### SUMMARY OF CHANGES/UPDATES

<table>
<thead>
<tr>
<th>Date of Change</th>
<th>Chapter</th>
<th>Description of Change</th>
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<tr>
<td>05 March 2020</td>
<td>Tyndall AFB IFS Rebuild Appendix Executive Summary</td>
<td>Logos were removed from cover Page</td>
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<tr>
<td>05 March 2020</td>
<td>Tyndall AFB IFS Rebuild Appendix Executive Summary</td>
<td>All instances of the words “should” and “shall” have been replaced with “must,” “will,” or “is to be”</td>
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<tr>
<td>05 March 2020</td>
<td>Tyndall AFB IFS Rebuild Appendix Executive Summary</td>
<td>Table of Contents on Page 5 was updated</td>
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<tr>
<td>05 March 2020</td>
<td>Tyndall AFB IFS Rebuild Appendix Executive Summary</td>
<td>Added Summary of Changes for Chapter 0</td>
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Executive Summary

Purpose

The Tyndall Air Force Base (AFB) Installation Facilities Standards (IFS) Rebuild Appendix was developed with the intended purpose of providing design guidance to:

- Support the rebuild of Tyndall AFB after the devastation of Hurricane Michael
- Specifically address the vertical and horizontal Military Construction (MILCON) program for the rebuild
- Clearly articulate the additions of sustainability, resilience, and smart technology actions that clarify or exceed baseline U.S. Department of Defense (DoD), Unified Facilities Criteria (UFC), and other requirements
- Provide “guardrails” for the rebuild without inhibiting innovation and creativity
- Expedite the design phases of the rebuild by consolidating design guidelines and intent in a single resource
- Specify guidelines that enable the Installation of the Future

Technical Approach

The technical approach for the Tyndall AFB IFS Rebuild Appendix was conducted in three phases:

- Phase 1: Update current IFS to include design criteria for high-velocity wind zones.
- Phase 2: Conduct a detailed and comprehensive update for new and existing and approved modifications to the IFS. This phase will run concurrent with Phase 1 including consensus building events and government reviews.
- Phase 3: Integrate the IFS into a digital, web-based tool

This document represents Phases 1 and 2. Phase 3, the digital delivery of the Tyndall AFB IFS Rebuild Appendix, will go live in April 2020, and be made available to the Government, contractors, and other pertinent parties.

Audience

The primary audiences of the Tyndall AFB IFS Rebuild Appendix are the Architect and Engineering (A/E) Firms, Design-Build Contractor teams, the Tyndall AFB Program Management Office (PMO) team that is overseeing the Tyndall Rebuild design and construction activities, and other Governmental entities involved in the rebuild program. It is anticipated that the standards of the Tyndall AFB IFS Rebuild Appendix and the related guidance documents will need to be updated after the program is completed.

Documentation Strategy

The documentation strategy for the Tyndall AFB IFS Rebuild Appendix was developed with the intention of guiding the hurricane recovery rebuild versus the typical IFS intention, which is to guide overall development in a normal operating environment. In this case, Tyndall AFB is in an urgent and compelling environment in order to recover, rebuild, and get back to a normal operating condition. Therefore, there was a demand for a much greater level of clarification, detail and, in some cases, deviation from the standard baseline requirements, which is reflected in this document.

This IFS Rebuild Appendix is nested in several primary guiding documents:

1. DoD Criteria:
   - UFC
   - Unified Facilities Guide Specifications (UFGS)
   - Memoranda

2. Air Force Criteria
   - Air Force Instructions (AFI)
   - Air Force Engineering Technical Letters (AFETL)
   - Air Force Corporate Facilities Standards (AFCFS)
   - Memoranda

3. Tyndall AFB-Specific Criteria
   - Pre-Final Tyndall AFB IFS (05 November 2018)
   - Tyndall AFB Design Flood Elevation (DFE) Memorandum (05 June 2019)
   - Tyndall AFB Design Wind Speeds and Building Envelope Protection Memorandum (27 August 2019)
Executive Summary

Documentation Strategy

DoD Criteria

Air Force Criteria

AFCFS

TAFB Criteria: Pre-Final IFS

*NOTE: At the time of the IFS Rebuild Appendix finalization, The November 2018 Pre-Final Tyndall Air Force Base Installation Facilities Standards was in the process of being updated.

The Air Force Corporate Facilities Standards (AFCFS) is an enterprise-wide program of facility standards. This document established the fixed Table of Contents for the Tyndall AFB Pre-Final IFS, which cannot be modified or expanded. Given these constraints, it was determined to address the rebuild strategy as an Appendix to the Tyndall AFB Pre-Final IFS. The IFS Rebuild Appendix is to be used as the guiding document versus referencing the Pre-Final IFS.

Focus of the Tyndall AFB IFS Rebuild Appendix

Design Wind Speeds and Building Envelope Protection Memo

Design Flood Elevation (DFE) Memo

Tyndall AFB IFS Rebuild Appendix

Chapter 1: Overview & Background

Chapter 2: Design Intent

Chapter 3: Technical Guidelines

Content current as of 11 March 2020. After 10 April 2020, please refer to the Tyndall IFS website (www.tyndallifs.com) for up-to-date information.
Executive Summary

Design Wind Speeds and Building Envelope Protection Memo

Based upon our AF Structural SME recommendations and in alignment with the SecAF directed Severe Weather Readiness Assessment recommendations, the Tyndall PMO will use the draft 2019 UFC and the following Tyndall design wind speeds based upon Risk Categories III-V:

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<tr>
<th>Tyndall Design Wind Speeds</th>
<th>RC I (mph)</th>
<th>RC II (mph)</th>
<th>RC III (mph)</th>
<th>RC IV (mph)</th>
<th>RC V (mph)</th>
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<td>165</td>
<td>170</td>
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Executive Summary

Design Flood Elevation (DFE) Memo

05 June 2019

MEMORANDUM FOR AFCEC/CL (Mr. Terry G. Edwards)
FROM: HQ USAF/A4C
1260 Air Force Pentagon
Washington, DC 20330-1260
SUBJECT: Tyndall AFB Design Flood Elevation (DFE)

Design Flood Elevation is defined as the minimum elevation to design assets considering not just the Base Flood Elevation (BFE), but other factors such as historic storm surge data, sea level change, regulatory mandates, state or local requirements, building code requirements, and an asset owner’s risk tolerance. This memorandum established two DFE values for the Tyndall AFB design effort:

a. For the Gulf side (generally southwesterly of Highway 98) the DFE is 19’ above today’s mean sea-level (MSL), and
b. For the East Bay side, generally northeasterly of Highway 98, the DFE is 14’ above MSL.
Executive Summary

Tyndall AFB IFS Rebuild Appendix: Chapter 1 – Overview & Background

Chapter 1 – Overview & Background provides an overview of the context of Tyndall AFB, hurricane damage, MILCON rebuild program summary, and a high-level site analysis of each land management district.

1. Introduction
   1.1 Tyndall Air Force Base Profile
   1.2 Impacts of Hurricane Michael
   1.3 Overview of Damage
   1.4 Recovery Plan
   1.5 Rebuild Tyndall
      1.5.1 Base of the Future
      1.5.2 Timeline of Services
      1.5.3 Resiliency, Sustainability, and Smart Systems
      1.5.4 Rebuild Program Summary

2. Context
   2.1 Regional Context
   2.2 Site Characteristics
   2.3 Land Use Management Districts
   2.4 Program List

3. Flightline District
   3.1 Site Inventory
   3.2 Site Analysis
   3.3 Findings

4. Support District
   4.1 Site Inventory
   4.2 Site Analysis
   4.3 Findings

5. Ammo District
   5.1 Site Inventory
   5.2 Site Analysis
   5.3 Findings

6. Crooked Island District
   6.1 Site Inventory
   6.2 Site Analysis
   6.3 Findings

7. Silver Flag District
   7.1 Site Inventory
   7.2 Site Analysis
   7.3 Findings

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Executive Summary

Tyndall AFB IFS Rebuild Appendix: Chapter 2 – Design Intent

Chapter 2 – Design Intent provides guidance as to the image, character, and design strategies to achieve an Installation of the Future as well as to represent the next generation of Tyndall AFB. Each section of the Design Intent addresses the design principles, solutions, and descriptions.

1. Architecture
   Image and character for the vertical environment, which includes all enclosed and open structures. This section is limited to new construction and does not include renovation of buildings to remain.

2. Site and Landscape
   Image and character for the horizontal maintained and manicured environment, which includes roads, parking, pathways, site furnishings, site lighting, landscape, and hardscape.

3. Coastal Resiliency
   Focus on creating opportunities for innovative solutions that integrate nature-based and structural elements to minimize coastal risk and to restore, maintain, and protect the coastal integrity.
Executive Summary

Tyndall AFB IFS Rebuild Appendix: Chapter 3 – Technical Guidelines

Chapter 3 – Technical Guidelines defines the standards that will be implemented to deliver on the promise of an Installation of the Future. These guidelines provide in-depth and comprehensive coverage of the aspects that need to be addressed in the built environment in order to construct the program outlined in the recovery MILCON.

To truly construct an Installation of the Future, in many cases, the technical guidelines needed to be clarified with greater detail or refined to exceed the standard baseline requirements. In some cases, there were no technical guidelines that addressed the vertical or horizontal infrastructure required, so guidelines were created. Four main categories of criteria are addressed in the technical guidelines.

1. New Criteria: Did not exist before
   • The Design Wind Speeds and Design Flood Elevation Memoranda established new and unique design requirements specific to Tyndall AFB and the desire to be more resilient to future hurricanes.

2. Enhanced Criteria: Exceeded minimum requirements
   • The MILCON program outlined in the DD 1391s establish funds based on a percentage of the overall construction to increase the amount of resiliency, sustainability, and smart technology that is incorporated into the program.
     » Climatic Resiliency Measures will include compliance with Florida Building Code, High Velocity Hurricane Zone standards applicable to Miami-Dade County, where they exceed the UFC, such as opening reinforcement, roof framing to foundation connections, and impact glazing and doors approved by Miami-Dade County.
     » Sustainability measures will be designed, constructed, and operated with sustainable features as unifying priorities for all horizontal and vertical efforts. Projects will incorporate criteria from a variety of proven strategies, including best practices from private sector and DoD agencies, as well as framework from third-party rating systems that specifically address aspects of Tyndall AFB’s natural coastal context, infrastructure, energy and water systems, and buildings, and include aspects of occupant and community experiences.
     » Smart technology measures will include technology and data systems for more resource efficient building operations and to enhance capability to respond to, and recover from, natural, and manmade disruptions.

3. Clarified Criteria: No change to original criteria, added more detail
   • During the development of the Tyndall AFB IFS Rebuild Appendix, numerous workshops and stakeholder charrettes were conducted that resulted in requests for clarification and additional detail to provide better guidance to the designers and contractors.
     • Clarifications included the consolidation of best practices from other industry sources for ready reference and consistent application and specific detail that are unique to the environment at Tyndall AFB.
     • Clarifications were also determined by benchmarking specific damage as an outcome from Hurricane Michael and observations about system and infrastructure failures.

4. Existing IFS Criteria: No change to original criteria, if still relevant it was pulled into the Appendix
   • Criteria in the Tyndall AFB IFS that were still viable and relevant were pulled into the Tyndall AFB IFS Rebuild Appendix. All other criteria in the previous iterations of the IFS should be considered outdated.
The U.S. Air Force has not undertaken an IFS specifically related to a MILCON program of the magnitude of the Tyndall Rebuild Program. The Technical Guidelines were written to accompany and inform the A/E design process to expedite the process and ensure that the Installation of the Future design intent is being met. It is not a final design specification; instead, it is intended to guide the design teams who will develop and use the final design specifications.

The Technical Guidelines were developed by reviewing a wide range of Third-Party Rating Systems and Industry Best Practices from some of the most trusted and used sources in the marketplace. Those sources were measured and evaluated for their technical applicability specifically to the Tyndall Rebuild Program. This analysis provided some of the new guidelines that currently do not exist in any DoD or Air Force requirements.

There were multiple workshops, coordination efforts, and interactions to gather stakeholder input to ensure that the overall vision of the Installation of the Future was defined, a validation of the technical guidelines was being conducted, and that the stakeholders who would manage the Tyndall Rebuild Program and own the installation after the rebuild was complete were taking ownership of the Technical Guidelines.

The requirements and guidance from DoD as well as the Air Force were evaluated to understand where there should be clarifications or exceedances in order to deliver the desired outcome of an Installation of the Future. The Technical Guidelines do not contain any guidelines that are repeated from other Federal requirements; they are either clarifications, exceedances, or new guidelines developed as shown in the infographic below.
Executive Summary

Participants
The Tyndall AFB IFS Rebuild Appendix engaged with a large number of key stakeholders.

OPTIONS were driven by a collaborative effort by a diverse stakeholder network

325th Fighter Wing

AFCEC

PMO

Utility Providers/Operators
• GCEC
• Gulf Power
• TECO Energy
• Allutiiq

KBR/JACOBS

Technical
• Civil
• Electrical
• Mechanical
• Transportation

SMEs
• Energy Efficiency
• Florida Resiliency
• Sustainability
• Smart Technology
• Site Planning

SAF

AF

OEA

NREL

USACE

Photo credit: Tech. Sgt. Jensen Stidham

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