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Bo2. Integrated Mobility Framework

Bo2.1 Introduction

B02.1.1 Goals

To provide safe and reliable mobility to, from, and within Tyndall Air Force Base (AFB) all transportation elements must work together as a cohesive system. One of the guiding principles for creating the “Installation of the Future” at Tyndall AFB is to encourage alternatives to privately owned vehicle (POV) travel for short trips within the base. As with any system, its effectiveness is limited by its weakest element. A balanced mobility system must encompass all modes of transportation both within and around the base.

For Tyndall AFB, the integrated mobility system includes the following elements:

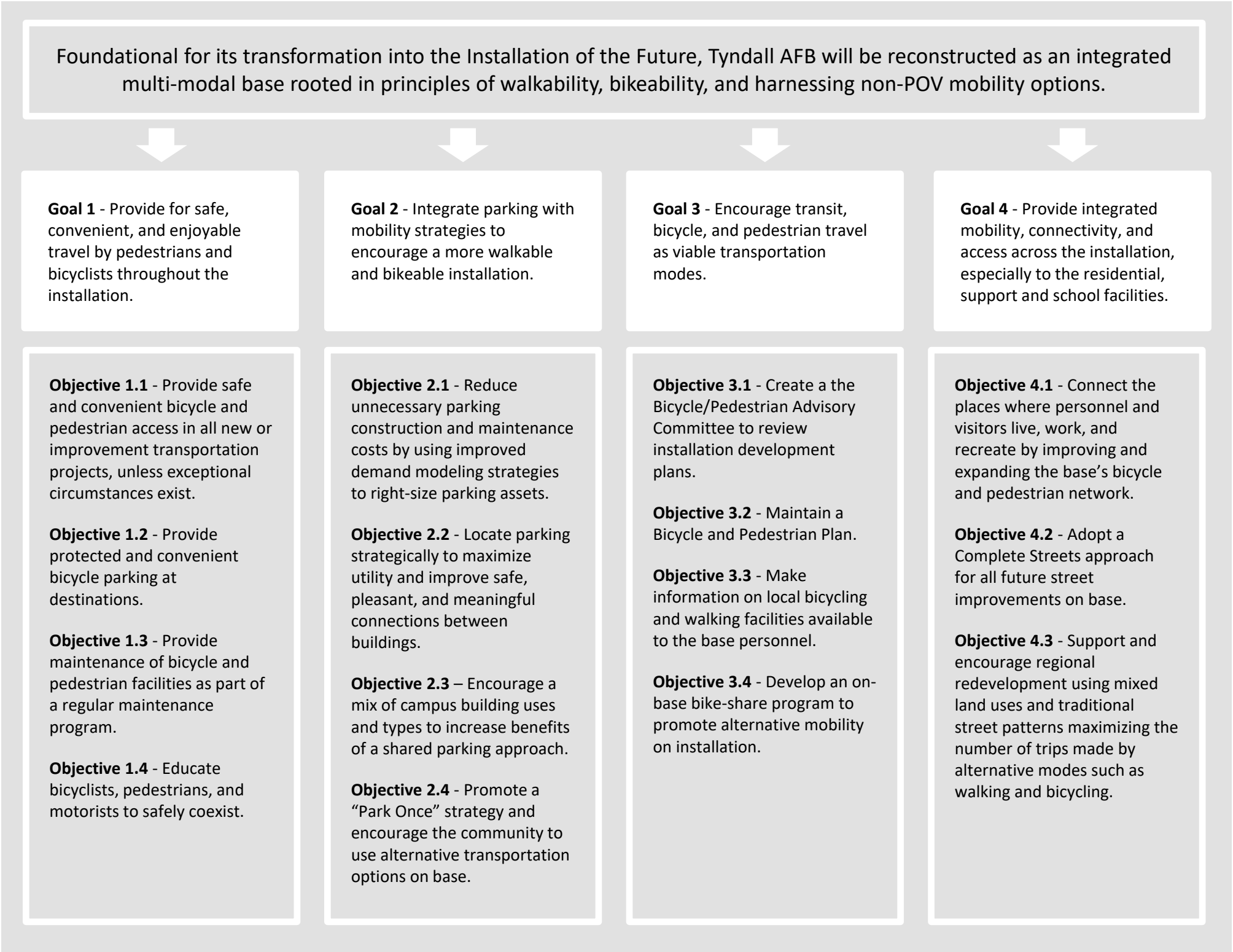
- Regional access between Tyndall AFB and the neighboring communities via U.S. Highway 98 (US 98)
- US 98 interchanges and intersections that facilitate access to Tyndall AFB
- Entry Control Facilities that provide base security and access for personnel, commercial deliveries, and visitors
- Hierarchy of Complete Streets for efficient and safe travel for all modes, and direct access to base parking areas and buildings
- Hierarchy of intersections to allow efficient and safe movement for all modes
- Multi-Modal Spine to encourage alternative transportation, largely separated from POV traffic, and providing convenient access and mobility for all modes (bicycle, pedestrian, and driver-operated or autonomous vehicle [AV] shuttles) between residential and mission areas on base
- Driveways that are strategically spaced based on good access management principles to balance convenience and safety
- Shared parking areas located and connected to maximize the use of parking, while minimizing unused impermeable cover

When well-planned and designed, the above elements provide safe and reliable mobility for the entire Tyndall Community.

B02.1.2 Objectives

A primary outcome of the integrated mobility plan is to contribute to a walkable, healthy Tyndall Community with less reliance on automobiles. This vision of a walkable and healthy installation is justified through the current rebuild master plan and the Defense Department Form 1391 packages that govern the reconstruction efforts. A main organizing element for the pedestrian circulation plan is a central Multi-Modal Spine, stretching across the majority of the Support and Flightline Districts. This tree-lined spine, in combination with a coherent, connected bikeway and pedestrian network, provides safe efficient routes for the base population to travel between the dormitories, Community Common, recreational amenities, base mission areas, and medical facilities. The result reduces the reliance on using POVs for common errands.

Exhibit B02-1. Integrated Mobility Framework



B02.2 Principle Guidance

B02.2.1 Federal Installation Guidance

Federal facilities and military installations such as Tyndall AFB must conform to a variety of guidelines, sources, and jurisdictions. The following guidance and compliance criteria apply to integrated mobility planning.

United States Code Title 10, Section 2864. Master plans for major military installations plans require the following characteristics relevant to mobility:

- 1) *Plans Required. At a time interval prescribed by the Secretary concerned (but not less frequently than once every 10 years), the commander of each major military installation under the jurisdiction of the Secretary shall ensure that an installation master plan is developed to address environmental planning, sustainable design and development, sustainable range planning, real property master planning, military installation resilience, and transportation planning.*

2) *To address the requirements under paragraph (1), each installation master plan shall include consideration of—*

a) *planning for compact and infill development;*

b) *horizontal and vertical mixed-use development;*
- Unified Facilities Criteria (UFC) 2-100-01, Installation Master Planning.** Tyndall AFB projects must comply with the UFC. Chapter 2 of UFC 2-100-01 provides further definition and guidance relevant to integrated mobility. Pertinent sections to integrated mobility planning are paraphrased below:
- 2-2.6 Connected Transportation Networks.** *Planners will ensure (through programming projects as appropriate) that uses within each district as well as the districts themselves are thoroughly connected by roads, sidewalks, and bikeways sized to support mission requirements. A connected network of streets is based on a modified grid pattern that affords multiple route options for vehicles, bicyclists, and pedestrians.*
- Air Force Instruction (AFI) 32-1015, Integrated Installation Planning.** All plans for Air Force installations must comply with the criteria set forth in the AFI. Pertinent sections to integrated mobility planning are paraphrased below:
- 6.4.5. Installation Development Plans must include Component Plans.** *Component plans are topic specific installation-wide plans, which identify lifecycle management plans for the program or asset group. The Component Plans support the Installation Development Plan by identifying areas or assets requiring investment, preservation, or special management considerations. Individual program managers must maintain Component Plans in accordance with program guidance to support the Integrated Installation Planning process. Component Plans include:*

6.4.5.1. Transportation Network Plan
- ## B02.2.2 Planning Principles
- The federal installation guidance and instructions affecting transportation and mobility planning require a set of unifying planning principles that optimize the coordination of the supportive planning components of an integrated mobility approach.
- To realize the vision and achieve the goals and objectives of integrated mobility on Tyndall AFB, all ongoing reconstruction and future projects will adhere to the following planning principles:
1. **Build Safe, Universally Accessible Complete Streets.** Throughout the base, implement “[Complete Streets](#),” as defined by the National Complete Streets Coalition. Streets, sidewalks, and pathways will provide safe, accessible mobility options for all users, including pedestrians, bicyclists, motorists, and transit riders of every age and every ability.

2. **Orient Buildings to Streets and the Multi-Modal Spine.** The organization and relationship of installation buildings to streets and a robust pedestrian/bicycle network and to each other requires careful planning and design. This focus on supporting a truly multi-modal community reflects the base’s commitment to integrated mobility.

3. **Arrange Community Uses to Support Civic Activities.** Mixing support, mission, and residential uses encourages community interactions and fosters an increased sense of belonging for personnel and residents.

4. **Create a Coherent Fine-grained Pedestrian and Bike Network.** Pedestrian and bicycle access is considered at all scales of the reconstruction and is networked to maximize clear, coherent connections and instill resilience in the mobility system.

5. **Screen and Place Parking Behind Buildings.** Priority in site organization is given to the streets and pedestrian facilities. Parking areas are placed behind buildings or screened from view.

6. **Manage Local Climate Factors through Passive, Place-Based Design.** Passive design features such as landscape or tensile structures are used to provide shelter and shade.

7. **Address the Human Scale with Architecture and Landscape Details.** Special detail and design emphasis are applied at the ground level where people interact with and experience the built environment.
- Numerous cost-saving and campus-forming synergies may be uncovered by integrating design efforts and balancing these principles with programmatic requirements at the installation scale. For example, the benefits of a holistic planning approach are outlined **Section B02, Coordinated Parking**.
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B02. Integrated Mobility Framework

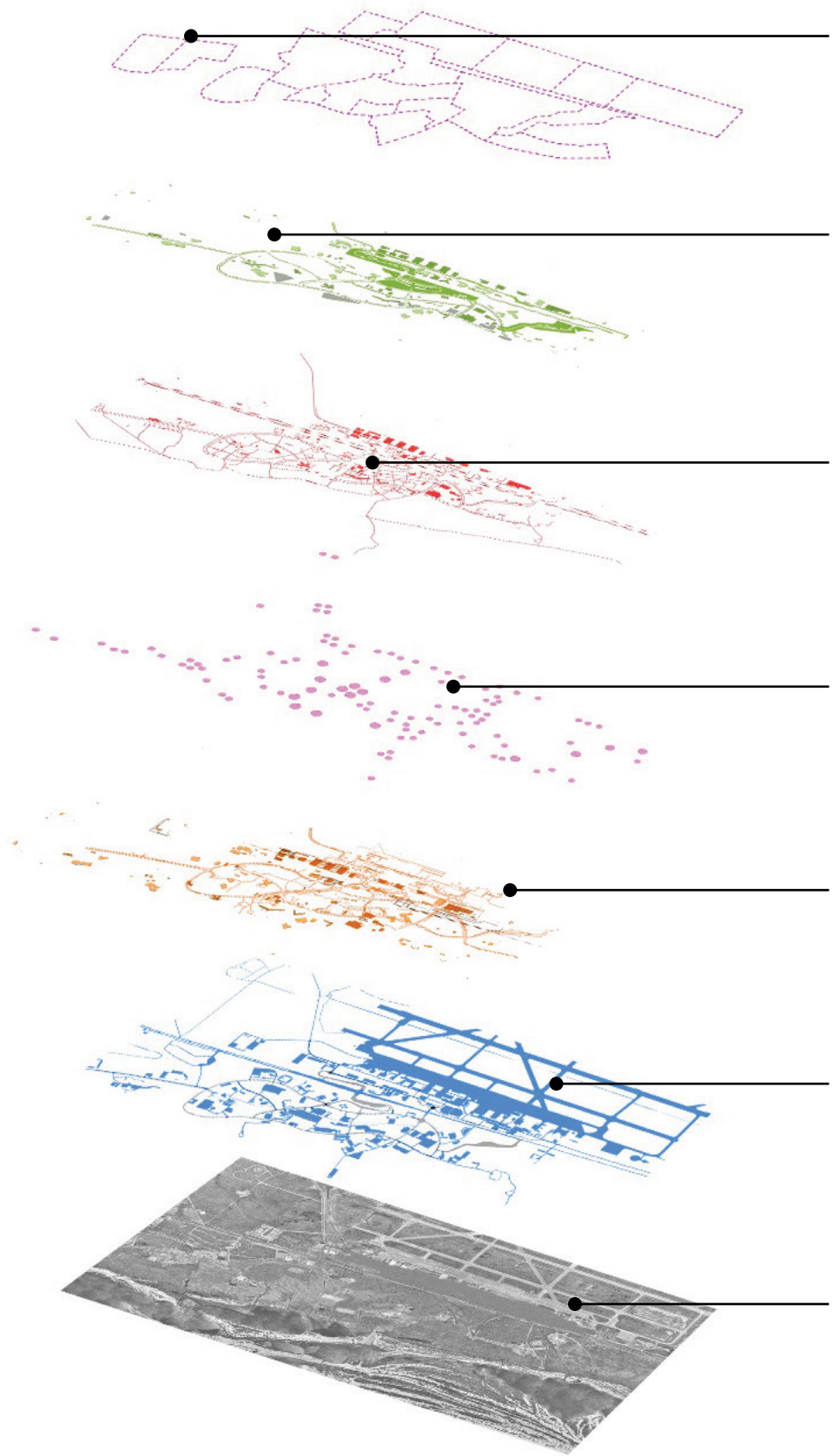
B. Framework| Landscape Master Plan Tyndall Air Force Base

Bo2.3 Planning Approach

B02.3.1 Integrated Mobility Requires Systems Thinking

More than any other element of the Tyndall AFB rebuild, the mobility network will foster connections and opportunities within the different rebuild packages to find cost saving synergies. In addition to fostering connections, the integrated mobility framework must unite the various master plan components and generate relationships for the vertical development.

The components of this plan must be designed and coordinated using a “systems thinking” approach. This holistic approach will yield improved plan organization and function without necessarily adding cost to short-term reconstruction efforts.



Base Policies
Base policy will drive integrated mobility vision and goals as Tyndall AFB moves from today’s reconstruction toward future mission growth.

Landscape and Integrated Land Management
Integrated, environmentally attuned landscape and coastal design creates sustainable appealing spaces for motorists, cyclists, and pedestrians, and encourages alternative modes of transportation for trips across the peninsula.

Bicycle and Pedestrian Network
Designated facilities will safely accommodate personnel by bike or foot and encourage the community to use these transportation options as a healthy alternative.

Signage and Wayfinding
Uniform signage and wayfinding will provide user-friendly guidance throughout the installations and enhance the community’s experience.

Lighting
Well thought-out lighting will provide both safety and security along routes, bike parking, parking areas, and building entrances.

Motorized Transportation
An improved transportation network with future shuttle/transit and integrated bicycle and pedestrian improvements will calm motor traffic, and minimize junctions among the modes, contributing to safer installation circulation.

A System of Systems
Optimizing, not maximizing, each component will contribute to the success of the mobility framework across the entire development.

B02.3.2 Opportunities & Constraints – Installation-Wide

Proper integrated mobility planning, design, and implementation requires a holistic look at all modes of transportation both on base and regionally. To achieve the vision set forth by the rebuild program, mobility across the entire peninsula must be considered. Any plans or investments in mobility must be developed in alignment with the guiding principles.

When evaluating concept feasibility for mobility plans and designs special consideration will be given to the site constraints. Numerous environmental, cultural, and flooding constraints can impact everything from large-scale alignments to small-scale design solutions. Considering these constraints early and often will contribute to smart, sustainable, and cost- effective implementation solutions. The large number of county-wide rebuild activities offer major opportunities to bolster regional connections by integrating base redevelopment using coordinated mobility strategies. Some of these major redevelopment opportunities include the following projects.

Sabre Housing and Enhanced Use Lease (EUL) Integration

There is a plan to rebuild housing within the Sabre District and a potential EUL development that would both require integrated mobility solutions to connect back to the installation.

City of Parker East Gateway Redevelopment Project

North of the Dupont Bridge, several regional developments are being planned or considered. Tyndall AFB will be an active stakeholder and participant in these discussions to foster improved connections that will yield better mobility choices and activities for personnel and visitors to the base.

In addition to redevelopment activities nearby, there are opportunities for Tyndall AFB to become an active partner in improving regional mobility connections.

New Dupont Bridge

A replacement for the Dupont Bridge is being planned and designed. The anticipated start of construction is 2024. The new bridge will include pedestrian and bicycle facilities not currently provided for in the existing bridge.

Regional Bike-Ped Plans

SUN Trails and Bay County have plans governing regional bicycle connections to support Tyndall AFB in growing its connectivity for recreation and commuting on the peninsula.

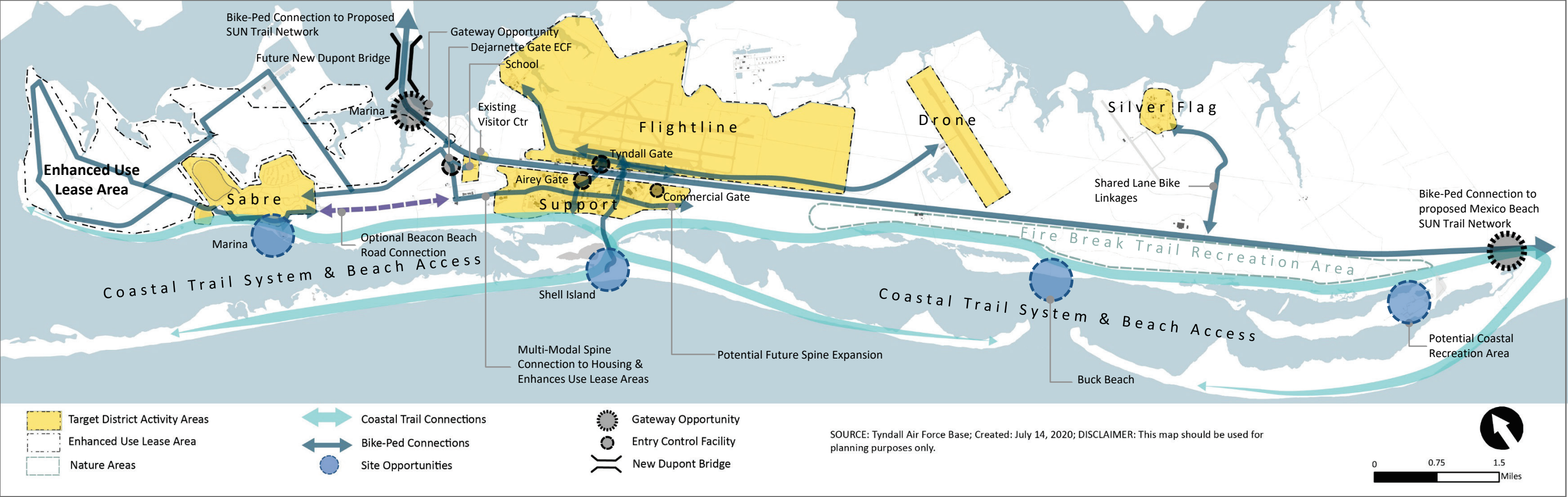
Bike Connections on Existing Streets

Ammo, Drone, and Silver Flag are three of the more remote districts for non-POV mobility. There are opportunities to safely and cost-effectively encourage bicycle connections to these and all districts using existing streets with shared-lane markings and a bike share program.

Morale, Wellness, and Recreation (MWR)

Along with the mission and commuting connectivity there are opportunities to establish an expansive MWR program providing access to the pristine natural resources of the Tyndall peninsula, such as Shell Island and Buck Beach.

Exhibit B02-2. Opportunities & Constraints – Installation-Wide



B02.3.3 Opportunities & Constraints – Support & Flightline Districts

Most of the trips within the installation start and end in two districts – Support and Flightline. Relatively speaking, the greatest opportunities to make an immediate and lasting impact to integrated mobility for the Tyndall Community will be in this central area of the base. Furthermore, within these two districts , plans and designs will refer to the National Association of Transportation Officials (NACTO) *Urban Street Design Guide* and *Urban Bikeway Design Guide* for best practices relative to the alternative mobility features of the integrated mobility framework. The primary integrated mobility connection opportunities in these districts include the key features and considerations listed below.

The Multi-Modal Spine

The Multi-Modal Spine links these two districts from the intersection of Beacon Beach Road and Suwannee Avenue in the west of the Support District to both ends of the Flightline District. In addition to pedestrians, the Multi-Modal Spine accommodates bicycles, PRT/maintenance vehicles, as well as a future AV system, that could quickly and efficiently allow Airmen to traverse the Support District and connect to the Flightline District. As future growth opportunities are identified, parcels along the spine will be the first choice for dense, urban campus development to occur.

Existing Mobility Facilities

Whether it’s the existing streets or certain sidewalks, it is important to consider maintaining and/or repurpose existing, quality pavement where possible to minimize costs while increasing overall connectivity.

Streets

Tyndall AFB’s streets must be planned and designed in accordance with the guiding principles and follow the code guidelines established within the *Tyndall AFB Installation Facilities Standards (IFS)*. In neighborhood or mixed-use areas, streets will be designed to Complete Streets standards.

Coordinated Parking Strategy

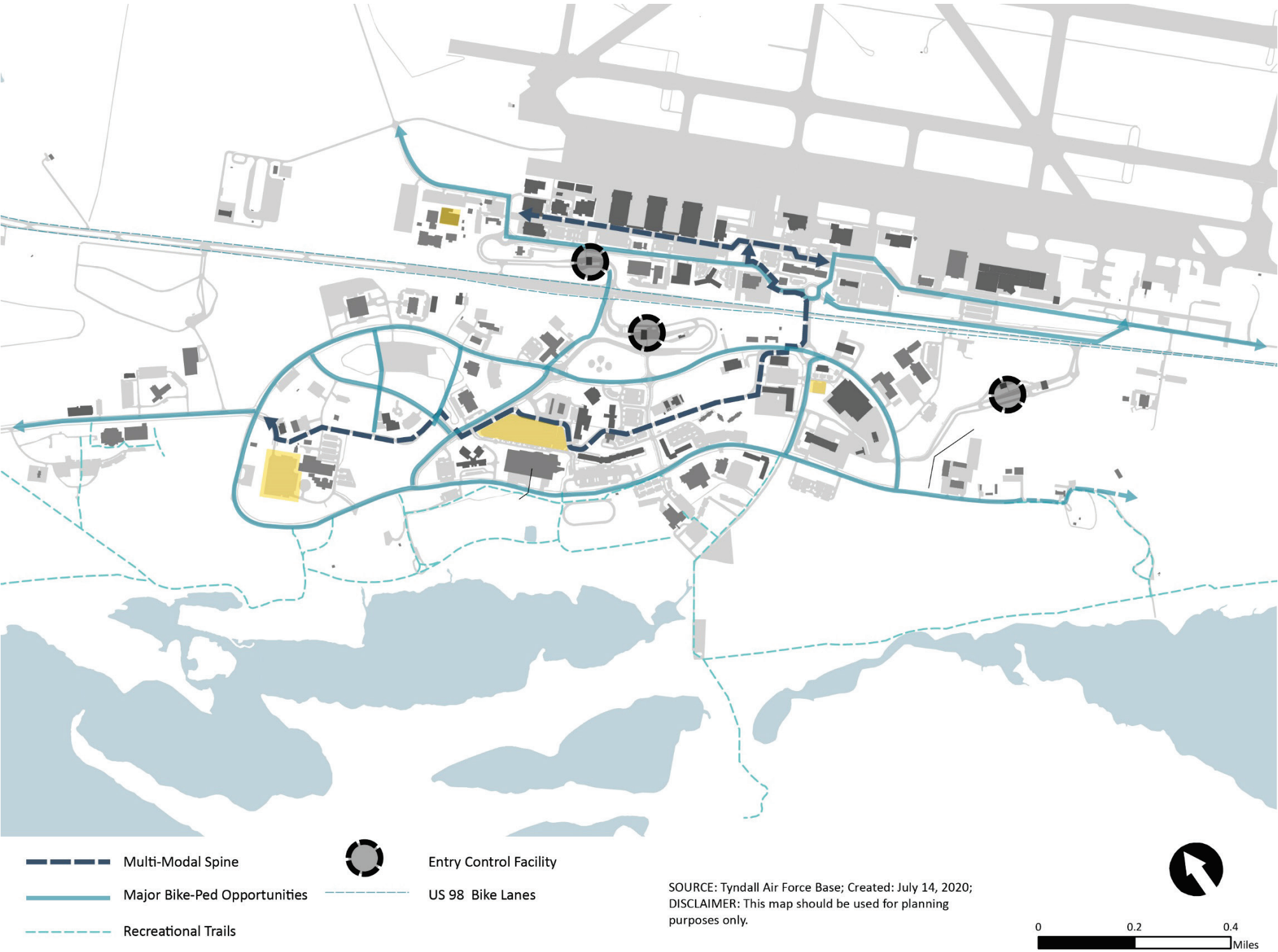
Parking areas can significantly diminish walkability on base if they are oversupplied or are not coordinated to enhance (and not dilute) the Bike-Ped network. Parking is to be shared between buildings and directly connected to surrounding sidewalks and paths.

Bike Share Programs

The ability for base personnel to access a bike-share program will support non-POV mobility and contribute to the vision of an urban campus environment. Bike share hubs will be considered for the primary trip generators and destinations.

More information on recommended mobility elements and typologies are provided in **Section C, Site Development Criteria**.

Exhibit B02-3. Opportunities & Constraints – Support & Flightline Districts



B02.4 Framework Plan

B02.4.1 Installation-Wide Plan

The installation-wide integrated mobility framework plan leverages regional investments in holistic mobility and fosters connections through a range of mode typologies. These features are considered in reconstruction activity and amplified for all future planning activities. Refer to **Section C, Site Development Criteria**, for more information about the specific typologies and elements of the integrated mobility plan.

Regional Bicycle and Pedestrian Connections

On-base development will leverage state and local investments and adhere to the intent and reflect the goals and objectives of regional mobility plan initiatives.

Installation Streets

Streets within Tyndall AFB have been planned and designed based on the known mission elements within the base, and the resulting demand on those roads. All streets are to be designed to accommodate all modes of transportation, with sidewalks and/or shared-use paths separated from the motorized vehicle lanes by a landscape buffer and/or drainage swale. With US 98 serving as the principle arterial through the base, the remainder of the streets function as local or collector streets, with design elements congruent with their use, speeds, and anticipated volumes.

Sidewalks and shared-use paths are designed in accordance with guidelines from the American Association of State Highway Transportation Officials (AASHTO). All streets and intersections are designed to provide Level of Service D or better. For Tyndall AFB to have a higher level of resiliency the next time a significant storm hits, traffic signals and other high-profile traffic control devices have been eliminated in favor of more resilient choices (such as roundabouts and in-pavement lighting).

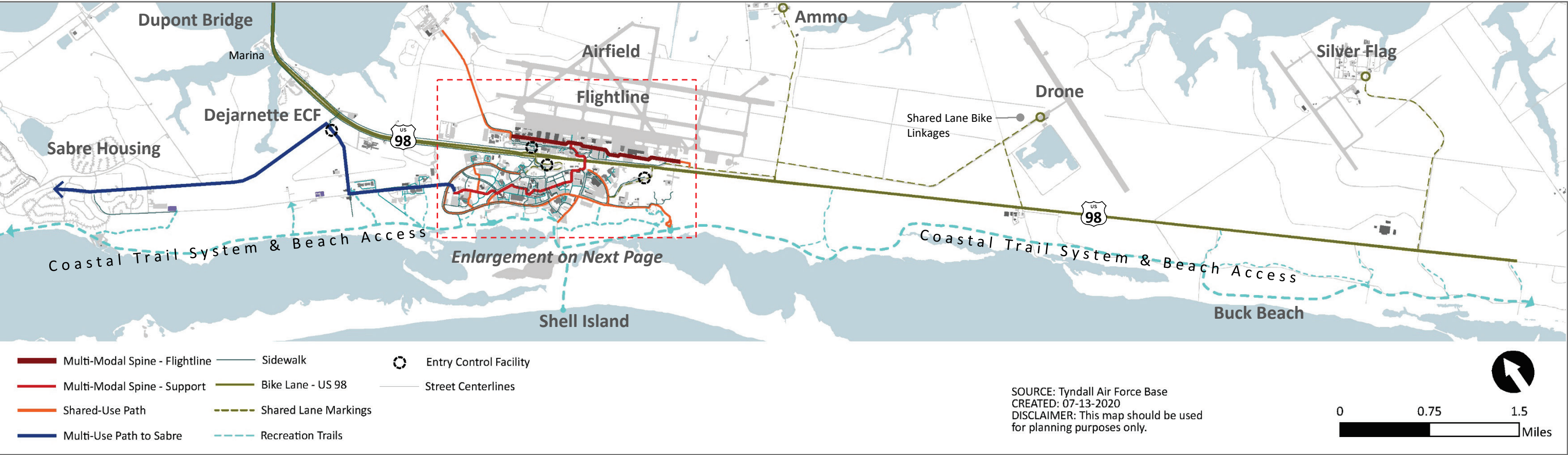
US 98 Bike Lanes and Sidewalks

Bicycles travelling along US 98 currently use a striped shoulder. In some areas, the shoulder includes pavement markings indicating its dedication to bicycle travel. Florida Department of Transportation is implementing a program to provide for bicycle travel along US 98, using shared-use paths separated from the US 98 vehicular lanes.

MWR –Coastal and Recreation Trails

MWR will take advantage of Tyndall AFB’s beautiful beaches, unique coastal features, and fire break trails to build a robust and varied trail network. Directional signage and distance markers will be placed at trail heads and at regular intervals.

Exhibit B02-4. Integrated Mobility Framework - Overall



B02.4.2 District-Level Plan - Support & Flightline

Most of the integrated mobility elements exist and/or are planned within the Flightline and Support Districts. In addition to the installation-wide framework plan elements on the previous page, key features of the system are listed below.

Multi-Modal Spine

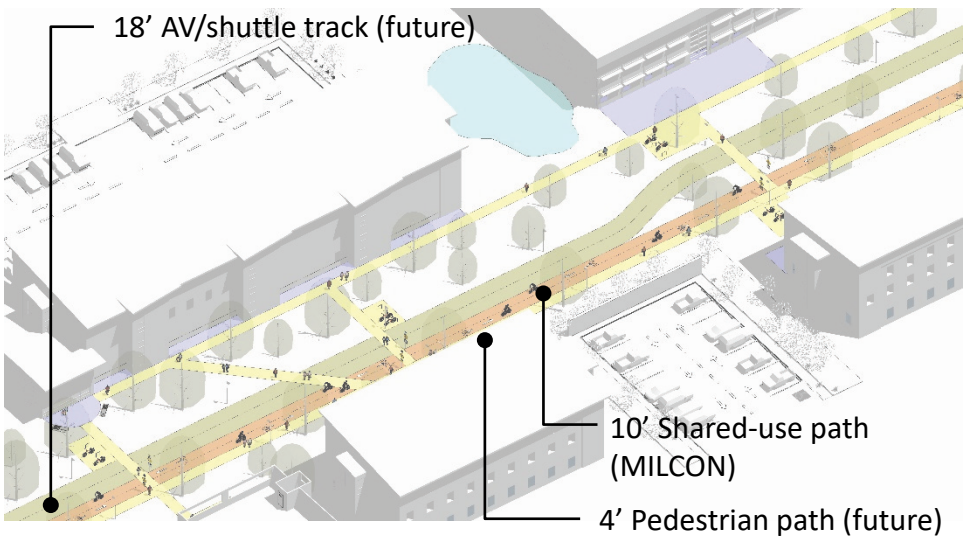
In order to provide a true alternative to POV travel within Tyndall AFB, a Multi-Modal Spine is planned and designed. This Multi-Modal Spine provides an independent mobility alternative to the street system, and includes:

- An east-west spine connecting the majority of uses on the Support side of Tyndall AFB
- A north-south spine connecting the Support and Flightline sides of Tyndall AFB, using the Louisiana Avenue underpass at US 98
- An east-west spine, aligned with the Utility Spine, serving multiple purposes including emergency access, improved drainage and connecting the mission elements on the Flightline side of Tyndall AFB
- 10 shuttle stops serving the major origins and destinations at Tyndall AFB

The Multi-Modal Spine will initially be built with a 10-foot shared-use path for bicycles and pedestrians, with an additional 22 feet of reserved width for future elements including a shuttle (with drivers or using AVs) and additional pavement for increased pedestrian or bicycle capacity.

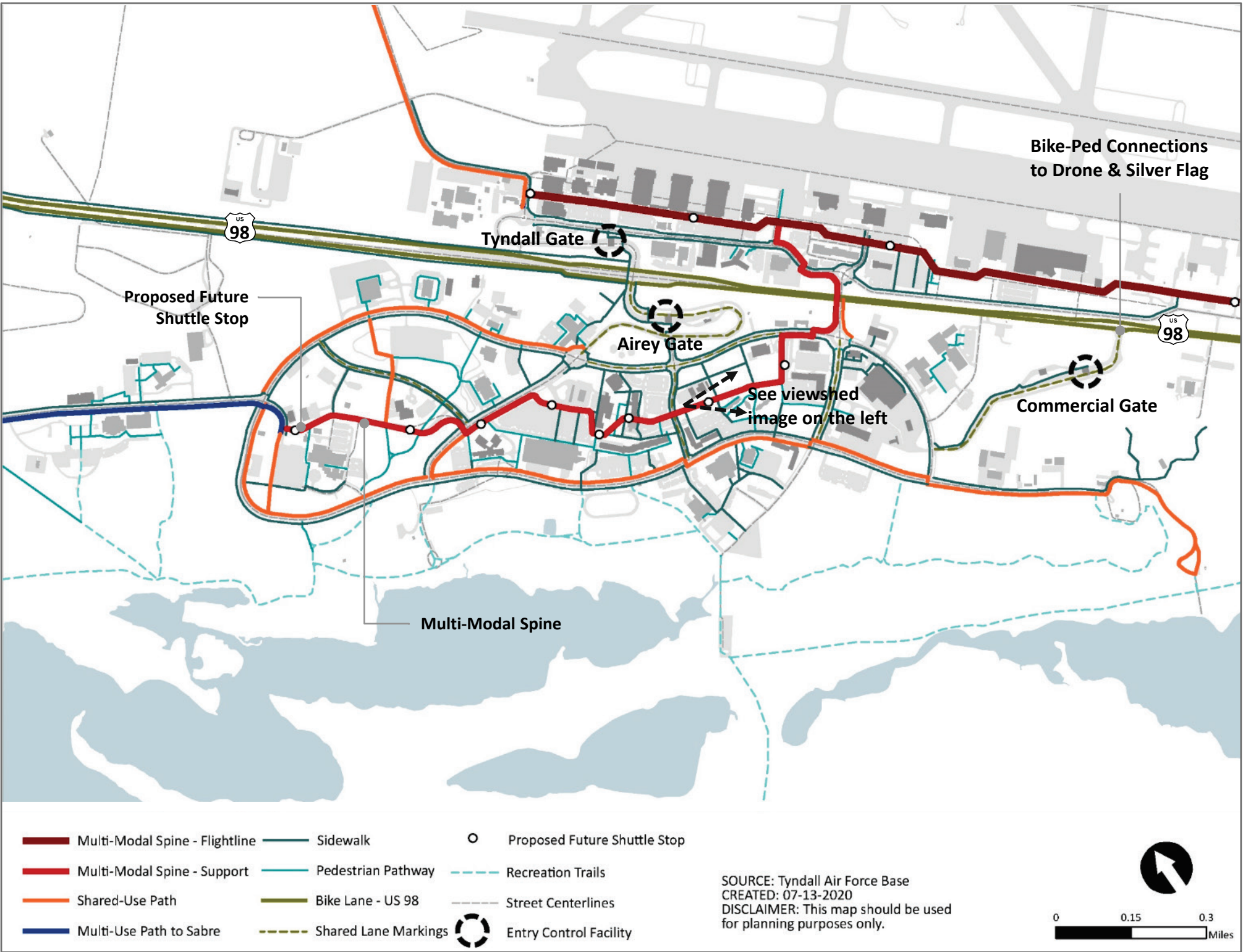
Fine-grained Path Network

The fine-grained bike and pedestrian network is important to connect the spine to all corners of the rebuild program and beyond. This network includes multi-use pathways, shared-use pathways, primary walkways, sidewalks, and trails. Refer to **Section C, Site Development Criteria** for the description of these facilities and supporting components.



Typical Multi-Modal spine condition within the support district showing integration of planning principles

Exhibit B02-5. Integrated Mobility Framework – Support & Flightline Districts



B02.4.3 Recommended Bicycle & Pedestrian Elements

Exhibit B02-6 lists recommended interventions to ensure the sidewalks, pathways, and trail components support a walkable and bikeable installation – a critical aspect of the vision set forth for the Tyndall AFB rebuild program. These interventions include policy, program, and project recommendations. Considering the rebuild is step one of the long-term transformation of Tyndall AFB, it is important for the rebuild designs and plans to coordinate with future policy, program, and project opportunities.

In **Section C, Site Development Criteria**, detailed typologies and element guidelines are provided for the various components of the pedestrian and bicycle mobility network. This system is one part of the larger integrated mobility framework. Each aspect of the master plan needs to be carefully considered and orchestrated to support the mobility goals set forth by the current master plan, the IFS, and the rebuild program.

Exhibit B02-6. Recommended Bicycle & Pedestrian Elements

	Pedestrian Elements	Bicycle Elements	Combined
Policies	▪ Reduced dependence on automobiles ▪ Maintenance policies related to sidewalks and crosswalks ▪ Installation land-use planning and development regulations/incentives that promote walkability ▪ Crosswalk enforcement policies	▪ Roadway maintenance policies related to bikeways (striping and re-striping bike lanes, clearing debris, filling potholes) ▪ Bicycle/transit integration policies ▪ Updates to roadway performance evaluation methodology ▪ Bikeway encroachment enforcement policies	▪ Complete Streets ordinances for Support District and JBLU/ neighborhoods ▪ Street connectivity standards ▪ Traffic calming, road diet, and speed reduction programs ▪ Travel demand management programs
Programs	▪ “Walk the Installation” programs ▪ Fitness challenges ▪ Pedestrian safety education programs	▪ Bike-to-work programs ▪ Bicycle safety education programs ▪ Bicycle mechanics and maintenance classes ▪ Bike sharing	▪ Safe Routes to Work (including US 98) ▪ Regional alternative transportation system incentive programs
Projects	▪ Sidewalks and pedestrian pathways ▪ Crosswalks and median refuge islands ▪ Way-finding for pedestrians ▪ Outdoor fitness stations	▪ Bikeways ▪ Shared-use roadway markings ▪ Bicycle traffic signals ▪ Bicycle boxes and painted bike lanes ▪ Bicycle parking and end-of-trip facilities ▪ Way-finding for bicycles ▪ Bike repair stations with air pumps	▪ Multi-use paths/trails ▪ Installation transit/shuttle service ▪ Grade-separated crossings ▪ Streetscape improvements ▪ Transit stop facilities for walkers and bicyclists

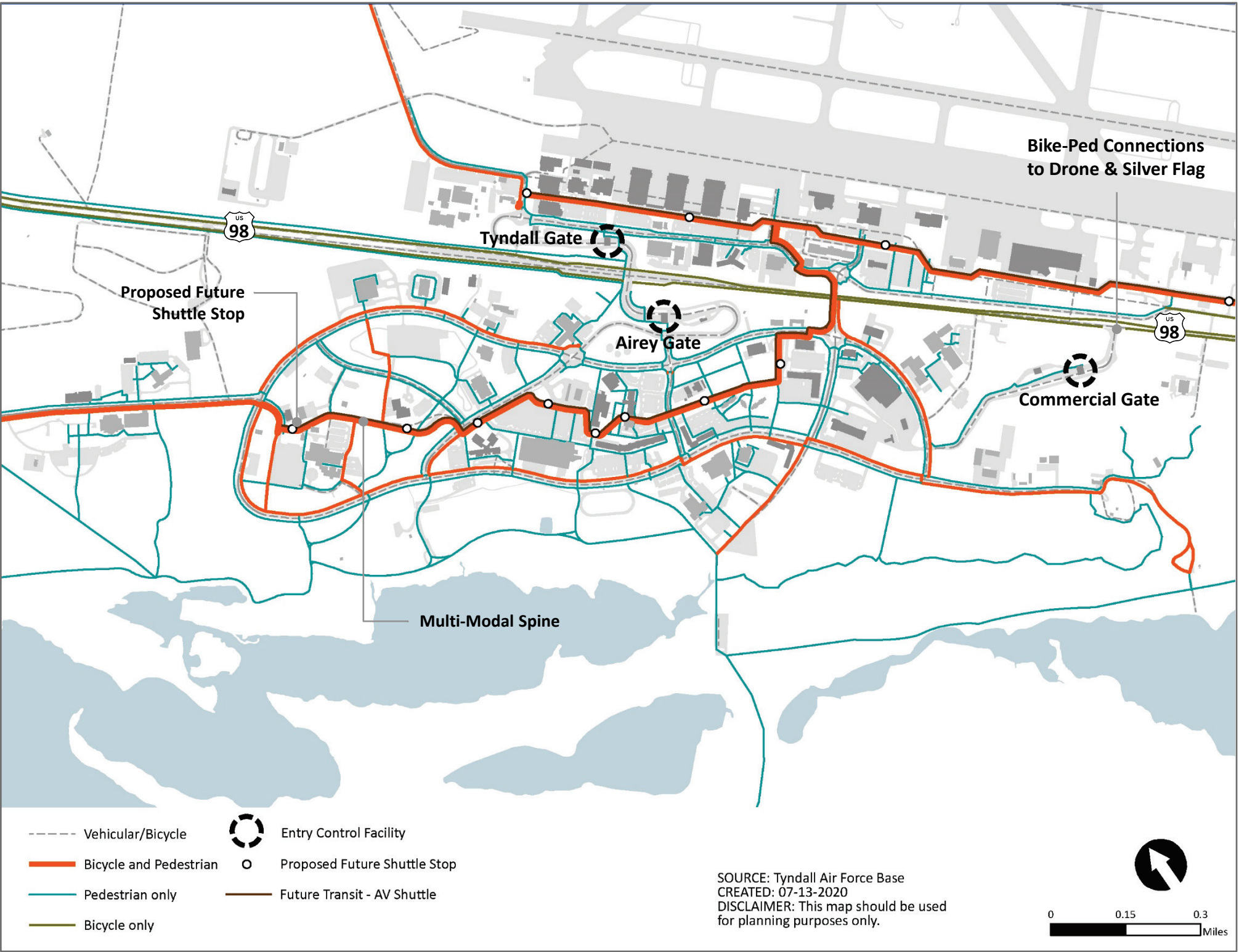


B02.4.4 Non-POV Mobility Mode Diagram

All primary roadways will feature sidewalks and trails, and shared lanes for bicycles. In its entirety, this well-organized and safe pedestrian circulation network will place most primary Support District facilities within a 10- to 15-minute walk for most of the District’s population, as reflected in the Multi-Modal Connectivity Analysis.

Exhibit B02-7 shows the various mode types for the mobility features.

Exhibit B02-7. Integrated Mobility Modes



B02.5 Framework Prioritization & Implementation

Exhibit B02-8 illustrates the mobility system considered part of the MILCON reconstruction, as well as long range mobility investments to position Tyndall AFB as the Installation of the Future. A matrix of stakeholders and funding opportunities for future phase elements is included in **Section C05, Sidewalks, Pathways, and Trails.**

The renderings below show how the initial investment from MILCON can be enhanced in concert with mission growth and increased investment in alternative mobility options.



Multi-Modal Spine, initial MILCON phase



Multi-Modal Spine, future project TBD – full build-out

Exhibit B02-8. MILCON Mobility System

