DOD Facility Design & Construction Strategic Focus and Direction

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**Moderator:** JJ Tang, AIA, Principal, Federal Programs, HDR

**Speakers:**
- Scott Wick, AIA, LEED AP, PMP, Chief Architect, HQ USACE
- Gene Mesick, RA, Chief, Technical Services Division, AFCEC
- Raymond Rodriguez, NCARB+GGP, LEED AP, Technical Discipline Coordinator, NAVFAC Southeast
Facility Design and Construction: Strategic Focus and Direction

US Army Corp of Engineers
Chief Architect
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Agenda

• Current & Future Program Status
• Impact on personnel and industry
• Current Initiatives
  • Energy Benchmarking
  • Energy Score Card
  • Energy & Sustainability Centers of Expertise
• Future Initiatives
  • BIM
Military Missions Program Trends
FY00-17

Program ($Millions)
Who We Serve

DOD – MILCON, Foreign Military Sales

STATE – Economic Support Funding (Iraq), Bureaus of Diplomatic Security, and International Law Enforcement and Counternarcotics

AID - Reconstruction

MCC – Economic Development Grants

Foreign Governments – Military and Civil Works Projects
It is not all bad...

<table>
<thead>
<tr>
<th>GENERATION</th>
<th>Count</th>
<th>% Workforce</th>
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<tbody>
<tr>
<td>Traditionalist (1900-1945)</td>
<td>608</td>
<td>1.80%</td>
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<td>Baby Boomers (1946-1964)</td>
<td>16625</td>
<td>49.33%</td>
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<td>Generation X (1965-1981)</td>
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<td>Millennium (1982-2000)</td>
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<th>RETIREMENT ELIGIBILITY</th>
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<tr>
<td>Not Eligible</td>
<td>20170</td>
<td>59.87%</td>
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<tr>
<td>Early</td>
<td>7214</td>
<td>21.41%</td>
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<tr>
<td>Optional</td>
<td>6306</td>
<td>18.72%</td>
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</table>
Continue to Leverage Personnel Resources through partnering/contracting with Private Sector

USACE Maintains a Balance Between In-sourced and Outsourced Work
Benchmarking Energy Consumption

**Purpose:** to provide a better reference for comparison for analysis of buildings to create benchmarks and target EUIs

**Process:**
- Collect metered consumption of buildings constructed after 2008
- Calibrate building energy models to metered consumption
- Factors affecting performance
  - Building type (TEMF versus DFAC)
  - Climate zone (Memphis versus Fairbanks)
  - Building properties (insulation, lighting, system efficiency)
  - Building usage (plug loads and schedules)
Why It Is Important

• Keeps the baseline from changing
• Energy Modeling is a comparative tool
• Based on actual usage of the buildings
• Considers plug loads
Energy & Sustainability Record Card

• **Scope:**
  - Follows UFC-1-200-02
  - Cards required for each facility:
    - over 5000 GSF, or
    - greater than $2.5 million in cost

• **Submission Process** (major milestones):
  - Concept/Parametric Design
  - 100% Design
  - Solicitation/Request for Award Authority
  - Beneficial Occupancy & Final Turnover

[Image of Energy & Sustainability Record Card]

Copy available on www.WBDG.org
Energy & Sustainability Record Card

Facility & Project Location and Description

Compliance Dashboard
- Mandates Met
- LEED Rating
- Energy Savings & Renewable Energy
- Water Savings & Harvesting/Re-Use
- Waste Reduction & Landfill Diversion / Recycling / Re-Use

Performance Data & Statistics
- Energy & Water Intensity (unit/SF)
- Total Consumption for Baseline verses Design & ∆%
Energy & Sustainability Record Card

- Why it's Important
  - Tacking by phases for lessons learned
  - Completed Record Cards will be hosted in a library on the above website as well
  - The first steps to EVENTUALLY replace LEED

- Next Steps:
  - Tri-Service solution
  - Update with LEED v4 Guidance
Regional Centers of Expertise for Sustainability, Energy, and LCCA (RECX)

• Present Needs:
  • Centers consult on technical issues by project
    • On-site assistance & oversight are project funded
    • Minor issues are centrally funded
  • Recommend policy updates and process advancements
  • Develop supporting implementation guidance (design guides)

• Strategy:
  • Knowledge Creation / Transfer
    • Technotes
    • Distance learning (Webinars/ Online Prospect Courses)
    • On-site learning (USACE Prospect Courses/ Field Office Training)
Regional Centers of Expertise for Sustainability, Energy, and LCCA (RECX)

**NAD**
- Commissioning
- Low Impact Development
- Solar Thermal
- Microgrids*

**NWD**
- Building Envelope
- Mirco-Hydro Power
- Waste

**SPD**
- Life Cycle Cost Analysis
- Solar PV
- Wind

**SWD**
- Deep Retrofits
- Waste to Energy

**LRD**
- Site Planning
- Charette
- Ground Source Heat Pumps

**POD**
- Energy Modeling
- Lighting (Natural & Day Lighting)

**HNC**
- Metering
- Contracting Vehicles
- Energy Audits

**TAD**
- Contingency Design

**SAD**
- District Energy
- Water Reuse

*NAD/HNC Technical Expertise Partnership

- ERDC technical liaison assigned to each RECX
- WEBSITE: http://mrsi.usace.army.mil/sustain
- Directly supports renewable energy
Distance Learning: Webinars

35 live webinars / 2,125 live attendees
Why the RECX is Important

- This is the primary way that USACE integrates new technologies
- Representation Includes Research & Development
- Nobody knows everything
- They must be involved in order to gather lessons learned across our enterprise
- PLEASE (CONTINUE) TO WORK WITH THEM
Other Initiatives to Improve Design Quality

• Building Information Modeling
  • BIM mandated in FY14
  • Working for COBie to be mandated in FY16
  • Improve as-built/Model quality
  • Sustainment Management System integration
  • BUILDER integration to follow
Facility Design and Construction

Gene Mesick
Chief, Technical Services
AFCEC/CF
May 23, 2014
AF Civil Engineer Priorities

Our “Proud Heritage”... to a “Promising Future”

Build Ready Engineers
Provide more effective Civil Engineer expeditionary and emergency response and management capabilities to meet current and emerging Air Force and CCDR requirements

Build Great Leaders
Organize, develop, enable, and retain a trained and capable Total Force Civil Engineer team ready to meet current and emergent mission requirements

Build Sustainable Installations
Develop sustainable installations by implementing asset management principles for built and natural assets
AF Installations: Enabling Combat Power

- Power projection platforms--CONUS, OCONUS, expeditionary
- Enable air & space superiority
- Assure Cyberspace access
- Provide infrastructure necessary to hold targets at risk anywhere across the globe
- Facilitate ISR exploitation
- Host robust C2 networks
- Forward bases build partnerships with allies & developing nations

“Air bases are a determining factor in the success of air operations. The two-legged stool of men and planes would topple over without this equally important third leg.” General of the Air Force Henry H. “Hap” Arnold
FY14 Facility Investments
Summary

- AF MILCON: $1,053M
- MFH MILCON (PAIP): $76M
- ECIP MILCON: $35M
- SOF MILCON: $8M
- Medical MILCON: $72M
- NAF Major Construction: $75M
- FSRM: $454M
- DLA Funded: $100M

Total: $1.9B
FY15 Facility Investments Summary

- AF MILCON: $778M
  - UMMC (P341) $23M
  - Planning & Design $11M
- ECIP MILCON: $43M
- SOF MILCON: $23M
- Medical MILCON $95M
- NAF Major Construction $13M
- FSRM $658M
- DLA Energy (Fuel) $150M

Total: $1.8B
Design & Construction Strategic Initiatives

- Centralize FSRM Program
- MILCON Cost Optimization
- Air Force Design Standards Program
- Standardize design & construction processes
- Develop improved project performance metrics
- Acquire WEC/REC construction IDIQ contract
Centralize FSRM Program

- Two-year Investment Planning Horizon
  - Comprehensive Asset Management – across AF
  - Early design & acquisition planning
  - Inform programming, budget, strategic acquisition

- Strategic acquisition to optimize combination of
  - Installation execution
  - AFCEC execution
  - USACE & NAVFAC execution
MILCON Cost Optimization

- Reduce construction unit costs
  - Reduce 25% from 2011 baseline by 2019
- Standardize products & processes
  - Focus on right quality of work when planning projs
  - Emphasize true value engineering in our projects
  - Design facilities to minimize life-cycle costs
- Utilize asset management principles
  - Drive down life-cycle costs
  - Reduce need to construct new facilities
MILCON Cost Optimization

- AFCEC teamed w/USACE, NAVFAC, MAJCOMs
- Some studies conclude MILCON unit costs may be as much as 37% higher than private sector
- 3 “product” related cost drivers ~14%
  - 7 recommendations could reduce costs to 3%
- 6 “process” related cost drivers ~23%
  - 8 recommendations could reduce costs to 14%
AF Design Standards Program

Coordinated for several major facility types

Corporate Facility Standards
- Defines design quality standards (cost/schedule/quality)
- Sets standard as appropriate for specific mission: “just right”
- One-stop resource for all facilities related requirements

Standard Designs
- Communicates AF spatial criteria for a specific facility type
- Most created in BIM to jumpstart design
- Facilitates incorporation of lessons learned

Standard RFPs
- Standardizes performance-based requirements
- Saves RFP development time
- Reflects Air Force design-build process
AF Design Standards Program

AIR FORCE CORPORATE FACILITIES STANDARDS
(Includes UFCs, AFIs, ETLs)

Standard Design

Standard RFP

A-E / Design Team Judgment

Installation Compatibility Standards

Facility Project Design & Construct
AF Corporate Facilities Standards

- Define AF expectations & requirements
- Provide standards for all construction projects
- Optimize cost while maintaining quality
- Reduce life-cycle cost, energy & water use
- V1.0 – Building envelope & interiors (done)
- V2.0 – Incorporate site development
## AF Standard Facilities Designs

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<tr>
<th>8 Completed &amp; Posted on WBDG</th>
<th>11 In-Progress (ECD: Jun 2014)</th>
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<tbody>
<tr>
<td>Enlisted (Permanent Party) Dormitory</td>
<td>Fire Station (Headquarters &amp; Satellite) (95%)</td>
</tr>
<tr>
<td>Security Forces Operations Facility</td>
<td>Air Traffic Control Tower/RAPCON (95%)</td>
</tr>
<tr>
<td>Fitness Center</td>
<td>CE Squadron Complex (95%)</td>
</tr>
<tr>
<td>Visiting Quarters</td>
<td>LRS - Logistics Readiness Squadron Supply Warehouse, (95%)</td>
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<tr>
<td>Child Development Center (not BIM)</td>
<td>UAS Squadron Operations Facility (95%)</td>
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<tr>
<td>Military Working Dog Kennel</td>
<td>UAS Maintenance Hangar/Shops (95%)</td>
</tr>
<tr>
<td>Thule Dorm</td>
<td>Fighter Maintenance Hangar/Shops (95%)</td>
</tr>
<tr>
<td>Consolidated Comm Facility (Requirements Doc)</td>
<td>Fighter Engine Maintenance Facility (95%)</td>
</tr>
<tr>
<td><strong>6 Being Updated w/ Lessons Learned</strong></td>
<td>Security Forces Level I Confinement (90%)</td>
</tr>
<tr>
<td>KC-46A Squad Ops</td>
<td>Indoor Small Arms Range (95%)</td>
</tr>
<tr>
<td>KC-46A Hangars (MX, Fuel, Corrosion)</td>
<td>Entry Control Facilities/Installation Access Control Points (90%)</td>
</tr>
<tr>
<td>KC-46A Flight Simulator</td>
<td></td>
</tr>
<tr>
<td>KC-46A Fuselage Trainer</td>
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USAF Design & Construction

Lackland BMT

USAFA CCLD

Afghan National Security University

Integrity - Service - Excellence
DoD Facility Design & Construction: Strategic Focus and Direction

SAME Joint Engineering Technical Conference
Raymond Rodriguez, NCARB+LEED AP+GGP
Technical Discipline Coordinator-Architecture
NAVFAC Southeast
May 22, 2014
Our Mission

NAVFAC is the Systems Command that delivers and maintains quality, sustainable facilities, acquires and manages capabilities for the Navy’s expeditionary combat forces, provides contingency engineering response, and enables energy security and environmental stewardship.

Our Vision

We strengthen Navy and Marine Corps readiness through our work across the facility lifecycle and our support of the shore expeditionary mission.
Strategic Focus: Focus Areas

Readiness
Cultivating a high-performance workforce and ensuring our equipment, facilities and command alignment will enable success.

- Safety, Workforce Development, High Performing Teams

Walter Reed National Military Medical Center (WRNMMC) Bethesda, Md

Containerized Units

Combined Child Care and Youth Center (P-211), Naval Air Facility, El Centro, CA
Strategic Focus: Focus Areas

Performance

Providing quality, timely, and efficient products and services to our supported commands at optimal total ownership cost.

• Adapt and Innovate, Proactive Expertise, Lifecycle Stewardship

MILDEP Investigative Agencies Headquarters, Marine Corps Base Quantico, VA

3rd Army (ARCENT) Patton Hall Headquarters Complex, Shaw Air Force Base, SC
Strategic Focus: Focus Areas

Sustainability

Leading Navy and Marine Corps sustainability efforts to achieve energy security, energy efficiency and environmental stewardship

• Technical expertise, energy and environmental stewardship, stakeholder partnering

Joint Region Marianas Headquarters - 2011

P-305 Bachelor Enlisted Quarters & Parking Garage, Bremerton, WA
$ BILLIONS

ARRA MILCON
GWOT/OCOS
BRAC 05
MCNR
GOJ Guam
MC MCON Guam
OCOS
FH CON
Defense
MCON (excludes MC Guam)

FISCAL YEAR


* Construction Funds programmed amount (includes SIOH, PCAS, & contingency). Includes UMC. Excludes Design funds. FY2015 through FY2019 based on POM 15 PB Submit
## FY13-15 MILCON – President’s Budget

<table>
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<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
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<tr>
<td>Navy</td>
<td>$761M</td>
<td>$852M</td>
<td>$739M</td>
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<tr>
<td>Marine Corps</td>
<td>$649M</td>
<td>$724M</td>
<td>$295M</td>
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<tr>
<td>Planning and Design</td>
<td>$103M</td>
<td>$83M</td>
<td>$35M</td>
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<td><strong>Sub Total DON:</strong></td>
<td>$1,513M</td>
<td>$1,659M</td>
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<tr>
<td>OCO</td>
<td>$143M</td>
<td>0</td>
<td>0</td>
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<tr>
<td><strong>Total DON:</strong></td>
<td>$1,656M</td>
<td>$1,659M</td>
<td>$1,070M</td>
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Strategic Focus: Workload Projections

- Decreased Workload FY 14-15+

- Disestablishment of NAVFAC MW

- Transfer of SC & GA Marine Corps bases to MIDLANT

- MCON/MCNR – Goal for FY14 & Beyond:
  - Maintain 60%-DB and 40%-DBB Split (or +/- 20% of total program goal executed by in-house forces)
Strategic Focus: Acquisition Strategy

Demand Signal – fiscally constrained environment

- Maximize readiness - Shore investments achieve biggest bang for the buck
- Planning: Provide the minimum facility requirement to meet mission
- Lowest initial cost and meet technical requirements
- Added focus to lower Total Ownership Cost within budget
- Capability and appearance needs to match fiscal climate

Product Delivery

- Design-Build remains primary vehicle for DON MILCON (60% goal). Design-Bid-Build (40% goal)
- Other MILCON and O&M dependent on project specific requirements
- Best Value Source Selection, including LPTA
Strategic Focus: Capital Improvement Initiatives

- Lower Total Ownership Cost of facilities
  - Continued focus

- Austere Navy Facility Criteria
  - Continue implementation and development support

- Tri-Service Unified Facilities Criteria for High Performance and Sustainable Building Requirements
  - Continued leadership and implementation
  - UFC 1-200-02 01 MAR 2013 ([www.wbdg.org/ccb/DOD/UFC/ufc_1_200_02.pdf](http://www.wbdg.org/ccb/DOD/UFC/ufc_1_200_02.pdf))
  - ASHRAE 189.1-2011 ([www.ASHRAE.ORG/TECHNOLOGY](http://www.ASHRAE.ORG/TECHNOLOGY))

- Implement newly developed NAVFAC Energy Technology Matrix for use (internal) across Command
Platform neutral, phased implementation of contract requirements via eOMSI spec.

- Identify and deploy BIM Deliverables in Navy Guide Specification
  - Section 01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI)

- Define BIM minimum modeling requirements for Navy MILCON and Special Projects

- Update A/E DBB Scope of Work template and A/E DB performance specification
  - Reflect BIM requirements for all Navy MILCON and Special Projects
Strategic Focus: In-House Design

P425 LCS Logistics Support Facility
Naval Station Mayport, Florida

PROJECT HIGHLIGHTS:
- In-House DBB Project
- 2-story, 59,518 sf
- Classrooms, Administrative Offices, Conference Space
- Registered LEED V3.0 Silver (Pending)
Strategic Focus: In-House Design

PROJECT HIGHLIGHTS:

- In-House DBB Project
- 11,862 sf, 1-story Equipment Maintenance Shop
- 18,858 sf, 1-story Holding Shed structures
- Equipment Maintenance and Storage, Classroom/Training, Conference Space
- LEED v2009 Silver (Targeted)

P427 Ground Support Equipment Shop
MCAS Beaufort, South Carolina
Strategic Focus: In-House Design

PROJECT HIGHLIGHTS:
- In-House DBB Project
- 5,898 sf - 7-story Air Traffic Control Tower
- 13,040 sf - 1-story Radar Air Traffic Control Facility
- LEED v3.0 Silver (Pending)

P477 Joint Air Traffic Control Tower & RATCF
NAS JRB New Orleans, LA
Strategic Focus: In-House Design

PROJECT HIGHLIGHTS:
- In-House DBB Project
- 47,480 sf, 2-story Marine Corps Physical Fitness Center
- Cardio, Aerobic, Weight training, Racquetball, Basketball
- LEED V2.2 Silver

P420 Physical Fitness Center
MCAS Beaufort, South Carolina
How is budget reduction impacting your branch executing facility design (architectural) type of work?

- Budget reduction has changed the dynamic and complexion of projects we are designing by in-house forces;

- Larger proportion of small project workload (O&M) and reduced number of large MILCON has caused us to evaluate internal processes and procedures in both execution and award of design projects;

- Re-Alignment of Integrated Product Teams to better correlate with Supported Commands
What are the most important technical focuses under this circumstance?

- Streamlining and improving how we do things in a small project environment: Process Improvement, Work Scoping, RFPs, In-house Design

- Training, Maintaining and Retaining a highly skilled workforce with equivalent design competencies to our private sector partners

- NAVFAC plan to implement BIM technology in FY15 for all Navy FY15 MILCON and Special Projects targeted for Summer of 2014
  - BIM use will be software neutral and implementation will be phased.
What are the technical challenges facing your branch in the next three years?

- Managing the anticipated surge in execution and award of small projects in a reduced funding climate and its impact on In-House design initiatives and the A/E community.
- Procurement of contemporary design software and supporting hardware to meet the increasing corporate demand for in-house design execution.
- Advancing our UFGS specification and UFC design criteria database to embrace evolving trends in product and system technologies (in an increasingly austere design environment).
- Attracting and recruiting highly-talented designers to our organization in a recovering and robust private sector economy
Where can I go to get more information on future opportunities with NAVFAC?

http://www.navfac.navy.mil/products_and_services/sb/opportunities/forecasts_opportunities.html