



**DEPARTMENT OF THE NAVY**  
**NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND**  
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4700  
Ser CHENG/041  
5-May-23

From: Commander, Naval Facilities Engineering Systems Command

Subj: INTERIM TECHNICAL GUIDANCE (ITG) FISCAL YEAR 2023-01 –Aircraft  
Maintenance Hangar Optimal Structural System Evaluation

Ref: (a) Deputy Chief of Naval Operations, Fleet Readiness and Logistics (CNO N4) Tension  
Fabric Hangar Pilot Project letter dated 17 Nov 22 Ser N4/22U129068  
(b) UFC 1-200-01 *DoD Building Code*, with Change 1, February 24, 2023  
(c) UFC 4-211-01 *Aircraft Maintenance Hangars*, with Change 3, April 20, 2021

1. Purpose. To require consideration of Tension Fabric Structures (TFS) for all aircraft hangar projects, as an alternative to other structural systems.
2. Applicability. This criteria applies to all aircraft hangar projects executed by Naval Facilities Engineering Systems Command (NAVFAC) including maintenance, corrosion control, depot, proto-type, etc., and any other structures housing whole aircraft (e.g. aircraft maintenance facilities) with project status described below.
  - a. Design-Bid-Build projects that have not proceeded beyond 35% design.
  - b. Design-Build projects that have not proceeded beyond date of Request for Proposal (RFP) issuance. When an RFP is issued in multiple phases or steps, use the date of the last phase of the RP issuance.
  - c. All FY26 projects and beyond regardless of planning/design status.
3. Direction. Perform a life cycle cost analysis (LCCA) of alternative structural systems as a basis for determining optimal system selection.
  - a. Perform the LCCA during the Budget Project Readiness Index Authority (BPA) phase, in accordance with the following criteria.
    - (1) The alternatives analysis must include TFS, in addition to other feasible structural systems such as structural steel, reinforced concrete framing systems, pre-engineered metal building, laminated timber, reinforced concrete masonry, and modular or off-site/pre-fabricated systems.
    - (2) Develop the LCCA assuming a 50-year period and include initial cost, maintenance costs, and fabric replacement costs. For the TFS alternative, assume fabric has 15-year life expectancy.
    - (3) For TFS only, develop conceptual design (i.e., 15%) for comparison to traditional

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Tension Fabric Hangar Alternative Analysis Requirement

steel-framed construction per Ref (c). Include floor plans, site plan, and other relevant drawings necessary to complete alternative analysis. Functionality as a relocatable facility is not required. Generally, the TFS portion is intended for the hangar bay only while administrative, shop, and support functions are attached as traditional construction.

b. All hangar designs, regardless of structural system selected, must comply with requirements for permanent construction of all relevant Unified Facilities Criteria (UFC) including references (b) and (c). Ref (c) requires steel construction but allows other systems with permission from the NAVFAC Aviation Facilities Technical Warrant Holder, if selected.

c. Develop a written summary of each alternative considered, including considerations that may be useful in final system selection. Include a discussion of advantages and disadvantages and potential mission impacts, for each. Include written summary in project file as backup.

d. Provide this analysis in the form of a short narrative with quantitative assessment on all submitted DD Form 1391 for hangar projects per reference (a). Include a backup copy in the project file for reference.

4. Point of Contact: Contact Mr. George Malamos, NAVFAC Aviation Facilities Technical Warrant Holder, at telephone (757) 322.4435 or email at [george.c.malamos.civ@us.navy.mil](mailto:george.c.malamos.civ@us.navy.mil).

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