timing and feasibility relative to other actions that can be advanced more directly by the Town, County, and installation partners.

Add Inbound Lane into Main Gate

Issue Addressed

Inbound queuing at the Main Gate during peak periods or disruptions can reduce travel time reliability, create spillback risk, and increase conflict at upstream decision points.

Description and Intent

This concept would add an additional inbound lane at the Main Gate to increase processing capacity and reduce the likelihood that inbound queues extend into the corridor. The intent is to improve throughput during peak arrivals, reduce congestion sensitivity to minor disruptions, and provide more operational flexibility for gate processing.

Lead and Coordination

- **Lead**: NSF Indian Head
- **Coordination**: Town of Indian Head and Charles County for traffic management interfaces, and MDOT SHA where changes affect MD 210 or require state coordination

Key Constraints

- Space limitations within the gate area and potential impacts on existing facilities and circulation
- Security and access control requirements that govern lane configuration and processing procedures
- Construction impacts on gate operations during implementation
- Potential for downstream constraints to limit realized benefits if processing procedures remain unchanged

Basis for Not Advancing

Stakeholders did not endorse this concept for advancement because of the physical and operational constraints within the gate area and because a foreseeable impact would be an increase in traffic speeds and risks to pedestrians and cyclists in the area, which is contrary to the purpose of the Study.

Commercial Vehicle Inspection Gate (Alternate Gate)

Issue Addressed

Commercial vehicle inspection and processing needs can contribute to queuing and operational complexity when trucks must use the Main Gate access stream. A dedicated processing path using the existing alternate gate could reduce conflicts, even if planned upgrades to the truck inspection facility are not implemented in the near term.

Description and Intent

This concept would utilize the current alternate gate located between the Pass and ID Office and Senior Center for commercial vehicle inspection and processing to remove trucks from the main access stream. The intent is to reduce conflicts in the main gate queue, improve predictability for non-commercial traffic, and provide a dedicated space for commercial vehicle screening and maneuvering even if Navy notional plans for improvement of the truck inspection facility were not immediately accomplished.

Lead and Coordination

- **Lead**: NSF Indian Head
- **Coordination**: Town of Indian Head, Charles County, and MDOT SHA as applicable depending on access location and roadway impacts

Key Constraints

- Suitability of the existing alternate gate location for routine commercial vehicle inspection and maneuvering, including available space and circulation
- Security requirements, procedures, and staffing needed to operate commercial processing at the alternate gate
- Traffic control and signage needs to route trucks consistently to the alternate gate without creating new conflicts near Pass and ID and the Senior Center
- Condition and adequacy of any existing inspection area or supporting facilities, and whether interim measures would be acceptable without full facility upgrades
- Potential impacts on adjacent uses near the gate location, including the Senior Center area

Basis for Not Advancing

Stakeholders did not endorse this concept for advancement because it depends on operational and security decisions about using the existing alternate gate for routine commercial processing, including staffing, procedures, and circulation management. Stakeholders also identified uncertainty about whether adequate space and interim inspection conditions could be maintained without the planned truck inspection facility improvements.

Improve Throughput on Strauss Avenue

Issue Addressed

Strauss Avenue is one of the few practical local alternates if MD 210 is entirely blocked. Improving its ability to carry traffic was discussed as a potential contingency measure to reduce isolation risk during a full corridor closure.

Description and Intent

This concept would implement targeted operational and geometric changes on Strauss Avenue to improve traffic flow and reduce bottlenecks. The intent is to increase local network resilience by improving how traffic could move through the Town street system during a rare full closure of MD 210.

Lead and Coordination

- **Lead**: Town of Indian Head
- **Coordination**: affected property owners, Charles County as applicable, and MDOT SHA if changes affect state-controlled facilities or require coordination at interface points

Key Constraints

- Meaningful throughput improvements would likely require widening or expanding the roadway into adjacent private property, which would require negotiations for government acquisition of private property.
- Throughput improvements would also likely require removing or modifying existing speed humps that were installed specifically to discourage cut-through traffic, keep traffic on MD 210, and maintain the intended character of a small country road.
- Removing or reversing those traffic calming measures would be politically sensitive and could conflict with prior community intent for the corridor.

Basis for Not Advancing

Stakeholders did not endorse this concept for advancement because the triggering condition it is meant to address, a full blockage of MD 210, was viewed as unlikely enough that major changes to Strauss Avenue were not justified. In addition, achieving meaningful throughput gains would likely require property acquisition and removal or modification of intentional traffic calming features, creating high implementation risk and political difficulty relative to other actions with clearer feasibility and benefits.

Upgrade Lanes on Rail Trail

Issue Addressed

The corridor has limited redundancy. The rail trail right-of-way was discussed as a potential alternate path only under a severe disruption scenario in which MD 210 is blocked and there is urgent need for access off the peninsula.

Description and Intent

This concept would upgrade the rail trail right-of-way to support expanded emergency access capability or a supplemental connection during major disruptions. The intent is to increase network redundancy for rare, high-consequence events.

Lead and Coordination

- **Lead**: Charles County
- **Coordination**: Town of Indian Head, trail stakeholders and user groups, adjacent property owners as applicable, and NSF Indian Head and MDOT SHA as needed based on connection points

Key Constraints

- The County and community view the rail trail as a major recreational asset and a defining scenic feature, including one of the County's most valued viewpoints.
- Introducing or expanding vehicle access within the corridor, even for emergency purposes, was viewed as highly controversial due to potential impacts on recreational use, safety, and the scenic experience.
- Legal, ownership, and easement constraints could limit the ability to introduce vehicle use within the corridor.
- This option had higher cost and longer timelines compared to other options considered

Basis for Not Advancing

Stakeholders did not endorse this concept for advancement because the scenario it is intended to address, a major MD 210 blockage combined with urgent need for access off the peninsula, was viewed as unlikely enough that the community impacts were not justified. In addition, the proposal conflicts with strong County and community interest in preserving the rail trail as a recreational and scenic asset, and it has a high cost relative to other considered options.

Appendix A: Implementation Plan

A

Appendix A contains the implementation matrix that functions as an action roadmap. Each recommended action includes a lead and key partners, near-term next steps, key dependencies, an estimated implementation timeframe and cost range, and candidate funding pathways with application timing where known. The matrix supports sequencing and prioritization by summarizing feasibility considerations, funding availability, and expected community and mission benefits. For technical basis, see Chapter 6.

ID	Action	Lead and key partners	Timeframe (ROM)	Cost (ROM)	Near-term next steps (condensed)	Funding options and when to apply (or timing notes)
01	Conduct Boundary Survey	Lead: Town of Indian Head. Partners: NSF Indian Head, MDOT SHA, Charles County, affected property owners	3-6 months	$40k-$120k	Confirm survey limits tied to endorsed projects; compile plats/ROW; coordinate access near installation; procure survey; deliver GIS boundary layer	If local funds are available, can start immediately. Also suitable as enabling work bundled into a larger fundable safety/readiness project scope
02	Create Transportation Master Plan	Lead: Town of Indian Head. Partners: NSF Indian Head, Charles County, MDOT SHA, emergency response partners, community stakeholders	9-15 months	$200k-$400k	Define scope and partners; assemble baseline data; set prioritization criteria; produce phased project list with cost ranges and candidate funding sources	Local planning funds. OLDCC IR Study funds for local plans. If structured to produce implementable, readiness-linked projects, consider OLDCC DCIP for implementation-ready outputs (cycle timing varies)
03	Pursue Pedestrian Improvement Funding	Lead: Town of Indian Head. Partners: MDOT SHA (MD 210), Charles County, NSF Indian Head (gate-area interfaces)	6-12 months to package/apply; 18-48 months to deliver after award	$50k-$150k (packaging); construction varies	Define first-round priority projects and limits; confirm jurisdiction/ROW early; prepare scoping + cost; coordinate with SHA on sponsorship; maintain a funding calendar	MDOT SHA TAP/RTP (FY26 portal showed Apr 30, 2025 deadline). HSIP local solicitations have used mid-May deadlines in prior cycles (verify annually). BUILD FY26 deadline Feb 24, 2026 for packaged corridor projects

ID	Action	Lead and key partners	Timeframe (ROM)	Cost (ROM)	Near-term next steps (condensed)	Funding options and when to apply (or timing notes)
04	Enforce Town Speed Limit	Lead: Town of Indian Head (through its law enforcement arrangements). Partners: Charles County Sheriff and other enforcement partners	1-3 months to start; ongoing	$10k-$60k per year (range depends on staffing / equipment)	Identify priority corridors/times; align enforcement coverage and reporting; pair with communications; establish before/after tracking	MDOT MVA Highway Safety Office grants: process closes Feb 28, 2026. Local operating funds can start immediately if grant timing does not align
05	Improve Wayfinding and Driver Navigation	Lead: Town of Indian Head. Partners: NSF Indian Head, Charles County (as applicable), MDOT SHA where state facilities/sign standards apply	3-9 months (quick wins); 6-12 months (plan + deployment)	$25k-$100k	Identify confusion points; develop coordinated wayfinding plan; implement quick improvements first; confirm maintenance responsibility	HSIP when scoped as crash-risk reduction (low-cost countermeasures). BUILD FY26 deadline Feb 24, 2026 if packaged with broader corridor improvements
06	Reconfigure Roadway with Shifting Taper Lane	Lead: Town of Indian Head. Partners: MDOT SHA (if applicable) and other partners for approvals/sequencing	6-18 months through design/approvals/ procurement; delivery depends on method	$673,739 (planning-level construction estimate)	Confirm preferred concept and limits; confirm ownership and approvals; validate constraints that could change cost (utilities, drainage, ROW)	Potential pathways: OLDCC DCIP implementation funding (cycle timing varies); FHWA Defense Access Roads (DAR) eligibility requires DoD certification; PROTECT discretionary FY26 deadline Feb 24, 2026; BUILD deadline Feb 24, 2026

This matrix is intended to be used as the standing implementation tracker. The lead entity for each action should confirm decision authority, set the first milestone, and update the status at regular coordination intervals.

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Appendix B: Methodology

B

This appendix documents the methods used to develop the findings and recommendations in this Transportation Corridor Readiness Study. It describes (1) how the project team organized and managed the work, (2) how data were assembled and analyzed, (3) how stakeholders and the public informed alternatives and priorities, and (4) how recommendations were evaluated, refined, and documented.

The intent is transparency and reproducibility. The methods below are structured to align with the project work elements and tasks established by TCCSMD and participating agencies, including analysis of transportation and pedestrian safety, emergency ingress and egress, stormwater considerations, traffic pattern alternatives (including sensitive cargo considerations), concept-level planning and initial cost estimates, and a communications plan with a tabletop exercise and two public sessions.

Project Framework and Study Context

Study duration and coordination environment. The project team delivered the study within the planned project duration and coordinated regularly with the sponsor and participating agencies through established advisory committee meetings and *ad hoc* technical work sessions as needed.

Area of concern and corridor definition. The corridor focus was defined as the state and Town-owned route connecting the intersection of MD 225 and MD 210 to the installation Main Gate. The team treated the corridor as a functional system that includes alternate routes, roadway operations, intersections and approaches, pedestrian and bicycle crossings and continuity, transit access where applicable, access to key community destinations, and the interface conditions along the installation boundary.

Problem statements that guided analysis. The methods were designed to directly address the study's core concerns: current and future transportation challenges, emergency response, and appropriate stormwater management procedures, leading to recommended alternatives that incorporate stakeholder concerns and constraints. Specific examination topics included safety and security at the gate interface, compatibility among commuter, commercial, residential, and pedestrian needs, safe and orderly pedestrian, bicycle, and transit movement, and shared emergency evacuation and response protocols.

Work Plan, Project Management, and Quality Control

Work plan and schedule. A work plan and schedule were developed early in the project and used as the baseline for staffing, meeting cadence, analysis sequencing, and milestone products. The schedule was used to confirm dependencies between technical work (data development, mapping, analyses), engagement activities (interviews, working meetings, public sessions), and milestone deliverables.

Project coordination and reporting. Project coordination focused on continuous alignment among the sponsor, the Town, the installation, and other stakeholders, including regular progress updates, milestone review meetings, and task-level check-ins to manage scope, schedule, and decision points.

Decision management and documentation. Key decision points were presented to the sponsor and advisory committee and used to guide revisions between milestones. Decisions addressed, for example:

- Assumptions for existing and future conditions
- Scenarios, participants, and objectives for the tabletop exercise
- Validation of alternatives proposed for concept planning and evaluation
- Framing and prioritization of recommended actions for implementation

Quality control. Quality control was implemented through:

- Internal technical review of maps, calculations, and narrative for consistency with data sources and assumptions
- Cross-checks to ensure recommendations trace back to identified needs and constraints and to stakeholder input
- Editorial review to maintain consistent terminology and to distinguish between "findings," "alternatives," and "recommendations"
- Final compilation checks for consistency throughout text, figures, tables, and appendices in the report

Stakeholder Identification and Engagement Approach

Stakeholder strategy. The stakeholder strategy was developed in coordination with the sponsor and advisory committee to identify appropriate stakeholders, structure discussions, and support selection of alternatives that are feasible and broadly compatible with stakeholder interests and operational requirements.

The engagement approach was built around the principle that the corridor is both a community transportation spine and an installation access route with unique operational and security considerations. As a result, the engagement plan balanced the need for broad community participation with targeted technical coordination on sensitive operational topics.

Engagement formats. Engagement was structured to support decision-making at three levels:

1. Technical coordination to review data, constraints, and feasible alternatives with agency staff and technical partners.
2. Policy coordination to align on priorities, acceptable trade-offs, and implementation pathways.
3. Community outreach to share findings and alternatives in accessible formats, confirm lived experience of corridor issues, and collect feedback on priorities.

Interviews. A wide variety of stakeholders was interviewed to (1) validate collected documents and data, (2) identify challenges and opportunities that were not available in written sources, and (3) socialize the study. Raw notes were written up into meeting minutes to inform subsequent deliverables. A list of the interviewed organizations and individuals is below.

Conducted Interviews	
Organization/Agency	Persons
NSA South Potomac	Captain Jon Townsend Tom Stanley Adam Lynch
Charles County Military Alliance Council	Pam Frank Jeff Bossart
Maryland Office of Military & Federal Affairs (OMFA)	Amy O'Donnell
Charles County Public Schools	John M. Kraft
NSF Indian Head Physical Security	Brian Washburn
Town of Indian Head	Brandon Paulin Ryan L Hicks Bethany Stoll
Charles County Chamber of Commerce	Kathy Guzman
Charles County Planning & Planned Growth Management	Beth Growth Noelani Brockett Markus Tarjamo
Tri-County Council for Southern Maryland	George Clark
Charles County Transit (VanGo)	Rob Romero Donna Downs
Charles County Department of Emergency Services	Michelle Lilly
Charles County Infrastructure Management/Roads	Andy Balchin Mark Cox
NSA South Potomac Public Works Officer	CDR Angel Aviles

Conducted Interviews	
Organization/Agency	Persons
Naval Surface Warfare Center (NSWC) Ordnance Assurance and Safety	Travis Walker
Maryland Department of Emergency Management	Summer Modelfino
Charles County Economic Development	Mark Thompson
NSF Indian Head Public Works	Ken Robitaille
Maryland State Highway Administration	David Rodgers Kimberly Tran
NSF Indian Head Facilities Management	James Wheeler
Indian Head Volunteer Fire Department and Rescue Squad	Chief Chris Klahr
Potomac Heights Volunteer Fire Department	Chief Mike Gimmel
USMC Chemical and Biological Incident Response Force	Capt Jacob Martinez MSgt Allen Putnam
Charles County Department of Recreation, Parks, and Tourism	Sam Drury Tim Drummond Ben Yeckley
NSF Indian Head Fire Department	Chief Matthew Gilroy

Public involvement. Two public sessions were used to (1) present the project purpose and what was being studied, (2) describe existing conditions and key issues, (3) share draft alternatives and recommendations, and (4) collect feedback on priorities and implementation concerns. Public input was treated as essential evidence about how and when the corridor functions well or poorly for different users, including pedestrians, cyclists, drivers, transit riders, residents, and business patrons.

How input was used. Stakeholder and public input was documented and incorporated in three ways:

- Confirming or refining the list of problems, hot spots, and constraints
- Screening alternatives for feasibility, acceptability, and unintended consequences
- Shaping recommendation packaging (near-, mid-, long-term actions; capital vs policy/program actions; lead and supporting entities)

When input raised issues outside the project scope, it was documented as context and, where appropriate, carried forward as “future considerations” rather than formal recommendations.

Data collection, management, and documentation standards

Data inventory. The project team assembled a structured data inventory covering:

- Transportation network and operations (functional classification, intersections, traffic controls, speed environment, access management context)
- Multimodal facilities (sidewalks, crossings, bicycle accommodations, trails, bus stops and access where applicable)
- Drainage and flooding context (known problem locations, drainage patterns, tidal influence areas where applicable)
- Land use and policy context (adopted plans and policies at Town and County levels)
- Constraints and opportunities (right-of-way limits, environmental features, sensitive receptors, critical facilities)

Documents and data were further categorized by agency, date, and other pertinent characteristics.

Data sources. Data were obtained from stakeholder-provided materials, publicly available datasets, and adopted plans and studies from relevant jurisdictions and agencies. Where multiple sources existed for the same feature (for example, roadway centerlines or parcel ownership), the team attempted to reconcile discrepancies by comparing attributes, checking recency, and performing targeted verification.

Data management and version control. To support traceability:

- GIS layers and tabular datasets were stored with consistent naming conventions and date stamps.
- Key derived outputs, such as maps, cited underlying datasets.

On-site verification. The team conducted in-person visits to confirm conditions that materially affect recommendations, taking note in particular of:

- Location and condition of installation alternate gates and related infrastructure and development
- Condition and continuity of sidewalks and crossings
- Visibility constraints and conflict points at intersections and approaches
- Location and usability of transit stops and pedestrian access
- Sites of EMS and Fire Stations and related traffic patterns
- Other constraints in areas identified as problem locations by stakeholders or data

Existing Conditions Analysis Methods

Transportation operations and corridor function. The team characterized corridor function by identifying:

- Primary travel patterns and trip purposes (commuter, freight/service, local access, installation access)
- Locations where turning movements, queueing, or access points create operational friction or safety concerns
- The role of the corridor in emergency response, including typical response paths and constraints during incidents, including alternate routes

Safety and conflict screening. The team screened for safety concerns using available information on roadway geometry, traffic control, speed environment, and documented or observed conflict conditions. Where collision data were available and usable at the appropriate scale, it was used to identify patterns and support problem definition. Where collision data were limited, the team relied on a combination of stakeholder reports, field observations, and design context.

Land use and growth context. The team reviewed adopted land use plans and policy documents to understand:

- Planned or expected Navy mission growth or development projects that may alter corridor demand over time
- Priority growth or redevelopment areas affecting access and circulation
- Policy direction related to complete streets, walkability, and economic development

Traffic projections. Estimating projected traffic to 2040 required several steps:

- Acquiring MDOT SHA traffic counts for relevant locations, which was aided by the U.S. Navy volunteering to conduct its own traffic count at the Main Gate
- Establishing a credible background growth rate for the community
- Deciding not to apply background growth to NSF Indian Head, as any growth would be centrally approved and planned
- Estimating the traffic impact of each identified mission or community growth driver and applying the increased trips appropriately throughout the corridor
- Traffic projections were then compared to applicable roadway performance and design standards to assess operational implications and inform recommendations

Emergency Preparedness and Tabletop Exercise Methodology

Purpose. Emergency planning work focused on identifying off-installation emergency routes and coordination protocols among agencies and the installation.

Scenario development. Tabletop exercise scenarios were selected to stress the corridor in ways relevant to community safety and installation access. Scenarios were designed to:

- Require multi-agency coordination
- Test communication pathways and decision authority
- Identify chokepoints where transportation conditions affect response outcomes
- Surface operational constraints that influence feasible transportation recommendations

Outputs. The tabletop exercise informed:

- Identification of procedural improvements (roles, responsibilities, communications, coordination triggers)
- Refinements to corridor recommendations where incident response needs are sensitive to access, queueing, or closures
- Follow-up needs for interagency agreements, protocols, or training

Alternatives Development Process

Alternative generation. Alternatives were generated through a structured synthesis of:

- Existing conditions findings (operational friction points, safety issues, multimodal gaps)
- Hazard and vulnerability screening (locations where resilience affects functionality)
- Stakeholder and public input (lived experience of problems and acceptable solutions)
- Implementation realities (right-of-way, jurisdictional roles, permitting, and likely funding pathways)

Alternative packaging. Notional alternatives were presented to stakeholders for discussion and presentation. Alternatives ranged widely:

- Near-term operational and policy actions (signing/marking, minor geometric adjustments, coordination protocols, maintenance and drainage actions)
- Mid-term capital improvements (signage treatments, multimodal connections)
- Long-term corridor investments (larger geometric changes, network redundancy options requiring redevelopment of new or existing rights of way, other major infrastructure upgrades)

Baseline condition. A "no-build" or baseline condition was used for comparison. The baseline reflects reasonable continuation of current operations and maintenance practices and planned projects already committed by responsible agencies, to the extent known. A further point of comparison was the projected 2040 traffic estimates.

Evaluation and Prioritization Methodology

Evaluation criteria. Alternatives were presented to the advisory committee for discussion using the following factors:

- Safety (all users, including pedestrians and cyclists)
- Operational performance and reliability (including incident response and recurring bottlenecks)
- Resilience (likelihood of failure under stress, ability to maintain or restore function)
- Emergency access and evacuation support (including coordination feasibility)
- Feasibility and implementability (right-of-way, environmental constraints, constructability, approvals)
- Cost reasonableness (order-of-magnitude and relative scale)
- Stakeholder compatibility (acceptability, operational impacts, community impacts)
- Ability to be phased and funded (logical sequencing, grant eligibility, responsibility alignment)

The team explicitly specified that a recommendation required the support of the agency or agencies that owned the property critical to the recommendation's success. Where the owner expressed opposition or unresolvable concerns, alternatives were either placed into the documentation-only category or removed entirely. Those ideas that had merit but were the subject of disagreement were placed into an intermediate category to differentiate them from the alternatives that had unequivocal responses.

Concept Planning and Cost Estimation Methods

Concept-level design. For recommendations involving physical changes, concept plans were developed to illustrate intent and feasibility at a planning level. Concept plans were developed to illustrate intent and feasibility at a planning level (not final engineering design). They were intended to:

- Show how an intervention could fit within typical constraints
- Allow identification of likely right-of-way or utility issues early
- Support meaningful discussion of trade-offs and implementation steps

Cost estimation approach. Initial cost estimates were developed at an order-of-magnitude level appropriate for planning. Estimates were used primarily to:

- Compare alternatives on a consistent basis
- Support phasing strategies
- Assist in identifying plausible funding pathways and grant competitiveness considerations

Cost estimates were described as planning-level and are subject to refinement through subsequent engineering, surveying, geotechnical investigation, and detailed quantity takeoffs.

Recommendation Development and Validation

Consistency checks. Before finalization, recommendations were reviewed for consistency with:

- Identified corridor challenges, as verified through analysis
- Stakeholder and public input
- Town and County plans and other guidance within the study corridor
- The need to support both installation access and community mobility and quality of life

Implementation pathway. Each recommendation was detailed appropriately for implementation next steps, typically including:

- Lead and supporting entities
- Dependencies and prerequisites (data, design, approvals, coordination)
- Suggested timeframe (near/mid/long)
- Notes on funding plausibility and next-step actions to move from concept to delivery

Reproducibility, Documentation, and Limitations

Traceability of conclusions. The project team maintained traceability by linking recommendations to:

- Data and maps used to identify constraints and opportunities
- Documented stakeholder and public input
- Evaluation criteria and trade-off rationale

Uncertainty management. The team documented key uncertainties (data gaps, ownership ambiguity, issues requiring engineering verification) and addressed them by:

- Avoiding false precision in estimates or performance claims
- Recommending next-step studies where needed
- Avoiding recommending alternatives that responsible members of the advisory committee did not support, while still documenting such alternatives to preserve the record of decisions and inform future discussions

Scope boundaries. The methods and recommendations reflect a planning-level corridor study. Recommendations requiring detailed engineering design, property acquisition, or specialized modeling are presented at concept level, with clear identification of follow-on steps necessary for implementation.

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Traffic Count Locations		Main Gate	MD210 - 1 MI S of MD225	MD210 - 0.2 MI N of MD225	MD 225 - 0.2 MI E of MD210
MDOT Location ID		-	B1711	B1712	B1720
Historical and current conditions	Latest Data Collection	2025	2025	2025	2023
	Latest Available Ave Daily Trips (ADT)	7,264	14,821	14,454	6,904
	Earliest Data Collection	-	2005	2012	2010
	Earliest Available ADT	-	13,613	13,508	7,021
Background Traffic Growth	Actual Annual Background Growth Rate	-	0.426%	0.522%	-0.129%
	Annual Growth Rate Assumptions	0.00%	1.00%	1.00%	1.00%
	Future (2040) Background ADT	7,264	17,207	16,781	8,015
New Traffic from Planned and Anticipated Changes	Townhomes at River Lane	-	2,510	2,008	502
	NSWC IHD Modernization	2,040	2,040	1,632	408
	CBIRF Mission Expansion	730	730	584	146

Traffic Count Locations		Main Gate	MD210 - 1 MI S of MD225	MD210 - 0.2 MI N of MD225	MD 225 - 0.2 MI E of MD210
MDOT Location ID		-	B1711	B1712	B1720
Commercial Vehicle Volumes	Existing (2024) % Heavy Vehicles	2.82%	2.82%	3.62%	7.95%
	Existing (2024) Heavy Vehicle Volumes	205	418	523	549
	Future (2040) Heavy Vehicle Volume With Background Growth	205	485	607	637
	Future (2040) Heavy Vehicle Volumes with 300 percent increase in Navy truck volumes	615	895	935	719
Future (2040) Total Volumes	Future (2040) Heavy Vehicles ADT	615	895	935	719
	Future (2040) Passenger Car ADT	9,419	21,592	20,069	8,352
	Future (2040) Total ADT	10,034	22,487	21,005	9,071

Concept Design: Shifting Taper Lane

Estimate of Probable Construction Cost

#	Item No.	Item Description	Unit of Measure	Est Qty.	Est. Unit Price ($)	Est. Extended Price ($)
1	110100	Clearing And Grubbing	LS	1	$29,500.00	$29,500.00
2	110600	Preconstruction Survey	LS	1	$37,000.00	$37,000.00
3	114011	5 Inch White Pavement Marking Paint	LF	446	$0.45	$200.70
4	120500	Maintenance of Traffic	LS	1	$29,500.00	$29,500.00
5	130875	Mobilization and Demobilization	LS	1	$55,000.00	$55,000.00
6	210011	Removal of Existing Combination Curb & Gutter	LF	539	$17.00	$9,163.00
7	210019	Saw Cuts	LF	1078	$6.00	$6,468.00
8	210025	Removal of Existing Pavement	CY	210	$55.00	$11,550.00
9	210026	Removal of Existing Sidewalk	CY	120	$60.00	$7,200.00
10	210028	Removal of Existing Monolithic Median	CY	149	$65.00	$9,685.00
11	504500	Superpave Asphalt Mix 9.5MM for Surface, PG64S-22, Level 2	TON	178	$160.00	$28,480.00
12	504560	Superpave Asphalt Mix 19.0MM for Base, PG64S-22, Level 2	TON	356	$145.00	$51,620.00

Concept Design: Shifting Taper Lane (continued)

#	Item No.	Item Description	Unit of Measure	Est Qty.	Est. Unit Price ($)	Est. Extended Price ($)
13	520113	6 Inch Graded Aggregate Base Course	SY	1089	$15.00	$16,335.00
14	549401	5 Inch White Thermoplastic Pavement Markings	LF	446	$1.30	$579.80
15	634313	Standard Type A Combination Curb & Guttter 24 Inch Gutter	LF	539	$75.00	$40,425.00
16	648680	Monolithic Concrete Median, Any Width up to 6 Feet, Any Type	LF	1117	$130.00	$145,210.00
17	655104	4 Inch Concrete Sidewalk	SF	3236	$12.00	$38,832.00
18	655120	Detectable Warning Surface for Curb Ramps	SF	59	$40.00	$2,360.00
19	21XXXX	Miscellaneous Removals	LS	1	$22,000.00	$22,000.00
20	XXXX01	Removal, Relocation & Installation of Utilities	LS	1	$55,000.00	$55,000.00
21	XXXX02	Erosion Control	LS	1	$4,130.00	$4,130.00
22	XXXX03	Contingency	LS	1	$73,500.00	$73,500.00
					TOTAL PROJECT BASE PRICE	**$673,738.50**

Concept Design: Commercial Lane

Estimate of Probable Construction Cost

#	Item No.	Item Description	Unit of Measure	Est Qty.	Est. Unit Price ($)	Est. Extended Price ($)
1	110100	Clearing And Grubbing	LS	1	$105,000.00	$105,000.00
2	110600	Preconstruction Survey	LS	1	$55,500.00	$55,500.00
3	114011	5 Inch White Pavement Marking Paint	LF	446	$0.45	$200.70
4	120500	Maintenance of Traffic	LS	1	$44,500.00	$44,500.00
5	130875	Mobilization and Demobilization	LS	1	$83,000.00	$83,000.00
6	210011	Removal of Existing Combination Curb & Gutter	LF	539	$17.00	$9,163.00
7	210019	Saw Cuts	LF	2098	$6.00	$12,588.00
8	210025	Removal of Existing Pavement	CY	210	$55.00	$11,550.00
9	210026	Removal of Existing Sidewalk	CY	120	$60.00	$7,200.00
10	210028	Removal of Existing Monolithic Median	CY	149	$65.00	$9,685.00
11	504500	Superpave Asphalt Mix 9.5MM for Surface, PG64S-22, Level 2	TON	364	$160.00	$58,240.00
12	504560	Superpave Asphalt Mix 19.0MM for Base, PG64S-22, Level 2	TON	728	$145.00	$105,560.00

Concept Design: Commercial Lane (continued)

#	Item No.	Item Description	Unit of Measure	Est Qty.	Est. Unit Price ($)	Est. Extended Price ($)
13	520113	6 Inch Graded Aggregate Base Course	SY	2232	$15.00	$33,480.00
14	549401	5 Inch White Thermoplastic Pavement Markings	LF	446	$1.30	$579.80
15	634313	Standard Type A Combination Curb & Gutter 24 Inch Gutter	LF	1560	$75.00	$117,000.00
16	648680	Monolithic Concrete Median, Any Width up to 6 Feet, Any Type	LF	1117	$130.00	$145,210.00
17	655104	4 Inch Concrete Sidewalk	SF	3236	$12.00	$38,832.00
18	655120	Detectable Warning Surface for Curb Ramps	SF	118	$40.00	$4,720.00
19	21XXXX	Miscellaneous Removals	LS	1	$33,000.00	$33,000.00
20	XXXX01	Removal, Relocation & Installation of Utilities	LS	1	$83,000.00	$83,000.00
21	XXXX02	Erosion Control	LS	1	$4,833.50	$4,833.50
22	XXXX03	Contingency	LS	1	$111,000.00	$111,000.00
					TOTAL PROJECT BASE PRICE	**$1,073,842.00**

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