INSTALLATION FACILITIES STANDARDS (IFS)
OPERATORS MANUAL

Installation Elements

Site Development

Facilities Exteriors

Facilities Interiors

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

Signature Field

IFS OPERATORS MANUAL (IFS-OM)

IFS is the base-level program under **Air Force Corporate Facilities Standards (AFCFS).** AFCFS includes both the IFS and the Air Force Design Awards Program (AFDAP) as part of its effort to define, implement and promote base-level facilities standards. AFDAP requires project compliance with IFS for eligibility and incentivizes design professionals to meet base standards. AFCFS and AFDAP are administered by the Air Force Civil Engineer Center (AFCEC). The IFS program is administered at the base level by the Civil Engineer Squadron (CES) under the direction of the Base Civil Engineer (BCE).

CHAPTER OUTLINE

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I. IFS PROGRAM SUMMARY

A. IFS Program Objectives

1. Use Air Force Resources to Comply with Facilities Design Criteria

Air Force Corporate Facilities Standards (AFCFS) is an enterprise-wide program establishing an acceptable level of quality and performance for all infrastructure, sites and buildings. AFCFS integrates Department of Defense (DoD) criteria such as Unified Facilities Criteria (UFC), Unified Facilities Guide Specifications (UFGS) and DoD Memoranda with Air Force (AF) criteria and organizes criteria based on its applicability to base-wide infrastructure, systems and materials; site systems and materials; and building systems and materials.
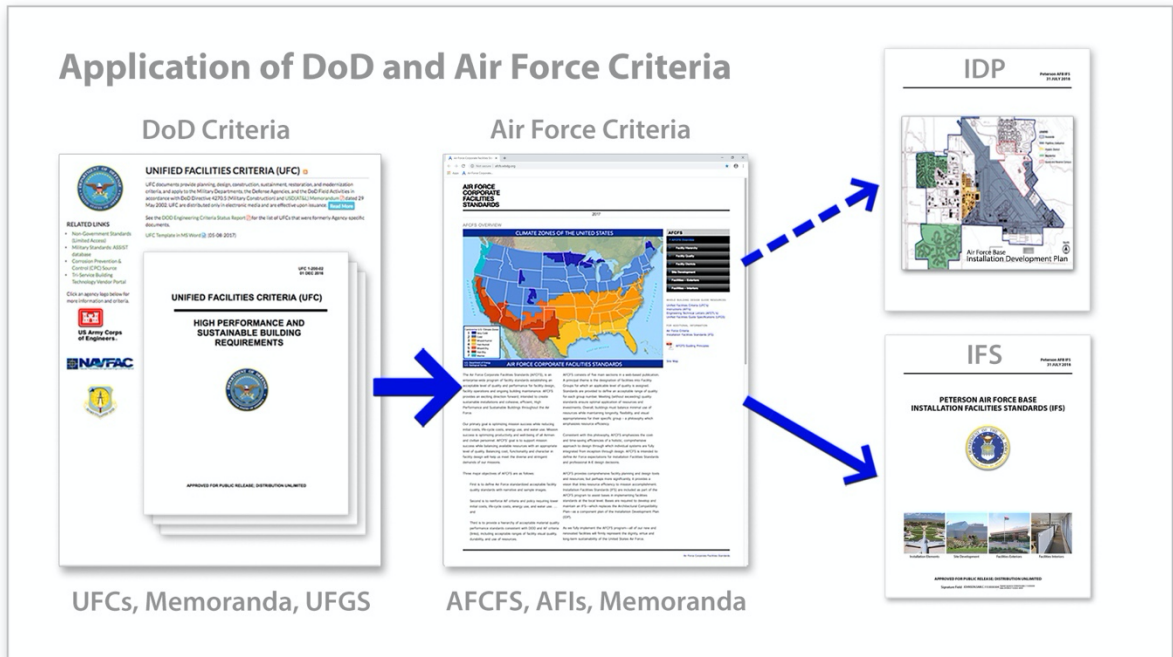
DoD and AF Criteria Are Listed in AFCFS' Major Categories, Subsections and Standards

AFCFS lists DoD and Air Force criteria based on applicability in four major sections:

- Installation Elements
- Site Development
- Facilities Exteriors
- Facilities Interiors

Please refer to the AFCFS website to review the major categories and subsections: http://afcfs.wbdg.org/afcfs_index.html

Applicable criteria is linked from each section and subsection. Further, criteria is linked where applicable to specific standards, materials and systems.

AFCFS considers facilities design, operations and ongoing maintenance in its directives to create highly sustainable and resilient installations. Further, AFCFS provides direction to create cohesive, efficient, High Performance and Sustainable Buildings throughout the Air Force.
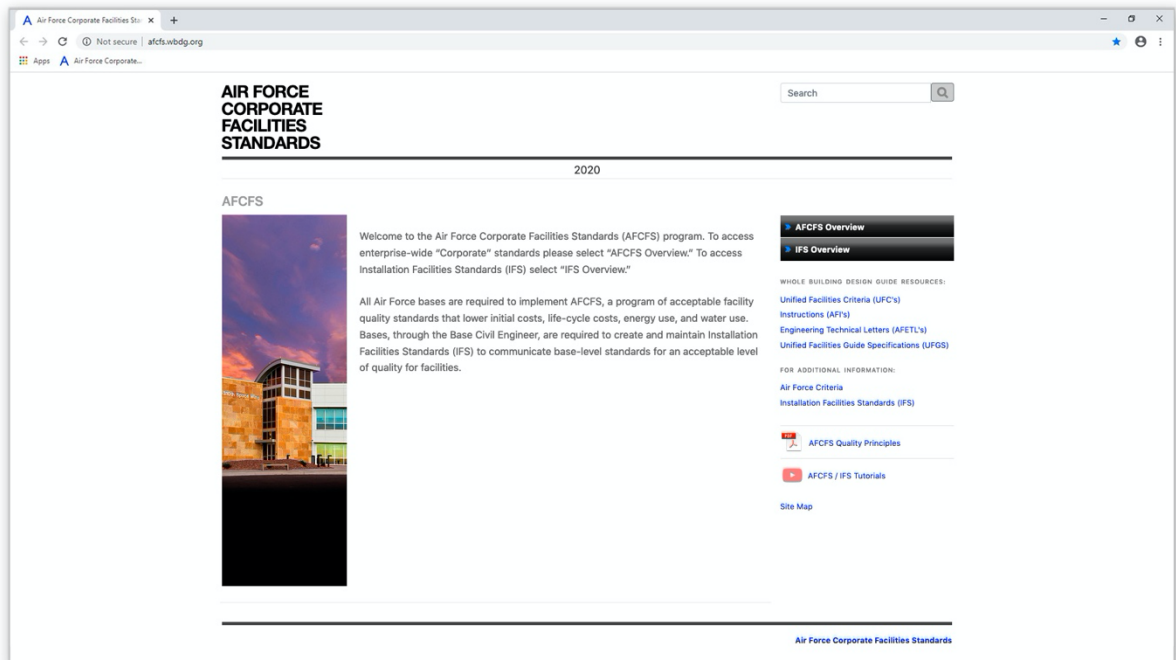
Screenshot of AFCFS Website

Civil Engineer Squadrons (CES) are directed to use AFCFS as a portal to Department of Defense (DoD) criteria and AF criteria to meet the program's primary goals and objectives:

- *Standardize acceptable levels of quality*
- *Lower initial and life-cycle costs and reduce energy use and water use, and*
- *Establish climate responsive and operationally acceptable material performance standards*

A principal theme of AFCFS is the designation of facilities into **Facility Groups** for which an acceptable level of quality is specified. All facilities must balance minimal use of resources while maintaining longevity, flexibility and an acceptable range of quality for their specific group—a philosophy which emphasizes resource efficiency.

Please refer to the Facility Hierarchy discussion at AFCFS for an overview of Facility Groups: http://afcfs.wbdg.org/facility-hierarchy/index.html

Materials and finishes in Group 1 facilities, for example, may be of higher visual quality than those in Group 2 facilities. Generally maintain higher durability in Group 3 facilities that are industrial in nature. Group 4 (family housing) systems, materials and finishes must respond to their residential use.

Even though Group 4 is typically privatized, standards for performance and quality must be documented to establish a baseline. It is also important to record conditions should housing require replacement, which is validated by the recent wind and storm surge events at Tyndall Air Force Base.

AFCFS Acceptable Range of Quality for Group 1

Design high-visibility buildings using features, materials and details that represent Group 1 as the most prominent facilities on an Installation. Create an architectural character using refined detailing but avoid excessive ornamentation.

AFCFS Acceptable Range of Quality for Group 2

For Group 2, provide building designs that are less prominent than Group 1. Create a visual character that represents a professional image using moderate detailing; avoid excessive use of architectural features and extravagant materials.

AFCFS Acceptable Range of Quality for Group 3

Design simple forms and massing with highly durable materials in Group 3 facilities that are industrial in nature. Visually represent a utilitarian nature in Group 3 facilities with features that efficiently support operations and functionality.

AFCFS Acceptable Range of Quality for Group 4

Provide long-lasting highly durable housing. Create a residential visual character for Group 4 with human-scaled architectural features and detailing. Limit refined detailing to General Officer Quarters. Avoid the use of extravagant materials.

Durability of materials is to be related to a building's type, functionality, use, and resistance to wear and weathering. Facilities must be designed to withstand their operations and to allow for multiple adaptations in use over a building's lifespan.

Another primary theme of AFCFS is gaining a greater understanding of the **local climate** and applying climate-based design strategies to the program's objectives related to:

- *Standardized level of quality*
- *Reduced costs of construction, ongoing operations and maintenance*
- *Reduced energy use and water use*
- *Durability of materials and systems*

AFCFS organizes AF installations into climate regions and proposes regional strategies for materials and systems performance through its base-level Installation Facilities Standards (IFS) program. IFS is intended to assist bases in optimizing their facilities and systems and in achieving a high level of sustainability and resiliency given the locale.

AFCFS-IFS Climate Region Map for CONUS Installations

The IFS program is a robust base-level tool and resource for applying DoD and Air Force criteria and corporate standards at the local level. IFS defines Air Force expectations for base-level design and provides guidance for professional Architect-Engineer (AE) design decisions.

Conformance to AFCFS and IFS is required by Air Force Instruction (AFI) 32-1023 and Air Force Memorandum. Allow AFCFS to guide the IFS, which replaces architectural compatibility plans and other design standards programs and documents, and to fully integrate governing criteria by reference.

Repeating criteria in base-level documents is no longer needed.

Bases are to reinforce a **facility hierarchy** by designating a Facility Group number for every facility on the installation. Comply with IFS in all new construction and renovation projects and provide acceptable architectural features, materials and details for each group number. Organize facilities into Groups 1, 2, 3, or 4.

IFS examines and appraises the local climate and natural systems in the application of overarching DoD and Air Force principles and criteria. Ensure that awareness and understanding of climate informs base standards to maximize efficiencies, performance and longevity, recognizing both the constraints and the opportunities. Implementation of passive systems and renewable-energy systems is encouraged and an integrated design approach, favoring on-site systems rather than increasing base-wide infrastructure, is preferred.

NOTE The Civil Engineer Squadron must continually refine base standards in the IFS

The Civil Engineer Squadron at each installation must recognize the refinement of its base standards as an opportunity and convey the standards through its IFS in a manner that inspires achievement and compliance.

Bases are encouraged to use the **Air Force Design Awards Program (AFDAP)** as an incentive for AE firms and construction contractors to comply with IFS. For projects to be eligible for the design awards program they must demonstrate compliance with the IFS. Further, projects must satisfy the AFDAP's prerequisites for the applicable climate region.

During project concepts, design and construction, Civil Engineer Squadrons are encouraged to distribute AFDAP checklists to facilitate design and construction of High Performance and Sustainable Buildings and to encourage compliance with the base standards in the IFS.

AFDAP Provides Incentives for Complying with IFS

2. **Establish Base-wide Standards and Consider Facility Districts**
   Civil Engineer Squadrons (CES) are directed to establish **base-wide standards** for each Facility Group. Standards are required to follow DoD and AF criteria and to be adapted for the specific local climate to optimize performance. Refer to AFCFS for guidance.

NOTE Establish base-wide standards initially for each Facility Group

An overarching principle of IFS is to establish base-wide standards for each Facility Group number. Once a group number is established, quality and performance standards may be defined. If a Facility District requires exceptions to the base-wide standards, these are subsequently defined and listed in Appendix F of the IFS.

NOTE After base-wide standards are established, define exceptions, if any, for Facility Districts

Consider the IFS hierarchy of Facility Groups initially and enforce, as the top priority, the base-wide standards created for each group number. Then, apply any exceptions to the standards that are listed in Appendix F for Facility Districts.
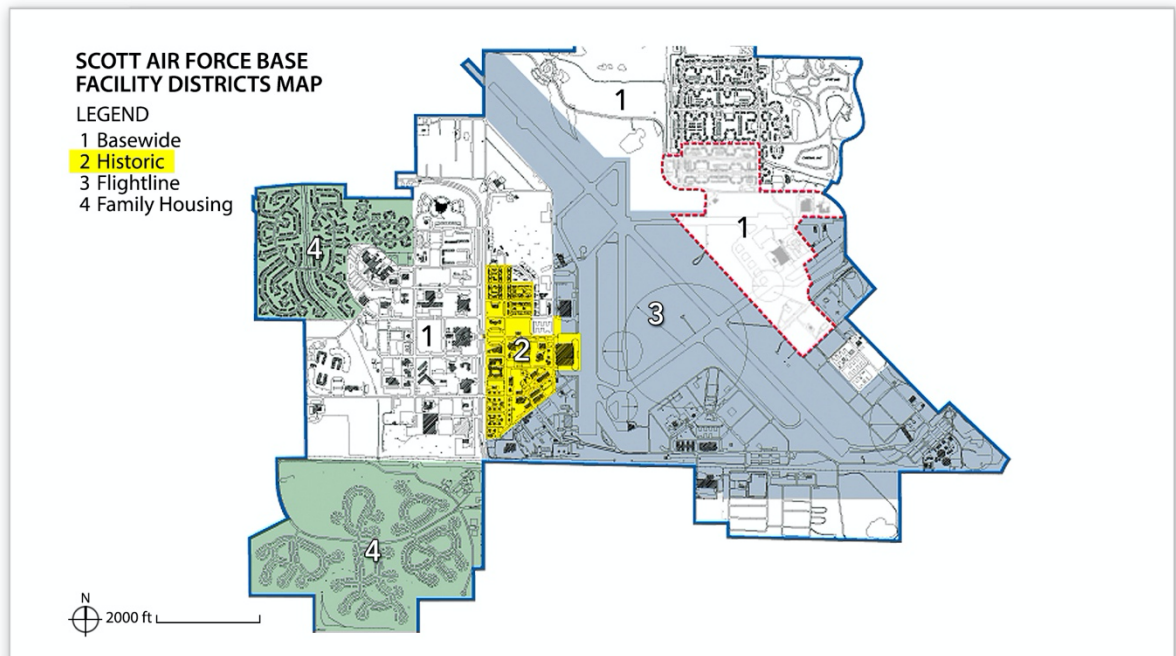
Facility Districts Map at Scott AFB with Historic District

In the above example from Scott Air Force Base, Facility Groups supersede district designations in all cases except for the base's "Historic District."

- Base-wide District   =   Apply Facility Group 1-4 Base-wide Standards
- Historic District   =   Apply Facility Group 1-4 Base-wide Standards,
                                              Then Apply Exceptions Listed in Appendix F
- Flightline District   =   Apply Facility Group 3 Base-wide Standards
- Family Housing   =   Apply Facility Group 4 Base-wide Standards

Facility Districts may be created, or may be preexisting, to define and maintain a unique visual zone with a distinguishable architectural character. A district is recognized as a geographical area with discernible boundaries and a consistent appearance throughout: similar patterns of development, form, scale, palette of materials, site systems, etc.

Examples of Facility Districts may include historical areas, flightlines, industrial areas, housing areas, or medical campuses. Facility Districts are synonymous with "planning districts" found in the base's Installation Development Plan.

Previously established districts were generally developed in response to land use, mission or operations, or to a unique architectural style that was in vogue when the structures were built. Preserve Districts designated as historical. Other districts should follow base-wide standards for new facilities and renovations; any exceptions to the base-wide standards as noted in Appendix F are subsequently applied.

NOTE A primary organizing theme of IFS is Facility Groups

To reiterate, the primary organizing theme of IFS is "Facility Groups." The IFS defines Facility Group numbers; it then establishes base-wide standards of quality for each group. Finally, IFS lists exceptions, if any, to the base-wide standard for facility districts.

Managing facility groups is actually easier than managing districts. Industrial facilities are Group 3, for example, yet a base may have a facility district called "Industrial" or "Flightline." The base-wide standards established for Group 3 are applicable to all industrial facilities.

There may be few, if any, exceptions to the base-wide standards for a Group 3 building, due to its location in an industrial district. An "Industrial" district may be simply a land-use or programming designation and may not require unique facility standards.

3. **Define Acceptable Material Performance Standards**
   AFCFS organizes bases into **climate regions.** Each base's IFS defines materials and detailing to satisfy durability needs and to reduce the negative impacts of climate such as degradation due to weathering. The intent is to reduce maintenance and its associated costs while improving the appearance of facilities.

   For example, architectural precast used in hot, humid climates requires a higher density to resist formation of mold and staining. Increased density of precast in response to climate is considered a "regional" standard.

   IFS provides an opportunity to apply DoD and AF criteria to base standards with specific attention to the impacts of local climate. Materials must meet the performance metrics defined in the criteria.

   The base standards therefore must define a palette of materials that are acceptable for the locale. Further the IFS must identify detailing required to optimize the performance of the materials being used.
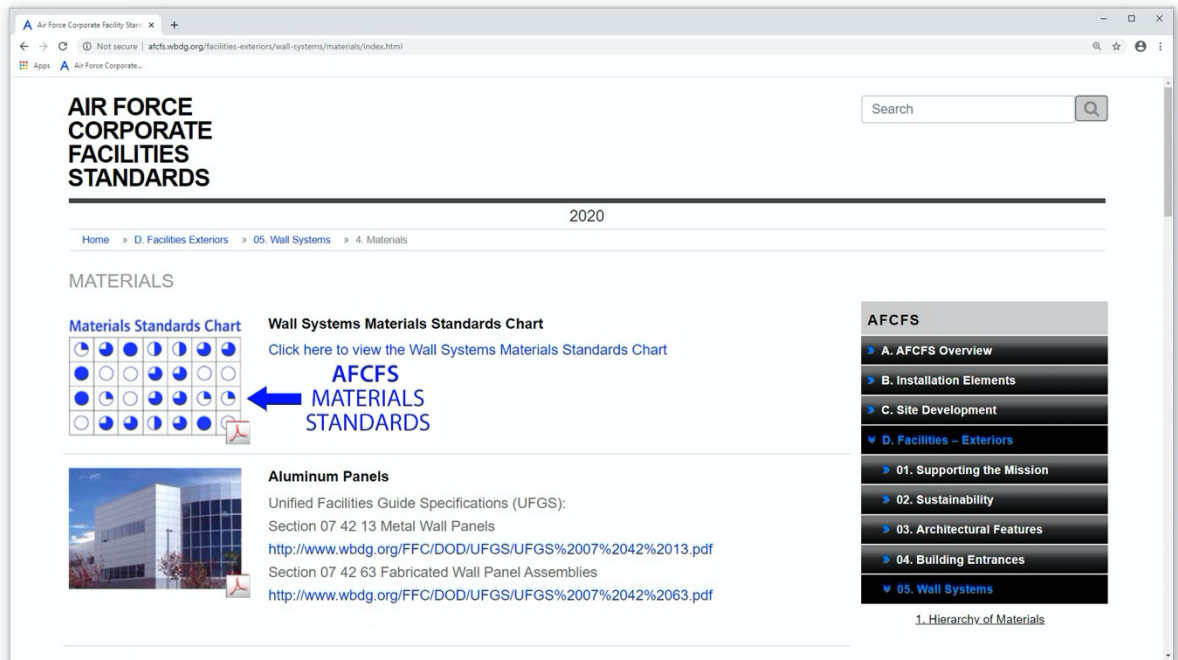
AFCFS Recommends Materials to Resist Wear and Weathering

4. **Simplify the Management Process for Air Force Personnel**
   Enforcing base design standards is vastly simplified and improved by IFS. Information is well organized, simply stated and linked to AFCFS and applicable DoD and Air Force criteria. IFS utilizes PDF navigation and tools and allows personnel to locate their base standards quickly and easily.

   Follow the guidelines in Chapters III and IV for organization of content and for composing narrative standards.

5. **Simplify the Implementation and Compliance Process for Designers and Contractors**
   Having concise facilities standards written in the form of **directives,** or brief instructions, gives designers and contractors a clear description of the requirements. Having the IFS content organized into distinctive categories allows base personnel and other users to quickly locate information. Standard PDF full-text search tools are available as well.

   Refer to Section I.F for the recommended process and workflow for implementing and enforcing base standards.

6. **Simplify the Review Process for Air Force Personnel**
   IFS formatting, arrangement and composition is straightforward and efficient. When reviewing a design and construction project for compliance with base standards, subject matter such as wall systems / materials can be accessed with one click from the IFS's Table of Contents.

   Major sections, subsections and standards are numbered to provide a clear path and an exact point of reference.

7. **Maintain a Standard IFS Format throughout the Air Force**
   The IFS format is a **fill-in PDF form** that is standardized throughout the Air Force. By understanding IFS organization and content, when base personnel transfer to another installation, there is greater efficiency in navigating the standards at the new location.

Architect-Engineer firms and contractors, who work at multiple bases, are able to navigate the IFS easily due to familiarity with the organization and general content.

B. **Program Principles**

1. **Establish Facility Hierarchy**

As discussed above, a hierarchy is established by organizing facilities into four groups. This is necessary to establish an acceptable level of quality. Please refer to the AFCFS website for information about group numbers:
http://afcfs.wbdg.org/facility-hierarchy/facility-groups/index.html

2. **Define Facility Quality**

Once a group number is assigned to a facility, an acceptable level of quality can be stipulated for each. Acceptable ranges of design quality, following the facility group number, are listed under the AFCFS Facility Quality tab:
http://afcfs.wbdg.org/facility-quality/index.html
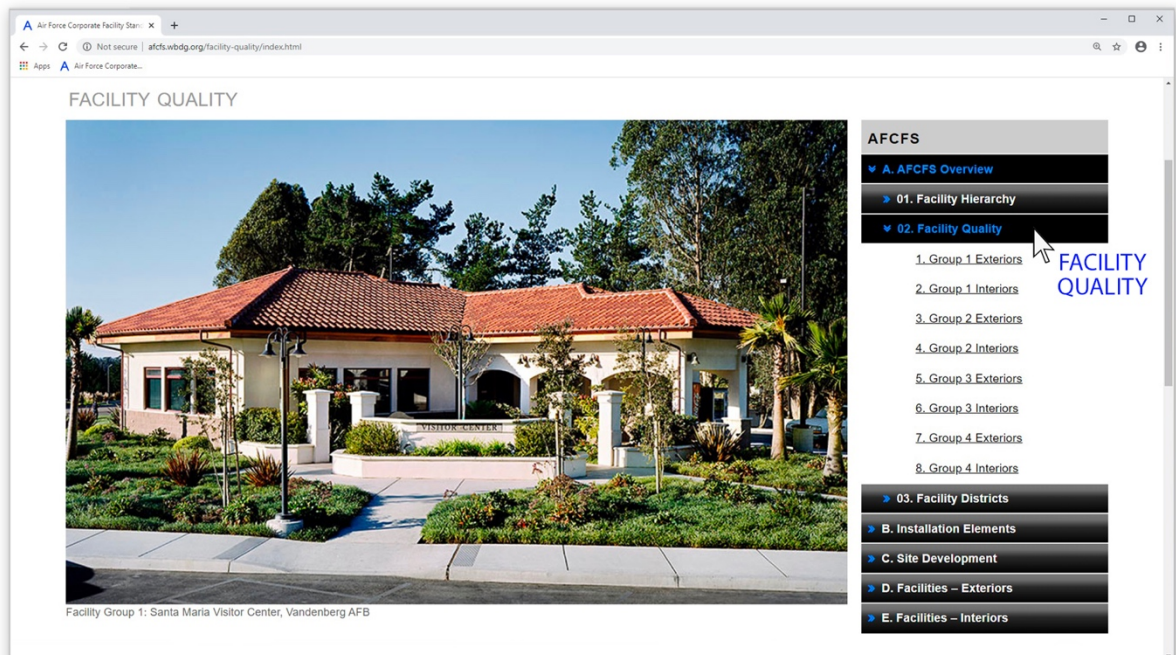
Facility Quality is Defined for Each Facility Group Number

3. **Define Base-wide Standards**

Civil Engineer Squadrons (CES) are directed to define and maintain their IFS following the **IFS Regional Templates** provided by AFCEC. These regional templates are developed using prevailing climatic data from the region. Standards for forms, materials, details, systems, and equipment, which perform well in a specific climate, are listed in the template. Bases are encouraged to refine these to fit the nuances of their locale.

NOTE Version 1 of the IFS is based on the IFS Regional Templates

CESs are directed to continually refine base-wide facilities standards by Facility Group number. As standards for facilities evolve for the various groups, there will likely be fewer exceptions listed for Facility Districts.

In a Facility District as described above, such as a historic area, there may continue to be exceptions to the base-wide standards. In this case the priority remains to enforce base-wide standards initially. Exceptions listed in Appendix F - Facility Districts may then be applied.

C. Role of the CES, BCE and Staff
  1. Establish a Single Point of Contact (POC)
  Unless the Civil Engineer Squadron (CES) has already done so, assign a **single point of contact** within the CES organization as the administrator of the IFS. This is ideally the base architect. In the absence of a base architect, a community planner, landscape architect, interior designer, or staff engineer may be assigned as the POC.

  While the POC is assigned the daily operations and management of the IFS, it is ultimately the responsibility of the Base Civil Engineer to implement and maintain the IFS program. The IFS provides a concise tool empowering the BCE needs to stand firm and defend the base's standards and to recognize issues or problems with materials and finishes and correct these. Address issues in the IFS with climate-responsive solutions.

  2. Qualifications of the POC
  The POC must be fluent with DoD criteria, AF criteria and AFCFS including its base-level counterpart, the IFS. The POC must have a design background and a working knowledge and understanding of facilities design, construction, operations, maintenance, and building performance. The POC must be proficient with MS Word and Adobe Acrobat and must have good computer and organizational skills. If there is a lack of computer proficiency it is recommended the POC have clerical and administrative assistance.

  3. **Responsibilities of the POC**

NOTE The POC is fundamentally the gatekeeper of the IFS

The POC is responsible to:

- *Distribute the IFS*
- *Apply the IFS*
- *Update the IFS*
- *Make Submissions to AFCEC*

Distribute the IFS
The POC distributes the IFS to programming personnel to ensure a Facility Group number and an acceptable level of quality is considered prior to making requests for funding.

The POC provides the IFS to the design professionals, who are undertaking new design projects. The POC must ensure the base's standards are being satisfied, and the POC must promptly report any instances of non-compliance to the BCE and AFCEC.

Refer to Section V.A.4 for recommended distribution for review and comments.

Apply the IFS

NOTE CES must promote application and implementation of the IFS

The POC with the support of CES leadership must promote and facilitate implementation of the base standards that are provided in the IFS.

The POC is required to be thoroughly familiar with UFC 3-101-01 ARCHITECTURE and its purpose and scope. The POC must be familiar with the standards of professional practice, which are used by Architect-Engineer (AE) firms. Please refer to "Project Planning, Delivery, and Controls" as published on the Whole Building Design Guide: https://www.wbdg.org/project-management
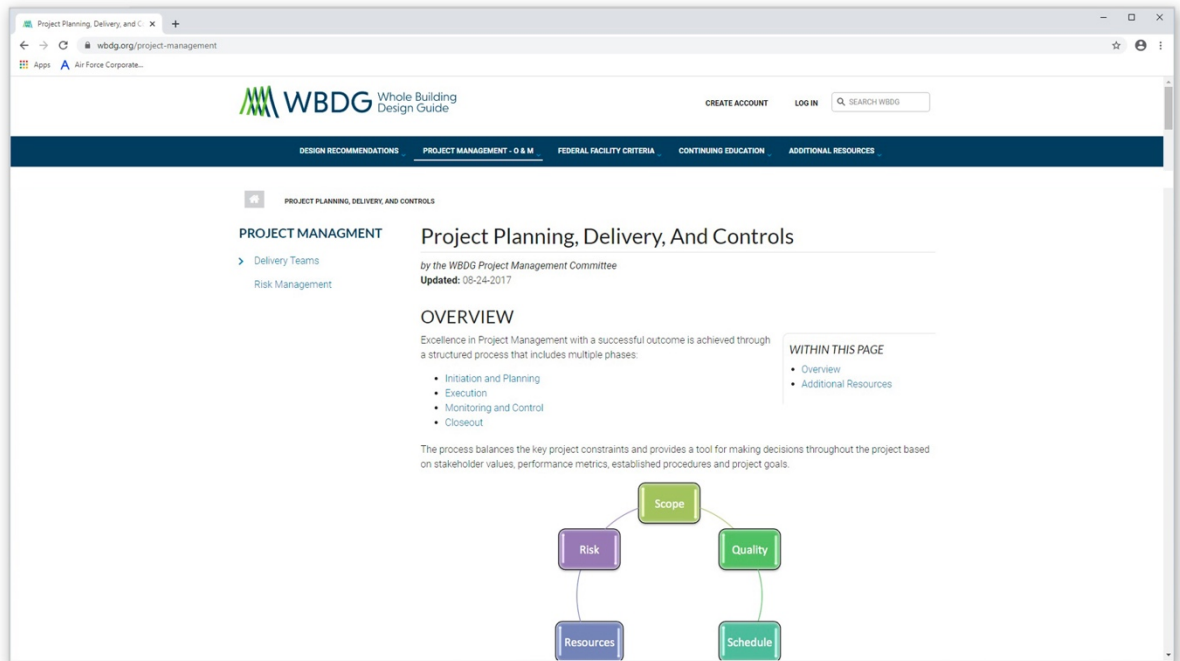
Online Tools Include Those on the Whole Building Design Guide and Its Industry References

Refer to the guidance under wbdg.org for "Design Stage Management." The POC must understand the responsibilities of the Civil Engineer Squadron. The POC must "define the criteria for assessing quality measurement to ensure the project's success" by conveying, promoting and facilitating implementation of the standards established in the IFS.

The POC must be fluent in the requirements, organization and location of content in the IFS to effectively implement base standards. The IFS, which is in force on the date of execution of the design contract, is the governing document. The POC must ensure that the project design complies with the version of the IFS that is in force.

The POC must monitor the progress of project designs to ensure initial and ongoing compliance with the IFS. The POC must be familiar with UFC 3-101-01, Section 5-3 DESIGN SERVICES. Follow the process for requiring AE firms to submit in their Basis of Design the proposed approach to achieving architectural compatibility as outlined in Section 5-3.3.

NOTE Use incentives to enforce the IFS

The POC may use checklists from the Air Force Design Awards Program (AFDAP) to encourage designers to record their project's compliance with the IFS. Compliance is noted on the AFDAP

checklists by line item, following the subsections of the IFS, with an emphasis on Site Development, Facilities Exteriors and Facilities Interiors. Apply Installation Elements on a case basis.

The "Cost Management" process requires the POC's attention. When a design or program exceeds the budget, the POC must ensure that all changes, resulting from "value analysis, alternate procurement strategies, cost-benefit analysis, program adaptation and life-cycle costing," comply with the IFS. The base standards, which are identified in the IFS, must be satisfied. All design revisions must maintain compliance with the standards.

The POC is responsible for "Monitoring and Control - Delivering and Measuring Building Quality" during construction. Ensure that all construction meets the intent of the design for compliance with the IFS. Checklists from the AFDAP may distributed to the design and construction team to log ongoing compliance. All changes and modifications made during construction must adhere to the IFS.

Update the IFS
The POC is responsible for initiating **annual reviews**, making updates to IFS content and obtaining BCE signature to keep the IFS up to date. Sections I.D and Chapter V describe this process in detail.

The POC is also responsible for the applicability of base standards, particularly materials standards—how well materials perform in the local climate.

NOTE Address materials performance issues in updates

The POC is responsible for evaluating the performance of systems, materials and details. Identify materials and conditions that are failing to meet AFCFS.

AFCFS requires to "Use materials and detailing not subject to excessive weathering," for example. It may be prudent to ask, "What can I do to prevent this problem in the future?" Then, develop a successful solution in response to the local climate.

Consider as a brief case study, the use of architectural precast in a region subject to high temperatures and high humidity. Many examples of precast have become stained with extremely dark weathering streaks; some have dark areas of mold growth. The POC is responsible for recognizing these conditions and asking, "How can this be prevented?"

NOTE The POC must craft base-wide standards to promote materials performance

In response to the above example, the POC must define how architectural precast is to resist weathering and staining.

To perform in the local climate, architectural precast requires a high-density concrete mix, smooth finish and proper slope on surfaces to shed water. These requirements are added to the IFS for this material.

Because the higher density increases costs, however, the POC determines to limit precast to Group 1, for example. No exceptions or substitutions would be allowed to this requirement to avoid the problem.

The POC notes a review requirement in the IFS during design and construction submittals.

The below graphic illustrates how the POC could note the weathering issues for architectural precast in the IFS. Requirements may be listed in the bulleted format or the requirements may be included in the materials, products and color summary section, or both.

Material Requirements Are Listed in Bullet Points or in the Materials Summary, or Both

Materials Subject to Excessive Weathering Do Not Comply with AFCFS

The POC will communicate regularly with all design and engineering disciplines at the Civil Engineer Squadron and with shops personnel to identify any performance issues with current systems, materials and detailing. Address any deficient items with revised standards as required using narrative or materials standards shown above.

The POC is responsible for making submissions to AFCEC. This process is outlined in Section I.D and is detailed in Chapters VI and VII.

D. Maintain the IFS and Keep It Current
1. Conduct an Annual Review of IFS

NOTE The Civil Engineer Squadron (CES) will complete annual reviews and updates

Civil Engineer Squadrons are encouraged to review and update the IFS on an annual basis. Each year a new template is posted on AFCFS for download. Any newly updated DoD or Air Force criteria is included in the update.

Content from the current IFS can be imported into the new template without losing data, making any updates very efficient. If the IFS undergoes substantive changes, the document will be submitted to AFCEC for review prior to signature as described in Chapter VI.

Refer to the recommended distribution for comments in Section V.A.4. The interactive PDF is very easy to use, and base personnel can quickly modify written standards and graphics where needed. In many cases, there may be no significant changes needed, only to update the template to the current year.

2. Review the IFS Internally at CES
It is recommended to review the IFS using a **cyclical process** with continual, ongoing evaluations and refinement. CES is requested during its annual update to circulate the IFS for review and comments to each personnel or team responsible for the major sections: Installation Elements, Site Development, Facilities Exteriors, and Facilities Interiors.

E. Submit for Review, Signing and Publishing the IFS
1. Submit Updates to AFCEC for Review
After all updates have been made, if changes are substantive, submit to AFCEC for review. After AFCEC's review is completed, the PDF is returned to the base to be signed by the BCE.

2. Sign the PDF by the BCE
On receipt of review comments from AFCEC, confirm all comments and recommended changes are made to the IFS. When all comments are addressed and changes are complete, the Base Civil Engineer (BCE) is requested to sign a copy of the PDF which locks this copy. The unlocked PDF is used going forward for future updates. The locked PDF is published.

3. Publish the IFS on the Whole Building Design Guide
Submit to AFCEC the digitally signed PDF. This locked version is posted to the Whole Building Design Guide. AFCEC will coordinate directly with wbdg.org to have the signed PDF, which is the final IFS document, posted online.

Please refer to Chapter VII for the procedures to submit the IFS for posting.
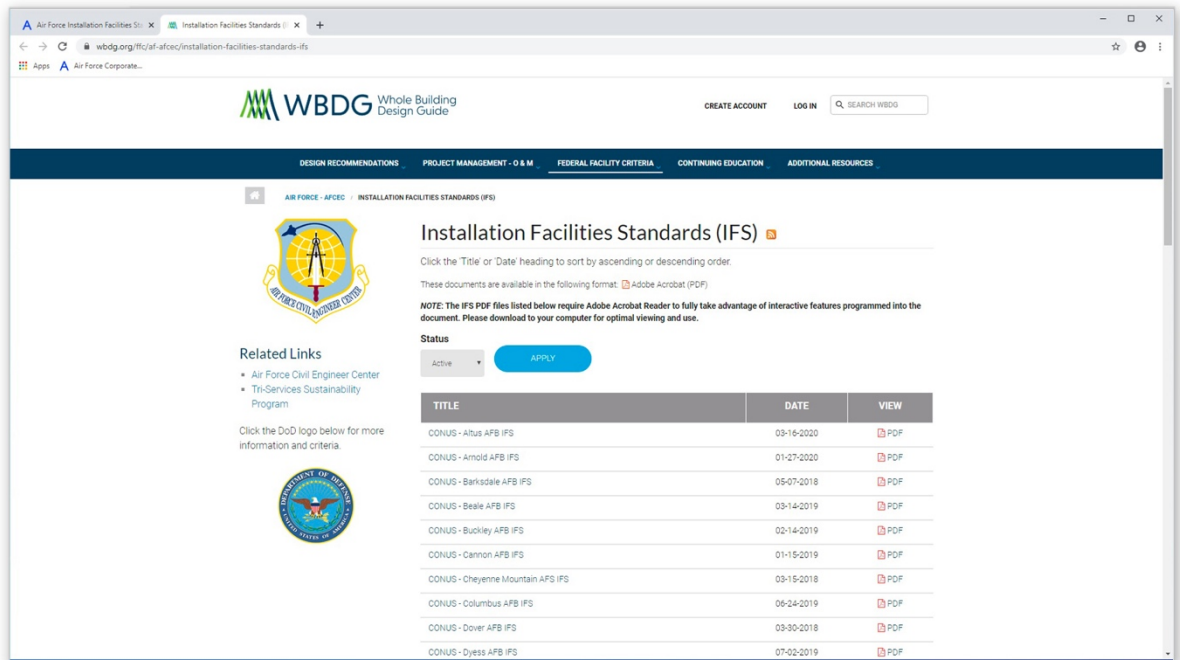
All IFSs Are Published on the Whole Building Design Guide Website

F.   Enforce IFS Requirements

1.   Assign a Facility Group Number

The POC determines with CES leadership's concurrence the Facility Group number that is assigned to every new construction and major renovation project. The POC then distributes the IFS to programming personnel with the assigned Facility Group number and defines an acceptable level of quality prior to determining project valuations, budgets and requests for appropriation of funding.

2.   Distribute Project Checklist

Bases are encouraged to utilize a project checklist and to submit copies to the AE early in the design process. Coordinate the distribution the IFS and checklists. A **Project Checklist** template is available at the AFCFS website under the IFS tab:
http://afcfs.wbdg.org/IFS/downloads/IFS-Project-Checklist.pdf

NOTE The POC maintains the Project Checklist

The Project Checklist must be managed by the POC to aid in the design review process and to note compliance with IFS. Copies may be distributed to the design team to promote compliance.

Typically the Project Checklist would be circulated to all members of the design team including all engineering disciplines. The POC may request the AE project manager to transmit the checklists among the team and return completed forms.

Please refer to resources on the Whole Building Design Guide and coordinate with the design team's project manager for the optimum point in the process for distribution.

AIR FORCE INSTALLATION FACILITIES STANDARDS

2021

Project Checklist

This checklist applies to all projects large and small including self-help projects. Before building, purchasing, or installing items, the project manager will submit the following documentation for review and approval by the Architectural Compatibility Review Board (ACRB). Large projects requiring professional design services must submit this form along with the design package at each phase of the project. The list of items below the phase title is representative of what must be submitted at each phase. Project continuation is contingent on phase approval. Smaller projects not requiring full design services must submit project documentation as designated by the ACRB chairperson. All projects must comply with the IFS standards as verified by this checklist and the ACRB, unless a specific exception is approved by the chairperson.

Project Title: _____

Project Number: _____   Project Address: _____

Submitted by: _____

IFS Provided to Designer? ☐ Yes ☐ No

Programming Documents Reviewed by ACRB? ☐ Yes ☐ No

REQUIREMENT DOCUMENTS

☐ Scope
☐ Goals
☐ Site Inventory / Site Analysis
☐ Coordinated with Subaru Development Plans

☐ Coordinated with Other Planning Documents and Policies
☐ Preliminary Solutions Allow for Full Compliance of IFS (design not finalized until concept design complete)

☐ Project Description
☐ Objectives
☐ Adjacent Facilities Photos
☐ Future Project Considerations
☐ Other: _____

INSTALLATION ELEMENTS	SITE DEVELOPMENT	FACILITIES EXTERIORS	FACILITIES INTERIORS
☐ Comprehensive Planning	☐ Site Design / NEPA	☐ Character	☐ Layout / Common Areas
☐ Future Expansion	☐ Building Orientation	☐ Style / Form	☐ Quality and Comfort
☐ Street Envelope Standards	☐ Utility Components	☐ Proportions	☐ Floors

The IFS Project Checklist Is Available for Download at the AFCFS Website

3. **Distribute the IFS**
   Prior to the beginning of a project design, the POC will provide a copy of the IFS to the design team. The IFS may be downloaded directly from wbdg.org or the POC may provide a link to design team members. Printed copies may be provided. Coordinate with the AE project manager for distribution to the appropriate parties.

4. **Distribute the Air Force Design Awards Program (AFDAP) Requirements**
   The AFDAP is organized consistently with IFS based on climate regions. AFDAP submission requirements include compliance with IFS and satisfying a series of "Requirements" unique to each climate region. The POC is encouraged to use the AFDAP as an incentive for designers to comply with base standards. Refer to the AFDAP tab on the AFCFS website.

   For projects to become eligible for the AFDAP, **all listed regional requirements must be satisfied**.

5. **Apply the IFS to Facility Design**
   Application of IFS base-wide standards will be made section by section. For D. Facility Exteriors, for example, designers are encouraged to review AFCFS for supporting the mission and meeting sustainability metrics, then to develop acceptable functional architectural features. Standards for building entrances, wall systems, doors and windows, roofs, structure, and MEP systems will be applied to all designs for new construction and renovation projects.

6. **Monitor Project Planning and Design**
   When a design or program exceeds the budget, the POC must ensure that all changes, resulting from "value analysis, alternate procurement strategies, cost-benefit analysis, program adaptation and life-cycle costing," comply with the IFS. The base standards, which are identified in the IFS, must be satisfied. All design revisions must maintain compliance with the standards.

7. **Monitor Changes in Design**
    During construction, the POC must ensure that all designs comply with the IFS. The POC may distribute checklists from the AFDAP to the design team to log initial and ongoing compliance. All changes and modifications made to the design, whether early in the design process or later during construction, must adhere to the IFS.

    Project designs, which meet IFS initially, but through changes during design and construction ultimately fail to comply with IFS, are **not eligible for the AFDAP.**
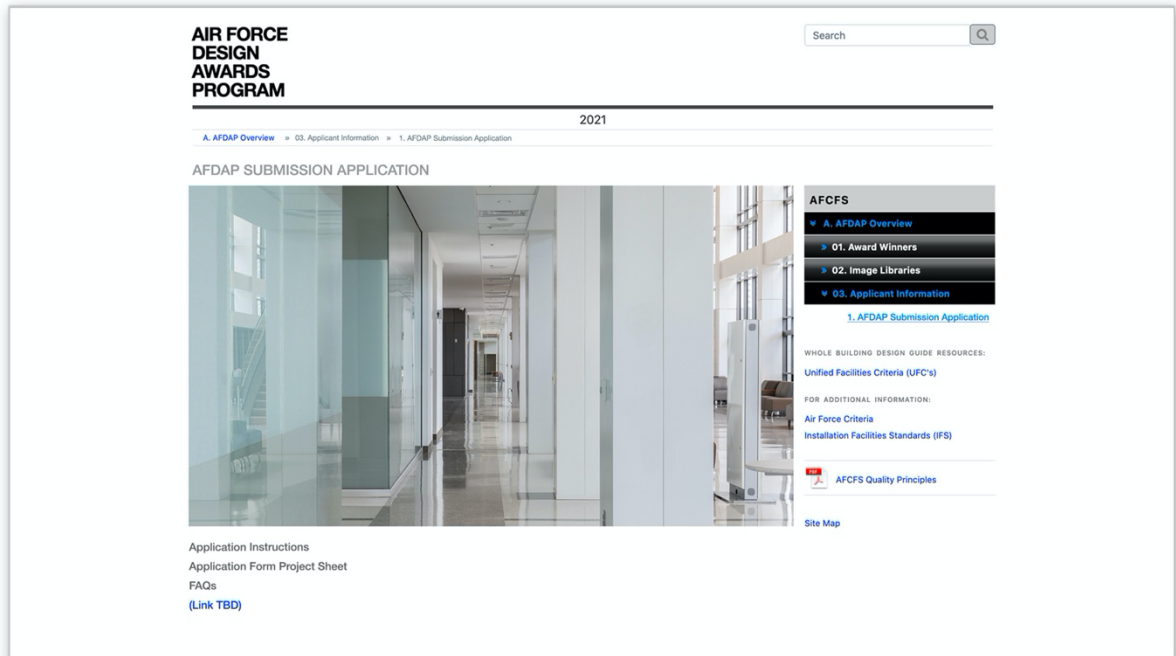
AFDAP Application Instructions and Forms Will Be Available for Download at the AFCFS Website

8. **Monitor Changes during Construction**
    Critical architectural features, systems, materials, and details will be reviewed by the POC for compliance with IFS. The POC may distribute to the design and construction team checklists from the AFDAP to log ongoing compliance. All design and material substitutions made during construction must maintain compliance with IFS.

    Material substitutions made during construction, which fail to comply with IFS, will cause the project to be ineligible for the AFDAP.

9. **Verify Compliance with IFS**
    Use the IFS Project Checklist and the AFDAP Checklist to evaluate the designs of facilities. The POC is encouraged to use the Air Force Design Awards Program (AFDAP) as an incentive for AE firms and construction contractors to comply with IFS. Only projects that comply with IFS and satisfy the prerequisites of the AFDAP are eligible for a design award.

NOTE Use checklists to organize and record evaluations and to encourage compliance

The POC is responsible for verifying compliance with IFS. Projects that fail to comply with IFS are ineligible to participate in the design awards program.

AFDAP Overview Page on the AFCFS Website

The POC is responsible to review the AFDAP submission instructions and application form to determine if requirements are fulfilled. The instructions and application are being developed for the AFCFS website.

AFDAP Forms Will Be Available on the AFCFS Website

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II. IFS TOOLS OVERVIEW

A. IFS Worksheets

1. Use the Standard IFS Worksheet

IFS Worksheets are provided in MS Word format to facilitate editing, circulating documents for review and tracking changes. MS Word tools include a track-changes feature to assist in managing changes and comments. The POC is responsible for maintaining these files.
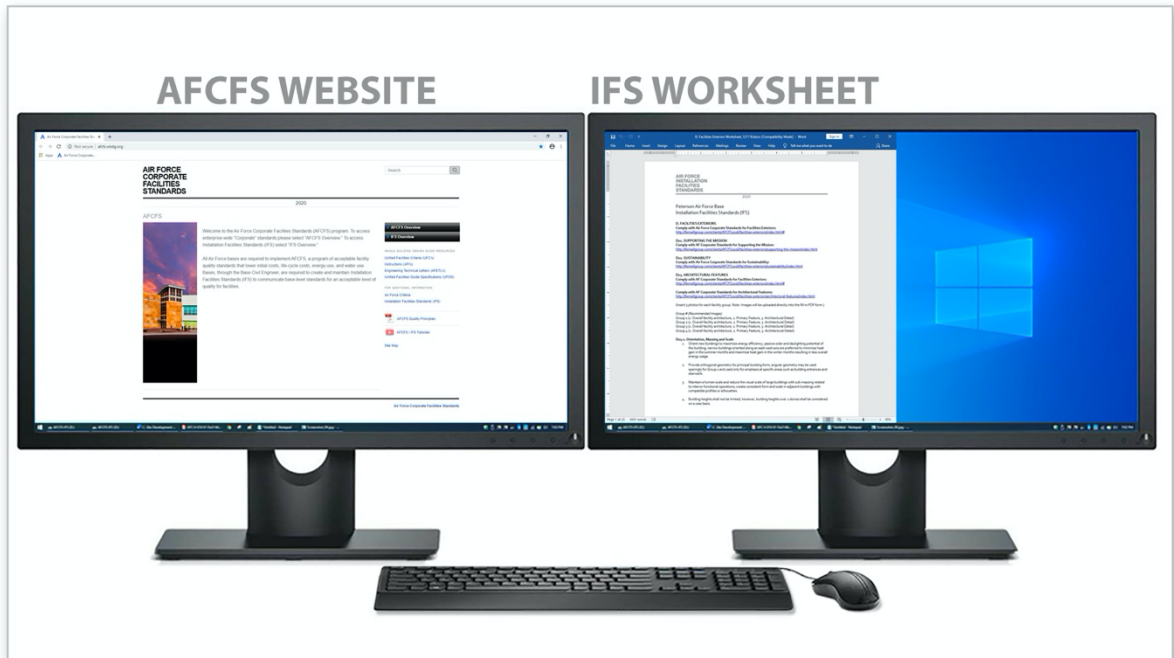
Screenshot of AFCFS Website and MS Word IFS Worksheet

FAQs Why do I need worksheets, can I just type directly into the PDF?

It is actually faster to use the worksheets. Word documents facilitate editing and tracking review comments, and having worksheets adds a layer of redundancy for archiving narrative content. The worksheets also have excellent tools for checking spelling and grammar, as well as tracking changes.

TIPs Remove formatting

To avoid formatting issues, when copying narrative from other documents, paste the content into Notepad. This removes formatting and saves the narrative as plain text. Copy and paste from Notepad into the MS Word worksheet to avoid changing the format set within the Word document.

2. Use MS Word Tools

The "Track Changes" tool can be valuable when review is required by multiple individuals. For multiple reviews, it is recommended the POC distribute the document sequentially to a single reviewer at a time, making it easier to manage the changes.

TIPs Proficient users may consolidate comments

For users who are highly proficient with MS Word, using Track Changes and combining and merging documents, multiple copies of the same worksheet may be distributed to multiple reviewers and comments may be consolidated into a single document.

3. **Use MS Word Shortcuts**
   Refer to Microsoft Word reference materials and standards for keyboard shortcuts and conventions to improve efficiency.

TIPs Use shortcut keys

Find shortcuts such as using Ctrl C to "copy," which can be done easily with the left hand, while using the right hand to click and highlight text with a mouse. Use Ctrl V to "paste." This has shown to save time when copying and pasting text into the worksheets.

B. **IFS Images**
   1. **Process Images for the PDF**
      If the POC and support team has access to third-party imaging software such as Lightroom or Photoshop, it is recommended to use these professional tools to process original image files. Typically original image files are balanced for exposure, contrast, hue, saturation, parallax correction, and sharpening.

TIPs Use recommended workflow for images

Follow the recommended process for collecting, processing, sorting and cropping images. This process is field tested and proven to save time when pasting images into the PDF.

   2. **Use the IFS Cropping Tool**
      If the POC and support team has access to imaging software such as Lightroom or Photoshop, it is recommended to crop images using these tools. If these or similar resources are unavailable, the Image Cropping Tool is provided as an alternative. Details for using the cropping tool are provided in Section IV.B. The tool may be downloaded here:
      http://afcfs.wbdg.org/IFS/downloads/IFS-Image-Cropping-Tools.docx

      Refer to the graphic on the next page.
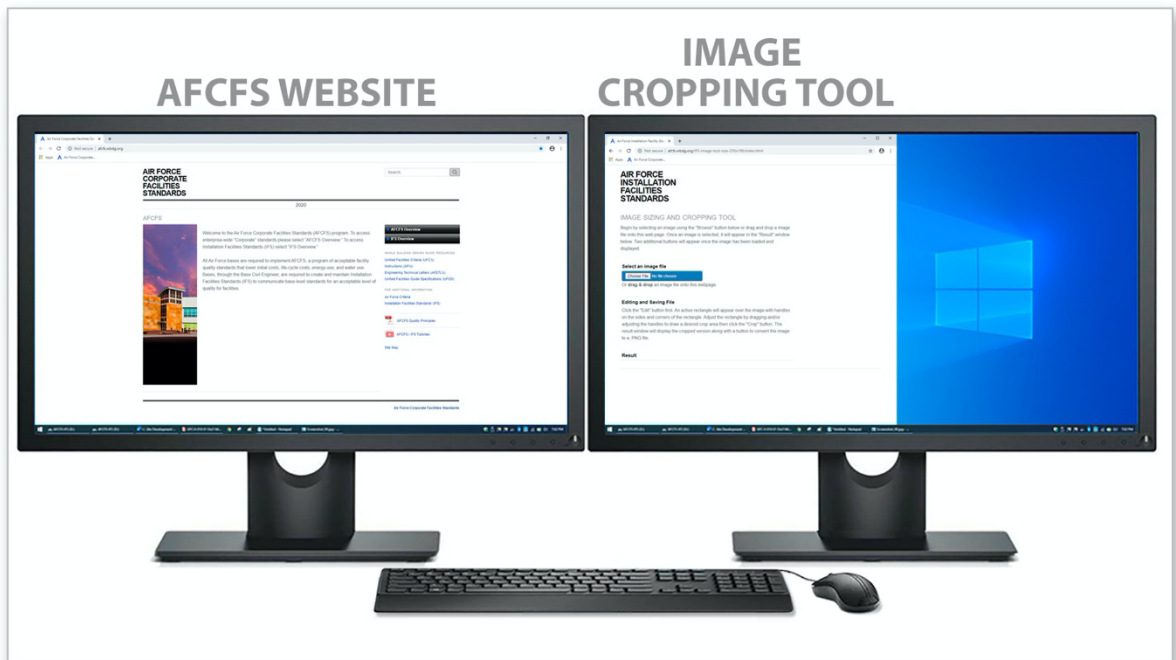
Screenshot of AFCFS Website and IFS Cropping Tool

 TIPs Crop a large group of images

When preparing to crop images it is best to prepare a moderate to large group of images for the session. Because there is time required for the set-up process, working with more images increases overall productivity.

C. IFS Fill-in PDF Form
    1. Use the Adobe Fill-in PDF Form
        The IFS template is essentially an interactive Adobe fill-in PDF form. Use this template to import narrative and to place images.

        Narrative is copied from the applicable IFS worksheet and pasted into the appropriate section of the PDF. It is ideal to use two monitors for this workflow with the worksheet on the left screen and the PDF on the right screen (see below). As text is pasted into the PDF, be sure to verify that all bullets are being copied and that the line spacing and numbering is accurate.

        Refer to the details for organizing files in Chapter III. Details for populating the PDF are provided in Section IV.C.

        Refer to the graphic on the next page.
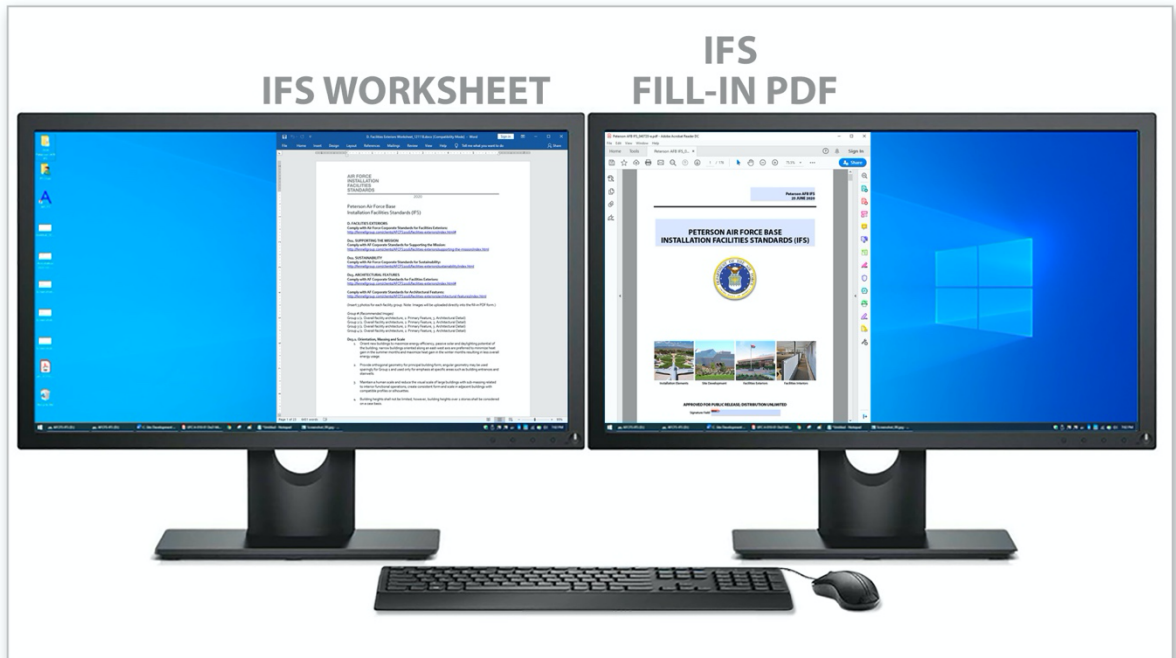
Screenshot of IFS Worksheet and IFS Fill-In PDF Form

TIPs Use shortcut keys

Use similar shortcuts used with the worksheets. Using Ctrl C to "copy" with the left hand, while using the right hand to click and highlight text with a mouse saves time. Using Ctrl V to "paste" saves times as well.

TIPs Recognize formatting

Become familiar with the idiosyncrasies associated with formatting when working between the two platforms of MS Word and Adobe Acrobat.

TIPs Avoid wasting time with formatting issues

Avoid formatting issues by simplifying the narrative in the worksheets and following the workflow outlined in Chapter IV.

2. **Use PDF Shortcuts**
    The IFS fill-in PDF form has built-in navigational tools. For example, clicking on any heading or page number in the Table of Contents (TOC) will navigate to that section. Clicking the "Back to Table of Contents" footer on any page will return to the TOC.

    Refer to the graphic on the next page.
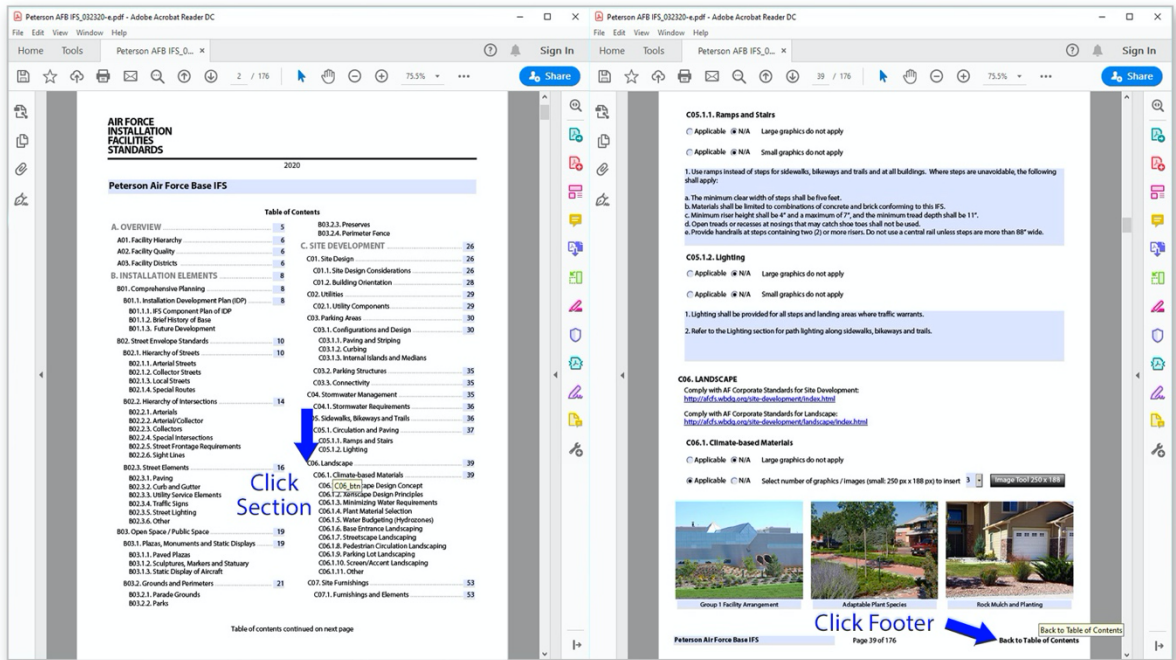
Navigational Tools: Table of Contents and Page Footer

Use the Table of Contents and page footers as the primary means of navigating the document. This will require a general familiarity with the organization of the document, which is beneficial for locating information and maintaining the IFS, and it is a substantial timesaver.

Use the format provided in the IFS worksheet for the text field at the top left corner of the Table of Contents. When the name of the base is entered, this field populates the footer on every page of the document. Click on the text box a second time if needed to ensure the default font is active. The font will be 10-point Myriad Pro regular without italics.

TIPs Navigate using the Table of Contents and page footers

Always use the Table of Contents (TOC) to navigate to a particular section. Avoid scrolling with the mouse. Click on each page's footer, "Back to Table of Contents," to save time.

TIPs Click text fields to enter data

As typical with fill-in PDF forms, click inside a text field to activate it and click outside a text field to deactivate it.

TIPs Use shortcut keys

Use shortcut keys for actions whenever possible. Examples that can save time when used frequently include: Ctrl + S to save, Crtl + + to zoom in, Ctrl + - to zoom out, Ctrl + Z to undo, Ctrl + Shift + Z to redo, Ctrl + C to copy, and Ctrl + V to paste.

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III. How to Organize Files

A. Maintain the IFS Project Directory

1. Preserve the Main Folder Structure and Order

Bases have experienced the greatest success in producing and updating the IFS when the standardized IFS directory structure is used. The recommended folder arrangement has been tested and has demonstrated a high level of efficiency. Download a sample directory here: http://afcfs.wbdg.org/IFS/downloads/IFS-Sample-File-Directory.zip

The example below shows the newly renamed "Main Folder" including the year the IFS is being updated and the base name, for example, 2020 Peterson AFB IFS. This "Main Folder" includes all files needed to update the IFS, submit it for review, and post it to wbdg.org. Be sure to make back-ups of this main folder on a regular basis.

Prior to beginning an update to an IFS, make a back-up of the previous IFS directory. The main directory is to be named with the year of publication and the base name, for example, 2018 Peterson AFB IFS. When the backup is created, named properly and archived, rename the main directory to the current year, as in the example below, 2020 Peterson AFB IFS.
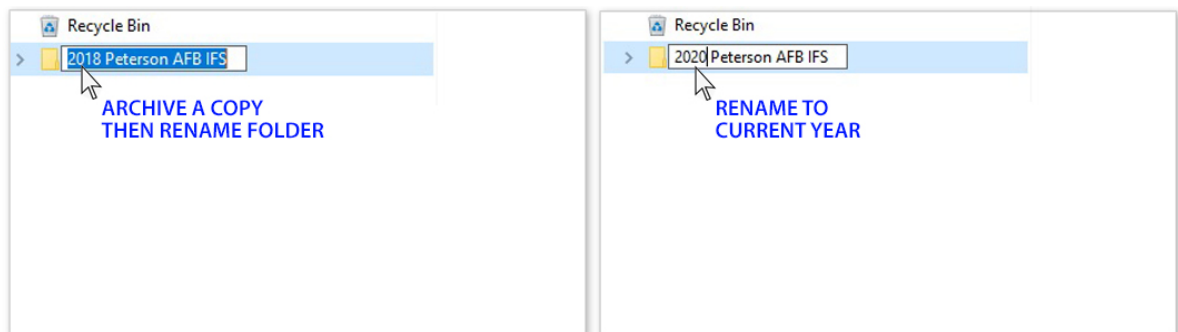
Renaming the Main Folder

Within the main folder are subfolders with prefixes to order the folders alphanumerically. The top subfolder, "95pct Peterson AFB IFS", is the principal "Working Folder." Ensure naming preserves the desired order of the folders, top to bottom. Locating the Working Folder at the top has proven to be most efficient.

It is recommended to use the "Navigation Pane" for viewing folders and subfolders. Click on the "caret" to expand or collapse a folder. The navigation pane allows users to see all the folders at a glance when accessing worksheets, images or the PDF. This helps to avoid working in the incorrect folder. In File Explorer go to the "View" tab and click on the Navigation Pane in the upper left. Check the box for the Navigation Pane.
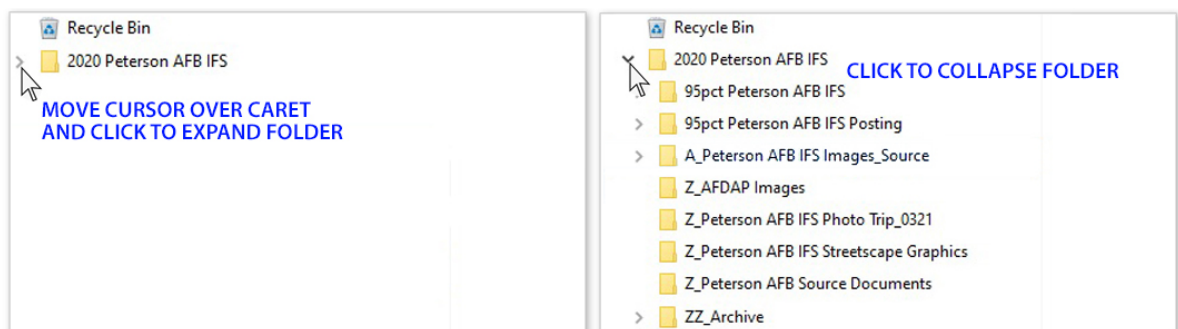
Clicking on the Caret Expands or Collapses the Main Folder
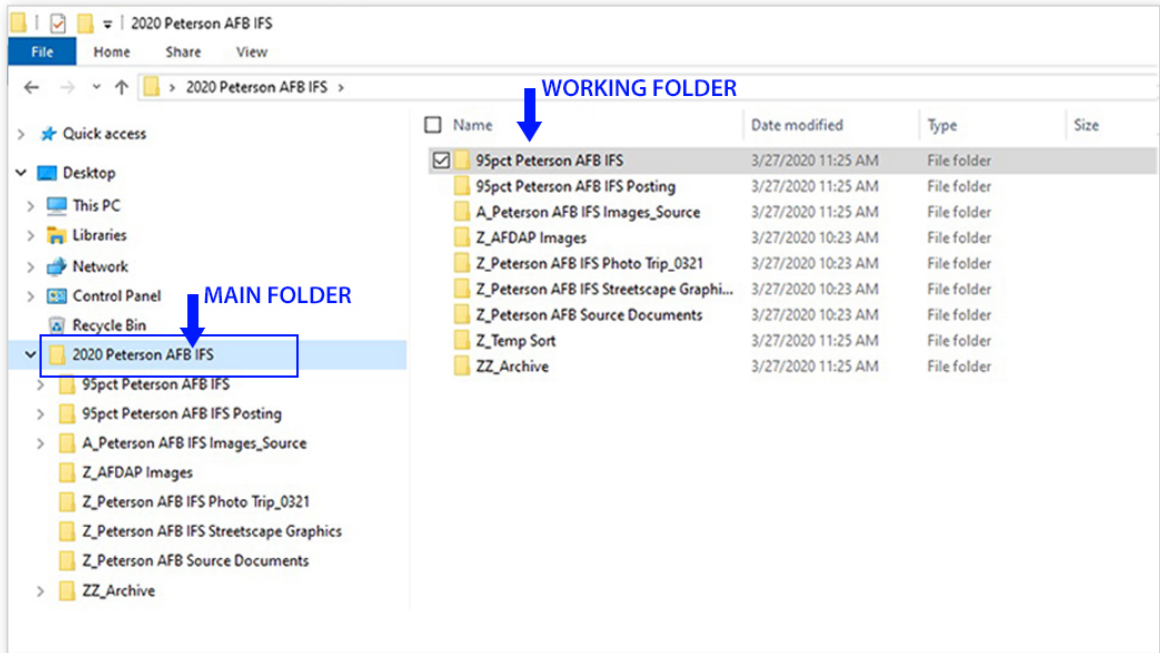
Screenshot of Windows 10 – Windows Explorer

All the worksheet files, images cropped files, and the fill-in PDF form are contained in the Working Folder. Subfolders include: IFS Worksheets, IFS Images Cropped and the IFS fill-in PDF form. File sizes must be kept small, which is important to facilitate copying, saving and sharing the Working Folder.
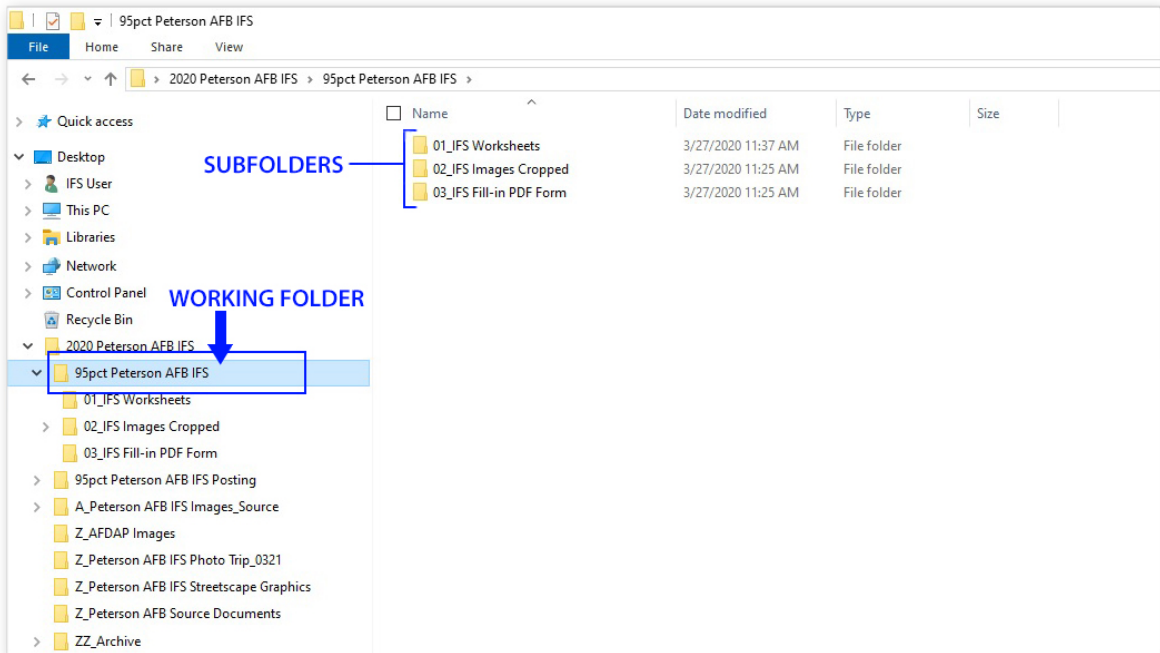
Working Folder and Its Subfolders Contain all Files Needed to Build the Fill-In PDF Form

The 01_IFS Worksheets folder contains one copy of each worksheet for each section of the IFS. IFS sections are organized by letters A thru G. Worksheets are included for the IFS Outline, Cover and Table of Contents as well. It is recommended to include the date in the filename.

Prior to opening a file, save a copy to the archive folder, "ZZ_Archive." Then rename the working file with the current date. This workflow will ensure proper backups and redundancy.
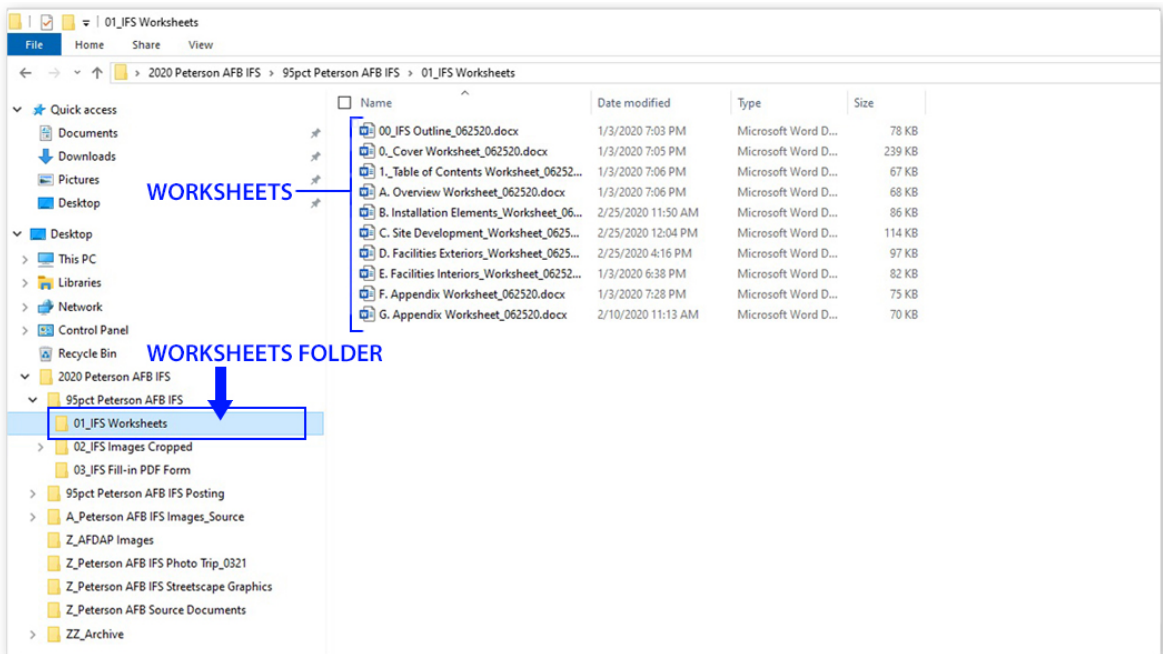
Worksheets Folder with Only One Current Working File for Each Section of the IFS

Only the cropped images are stored in the Working Folder. Source images are discussed later. The 02_IFS Images Cropped folder contains all images at the proper size needed to populate the fill-in PDF form. The images are organized into subsections that match the Table of Contents in the IFS document.
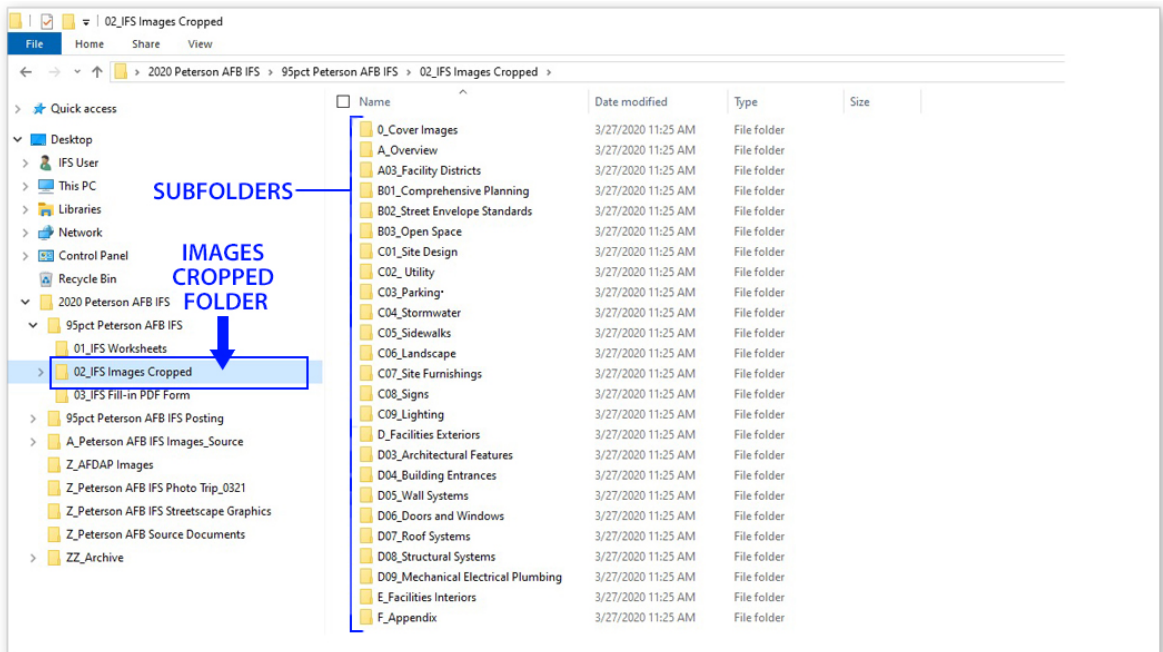
The Images Cropped Folder and Its Subfolders for Each Section of the IFS

The third subfolder in the Working Folder contains the editable version, the working copy, of the PDF.
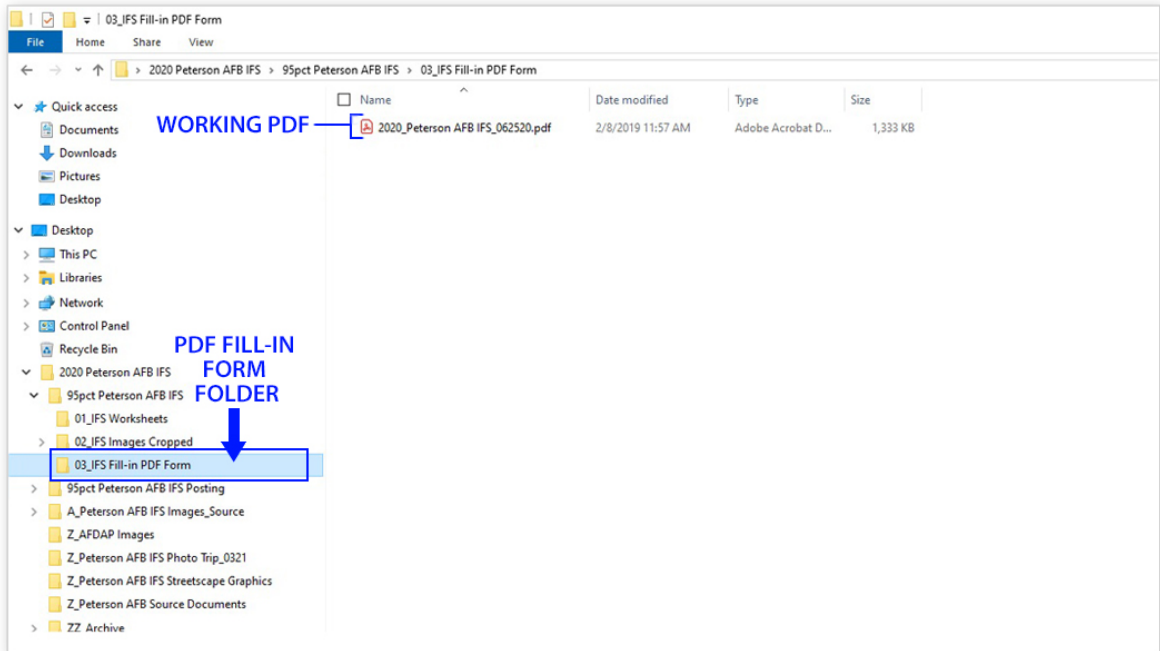
The PDF Folder and Its Working PDF File

FAQs My base has a different method for organizing files. What should I do?

It is likely possible to create the "Main Folder" and locate it within the base's preferred organization. Subfolders are recommended to follow the IFS format. Discuss IFS requirements with base leadership and pursue the AF standardized format as the most efficient option.

TIPs Check the size of the "Working Folder"

Note the average size of the "Working Folder" is typically in the 80 MB to 120 MB range. Keep only the current versions of the files in this folder to maintain a small folder size. Move outdated files to the ZZ_Archive folder.

TIPs Name folders for each submission

If minor changes are anticipated, use the prefix "95pct" (for a 95 percent submittal) for the working folder, because a single review and submission may be all that is needed. If major changes are anticipated, and multiple submittals are needed, name the working folder accordingly: 35pct, 65pct, etc.

TIPs Archive and rename folders

If a 35pct folder is created, when it is completed, archive it, save a copy, and then rename the copy using the prefix "65pct." This ensures a complete back-up of the 35 percent effort. Repeat this process going forward for each required submittal.

TIPs Create back-ups frequently

Make back-ups regularly and ensure there is redundancy in the archiving process.

TIPs Archive outdated files

Move outdated worksheet files, image files, and PDFs to the "ZZ_Archive" folder. This archive folder in is the main directory so it does not impact the size of the working folder. Only essential files are to be stored in the working folder, keeping it small in size.

2. **Preserve Folder Names and Filenames**
Because IFS is an enterprise-wide Air Force program, having a uniform structure for directories and file naming conventions, makes it easy for base personnel to use the program and its tools even should they move to another base location. IFS is currently standardized throughout CONUS, USAFE and PACAF.

Standardization also makes it easier to provide support to bases when needed. The review process is simplified as well by maintaining a standard organization of files.

Numbering for images will be discussed later. Image filenames will also have a prefix to determine its position in the folder.

FAQs Is it necessary to rename every single file?

Prefixes need to be added. Please refer to the TIPs in Chapter IV, which provide shortcuts to make naming files extremely fast.

TIPs Periodically check filenames for accuracy

Occasionally check the Working Folder and its subfolders to ensure file naming is accurate.

3. **Confirm Location of the Images Source Folder**
It is recommended to locate the Images Source folder near the top of the directory for convenience. Using a prefix of "A_" will allow this folder to display immediately after the working folder.

There are actually three steps or three types of images in the workflow:
Original Images, Source Images and Cropped Images.

- *Original images* are image files imported directly from a digital camera, scan, screenshot, or archive
- *Source images* are processed original images; balanced for color, contrast, etc.; and used to create the final cropped images
- *Cropped images* are image files of the proper size and aspect ratio to be placed into the PDF

Archive original images in a separate directory outside the IFS Main Folder.

Locate source images in the "Main Folder" in a subfolder titled, for example, "A_Peterson AFB IFS Images_Source." Source images are sorted into categories matching each subsection of the IFS.
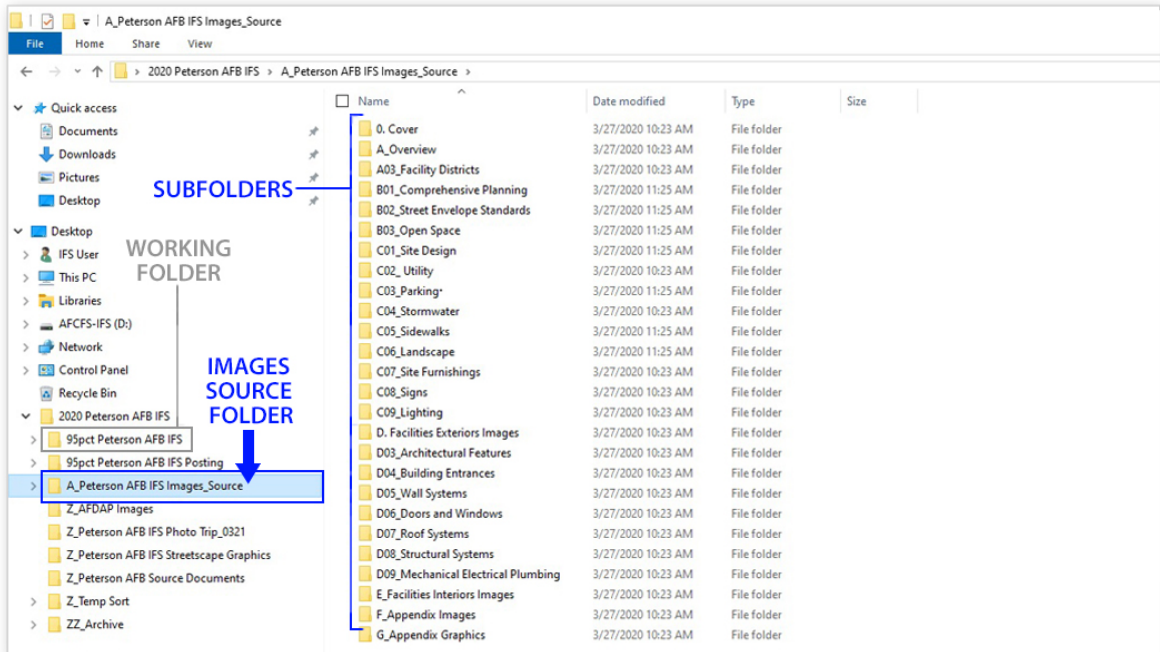
Locate Source Images in the "Images Source" Folder; Note this Is outside the "Working Folder"

Remember to locate cropped images in the "Working Folder" in a subfolder titled "02_IFS Images Cropped." Refer to Item 1 above for categories, which match each subsection of the IFS.

TIPs Use only good quality images

Use only processed, good-quality images as "source images" to be sorted into the images source folders.

TIPs Store RAW images in a designated folder

If original photography is provided in a RAW format it is recommended to store these image files in a separate directory outside the Main Folder.

TIPs Process RAW images to reduce file sizes

RAW images have extremely large file sizes. Process these to a reduced file size prior to importing into the main directory. Refer to Section IV.B for details on the recommended workflow.

4. **Maintain Subfolders and Archives**
IFS POCs around the Air Force have reported the value of having back-ups. In one case, a CES lost its entire Main Folder after a computer crash. Because the POC had followed protocols and had delivered the contents of the Working Folder to AFCEC for review, all the files needed to build the PDF were provided to restore to the CES servers.

B. IFS Worksheets
   1. Preserve Filenames
   Maintain the original IFS Regional Worksheets file naming system. Having a uniform structure for file naming makes it easier for base personnel to locate and manage files. It also simplifies the review process for the base POC. Any needed support is simplified by standardization as well.
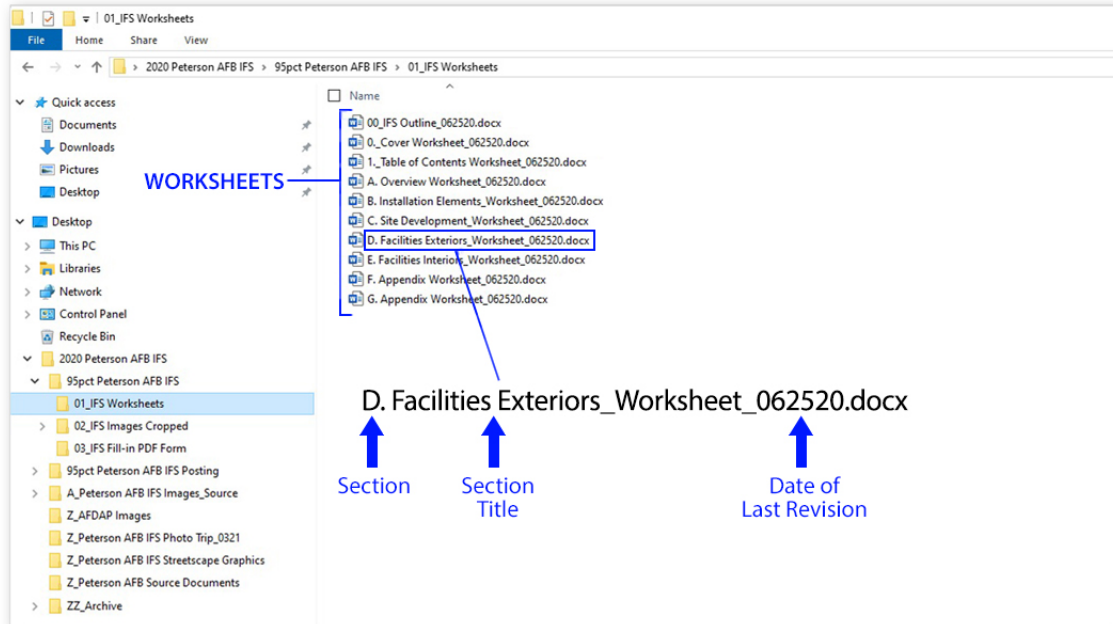
Typical Worksheet Filename with Section, Title and Date

   2. Insert a Date within the Filename
   Prior to opening a file, save a copy to the archive folder, "ZZ_Archive." Then rename the working file with the current date. Always maintain a date in the filename rather than relying on the file's "properties."

   3. Save Files Daily
   When editing, updating or reviewing a worksheet document, save the file often. Use the shortcut keys "Ctrl + S" to save quickly. At the end of the day it is recommended to save the file and to create a back-up of any folders and files in which changes were made.

   4. Move Old Files to the Archive Folder
   Each day a worksheet is accessed, prior to opening it, save a copy to the archive folder. Then change the working file's name to reflect the current date. Do not be concerned about maintaining a large backlog of worksheet documents. These are very small in file size and, because they are located in the archive folder, they do not impact the size of the working folder—and they do not create confusion.

C. IFS Images
   1. Preserve Filenames
   Digital cameras including those on smart phones automatically assign an image filename. These are typically a numeric sequence. Default image numbering is acceptable, but users may customize original filenames to correspond to subject matter, location, date, etc.

Once the original filename convention is determined, it is recommended to archive the original file and to import a copy of these files into the IFS directory. It is recommended to preserve the original filenames. Prefixes and suffixes may be added later in the process.

TIPs Consider "batch" renaming

Check online resource for MS Windows File Explorer for "batch" renaming multiple files.

2. **Locate and Organize the Original Image Files**
   Use the recommended directory structure to organize folders and image files.

   When original images are provided in a RAW format, which are typically very large in file size, it is recommended these be processed into jpeg format at 1600 pixels in width prior to importing the images into the IFS directory. This step is highly recommended for expedience and to avoid issues when copying, pasting and cropping files going forward.
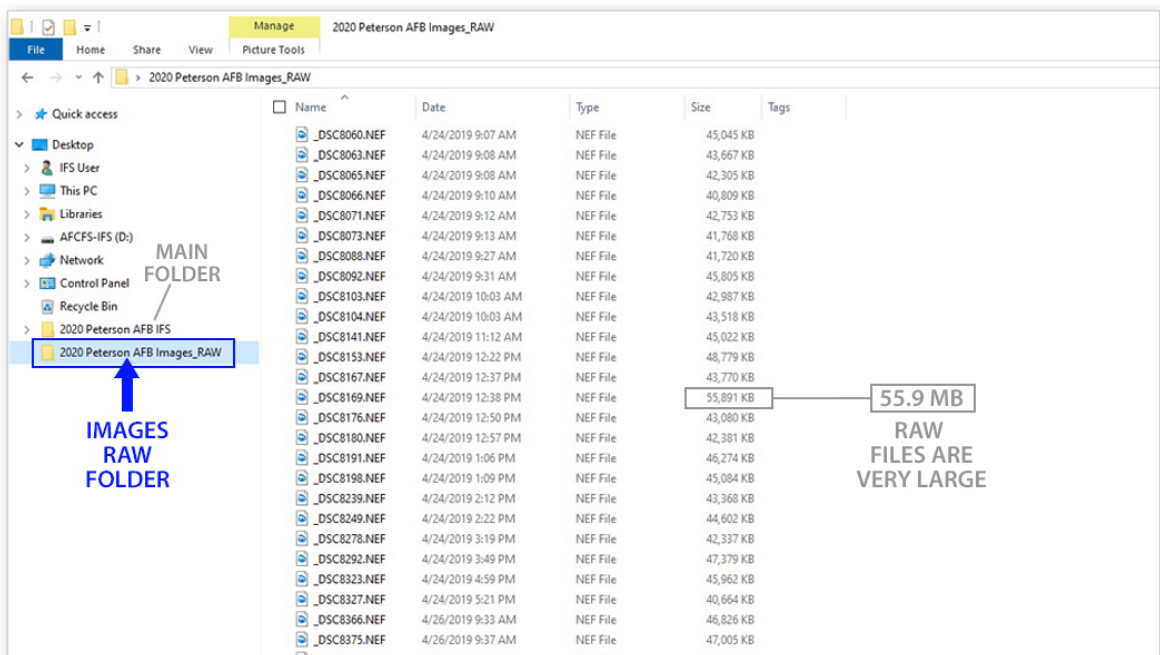
Create a Separate Folder for RAW Image Files that Is outside the Main Folder

3. **Note the Location of "Source" and "Cropped" Images**
   The source folder will be used to accommodate jpeg images that are 1600 pixels wide. This folder is under the "Main Folder," and it does not impact the size of the "Working Folder." It is highly recommended to import only images into the source folder that are 1600 pixels wide or less than 1.5 MB in size.

   Please refer to the graphic on the next page.
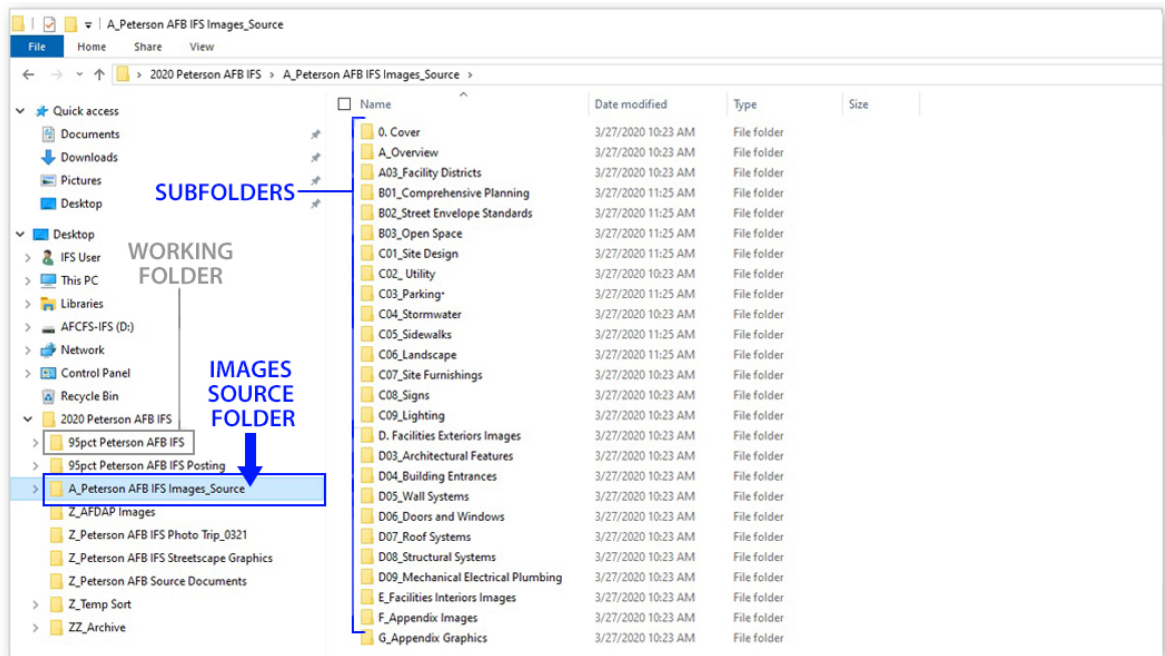
Note the "Source" Folder Is in the Main Directory and Is Not in the Working Folder

Source images are sorted into the subfolders. Refer to Section IV.B for the workflow for sorting images.

The folder for cropped images is located in the Working Folder. Please note this folder will contain the final cropped images. The majority of images will be cropped to 250px x 188px and will be very small in size. It is important to keep the file sizes small in the cropped folder.

D. IFS Fill-in PDF Form

1. Assign the Filename

The working fill-in PDF form is located under the Working Folder in the subfolder titled "03_IFS Fill-in PDF Form." Ensure the most current version of the PDF resides here. Compare the PDF to the published IFS document to ensure it is the same version. If this file has been idle since publication of the previous version, the filename may have "Pre-Final" or "Final" in the filename.

Copy the file to the archive folder and rename the file as described below.

2. Insert a Date within the Filename

Maintain only one PDF, the working file, in the PDF folder. It is recommended to move any previous versions to the archive folder.

When beginning a new work session, prior to opening the PDF, save a copy to the archive folder. Then rename the working file with the current date. This workflow will ensure proper backups and redundancy.
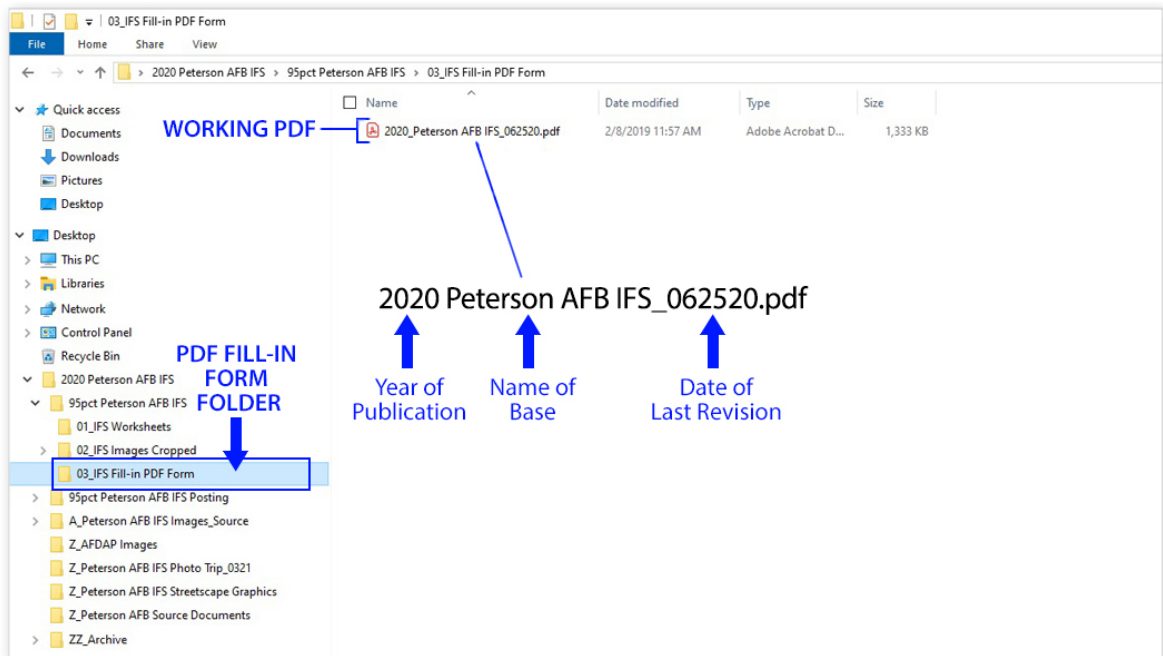
Typical PDF Filename with Year of Publication, Name of Base and Date

3. **Save Files Daily**
   When importing narrative, graphics or images into the PDF, save the file frequently. Use the shortcut keys "Ctrl + S" to save quickly. At the end of the day it is recommended to save the file and to create a back-up of any folders and files in which changes were made.

4. **Move Old Files to the Archive Folder**
   If back-up files are left in the working folder, move these to the archive folder. Diligence in renaming and organizing files will lessen the possibility of losing work. To reiterate, it is most efficient to maintain only the working file in the PDF folder.
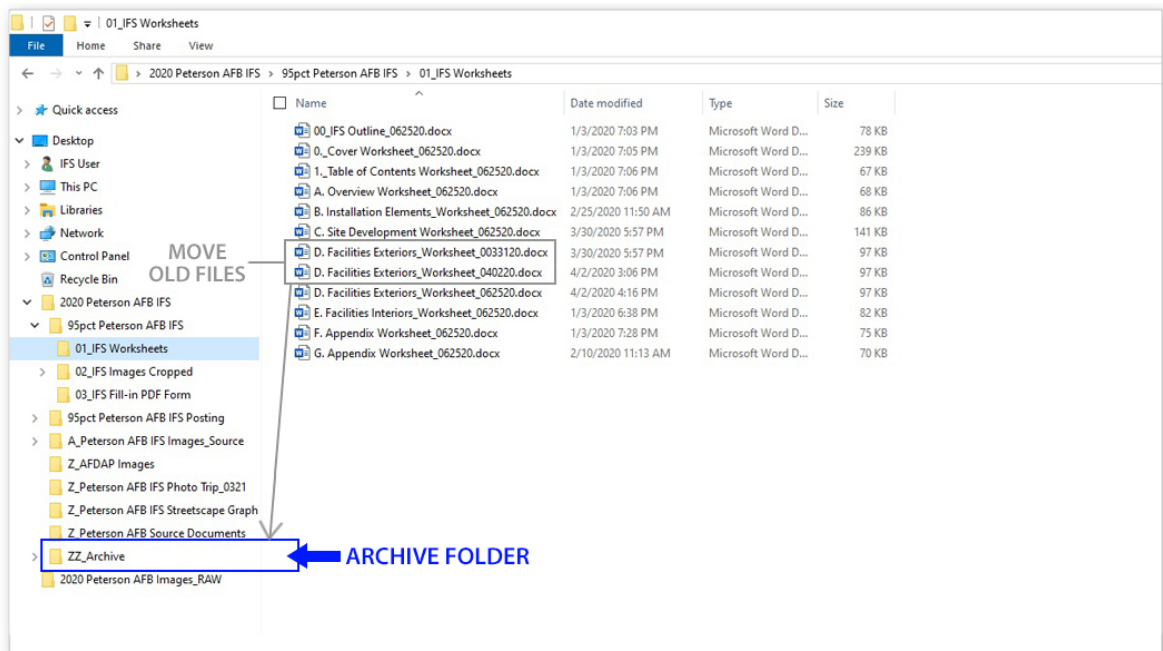
Move Old Files to the Archive Folder, Maintain Only the Current Working File for Each Section

5. **Preparing "Pre-Final" and "Final" Documents**

    To confirm, only working files are maintained in the Working Folder and its subfolders.

    When the update process is complete, and a 95% Submittal is prepared for review under Chapter VI, AFCEC will provide comments to the POC. When comments are addressed, a "Pre-Final" IFS is signed by the Architect of the Air Force. The Pre-Final is posted online until the "Final" IFS is signed by the BCE.

    To distinguish, the 95% IFS is a working copy of the PDF in which changes may be made. A "Pre-final" document is a copy of the 95% PDF approved and digitally signed by the Architect of the Air Force as an interim step.

    To organize files, locate the "Pre-Final" PDF in the "Posting" folder titled similar to this example: "95pct Peterson AFB IFS Posting."
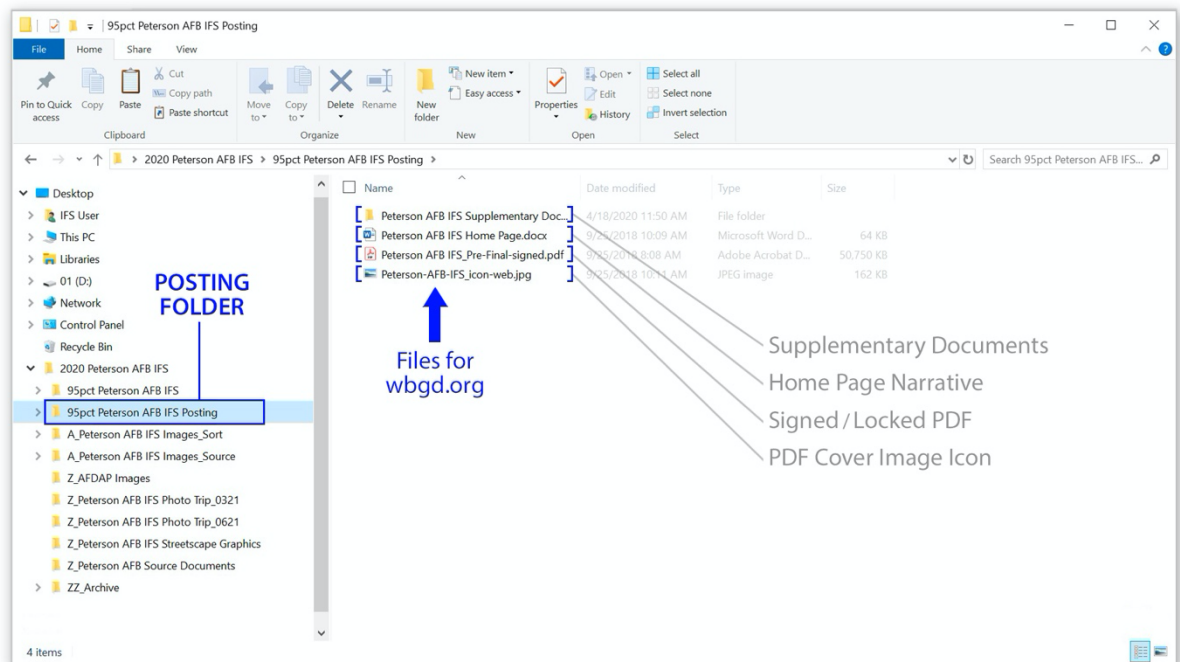
Posting Folder with All Files Needed to Post the IFS on wbdg.org

When a "Final IFS" is available, create a "100pct IFS Posting" folder and place the file there. Next, transmit a copy of the Final IFS to AFCEC. The Final IFS will be posted to wbdg.org and the previously published Pre-Final IFS will be removed.
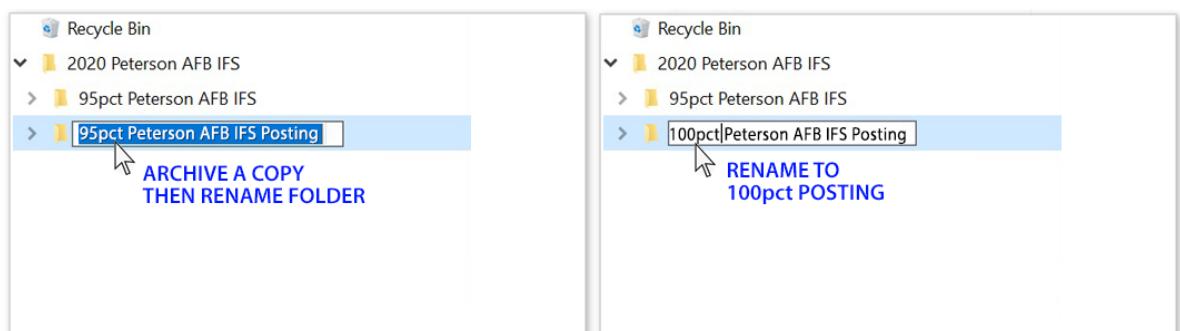
Archive the 95pct Folder, Copy It, Then Rename It 100pct

Update files as required to ensure an accurate 100% IFS Submittal. Files include the following:

- 100pct PDF Final-signed
- 100pct Supplementary Documents
- 100pct Final Home Page Narrative for wbdg.org
- 100pct Final PDF Cover Image Icon for wbdg.org
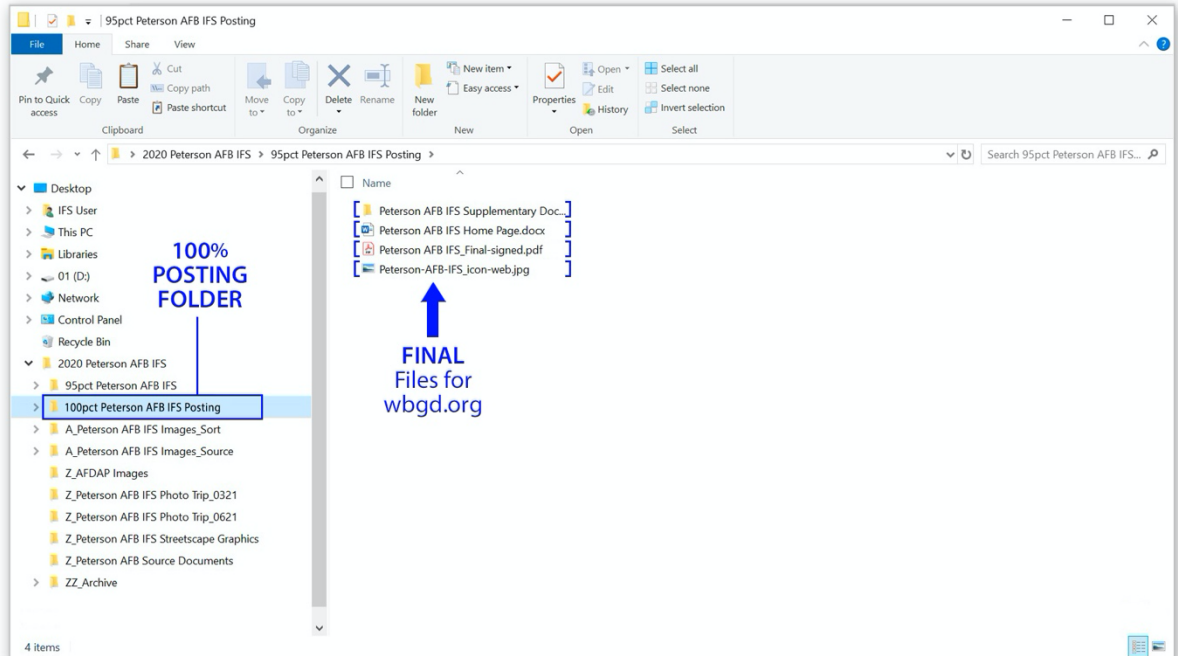
The 100pct Folder Contains all Files Needed for Posting to wbdg.org

IV. How to Use the IFS Tools

A. IFS Worksheets

1. Paste or Enter Content in the Appropriate Section

Update the IFS worksheets with any new standards created since the previous IFS publication. New standards may be proposed by any base organization, but the Civil Engineer Squadron (CES) must determine applicability as outlined in Chapter I. CES is responsible for ensuring that all updates are in compliance with applicable DoD and AF criteria.

The suggested workflow for the updating the worksheets is as follows:

      Step 1: Archive the IFS Worksheet document
      Step 2: Rename the IFS Worksheet document
      Step 3: Obtain the new information for the update
      Step 4: Remove formatting (using Notepad as an option)
      Step 5: Copy and paste into the IFS Worksheet document

In the below example two monitors are used. Customize the workflow as needed to accommodate a single monitor.
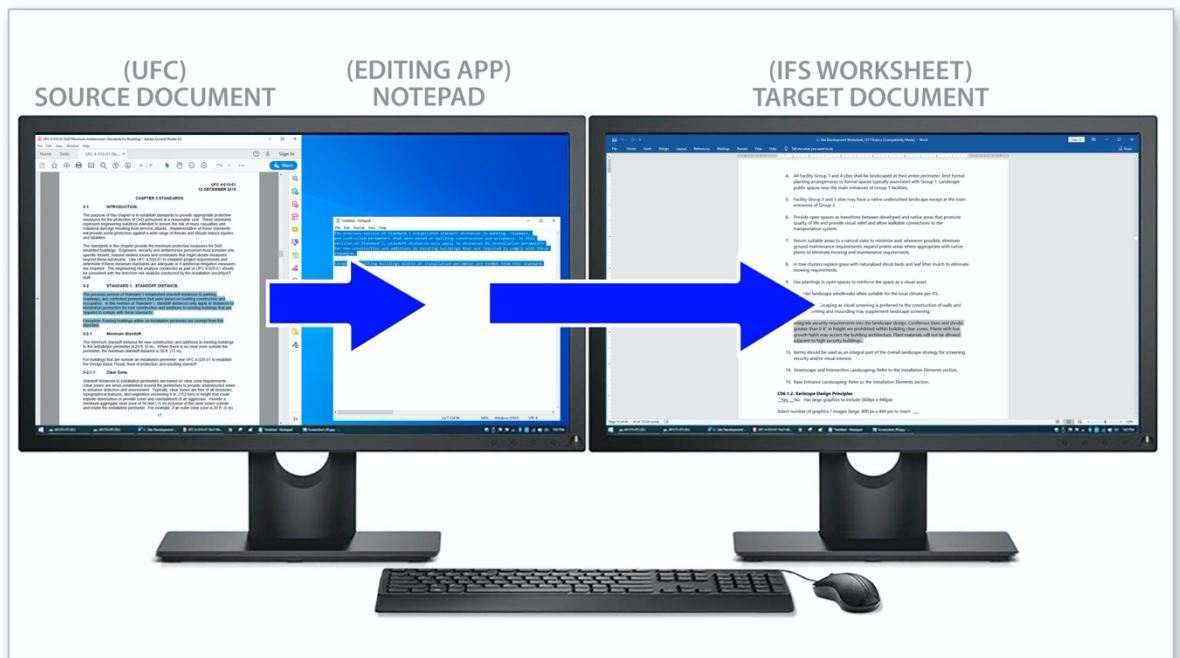
Workflow: Copy Narrative from Source, Paste into Notepad; Edit, Copy, Then Paste into Worksheet

Begin updating a worksheet by opening the source document and the target document. In the example above, the source document is a UFC that has been updated since the last version of the Peterson AFB IFS was published. Open the source document on the left screen. Next, open "Notepad" also on the left screen.

Prior to opening the worksheet, save a copy in the archive folder. Then rename the working file following the recommendations mentioned above. Ensure the filename is updated with the current date. Open the worksheet on the right screen. Turn on "Track Changes" prior to editing. Having the "Track Changes" on is important because only the narrative being changed needs to be imported into the PDF. Unchanged narrative sections may remain as-is.

Simply copy data from your source document into Notepad. Make any needed edits to form a directive or instruction—a base standard. Since this will become a new requirement in the IFS program, verify the content for relevancy and accuracy.

The steps are to edit the content in Notepad, then paste the new base standard into the appropriate worksheet at the proper location.

In the example, data is regarding standoff distances. The relevant worksheet is "C. Site Development," and the applicable section is "C06.1.1. Landscape Design Concept".

Preserve the original intent of the source narrative and adapt the general guidance to the specific climate and mission requirements.

FAQs Why do I need worksheets, can I just type directly into the PDF?

It is actually faster to use the worksheets. Word documents facilitate editing and tracking review comments, and having worksheets adds a layer of redundancy for archiving narrative content. The worksheets also have excellent tools for checking spelling and grammar.

TIPs Remove formatting

Remove all formatting from narrative prior to copying and pasting into worksheets. It may be necessary to paste text into Notepad initially, then copy and paste from Notepad to remove all formatting. Preserving the worksheet format and keeping the worksheets clean will minimize potential issues.

TIPs Update header

When opening a worksheet for the first time after more than one year, update the header with a current version available on the AFCFS website.
http://afcfs.wbdg.org/IFS/downloads/IFS-Worksheets-Header-2021.jpg

TIPs Confirm version of narrative

Ensure, when beginning an update, the narrative matches the published PDF, all "Tracked Changes" are accepted and turned off, and the document is set to "Original."

TIPs Use "Track Changes"

When the editing process begins, turn on "Track Changes." It will be necessary to view the changes when importing narrative into the PDF.

2. **Number Each Standard**
    Every base standard in the IFS receives a number. The only exception is the "Brief History of Base" section; this may be written in paragraph form.

    Numbering each standard is needed as a reference during the design and construction process. Numbering is also needed during reviews and in the evaluations of submission for the Air Force Design Awards Program.

3. **Provide Only Directives and Instructions**
Create and refine each standard as a brief instruction to a designer, contractor or project manager. <u>Convey only directives or instructions and avoid philosophical narrative</u>. When a unique, unusual practice or specification is required for local climatic or operational considerations, a brief explanation may accompany an instruction similar to the following example. "Provide only 6,000 psi high-density architectural precast to resist weathering. Due to added costs for higher density, limit precast use only to Group 1 facilities."

4. **Prepare Only Concise Statements**
Avoid over-complicating the grammatical structure of the standards. If a sentence is becoming overly complex, break it into a series of short, clearly worded sentences to communicate the requirements effectively. Eliminate any unnecessary words. Be clear, direct and avoid ambiguity.

5. **Create Supplementary Documents and Hyperlinks in Appendix G**
Highly technical, programmatic or procedural information, which is generally beyond the scope of the IFS, may be provided as a separate supplementary document and included in Appendix G. Any supplementary documents related to facilities design, construction and maintenance may be listed here. Appendix G provides hyperlinks to access these documents.
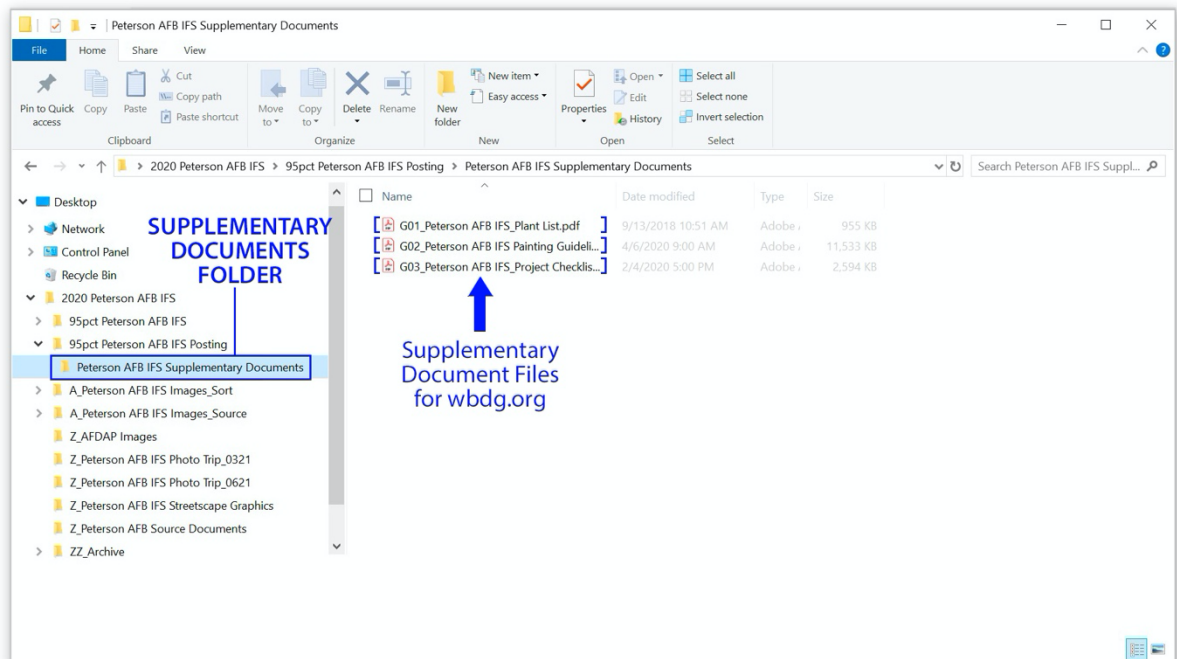
The Supplementary Documents Folder Is under the Posting Folder

Ensure the title of the supplementary document is succinct, intelligible and infers the contents of the document. If 3 or more supplementary documents are provided it is recommended to use a prefix beginning with G01, G02, G03, etc., to organize the documents in the desired sequence. In the absence of a predetermined order, generally follow the ordering of UFCs for related content. Exclude dates from the titles and filenames so that the supplementary documents may be updated without the need to update and re-sign the IFS.

Convert or save supplementary documents as PDFs. At 95% completion these are submitted to AFCEC for review and posting to wbdg.org as detailed in Section VI.C.

When a hyperlink is provided, copy and paste the link into the worksheet for Appendix G. List the full URL in text form below the title of the document. This allows users to copy and paste the URL if the hyperlink is blocked or becomes inactive. Next, copy and paste the link from the worksheet into the PDF as shown on the below graphic.
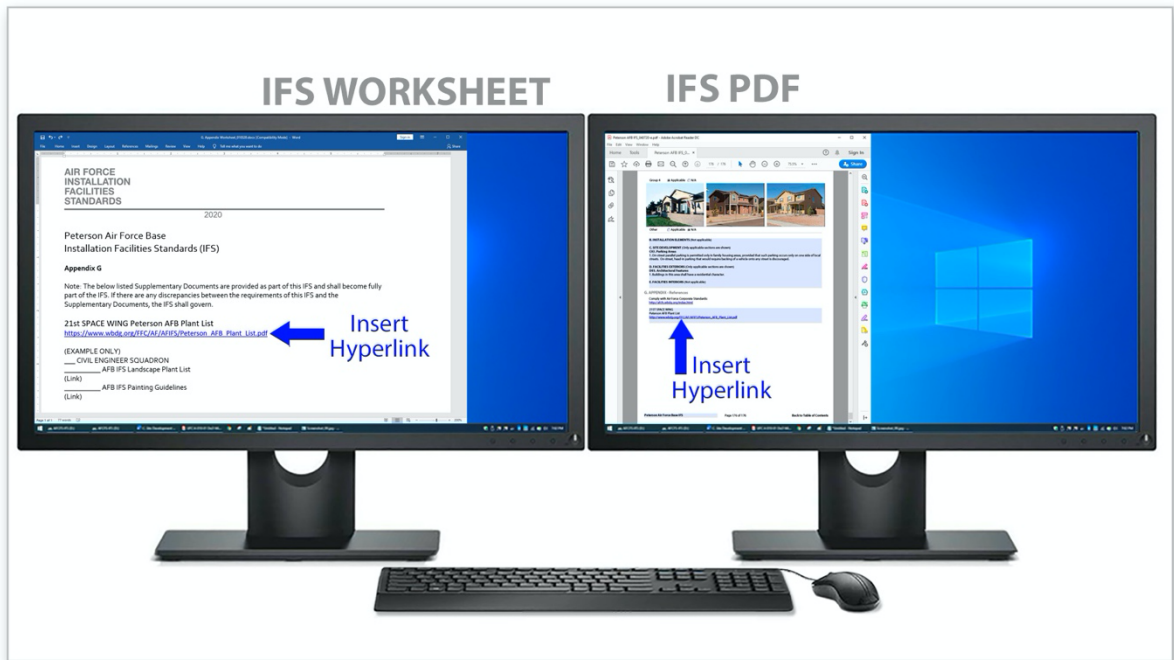
Workflow: Copy and Paste Hyperlink into the Worksheet, Then Copy and Paste into the PDF

Create an active hyperlink in the PDF by highlighting the entire line of the URL, right clicking and selecting "Hyperlink." In the menu click the text field and paste the URL. Save the PDF. Test the URL to ensure it is working.
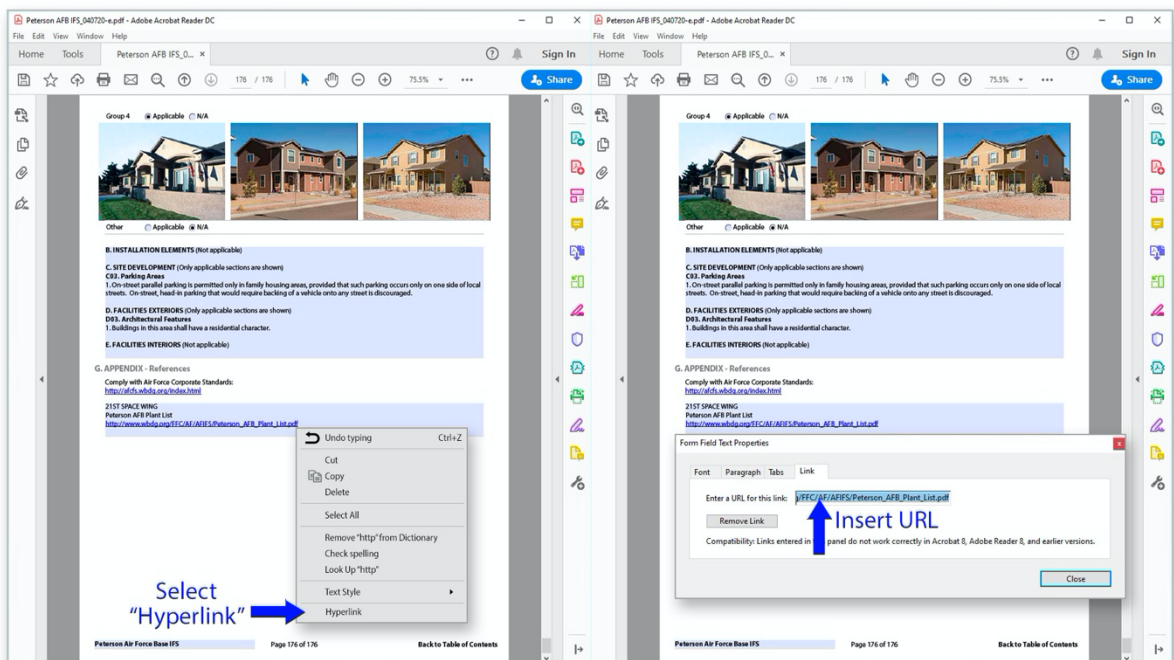
Workflow: Highlight and Right-Click the Hyperlink, Then Copy and Paste the URL

FAQs Why can't I just "customize" the IFS to add additional information?

The IFS template is purposefully developed to convey installation-level facilities standards consistently across the AF enterprise. The ability to link to supplementary material allows individual bases to add information while preserving the standardized format.

TIPs Copy URL from browser

It is recommended to open the supplementary document online, click and highlight the URL from the browser, then paste the URL directly from the browser into the hyperlink text field. This reduces the chance for errors.

TIPs Check and test all hyperlinks

Test hyperlinks to confirm each link functions properly and to verify the reader is directed to the correct website or document.

6. **Include Philosophical Narrative Only in Appendix G**
    As you edit and refine your narrative, organize items into a succinct bullet points. To reiterate, avoid using excessive words and philosophical narrative. Be concise. Think of each bullet point as a brief instruction to a designer, contractor or project manager.

    Generally, philosophy is addressed by DoD or Air Force Criteria. Research applicable documents to determine the availability of information prior to drafting content. If philosophy is already published on the subject matter, new content is only recommended to provide clarifications related specifically to local climate or unique operational requirements. When necessary provide philosophical narrative as a supplementary document in Appendix G.

FAQs Can we provide the philosophy behind a standard to circumvent anticipated questions?

It is permitted to provide a brief statement that supports the requirement or explains why the standard is warranted. An example would be to justify smooth textures and sloped surfaces of architectural precast in extremely damp climates, e.g., "Provide sloped faces and smooth texture to promote drainage and drying, and to minimize staining, mold and weathering."

TIPs Seek "top cover" from AFCFS

AFCFS generally supports language that is intended to reduce costs by avoiding the use of unacceptable or problematic materials or details in a particular climate.

7. **Organize Files under III.B**
    Refer to Section III.B. to ensure images are properly located in the appropriate folder.

B. IFS Images
   1. Collect Images Using Professional Standards
   This section describes the workflow for images. The process begins with collecting images and ends with placing the images into the IFS fill-in PDF form.
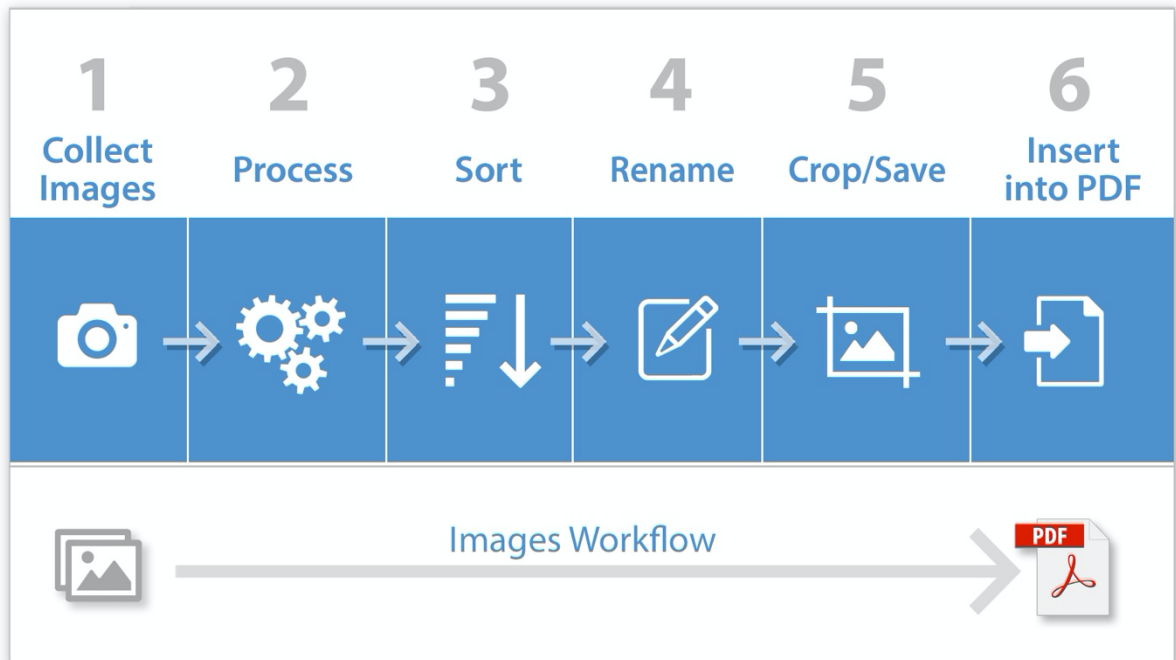
The Workflow Begins with Collecting Images to Be Ultimately Placed into the Fill-In PDF Form

Images may be taken with smart phones, but additional care is required to ensure images are properly exposed, in focus and composed without extreme perspective, or parallax. With a special adapter, a smart phone may be mounted to a tripod. High Dynamic Range (HDR) may be selected to enhance the image quality.

NOTE Most all images are 4:3 proportions, the same as a smart phone

The IFS is formatted with its small images using the same aspect ratio of smart phone cameras, 4:3.

NOTE Turn your phone horizontally

All images in the IFS are horizontally proportioned or "landscape" format, except for the cover and the facility districts map. Avoid taking images that are "portrait" format or vertically proportioned.

FAQs Do I need a professional camera?

Images may be taken with a smart phone, but a digital SLR will typically yield better quality.

FAQs What if my images are too dark?

Always plan photography during full sun with good light on the subject and use the proper exposure.

FAQs What if CES does not have the resources to take quality images?

Bases are encouraged to review the AFCFS website where images may be downloaded for use in the IFS. Go to: http://afcfs.wbdg.org/afcfs_index.html

If CES has resources, professional photographers may be retained; in this case have the photographer review a sample IFS for examples of images and download and follow the recommended shot list from the AFCFS website:
http://afcfs.wbdg.org/IFS/downloads/IFS-Images-Shot-List.pdf

TIPs Photograph with good conditions

Try to photograph facilities on a sunny day during the year when vegetation is green. Keep the sun behind you and avoid shooting in shadow areas.

TIPs Photograph at the right time of day

Schedule photography for morning or afternoon when the sun is shining directly on the elements and features to be photographed.

TIPs Keep the phone camera level

If taking an image with a smart phone, try to keep the camera level and plumb. This minimizes parallax, the harsh angles of vertical perspective.

TIPs Use a tripod

Use a tripod whenever possible to stabilize the camera and ensure sharpness.

TIPs Follow the suggested shot list

Download and use the IFS Shot List to capture the appropriate content.
http://afcfs.wbdg.org/IFS/downloads/IFS-Images-Shot-List.pdf

TIPs Respect privacy and avoid clutter

Avoid capturing personnel or confidential items in the background as well as clutter, etc.

TIPs If you are comfortable with photography, try the below "professional standards"

Use the below professional standards for recommendations on lighting, composition, exposure, sharpness, perspective, and for being creative. Specifications for file formatting are also recommended. The specifications may be provided to photographers and downloaded here:
http://afcfs.wbdg.org/IFS/downloads/IFS-Photography-Specifications.pdf

PROFESSIONAL STANDARDS

Lighting is the top consideration for giving an image a professional appearance. For exterior images, select a sunny day for photography. Ensure the sun is on the subject and the subject matter and composition conveys the facility standard. It is ideal to photograph all sides of a building. This requires photographs to be taken in the morning and again in the afternoon, so that all facades will be bright with direct sunlight. For north-facing facades, it is best to take images near the summer solstice early or late in the day when there is light on the surfaces of the north wall.

Simplify the **composition** to emphasize the elements or details being conveyed. If a window is being photographed, for example, it is best to move close to the subject and compose the window within the context of the wall system. Take multiple images including close-ups that fill the frame.

When using an SLR camera, ensure the **exposure** is set properly. This will most accurately render the colors of materials. Exposure may be controlled by ISO, aperture and shutter speed. Refer to the camera's owners' manual or find online resources for setting these.

Ensure crisp, sharp images. For the highest level of **sharpness** it is recommended that images be taken with a camera mounted on a tripod. Also be certain the focal length is exactly correct.

When shooting close-ups of materials and details for the IFS, it is generally recommended to avoid drastic perspective, or **parallax**, and to keep lines parallel.

For general photography compose images by applying the rule of thirds. This means imagining a grid of vertical and horizontal lines that divide the image into thirds in each direction and capturing the most interesting part of the photo on the intersection of those lines.

There are opportunities for **creativity** and to use dramatic images in the IFS, particularly in the Overview section and in Section D. Facility Exteriors. For these sections, capturing an image with a dramatic colorful sky may be appropriate. When using a professional camera, "Depth-of-Field" may be adjusted to create dramatic effects by varying the focus between foreground and background.

Take images using RAW format. These images have extremely large file sizes and are to be processed and reduced in file size prior to importing into the main directory. It is recommended to resize RAW images to 1600 px wide and saving these in a jpeg format with an sRGB color profile. 1600px-wide images may be imported into the main directory into the images source folder and later, sorted into subsection folders.

Summary of Specs for photographers:

- Provide images in RAW format
- Process RAW images to lighten shadow areas to convey content
- Provide a copy of processed images at 1600px wide in jpeg format
- Set image color profile to sRGB

TIPs Source images from the Air Force Design Awards Program (AFDAP)

Images may be sourced when published on the Air Force Design Awards Program (AFDAP) web pages. Refer to AFCFS and navigate to the AFDAP tab for available downloads.

2. **Process Images Prior to Sorting**
    If base personnel provide the photography, ensure to use professional standards as outlined above. Images must adequately communicate the subject matter. Ideally base personnel would have access to an imaging software such as Photoshop or Lightroom to adjust images as needed to ensure high quality and consistency with AFCFS stock imagery.

    Generally, when images are taken in the field with proper exposure, focus and stability, there would be little or no need to manipulate these. If images are sourced from AFCFS or from a professional photographer these are to be balanced for density, color, sharpness, etc.

    Use only images of very good quality when sorting into the IFS folders. Place all new images into a single folder. An example of the folder's name would be, "Peterson AFB IFS Images Source_062520." It is recommended to include the base name, IFS Images, Source, and the date in the folder name.

    In the next step, copy images from this folder into the applicable subsection folders.

FAQs Can I lighten an image without Photoshop?

An imaging software is required to lighten an image or adjust its contrast. Adobe Lightroom or Photoshop software offers excellent tools for these and other adjustments.

FAQs Can I make a blurry image sharp?

Reducing the size of an image can have a sharpening effect. An image 1600 pixels in width may appear blurred, but when it is cropped to 250 pixels in width it may appear sharper.

FAQs Can I use an image more than once?

Yes, in fact with creativity in using a variety of crops, the same image file may be used in many locations throughout an IFS without being perceived as repetitive.

TIPs Check available resources

Send a request to AFCEC for review of your images. Image processing may be available as a resource.

TIPs Process before sorting

Ensure all imaged are processed for exposure, lightening shadow areas, color correction, parallax correction, contrast, sharpening, etc., prior to sorting.

TIPs Verify the image size

Work only with images that are 1600px wide or less than 5 MB in size when sorting.

TIPs Use jpeg format

Work only with jpeg images when sorting.

3. **Sort Source Images**
   In this step images are selected from the original images folder and are copied and pasted into the IFS directory to the appropriate major section: B_Installation Elements, C_Site Development, D_Facility Exteriors and E_Facility Interiors. Once sorted at this level, images may be sorted into each of the sections.
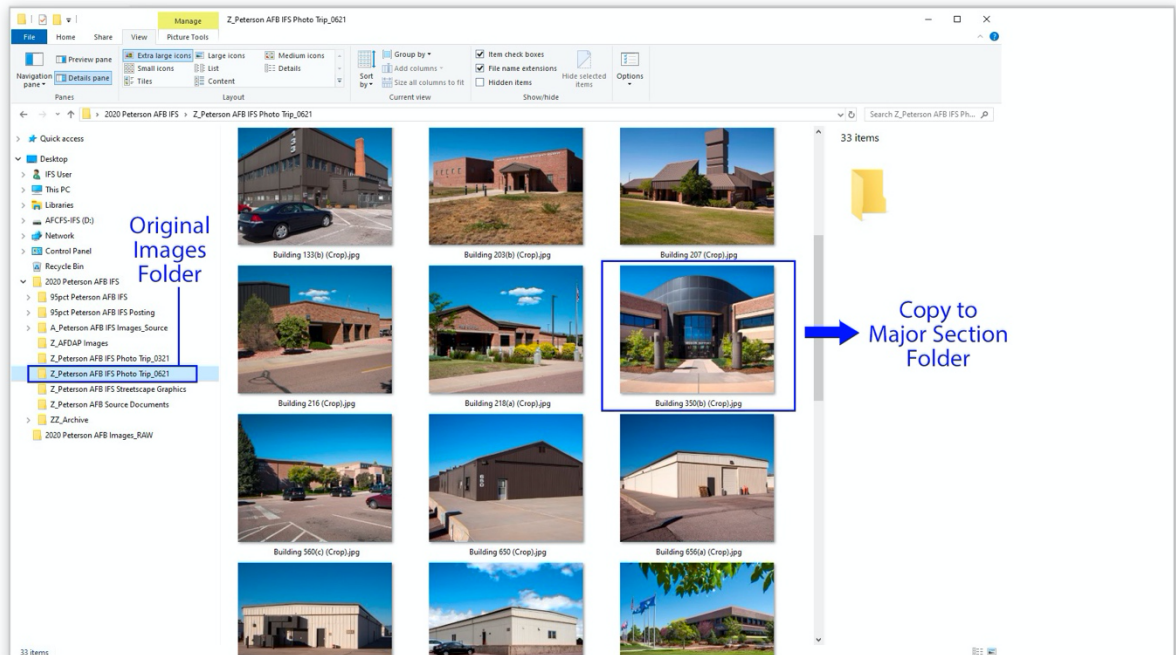
Copy Processed Images from the Original Images Folder

TIPs Images of buildings may be sorted into Facility Groups

Processed images sorted into the Facilities Exteriors folder may be sorted into subfolders for Facility Groups 1-4; this makes it easier to locate an image for a particular group number.

Refer to the graphic below.
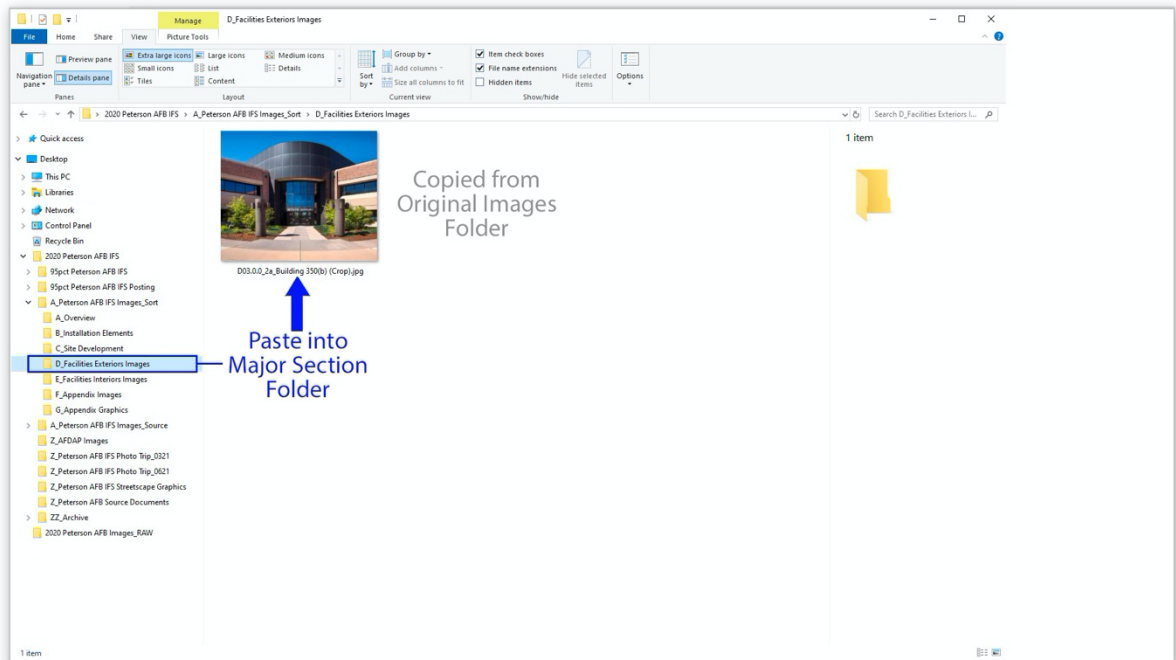
Paste Processed Images into the Major Sections Folder

If needed, please review the descriptions in Section III. A for each type of image file used in the IFS. Images are classified as "original", "source" or "cropped".

TIPs View icons

Use the "Extra Large Icon" view to quickly see the images in the source folder.

TIPs Complete Section E last

Save Facility Interiors until the last step. Most bases have difficulty finding good quality interior photos that meet AFCFS, so stock images and design awards images are frequently used.

TIPs Use shortcuts

Users, who are familiar with the original images and the sorting workflow, may skip the major sections and sort the original files directly into the source subfolders.

In the previous versions of the IFS, images were sorted into subfolders. These images may be replaced when updating the IFS. From the major section folders, new images may be selected to replace existing images. Copy and paste new images into the appropriate subfolder.

It is recommended to complete the written narrative standards to 95% prior to selecting images. The individual responsible for sorting and selecting images must be familiar with the narrative content for each section. For example, Section C06.1.1. Landscape Design Concept provides vivid standards for plant materials and details that are suitable for the local climate. Select images that exemplify and reinforce the written standards.

POCs are encouraged to review other completed IFSs, particularly in their region, for examples of similar image selections.

It is recommended that two monitors be used for this exercise if possible. Open the source folder, the folder where the images reside, on the left monitor. Open the target folder on the right monitor.
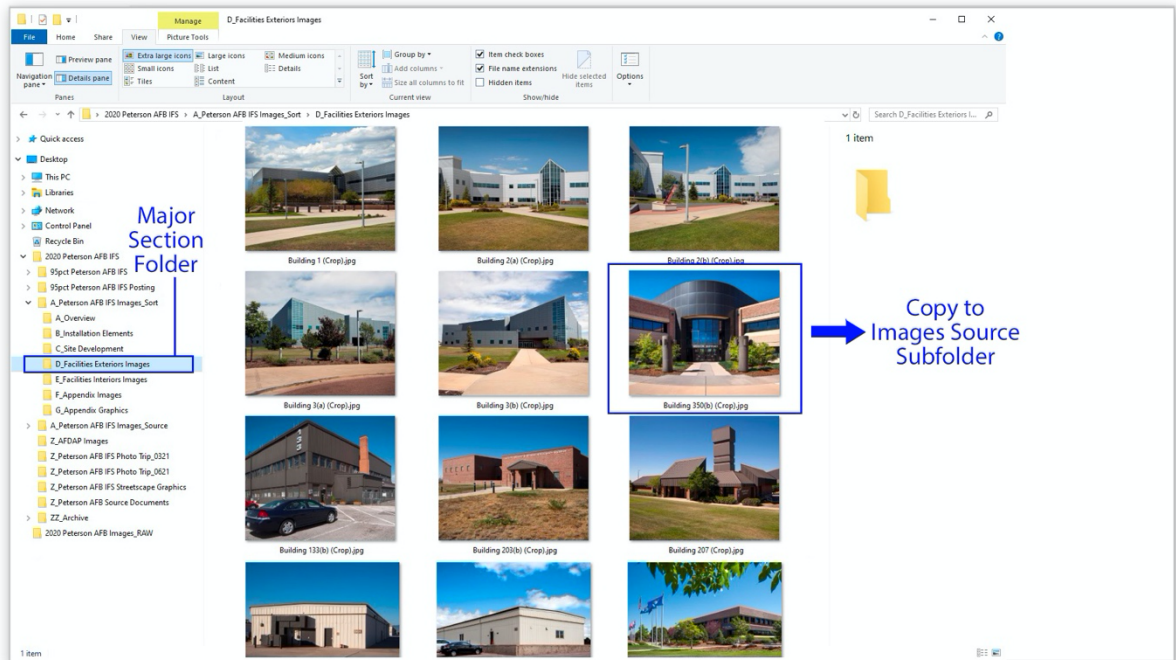
Copy Images from Major Sections into the Appropriate Subfolder

An image of a park bench would be pasted into the C07. Site Furnishings folder for example. An image of a building entrance would be pasted into D04. Building Entrances.

An image may be used in more than one location. Simply copy the same image to multiple subfolders.

It these cases, it is typically best to crop the image differently to emphasize the feature or element that is applicable to the section. During the cropping step, which occurs later, a crop might emphasize a roof for section D07. Roof Systems, and the same image might be cropped to emphasize the wall for section D05. Wall Systems, for example.

Refer to the graphic below.
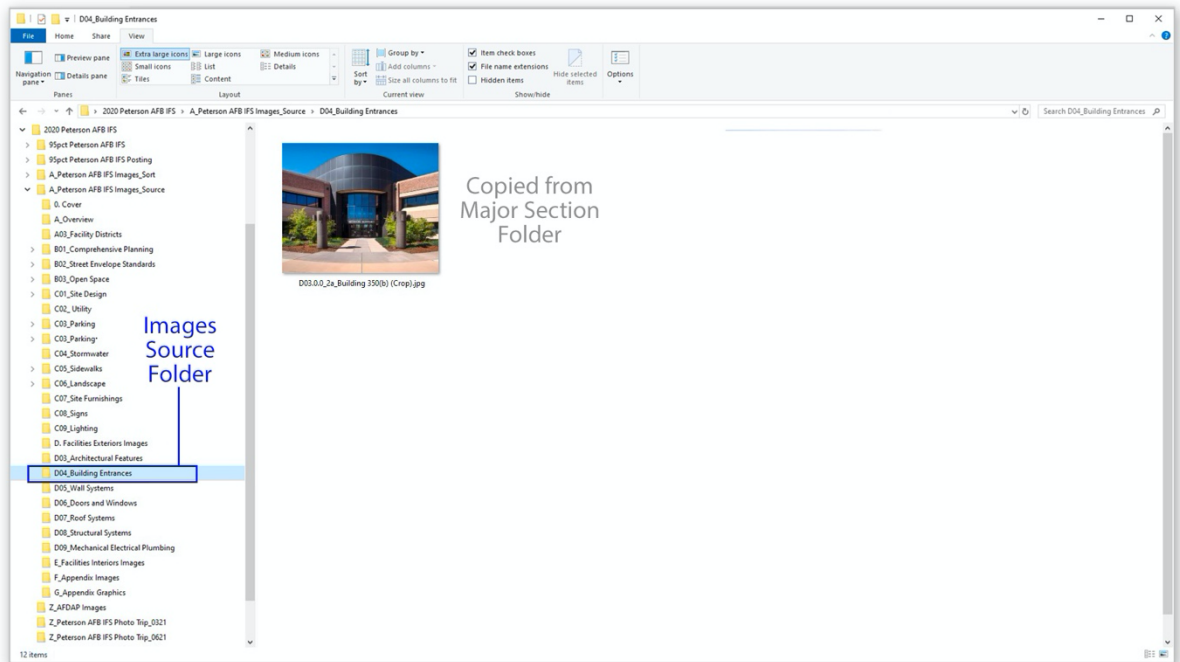
In This Example an Image Is Pasted into the "D04 Building Entrances" Subfolder

FAQs What's the fastest way to sort images?

Using two monitors, copy images from the original folder and paste into the target folder. Use both hands to copy and paste images as described in the TIPs below.

TIPs View icons

Use "Extra Large Icons" to quickly identify the images in the folders.

TIPs Use shortcuts

Rather than dragging images, use shortcut keys to increase speed. Click to highlight the desired image, then press Ctrl + C with your opposite hand to copy the image. Click to highlight the target folder, then press Ctrl + V to paste the image. This lowers the likelihood for errors, plus a group of images may be selected by pressing and holding the Ctrl key and selecting multiple files.

TIPs Recognize Facility Groups

Memorize the Group 1 buildings in the source images. Group 3 industrial buildings and Group 4 housing are typically easy to recognize. Being able to identify buildings by Group number will make Section D, Facility Exteriors, much easier to develop. Plus, familiarity with facility group numbers makes it easier to establish and implement the standards.

4. **Rename Source Images**
   Images in previous versions of the IFS use a standard format for numbering. All images have a prefix with the section number in the filename. After the prefix is the position number within

the section. For example, the first three images in the folder named C06.1.2. Xeriscape Design Principles, are named as follows:

C06.1.2_01_Image Name.jpg
C06.1.2_02_Image Name.jpg
C06.1.2_03_Image Name.jpg
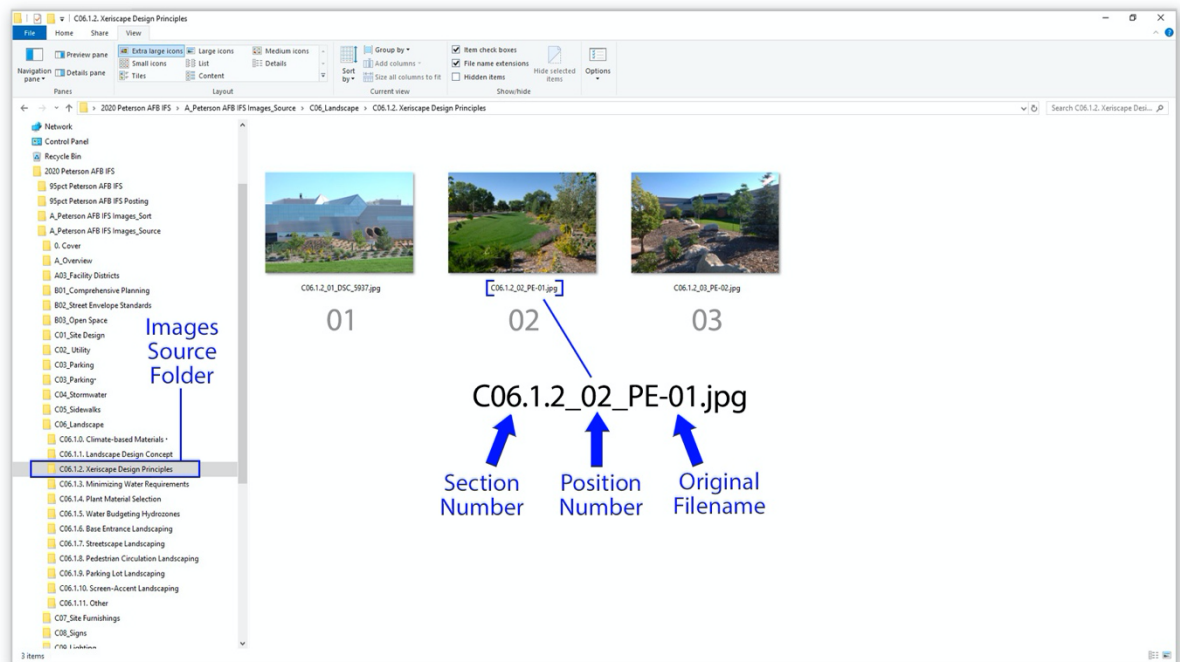
Add the Section Number as a Prefix, Add a Position Number to Order the Images

Preserving the original filename, add the desired prefix; the above example shows a prefix "C06.1.2." With this naming format, images are displayed in order, top to bottom. In icon view, the File Explorer window can be set to display three columns to match the layout of the PDF. This simulates a preview of the PDF's page layout.

With images that best represent the topic in the source folder, use prefixes to create the desired order of the images. Visualize the final layout in the PDF, which allows up to 12 small images per section, and determine the number of images that may best represent the narrative. Typically 3 to 6 images are adequate for a section.

Using a File Explorer window, determine the general composition of the page. Begin composing rows of 3 images each. By adding a "position number" the images may be arranged to simulate the final layout in the PDF. When the order is satisfactory, assign position numbers sequentially to preserve it.

It has proven much easier to load the PDF when a position number is included in the filename.

Once images are sorted into the subfolders, quickly add a prefix to each filename.

FAQs Why do I need to add prefixes and position numbers to the files?

This step saves time during production of the PDF. When a source image file is cropped, the same filename is used for the newly cropped image. In the cropped folder, the images are then listed in order, top to bottom. Ordering the images makes locating and selecting images easy.

Having images organized makes is much easier for new personnel, who are assigned the IFS in the future, to follow the recommended workflow. It also allows new users to easily replace specific photos based on new standards or better examples.

TIPs Use batch renaming

Refer to your computer's OS guidelines for batch renaming, which vastly simplifies and expedites the process.

TIPs Copy and paste prefixes

Keep a copy of the IFS Outline worksheet open in the background and reference it to see the section numbers. It is easy to copy the needed prefix from the worksheet and paste it into a filename.

5. **Crop and Save Images**
It is recommended to open the "Images Cropped" folder while performing the cropping step. As images are cropped, the new files will be added to the folder's window. Confirm the image is being saved to the proper folder. Check that the filename is correct.

FAQs Why do I need to separate source images and cropped images?

The PDF must maintain the smallest possible file size for ease of use. Cropping images to the specified aspect ratio keeps image files at the proper sizes.

TIPs Copy prefixes

As in previous workflow, open the IFS Outline worksheet and display it while cropping. Prefixes can be copied and pasted easily.

For users without access to imaging software, a custom Image Cropping Tool is provided. A separate tool is available to crop each image size. Tools may be accessed from the AFCFS website: http://afcfs.wbdg.org/IFS/downloads/IFS-Sample-File-Directory.zip

The IFS fill-in PDF form will accommodate five different sizes of images:

Cover Images: (170px x 170px)
http://afcfs.wbdg.org/IFS-image-tool-size-170x170/index.html

Facility District Map: (800px x 800px)
http://afcfs.wbdg.org/IFS-image-tool-size-800x800/index.html

Large Graphics: (800px x 440px)
http://afcfs.wbdg.org/IFS-image-tool-size-800x440/index.html

Small Graphics: (250px x 188px)
http://afcfs.wbdg.org/IFS-image-tool-size-250x188/index.html

Appendix F Maps: (800px x 600px)
http://afcfs.wbdg.org/IFS-image-tool-size-800x600/index.html

Open the Image Cropping Tool on the left monitor, left side. Open the image source folder on the left monitor, right side. Then, open the image cropped folder on the right monitor. Adjust the image icon sizes to fit the screen. For this example the source and cropped folders are "C05_Sidewalks."
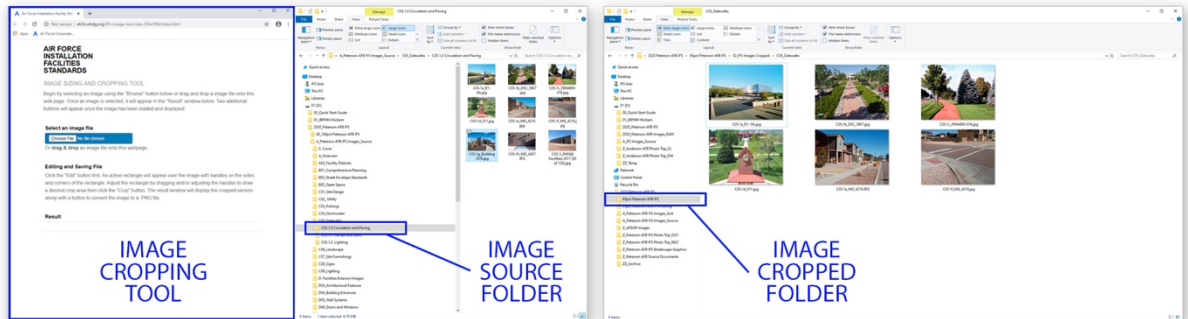
Two Monitors with the Image Cropping Tool and Two File Explorer Windows

Next, in the images source folder, click the desired image to be cropped and drag the icon into the image cropping tool. This action will open the image in the cropping tool window. Images may be selected by browsing as well.

Refer to the graphic below of the left monitor.
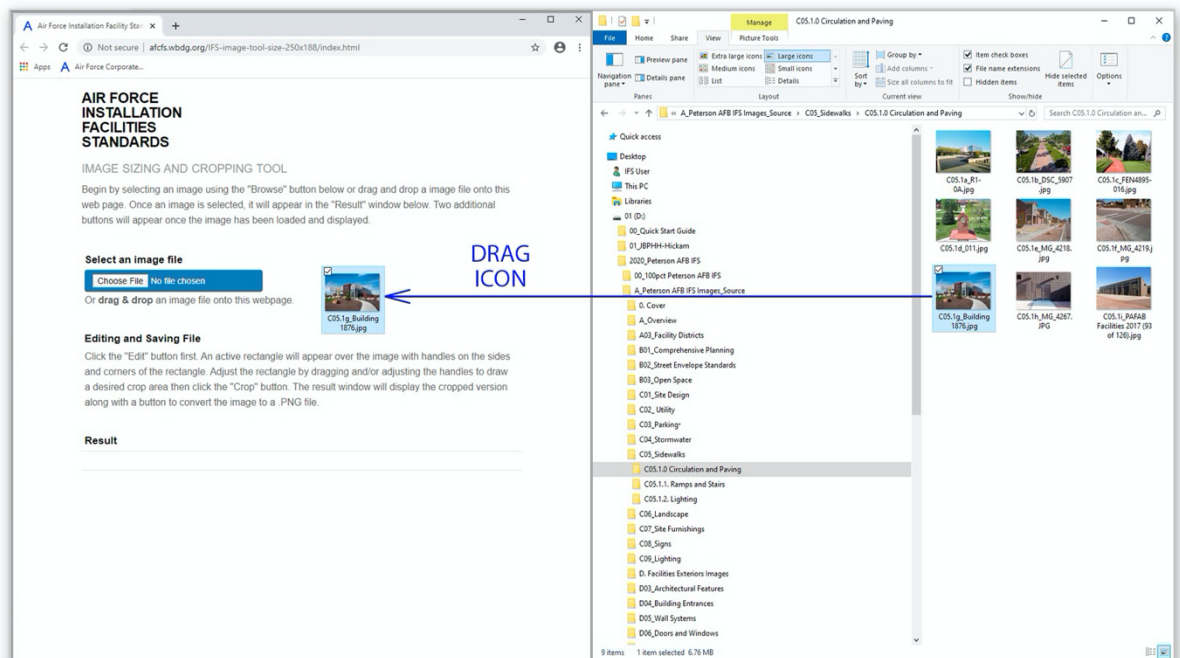
Drag and Drop the Desired Image into the Image Cropping Tool Window

Follow the below steps to crop and save images. It is recommended to crop several images during a session to accomplish the repetitive actions quickly:

1. Click Edit on the Cropping Tool
2. Drag and Resize the Crop Window
3. Click Crop
4. Click Convert Image to PNG
5. Right-Click to Save
6. Copy and Paste the Filename from the Source Folder
7. Save the Image in the Image Cropped Folder
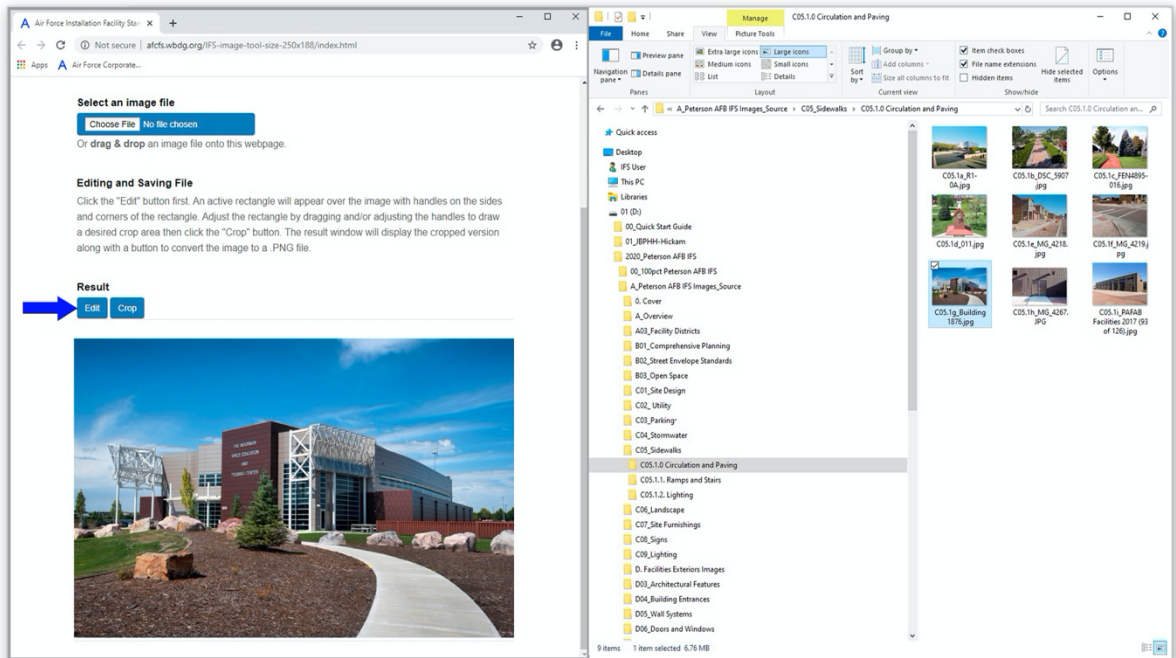
After the Image Displays in the Tool, Select "Edit"
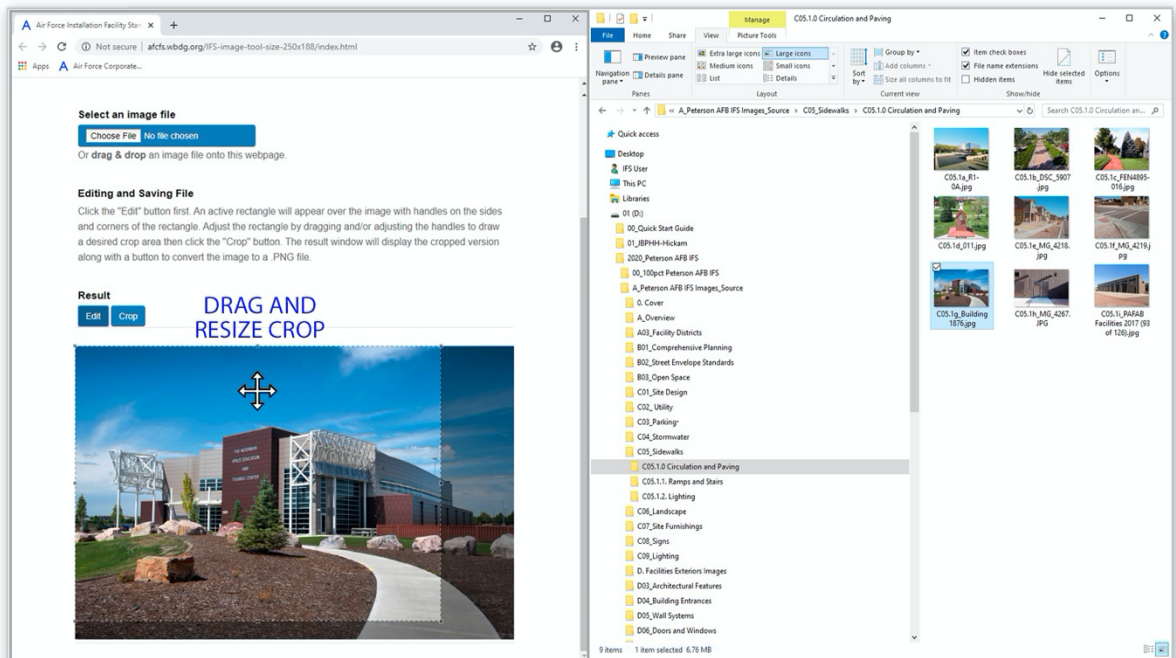
Move the Crop Window to the Desired Location

Review the narrative if needed and crop the image to emphasize the relevant content. Ideally every cropped image in a section will graphically represent the written standards.
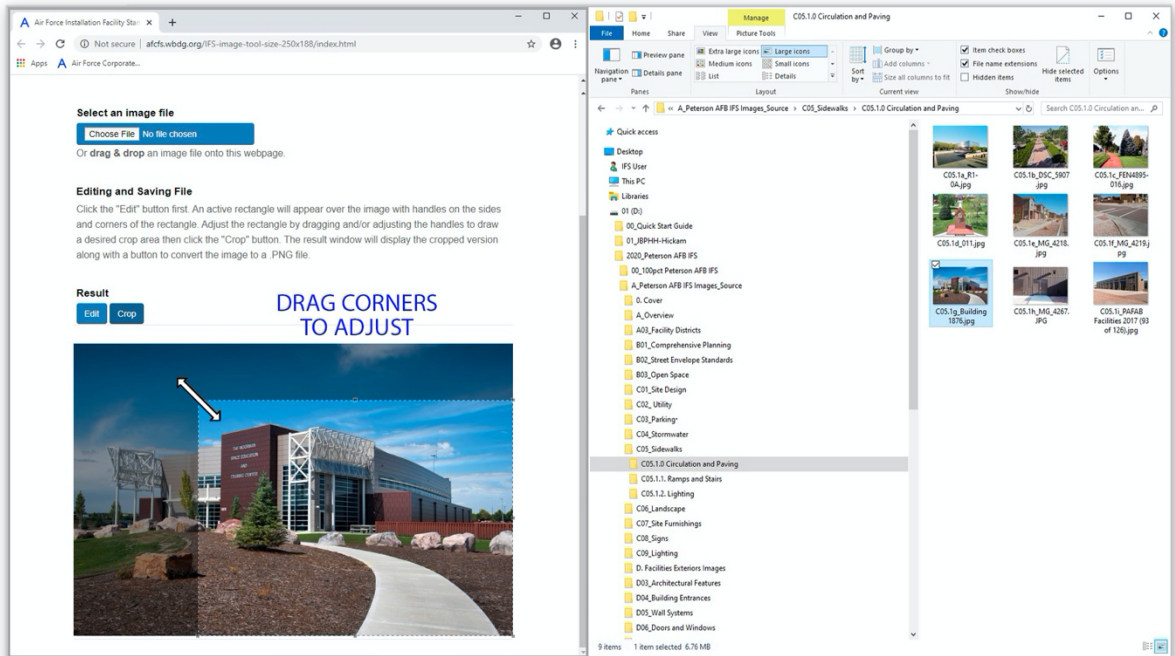
Drag the Corners of the Window to Refine the Crop

When the image preview shows the desired crop, click the "Crop" button. Click "Convert to PNG."

At this point, as shown in the next graphic, the newly cropped image will appear in the window. Next, mouse over the image and right-click to save it.
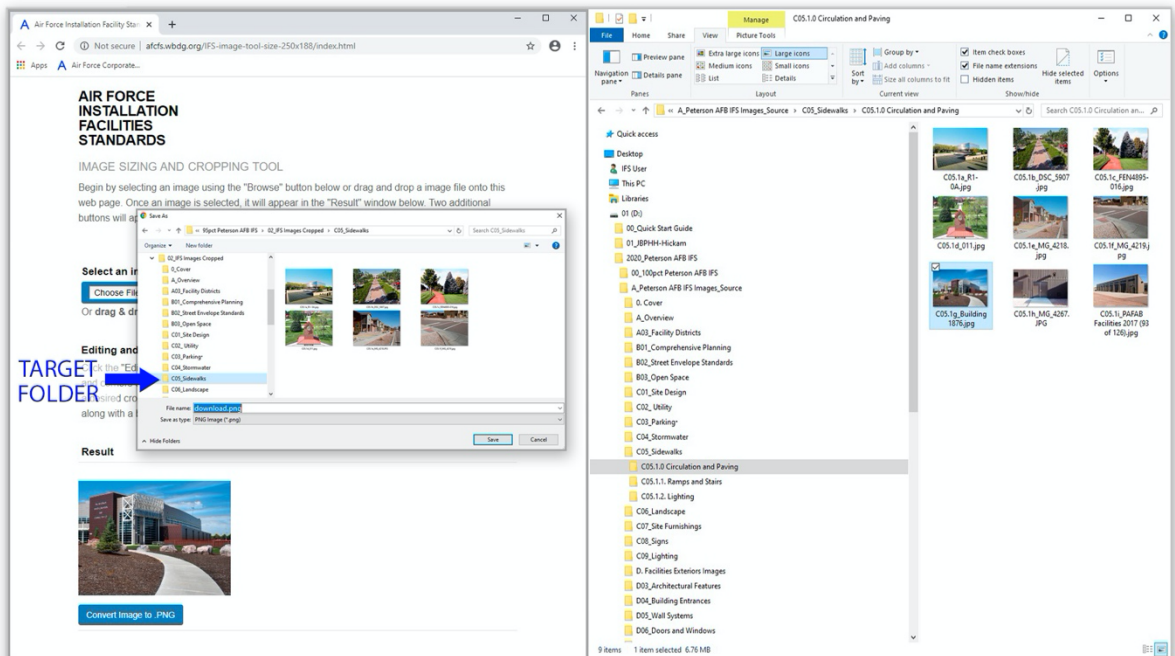
Right-Click to "Save Image As" and Select the Target Folder

Choosing "Save Image As" loads a menu allowing selection of the target folder. This is the folder where the image is to be saved. Confirm this is the correct folder. For this example, the folder is under the images cropped folder, "C05_Sidewalks." Also note, in the menu, is a text field for naming the image.
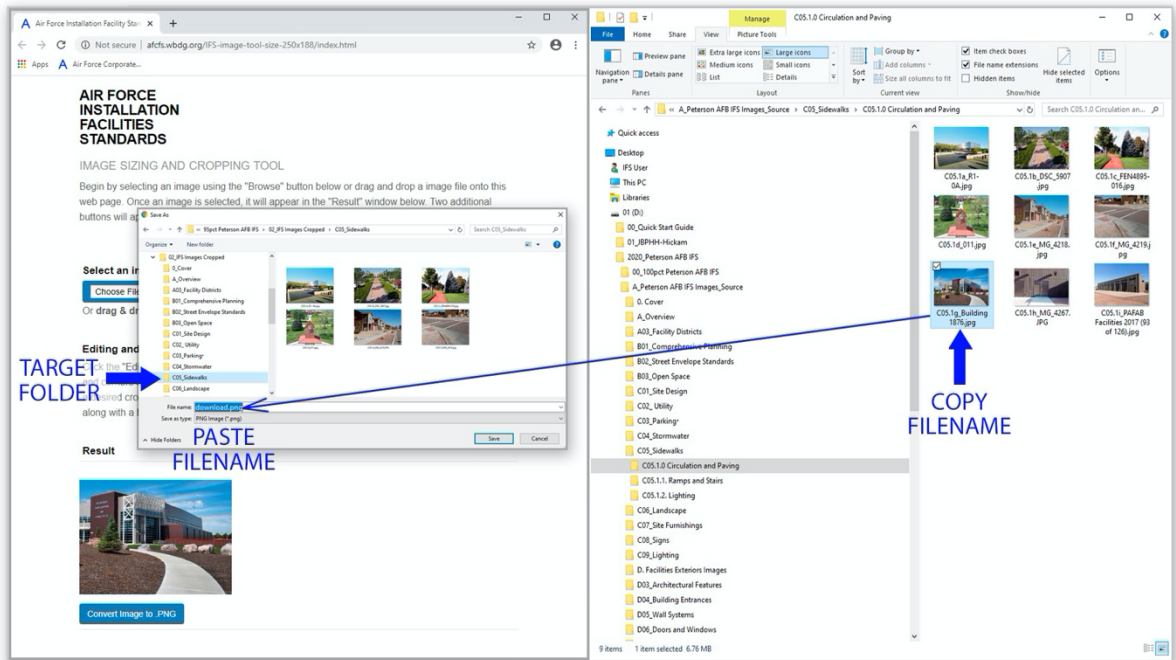
Highlight and Copy Filename to the Menu

In the image source folder, click to highlight the filename. Press Ctrl + C to copy the filename, then press Ctrl + V to paste the filename into the menu. When the filename is confirmed, save the image.

The next graphic shows both screens. On the right monitor, if the file was saved to the proper location, the image icon will populate. Having the "image cropped" window open is beneficial to verify the image is saved properly.
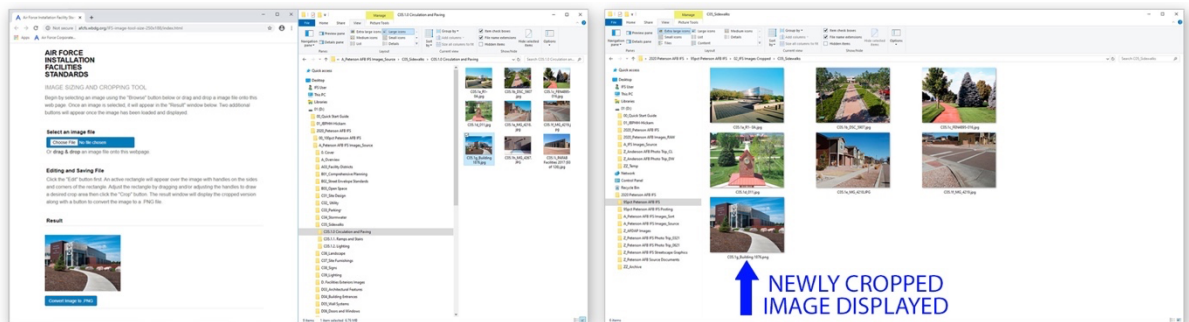
When the Image Is Saved an Icon Is Populated in the "Image Cropped" Subfolder

Confirm the image is successfully saved to the proper location, then proceed to the next image.

TIPs Check file sizes

Periodically check the folders with the details displayed. Verify that all images are the proper file size, which is approximately .3 MB for larger images (800px x 440px) and 70 KB for small images (250px x 188px).

If imaging software is available, such as Lightroom or Photoshop, ensure images are cropped using the proper aspect ratio:

- Cover Images: (170px x 170px)
- Facility District Map: (800px x 800px)
- Large Graphics: (800px x 440px)
- Small Graphics: (250px x 188px)
- Appendix F Maps: (800px x 600px)

Save images using a jpeg format. If using Photoshop, the "Save for Web" utility may be used to reduce file sizes. In this setting, ensure quality is set to "Maximum" and check the "Convert to sRGB" profile.

Verify the folder structure follows that recommended under Section III.C.

Arrange windows on monitors to facilitate opening from the source folder and saving to the cropped folder. It is recommended to open two windows of File Explorer to verify files are being saved into the proper folder as they are being cropped.

If an image in the source folder is inadvertently deleted or overwritten, immediately restore the image; find the image in a back-up directory if needed.

C. IFS Fill-in PDF Form
1. Enter Narrative Content in the Appropriate Section
When updating narrative it is recommended to replace the entire text field rather than replacing a single bullet. This ensures proper formatting. As outlined earlier, only sections with changes require updating.

Open the applicable worksheet on the left monitor and find sections with "Track Changes" highlighted. Prior to copying narrative from the worksheet verify that the numbering, line spacing and formatting is accurate.

Open the PDF on the right monitor. Now, in the PDF, highlight and erase the narrative in the entire text field. Click outside the text field to close it.

Highlight the narrative for the entire section in the Word document and, from the track changes menu, select "Accept Change." Copy the narrative and paste it into the text field in the PDF. Save the PDF, but do not save the Word document. Preserve and use tracked changes as a reference going forward.
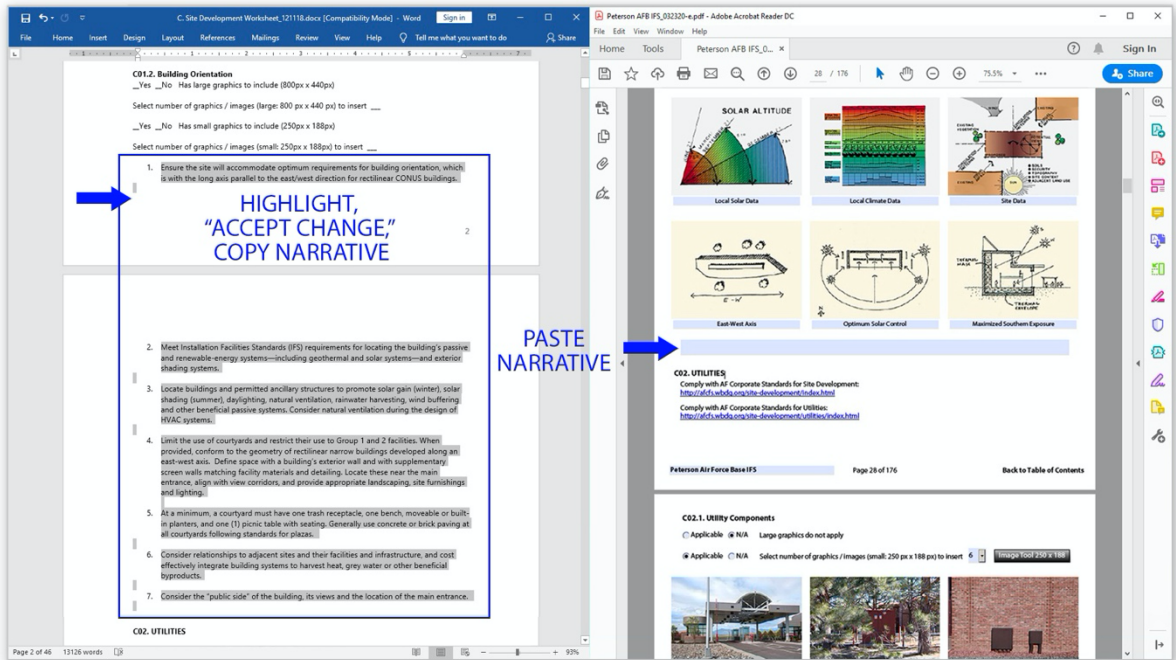
Copy Narrative from the Worksheet into the PDF Subfolder

If there are any issues with the PDF font or formatting, highlight the entire narrative and right click "hyperlink." From the pop-up menu select "font" and select Myriad Pro. This option is near the top of the list in the second group. Then, select "10 point." This returns the font to the default settings as required.

NOTE Use 10 pt. Myriad Pro

10 pt. Myriad Pro is the default font for the PDF. Use the above process from the "hyperlink" menu to reset the font and size if needed.

Adjust paragraph formatting similarly. Highlight the entire narrative and right-click hyperlink. From the pop-up menu select "paragraph" and verify alignment is set to "Align Left." Indents may be adjusted as well for consistency with other sections. Under the "First" setting, "Hanging" may be selected to set the indent for multi-lined bullets. Offsets can be keyed by points.

TIPs Use default formatting

Adjust the indents in the Word document initially to align with the PDF formatting. Word format may be applied globally to save time and to avoid editing in the PDF environment.

2. **Enter Images into the PDF**
   Confirm images to be used when updating the PDF are processed, sorted, named, and located properly. Replace only the images for which there are new images. Otherwise preserve the existing images.

Simply click on an existing image and the PDF will open a window to allow browsing to the proper folder. Go to the Working Folder then to the "02_IFS Images Cropped" folder. Click on the appropriate subfolder and locate the image file by section number and position number. Choose "Select." The PDF will remember this location, so it is best to complete a section prior to moving to another.

It will be necessary to open File Explorer and display "Extra Large Icons" to view the image files. Compare these to the same section of the PDF and replace only the outdated images. Add any new images.

Refer to the following example where new images are being added to a section. The Main Folder is "2020 Peterson AFB IFS." The image source folder is opened on the left and the working PDF on the right. The subsection in the example is "C05.1 Circulation and Paving;" this is a subsection of "C05. Sidewalks, Bikeways and Trails."
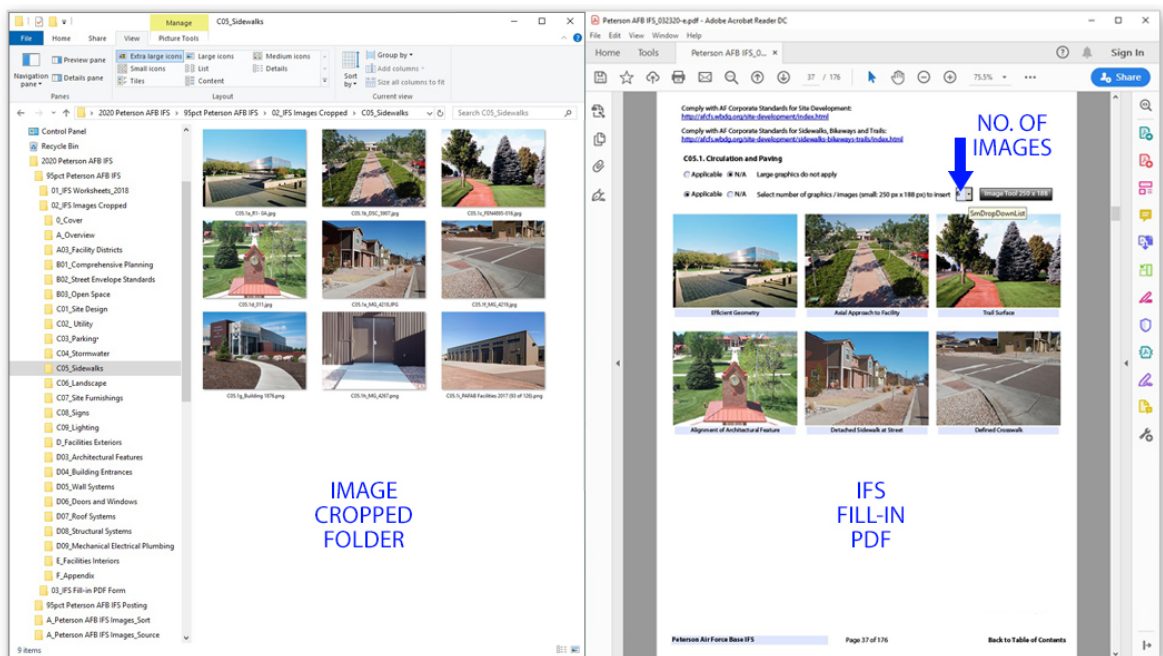
A File Explorer Window Is on the Left and the Fill-In PDF Form Is on the Right

To add images to a section click on the selection box and choose the total number of images. In the example, the 6 images are increased to 9 images.

NOTE Avoid large image files

Whenever images are added to the PDF be vigilant about using the proper aspect ratios and file sizes. It is important to minimize the file size of the PDF. A single mistake of adding a large image will dramatically increase the size of the PDF.

For example, inserting a 20 MB image will increase the PDF's file size by 20 MB.

Check file sizes regularly!
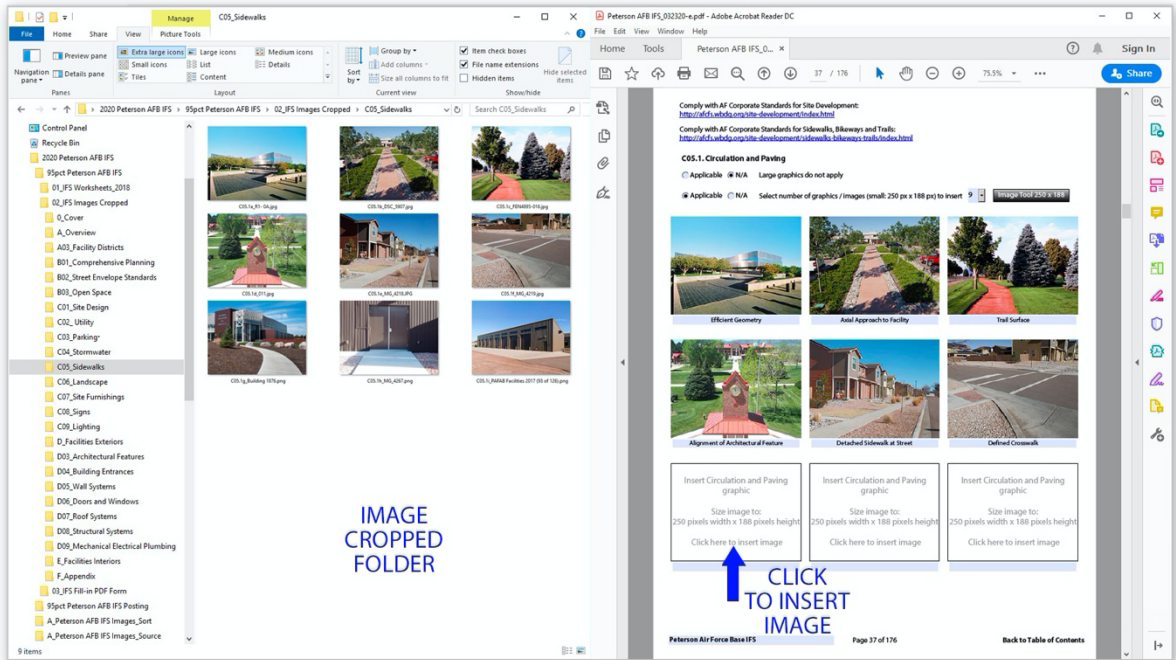
In the PDF Click on an Image Box (or an Existing Image) to Add a New Image

Clicking on an image box will open a menu for browsing to the appropriate image cropped folder. In the example, the path to the image is:

95pct Peterson AFB IFS > 02_IFS Images Cropped > C05_Sidewalks

Clicking on an Image Box Opens a Menu from Which to Select the Desired Image

When the New Image Is Displayed, Proceed to Add the Next Image

The PDF will return to the previous folder when browsing for an image. So, it is recommended to complete an entire section at a time.

NOTE Avoid deleting images

Do not select the "N/A" button for images on the PDF unless you are certain you wish to delete images. If the "N/A" button is toggled off and on, the images will be deleted.
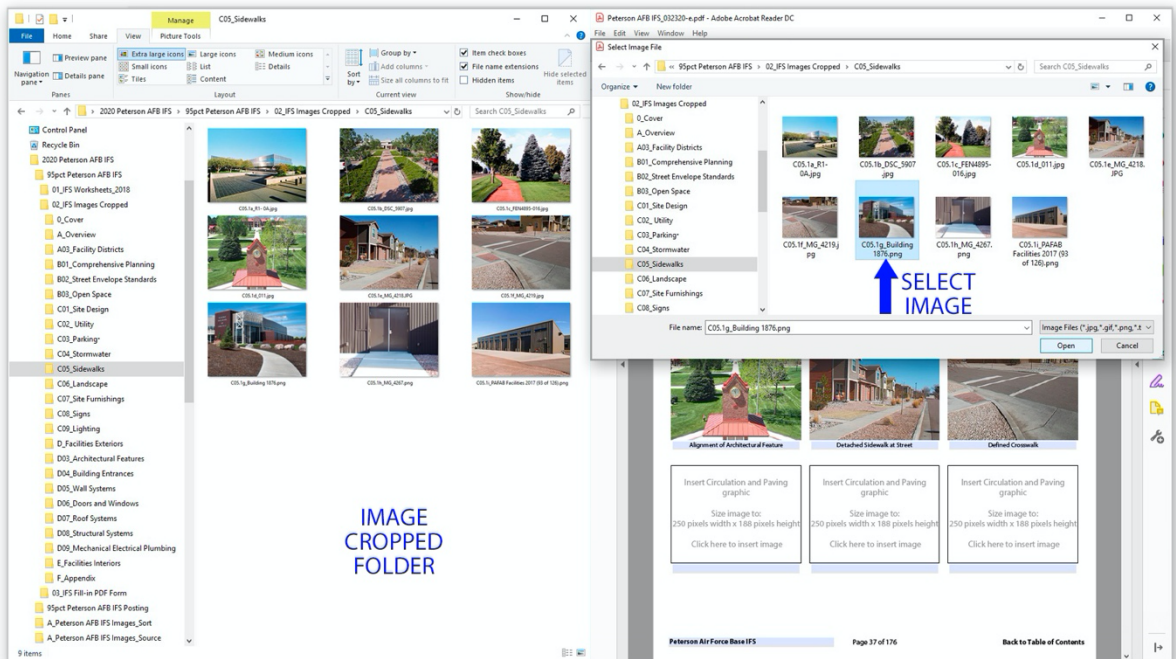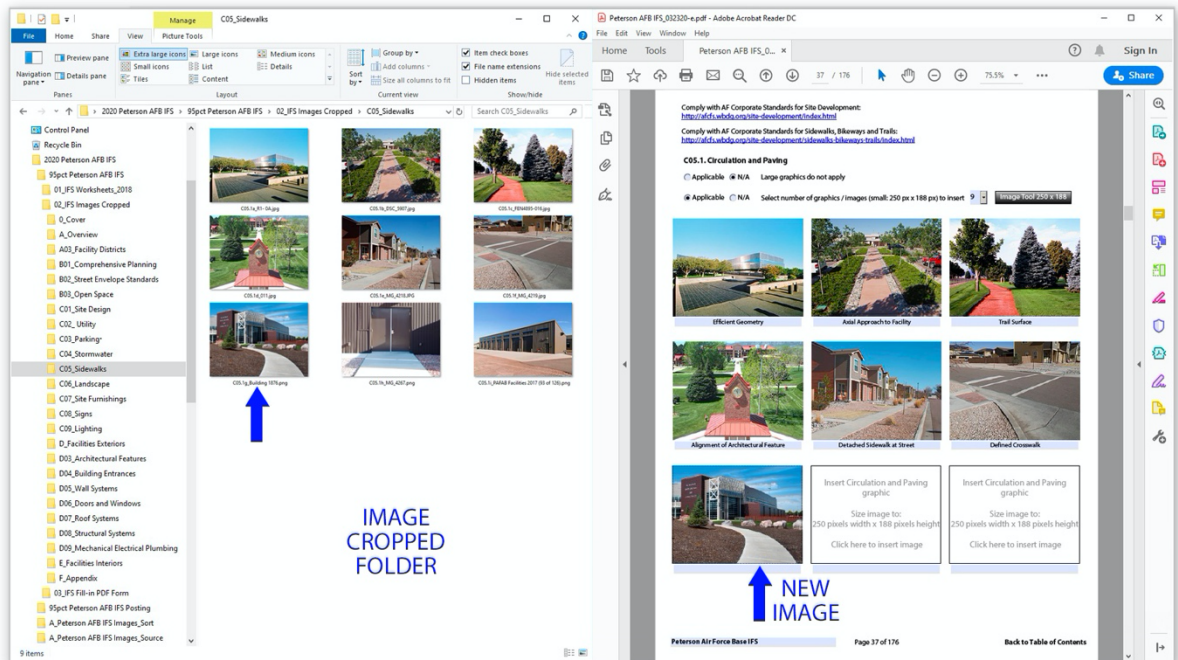

TIPs Restore your deleted images

If your images are inadvertently deleted, immediately close the PDF without saving changes. Reopen the PDF and the images will be restored.

TIPs Organize "materials" top-down

The materials standards in D05 Wall Systems and other sections are listed sequentially. Due to limitations in the Adobe fill-in-form environment, you can only delete entries from the bottom up. If you wish to delete an entry near the top of the list, it is recommended you rebuild the standards from that point downward. There is a quick way to do this in the next tip.

TIPs Recreate "materials" order

When changing the order of materials standards, it may be easier to open two PDFs—the current PDF and an older archived version of the PDF. Copy and paste from the old PDF into the new PDF from the top down using the preferred order.

3. Enter Appropriate Captions

Please note captions are "informative" in nature. These explain, call attention to detail and pinpoint the significance of the image. Format all captions using "Title Case," meaning each word is capitalized except articles and prepositions. Examples would include, "Deciduous Trees Shading a Facade" and "Xeric Planting." Avoid providing directives in captions.
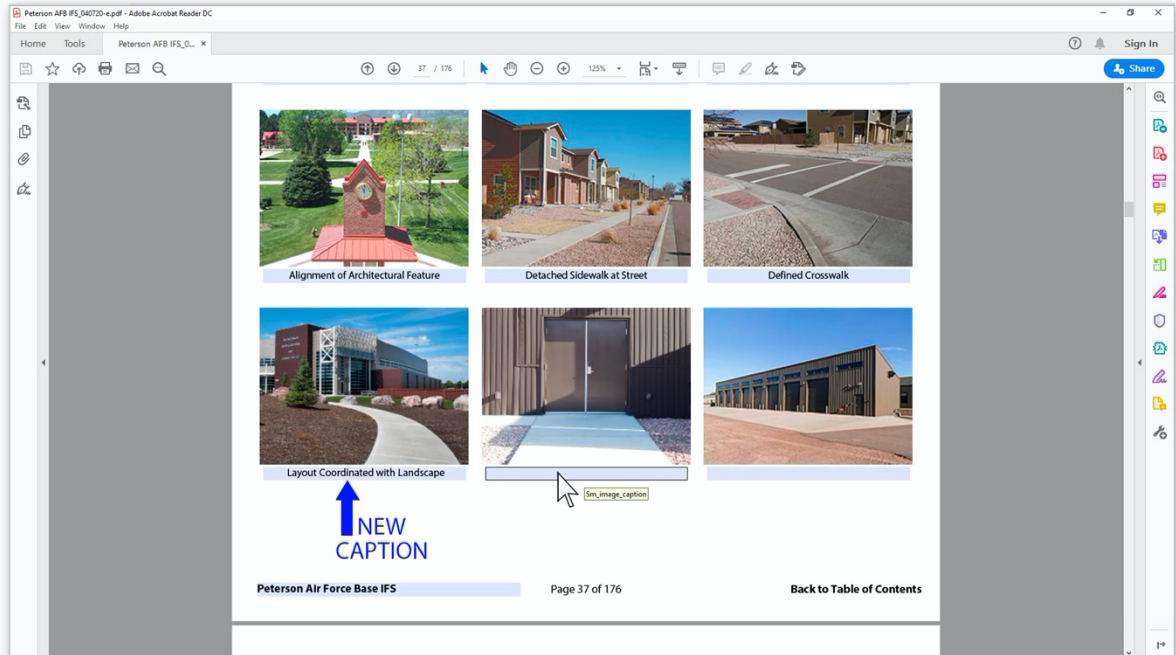
Click the Text Field to Add a Caption

The caption in the example is "Layout Coordinated with Landscape." Interpreting the next image, a caption could be: "Width to Accommodate Equipment."

TIPs Check captions

If multiple personnel are creating captions, the POC will check content and capitalization. The word "near," for example is often used as a preposition and is to be consistently lower case. The style and tone of captions must be congruent throughout the entire document.

TIPs Draft captions

Captions may be added to the worksheets when necessary for reviewing and commenting. In this event list the captions prior to the narrative just as they appear in the PDF. If captions are numbered in the worksheets, remove the numbers when pasting captions into the PDF.

TIPs Confirm captions where needed

Section D has captions only in the initial topic. Section E does not use captions.

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V. How to Update the IFS

A. IFS Worksheets

1. Download the Current IFS Worksheet Template

The most current version of the IFS Regional Worksheets is available on the AFCFS-IFS website:
http://afcfs.wbdg.org/IFS/IFS-regional-templates/IFS-regional-templates/index.html

NOTE Check for changes to the worksheets

Download the applicable files and save these to the working folder. Read all bulletins published on AFCFS since the last version of the IFS was published.

2. Review Updates and Changes to IFS Worksheets

Similar to UFCs, the IFS Regional Worksheets are periodically updated and have a summary of changes at the beginning of the document. Read the changes and prepare to import the changes into your legacy worksheets.

3. Preserve Format and Edit Narrative as Required

Using the numbering utility built into the MS Word software, maintain the numbering style from the previous IFS publication. Refer to the help section on the Microsoft website if needed. It is recommended to maintain simplicity in the formatting and to use the software's default settings; under the "Format" pull-down menu, mouse over "Bullets and Numbering." Indents may be adjusted as needed to preserve consistency in the PDF format.

The POC is encouraged to update the worksheets with any recommended changes required by DoD or Air Force memoranda or criteria.

4. Distribute Worksheets for Comments

The Point of Contact (POC) distributes and receives comments.

First, the POC must ensure the MS Word IFS Worksheets are "clean." Open each file and ensure all changes made previously are accepted and "Track Changes" is turned off. Update the header to the current year. A new header graphic is available from the AFCFS-IFS website:
http://afcfs.wbdg.org/IFS/downloads/IFS-Worksheets-Header-2021.jpg

When the worksheets are ready for distribution, turn on "Track Changes" and save the file. Update the filename with a suffix to reflect the current date, e.g., "D_Facilities Exteriors_Worksheet_123120." Now, the POC may distribute the worksheets.

NOTE Assign reviews for each major section

There is a single worksheet for each major section of the IFS. Instruct reviewers that all changes made to the worksheets must be done with "Track Changes" turned on.

It is recommended to send each file only to the person responsible for the respective section or discipline. Ideally, the distribution would be as follows:

- Installation Elements: Base Community Planner
- Site Development: Base Landscape Architect
- Facilities Exteriors: Base Architect
- Facilities Interiors: Base Interior Designer

If the base does not have these positions filled, the BCE assigns an individual to be responsible for each section. The BCE may elect to have shops personnel review the documents. When few staff positions are assigned, all sections may be reviewed and maintained by a single individual.

It is recommended to remind reviewers, who wish to suggest changes, to use the "Track Changes" feature in MS word. This will allow the POC and others to see the changes that are being proposed.

It is also recommended that, if more than one reviewer will be participating, only a single copy of each section be circulated. This will keep all comments and proposed changes in a single document and make it easier to manage.

The POC may distribute the locked version of the PDF as well, so reviewers may see the narrative in context with the images. The locked version of the PDF is needed, so that reviewers will not make changes within the PDF environment. Changes need to be tracked and must be made in the Word documents.

To facilitate reviews, a POC in USAFE developed the below example of a custom PDF. It includes text fields for reviewers to accept the worksheets or to add a brief comment by section number. A signature block is included as well. All POCs are encouraged to innovate when soliciting and collecting comments.

Sample of a Custom Review Comments Form Created by a POC

FAQs Why can't I just distribute the PDF and have the reviewers make the proposed changes once?

The POC is responsible to review all changes for compliance with DoD and AF criteria. The worksheets have "track changes" tools that make it easy to review proposed changes. Changes

may be accepted or rejected or edited based on applicability, prior to pasting narrative into the PDF.

Update and refine all narrative content following the workflow outlined in Section IV.A.

TIPs Facilitate reviews

Streamline and simplify the review process and provide the necessary tools to facilitate reviews. If possible, it is ideal to have reviewers work within the IFS worksheets using "Track Changes."

5. **Organize Files under III.B**
   Preserve the directory structure recommended in Section III.B. Follow the recommended workflow for naming, saving and archiving files.

B. **IFS Images**
   1. **Organize Files under III.C**
      Attentively organize image files following Section III.C. Match the numbering conventions in new files with those in the previous version of the IFS.

   2. **Process and Prepare Images under IV.B**
      Please refer to Section IV.B. Process, sort, crop, and save images using the recommended workflow. All new images, to be placed into the updated PDF, are presumed to be replacing older images or augmenting the existing with newer examples.

      In these cases, new images will displace outdated images. During the cropping step, the images being replaced must be deleted from the folder, leaving only those images being used in the updated PDF.

   3. **Enter Images into the PDF under IV.C**
      Configure windows using the graphic in Section IV.C. To distinguish new from old, view cropped image files in File Explorer using "Large Icons" on the left screen and compare the layout page of the PDF on the right screen. On the PDF, click on the image to be replaced, navigate to the cropped folder, and select the new image as described in Section IV.C.

C. **IFS Fill-in PDF Form**
   1. **Organize Files under III.D**
      Confirm the working PDF is the correct version, prepared under Section III.D above, and is properly named. Use the PDF's year of publication as the prefix, e.g., "2020 Peterson AFB IFS_062520.pdf." Maintain only the working copy in the Working Folder.

   2. **Download the Most Current IFS Fill-In PDF Form**
      Prepare to update an older version of the IFS fill-in PDF form by downloading the latest version of the IFS fill-in form via the AFCFS website:
      http://afcfs.wbdg.org/IFS/downloads/IFS-Fill-in-PDF-Form.docx

      Save the new PDF under the Working Folder in the subfolder titled 03_IFS Fill-in PDF Form. Ensure to download the correct regional template for the base location. For example, the proper template for Peterson AFB is the Rocky Mountain West regional template. Save a copy of the template to the archive folder as a back-up file.
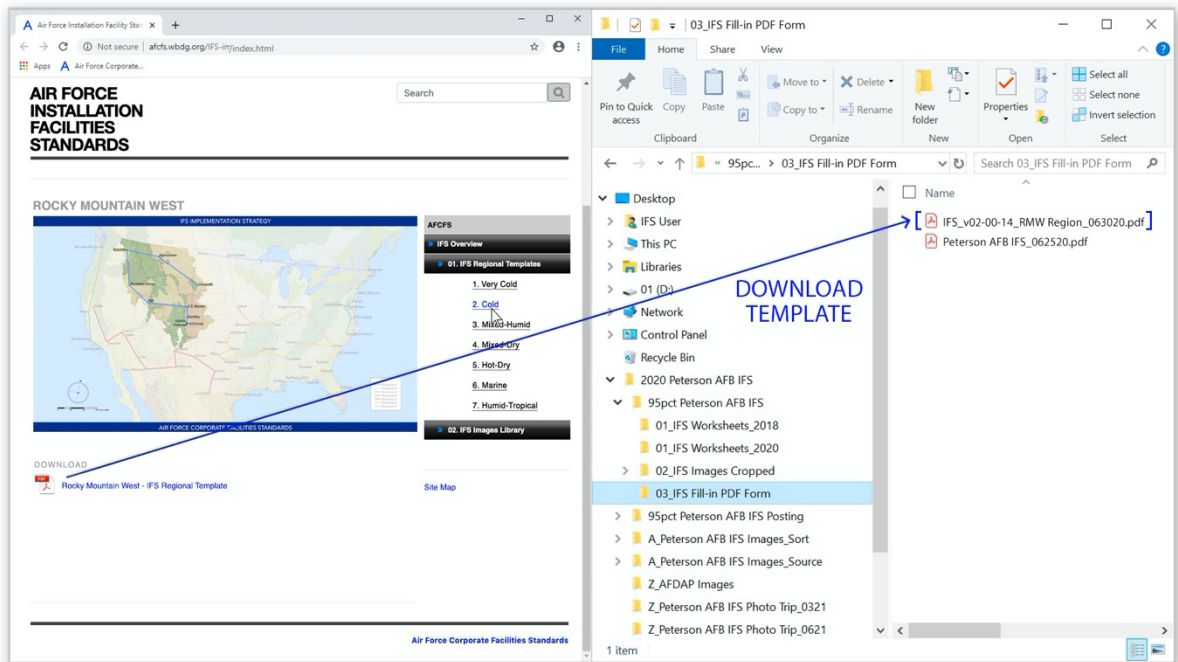
From the AFCFS Website's IFS Page, Download the IFS Template
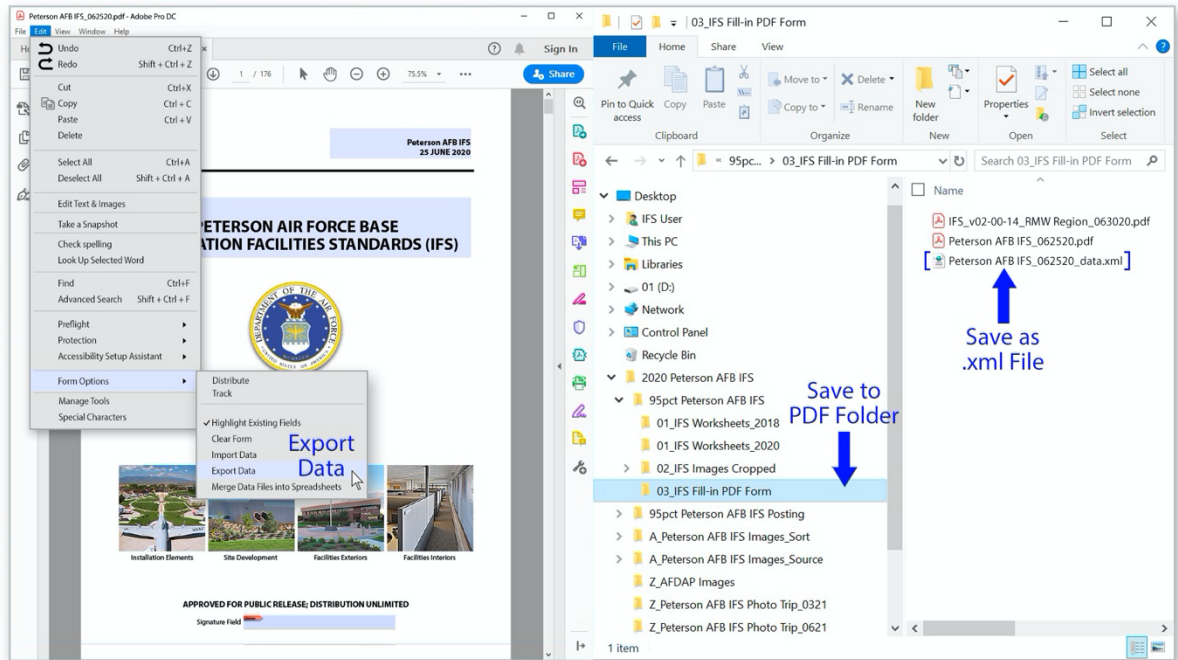
3. **Export Data**
   Adobe Pro is required for this exercise. First, confirm Items 1 and 2 above are completed and ensure the files are saved in the proper location and properly named. Using Adobe Pro, all contents from the working PDF will be exported and saved in this step.

   Open the working PDF and open a File Explorer window. Using the PDF's "Edit" pulldown menu, mouse over "Form Options" and select "Export Data." A pop-up menu allows browsing to the appropriate folder where the data is to be saved. Save the data into the working PDF folder. Note the format is an "XML" file.

   At this point, there are three files in the working PDF folder:

          1) the new PDF regional template,
          2) the working PDF, and
          3) the XML file.

   Refer to the graphic below.

From the Edit Menu, Choose "Form Options" and "Export Data"

FAQs What if I do not have access to Adobe Pro or the export doesn't work?

Send your latest working PDF to AFCEC for processing. The file will be updated to the newest IFS template and returned to the POC.

TIPs Complete the export prior to making major edits

It saves time and is recommended to update the PDF template at the beginning of the process prior to inserting new narrative and images.

4. **Import Data**
   Using Adobe Pro, the next step is to import the XML data, created under Item 3 above, into the new fill-in PDF form. It is okay to maintain the default filename during this step. An example might be, "IFS_v02-00-14_RMW Region_063020."

   Open the PDF and, using the edit pulldown menu, mouse over "Form Options" and select "Import Data." There will be a prompt to "Save a Copy;" select "Save a Copy." When prompted simply add "_copy" to the end of the filename and save, then close the document.
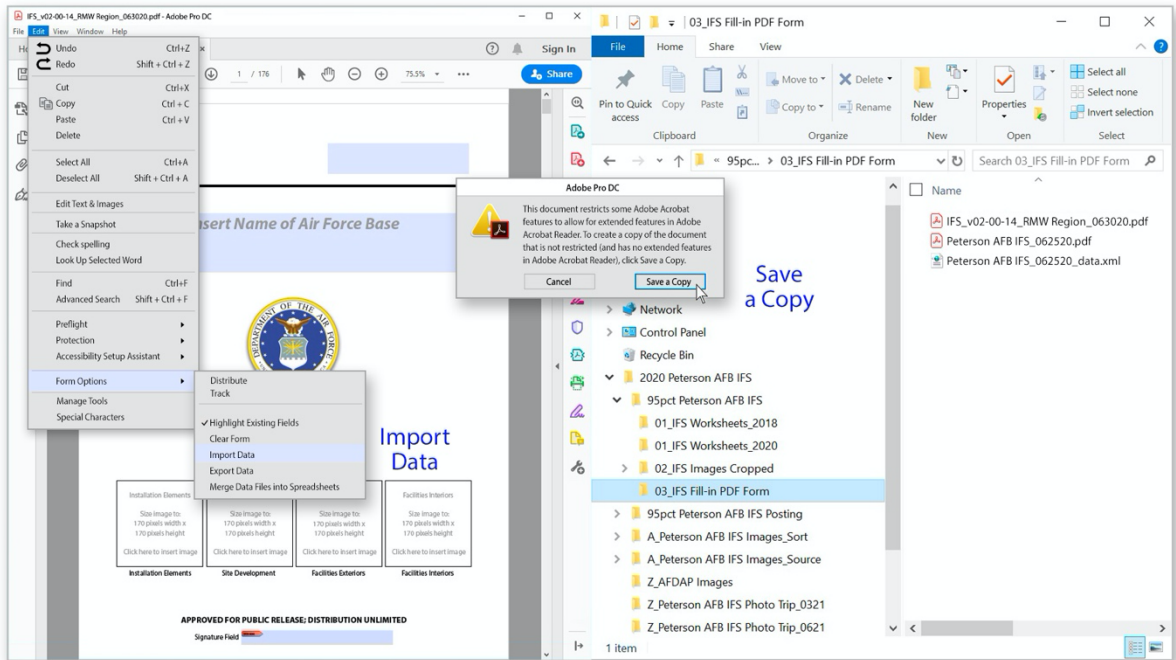
From the Edit Menu, Choose "Form Options" and "Import Data"

NOTE Confirm the "Save a Copy" action

Verify that the copy of the PDF created under the previous step is in the correct folder and is named properly before proceeding to the import action.
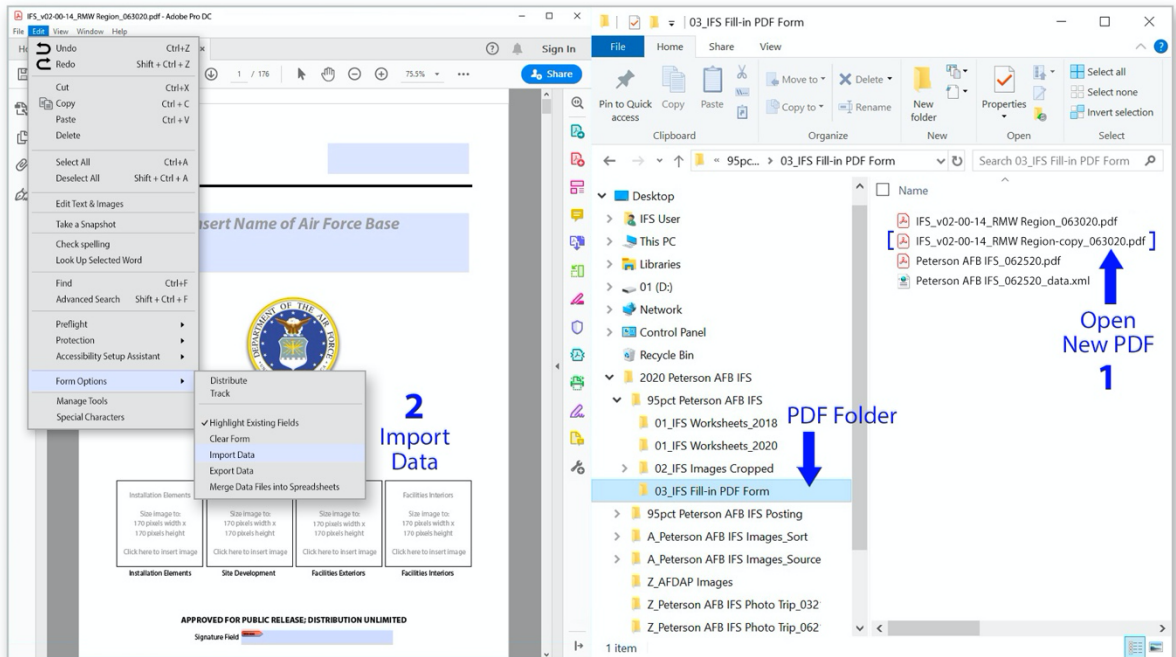
Locate the Copy of the New IFS Fill-In PDF Form in the Working Folder

Open the newly created copy, with "_copy" at the end of the filename. Using the edit pulldown menu, mouse over "Form Options" and select "Import Data."

NOTE Verify the data is properly imported

After the data is imported check the PDF to confirm images, graphics and narrative are properly formatted.

TIPs Refer to the File Explorer Window

Keep a File Explorer window open during the import process to see the copy of the PDF created under the previous step. Observe the File Explorer window and the PDF file during the import process to confirm the import actions are being made to the correct file.

TIPs Check the fonts on the cover and Table of Contents

Click the text fields on the cover and in the header of the Table of Contents to remove italics if necessary
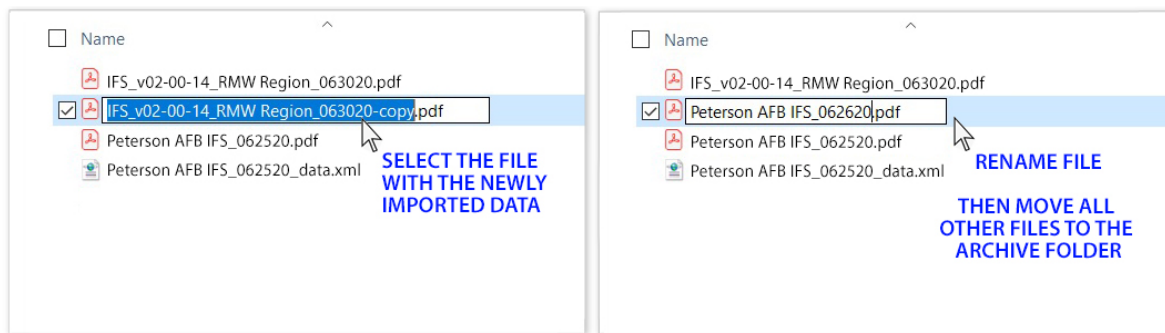
Rename the Newly Created PDF

From the menu, select the XML file. Once the data is imported, save and close the file. In the File Explorer window rename the new PDF as the working PDF. As outlined earlier, the filename includes the year of publication, base name and date, e.g., "2020 Peterson AFB IFS_062520.pdf."

5. **Place New Content under IV.C**
    Rather than edit the PDF, it is recommended to make all edits in the worksheets.

    If there are substantive changes to the worksheets, submit 95% complete worksheets, with "Track Changes" included, to AFCEC for review prior to importing narrative into the PDF. Follow the workflow in Section VI.A.

    When all comments are addressed and when revisions are complete, reviewed and approved, import the entire section into the PDF. Refer to Section IV.C for the recommended workflow.

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VI. Submit to AFCEC for Review

A. IFS Worksheets

1. Submit Worksheets with Major Changes

If changes to the worksheets are substantive, please submit worksheets to AFCEC for review prior to importing narrative into the PDF. Ensure that "Track Changes" are included in the version being submitted. AFCEC will review the changes for compliance with DoD and AF criteria including AFCFS. Comments, if any, will be returned to the POC. Transmit worksheets to the AFCFS-IFS program coordinator at afcec.cftp.workflow@us.af.mil via a file transfer website such as DoD SAFE.
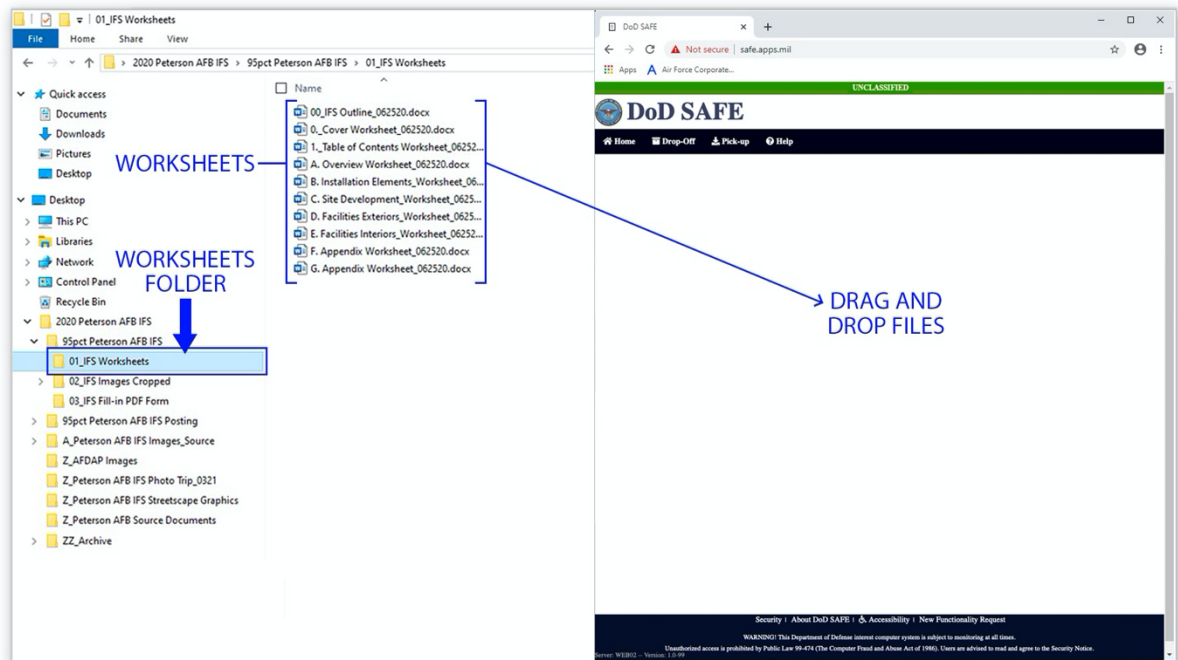
Worksheets with Substantive Changes Are Transmitted to AFCEC

The POC will then integrate any comments into the narrative and prepare to import the revised narrative into the PDF.

NOTE When changes are minor, skip this step

When only minor changes are made to worksheets during an update to the IFS, it is not necessary to submit the worksheet for review. In this event the POC is responsible to ensure all proposed changes comply with DoD and AF criteria.

2. Organize Files under III.B and III.D

Preserve the directory structure recommended in Section III.A. Follow the recommended workflow for naming, saving and archiving files.

Please refer to the graphic below.
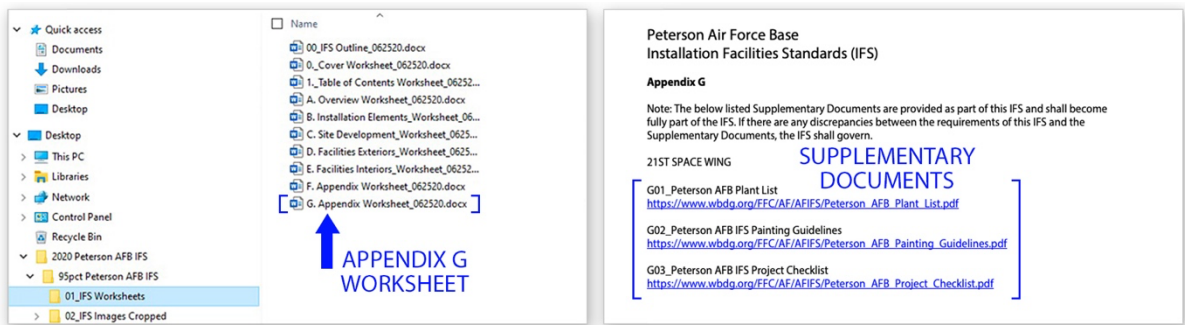
Use the Worksheet for Appendix G to Organize Supplementary Documents

TIPs Be sure to review and update supplementary documents listed in Appendix G

If changes to the supplementary documents are substantial the worksheet for Appendix G may be submitted for review prior to importing the narrative into the PDF.

Refer to Chapter IV.A for information on creating and maintaining supplementary documents.

B. IFS Images
1. Ensure all Images Are Entered under IV.C
Verify that all new images proposed for the update are prepared and placed into the appropriate sections of the IFS fill-in PDF form. When all new images are imported into the PDF, move to Section VI.C.

2. Organize Files under III.C
Confirm images are organized as described in Section III.C.

C. IFS Fill-in PDF Form
1. Organize Files under Chapter III
Confirm the directory structure recommended in Section III.A. Follow the recommended workflow for naming, saving and archiving files.

### 2. Confirm the Version of the IFS Fill-In PDF Form
Review the version number of the IFS fill-in PDF form. The number is listed on the third page of the table of contents in the lower right corner. Contact the AFCFS-IFS program coordinator at afcec.cftp.workflow@us.af.mil to determine if a newer version is available.

If applicable, download the newer version and import data from the previously published version into the new form. Use the workflow for exporting and importing data as outlined in Section V.C.

When the PDF version is current and all content is considered to be at 95% completion, including all narrative, images and graphics, the PDF is ready for submission to AFCEC.

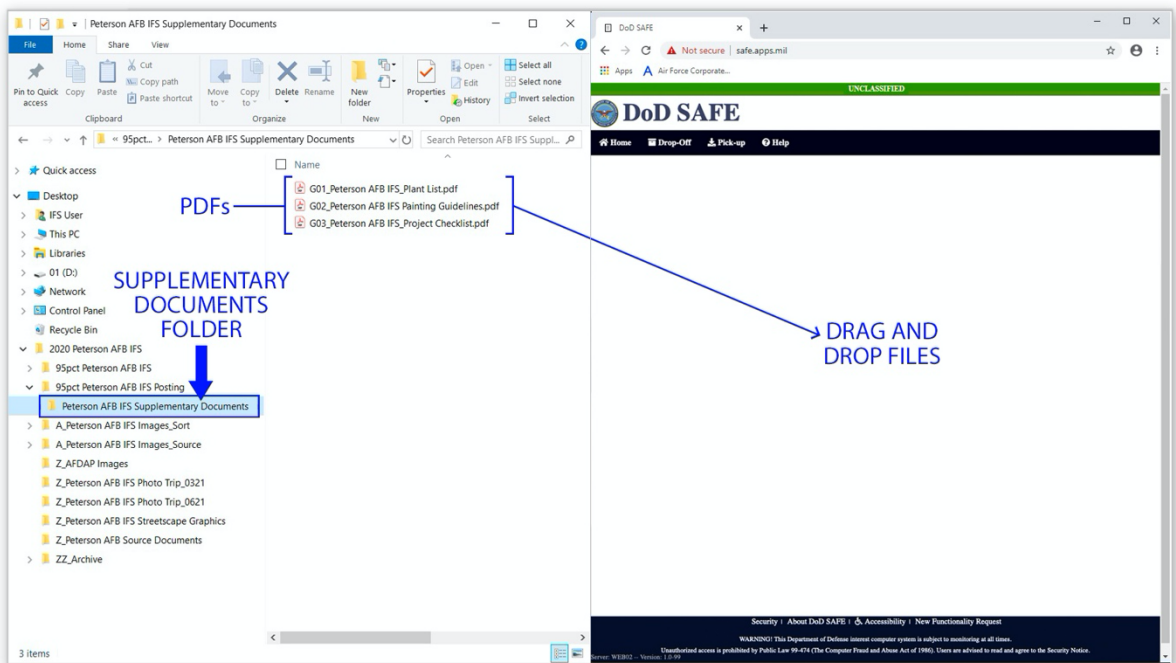### 3. Transmit to AFCEC the PDF and Supplementary Documents
Submit the 95% PDF file to AFCEC for review. Note this is the "working file" and is unsigned and unlocked.
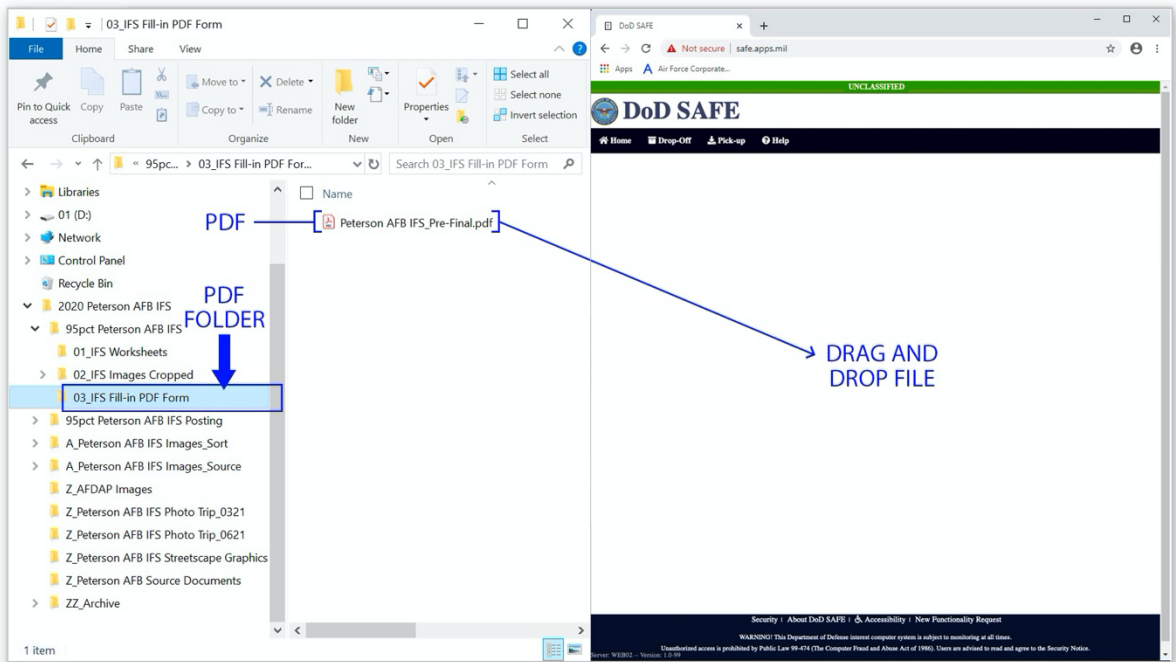
PDF Is Transmitted to AFCEC

As discussed earlier, any highly technical, programmatic or procedural information, which is generally beyond the scope of the IFS, may be provided as a supplementary document. Examples include plant lists, painting guidelines, parapet flashing details, and contractor procedures for base access.

Convert all supplementary documents to PDF files and locate these in the appropriate folder. When these are properly titled, organized and considered to be 95% complete, submit the files to AFCEC for review. In rare cases a re-submission may be needed.

Supplementary Documents are Transmitted to AFCEC

On approval, AFCEC will have the supplementary documents posted to wbdg.org and will provide hyperlinks to be included in Appendix G.

The POC is responsible for adding hyperlinks to the PDF. Follow the steps for adding a hyperlink in Section IV.A.

End of Chapter

VII. Publish the IFS

A. Sign and Lock the PDF

1. Save a Copy

Confirm the IFS narrative, images, graphics, etc., are revised based on any comments received from AFCEC. Once at a level of Pre-Final, and no additional changes are required, the POC makes back-ups of all files and place these into an archive. The POC maintains a copy of the Working Folder; as outlined in Chapter III, all the worksheet files, images cropped files, and the fill-in PDF form are contained in the subfolders of this directory: 01_IFS Worksheets, 02_IFS Images Cropped and 03_IFS Fill-in PDF Form.

The POC prepares a PDF file for signature by the BCE. The copy for signature will be in addition to the working copy. Rename the copy for the BCE similar to the example: "2020 Peterson AFB IFS_Final."

2. Have the BCE Sign the IFS

The Base Civil Engineer is the signature authority for the IFS and is requested to sign the PDF. The digital signature is to be placed on the cover of the PDF. Signing the PDF locks the file against any further changes. This locked version is posted to wbdg.org.

To reiterate, only the "locked" PDF is published. The "unlocked" PDF is used going forward for future updates.

When digitally signing the PDF the user will be prompted to save a copy. It is recommended to simply add "-Signed" at the end of the filename. Open this copy and sign and save it. The filename will be similar to the example: "2020 Peterson AFB IFS_Final-Signed."

Submit to AFCEC the digitally signed "locked" PDF. Publication will be coordinated directly with wbdg.org.
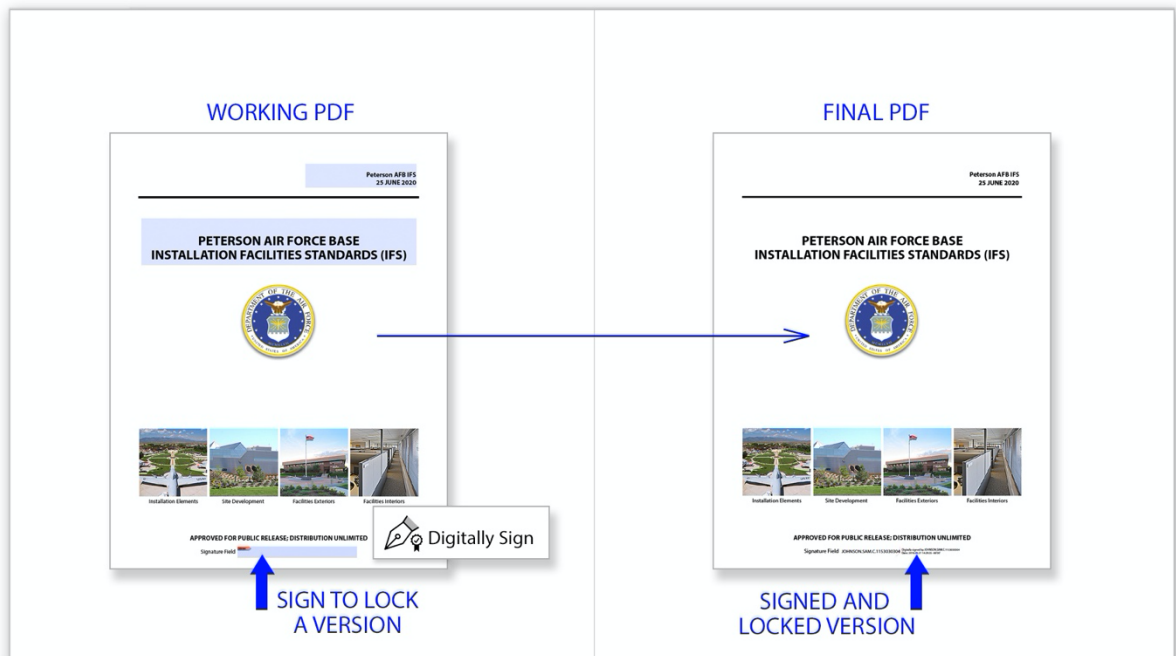
*Digitally Sign the PDF to Lock the Document*

3. **Organize Files under III.D**
   With the IFS complete, it is recommended to conduct a final review of the entire directory of folders and files. Ensure folders and files are organized under Chapter III.

B. **Submit the Signed PDF to AFCEC**
   1. **Use a File Transfer Website**
      Transmit the Final-Signed PDF to the Architect of the Air Force using a file transfer website such as DoD SAFE.
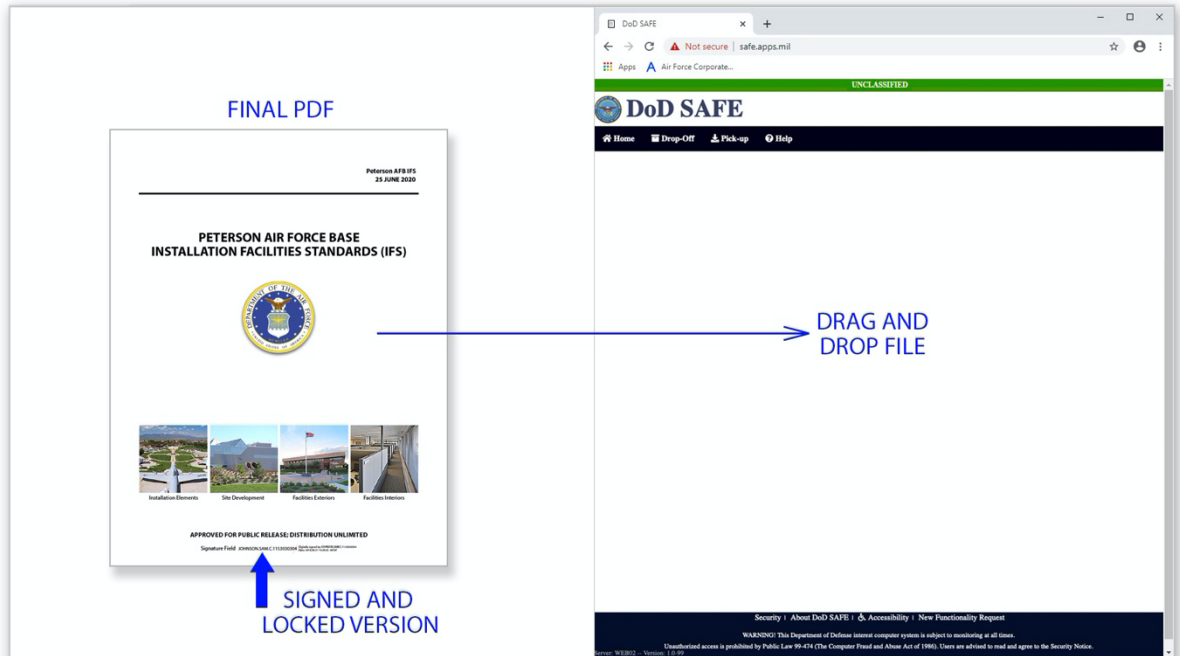
Transmit Files to AFCEC Via a Transfer Site Such as DoD SAFE

2. **AFCEC Publishes the PDF to wbdg.org**
   No further action is required by the base for posting. AFCEC will develop the summary information and will coordinate directly with wbdg.org to have the IFS published.

   Congratulations on completing the update of your IFS!

   Please keep the momentum going on the IFS program by proceeding to Chapter VIII, "Prepare for the Next Update." Even though the next update may be in one year, it is best to stay organized and to continue maintaining the files.

VIII. Prepare for the Next Update

A. Maintain a New Folder for the Next Update

1. Target an Annual Cycle

The IFS is a living document, a dynamic document, that is continually edited and updated. It is recommended to review, update and re-publish the IFS on an annual basis.

Immediately after posting a new IFS document, the POC coordinates with base leadership to establish a due date for the next update. Ideally, the update will be approximately one year from the date of the previous publication.

Even if there are no significant changes required to the narrative or images, an update is recommended to upgrade the current template and to maintain the current year of publication. A minor update of the fill-In PDF form and signature is quick and straightforward.

2. Organize Narrative Content

Anticipating a one-year target date, the POC will develop a work plan for updating the narrative content. Download the most current version of the IFS fill-in PDF form at the AFCFS website: http://afcfs.wbdg.org/IFS/downloads/IFS-Fill-in-PDF-Form.docx

The POC will communicate regularly with shops personnel to identify any performance issues with current systems, materials and detailing. Address any deficient items with revised standards as required. Note and organize any needed changes to the narrative by section number. Changes may be made directly in the worksheets using track changes. The POC may maintain changes in a separate folder and update all worksheets immediately prior to publication of an update.

It is recommended to re-read the **Responsibilities of the POC** in Chapter I and complying with the requirements as outlined.

3. Organize Images

As any performance issues are being addressed and narrative is being updated, images are to be collected using professional standards to represent the proposed changes. Images may be numbered accurately and stored directly in the images source folder. The POC may maintain new images in a separate folder and update the source folder and cropped folders immediately prior to publication of an update.

B. Prepare an Update Following Chapters V, VI and VII

1. Transition to the Workflow of an Update

The POC will update worksheets and images following the recommended workflow. First, the POC downloads the most current IFS PDF template from the AFCFS website. Next, export data from the previous IFS into the new template using the recommended steps. Note that new templates are typically published at the beginning of each year with the current date.

Even if there are no changes to the previous IFS, an update is recommended to initiate the new template and to remain current with the year of publication.

Ideally, the BCE signs a new version of the IFS each calendar year.
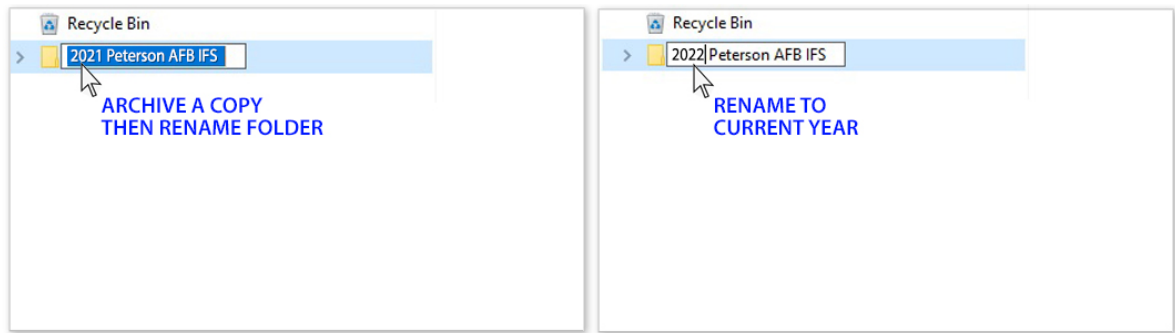
The Main Folder Is Renamed to the Current Year

Begin the update by archiving a copy of the previous Main Folder. Then rename the folder to the current year. Follow the cyclical process for maintaining and updating the IFS described in the earlier chapters.

Use the IFS to meet DoD and AF requirements. Comply with AFCFS to:

- Create Cohesive, Efficient, High Performance and Sustainable Buildings
- Optimize Mission Success
- Reduce Initial Costs and Life-Cycle Costs
- Reduce Energy Use and Water Use

Refer to Chapter I for the responsibilities of the POC:

- Distribute the IFS
- Apply the IFS
- Update the IFS
- Make Submissions to AFCEC

Fully implement the AFCFS program, including IFS and AFDAP, to ensure all new and renovated facilities firmly represent the dignity, virtue and long-term sustainability of the United States Air Force.

Thank you for your support of the AFCFS program!