APPENDIX C

PHASES OF MILITARY CONSTRUCTION

A. Congressional authorization of major construction projects typically represents the culmination of planning, programming, and budgeting efforts. A project evolves from a determination that additional facilities are needed. The need is defined, given a priority ranking, and placed in competition with other projects for available resources. The project definition effort begins at the installation level and moves through the chain of command until the project ultimately is included in the budget submittal. Attachment 1 to this appendix, “Evolution of a FY 1995 Military Construction Project,” depicts the life-cycle of a military construction project and shows that the process of acquiring a military facility could take 3 to 7 years from conception to completion. The actual design phase could take 1 to 2 1/2 years, while the construction phase could take 1 to 3 years. The remaining time is for planning, programming, budgeting and procurement activities. The scope and cost of each project must be finalized before the annual budget submission to the Congress. The total construction process consists of four phases.

1. PLANNING AND PROGRAMMING

   a. Planning. During planning, an installation’s facility requirements are derived from the installation’s mission. The need to acquire additional facilities is determined by an assessment of how existing facilities meet the installation’s facility requirements. If additional facilities are needed, construction projects may be undertaken to build new facilities, or upgrade existing, substandard facilities to accommodate new missions, accept technological changes, and improve operational efficiency.

   b. Programming. During programming, requirements—which are not met—are matched with anticipated resources and included in a long-range plan to acquire those facilities. Installation plans are combined into a Component-wide basis to ensure compatibility with the nation’s military strategy, Component priorities and guidance, and in consideration of the DoD facilities investment goal.

   c. Investment Goal. The Department and the Congress recognize that there is a minimum level of facilities investment that should be reached each year to protect the investment in existing facilities, ensure that facilities will continue to satisfy their designated purposes, and renew our installations. The physical plant must be capable of supporting operational requirements and readiness, both today and in the future. The investment goal is expressed as a percentage of plant replacement value.

   d. Plant Replacement Value (PRV). See Attachment 2 to this appendix for further details.

   e. Master Planning. Facility requirements are reflected in an installation master plan. This document is the installation’s long-range strategy for development. It prescribes overall facility quality standards and architectural themes and addresses such areas as land use, utility systems, roads and parking.

   f. Project Planning and Programming. After it is determined that a construction project is needed, a general description of the project requirement, its scope and a cost estimate are developed and, along with supporting documentation, submitted as part of the installation’s military construction budget request. The project shall include associated equipment, furnishings (classified as equipment in place), and supporting facilities.
g. The cost of the above efforts normally is expensed and not capitalized.

2. BUDGETING

a. DoD Components determine which facility projects should be included in their Military construction budgets. Some facility projects may qualify for inclusion in other budgets, such as Procurement, RDT&E, or O&M or for accomplishment with nonappropriated funds.

b. The budget requests are forwarded to OSD, where all DoD Component programs are reviewed for compliance with DoD objectives and policy and refined and modified as necessary to ensure consistency and conformity. Once the program has been reviewed by the OSD, it becomes part of the budget request submitted to the OMB for transmission to the Congress as part of the President’s Budget.

c. After receipt of the President’s Budget, it is reviewed by oversight subcommittees of the House and Senate Appropriations Committees and the House National Security and Senate Armed Services Committees. Often, witnesses from respective DoD Components, and sometimes from the private sector, appear before the subcommittees to furnish further information on specific programs and projects.

d. Upon completion of its review, each subcommittee marks up the budget request and forwards its recommendations for approval to the full committee and then to the full chamber. Differences between the projects approved by the House and Senate are resolved in joint conferences. The Congress passes separate authorization and appropriation bills that, when signed by the President, become the approved Military Construction program.

e. The cost of the above efforts normally is expensed and not capitalized.

3. DESIGN

a. Once a Military Department has validated the requirement and priority of a military construction project and inserted it in a specific fiscal year program, a design instruction is issued to the design agent who initiates the design process.

b. Design may be accomplished by contracting with an architect-engineer firm, a design build firm, or an in-house professional staff. If the design is to be contracted, 10 U.S.C. 2855 will be followed.

c. Design is accomplished in predetermined phases to assure that user requirements are addressed properly in the design and that established standards and criteria are met. The number of phases and detail required for each phase varies with each project, depending on complexity, special interest, high visibility, time constraints and funding level.

d. Normally, the critical point is at the preliminary design stage (referred to as the 35 percent stage) since this stage provides sufficient detail to define scope, criteria, and cost estimates for consideration in the budgeting process. The content of the 35 percent design submittal is defined in the contract scope of work and will vary depending on the contract delivery strategy to be used to acquire the facility. The most typical strategy is a design based on a unique one-of-a-kind effort. However, design could also be a site-adapt, a performance specification using commercially available building systems, a design-build, etc., but each of these contracting processes determines the content of the 35 percent design submittal.
e. Design includes such actions as the development of design manuals, software programs, guide specifications and standards, standard drawings, extensive site investigation, analysis of alternative solutions, development of building systems layout, outline specifications, cost estimates, and special studies including value engineering.

f. The final design phase is initiated after thorough review by the using activities to ensure that requirements and criteria are addressed properly in the preliminary design documents and that the project has been revalidated and still is in the budget. Upon completion of the working drawings, contract specifications, and bidding documents, the project is ready to be advertised for construction. Projects require both congressional authorization and appropriation before a construction contract can be awarded.

g. The cost of the above efforts, including administrative and overhead support costs, shall be capitalized.

4. CONSTRUCTION

a. Normally, military construction projects are awarded through a competitive bid process that consists of advertising in the “Commerce Business Daily,” using sealed bid procedures and awarding a firm fixed price contract to the responsible contractor submitting the lowest acceptable bid. However, as discussed previously for the design phase, alternative contracting delivery strategies may be followed in accordance with the Federal Acquisition Regulation (FAR) and congressional direction. Regardless of the method used, all requirements for construction contacts over $250,000 must be advertised in the “Commerce Business Daily” to include details of the bidding procedures to be used.

b. Advertisement, award and administration of a construction contract require both in-house and contract efforts that include reproduction of bid documents, preparation and response to the advertisement, supervision, and administration and inspection throughout the life of the construction project, in addition to the total cost of the construction contract.

c. The cost of the above efforts shall be capitalized.
ATTACHMENT 1 TO APPENDIX C  
EVOLUTION OF A FY 1995 MILITARY CONSTRUCTION PROJECT

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<tr>
<td>PLANNING, PROGRAMMING AND BUDGETING</td>
<td>User Identifies and Develops Project</td>
<td>Service Inserts Project in FYDP*</td>
<td>Service Completes Planning</td>
<td>Service Finalizes Program and Prepares Budget</td>
<td>OSD Submits Budget to the Congress</td>
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<td>LEGISLATION</td>
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<td>Congressional Committees Hold Hearings &amp; Enact Legislation</td>
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<td>DESIGN 1/</td>
<td>Service Selects A&amp;E**</td>
<td>A&amp;E** Performs 0-35% Design. Service Reviews and Approves</td>
<td>A&amp;E** Performs 35-100% Design. Service Reviews and Approves</td>
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<td>CONSTRUCTION</td>
<td>Service Solicits Bids and Awards Contract</td>
<td>Construction 2/</td>
<td>User Occupies Facility</td>
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*  Future Years Defense Program  
**  Architect and/or Engineer

1/ Reserve Component facilities are to be at 65% design complete before inclusion in the DoD budget  
2/ Contracts may not be awarded without congressional authorization and appropriations.
A. The Department and the Congress recognize that there is a minimum level of facilities investment that should be made each year to protect the investment in existing facilities, ensure that facilities will continue to satisfy their designated purposes, and renew our military installations. The physical plant must be capable of supporting operational requirements and readiness, both today and in the future. The plant replacement cycle is one indicator of an appropriate facility investment level. The methodology to determine the plant replacement cycle makes use of one indicator, plant replacement value which is described in this addendum.

1. PLANT REPLACEMENT VALUE (PRV)

   The PRV is the cost of replacing the current physical plant with modern facilities built at today’s construction costs using today’s construction standards. It includes all buildings, structures, or other improvements to real property, regardless of funding source but does not include land value or leasing costs.

2. CALCULATION

   a. The PRV shall be calculated by applying current construction pricing data to the total inventory of the current physical plant. This will yield the PRV.

   b. The “Tri-Service Cost and Pricing Guide” should be consulted to determine current construction prices. Appropriate unit costs may not be available in the pricing guide. If this occurs, DoD Components shall use any other supportable sources available. DoD Components should use the most accurate estimates. The PRV shall not be calculated by inflating the original facility acquisition cost to the current year, unless no other reasonable method is available.

   c. The PRV shall be identified for each of the following investment categories (ICs):

   IC 01 Aviation Operational
   IC 02 Communication Operational
   IC 03 Waterfront Operational
   IC 04 Other Operational
   IC 05 Training
   IC 06 Aviation Maintenance
   IC 07 Shipyard Maintenance
   IC 08 Other Maintenance and/or Production
   IC 09 Research, Development, Test, and Evaluation
   IC 10 Petroleum, Oil and Lubricant Supply and/or Storage
   IC 11 Ammunition Supply and/or Storage
   IC 12 Other Supply and/or Storage
   IC 13 Medical and/or Dental
   IC 14 Administration
   IC 15 Troop Housing and/or Messing
   IC 16 Other Personnel Support Services
   IC 17 Utilities
   IC 18 Real Estate and Ground Structures (less land)
   IC 19 Other Facility Costs
   IC 20 Family Housing
d. Facility acquisitions include all aspects to include construction, purchases, donations, and transfers in. In effect, include any transactions that increase the size of the physical plant.

e. Facility losses include demolitions, transfers out, sales, and losses because of fire or natural disaster. In effect, include any transactions that decrease the size of the physical plant.

f. The DoD Component shall maintain an audit trail of the calculations used to develop the PRV.

3. REPORTING REQUIREMENTS

PRV information is to be furnished to the Office of the Deputy Under Secretary of Defense (Installations) within 60 days after the end of each fiscal year. The following format will be used for submitting this information.

| Plant Replacement Value (PRV) for FY 19____ (As of September 30, 19____) (Dollars in Millions) |
| INSTRUCTIONS                                                                                   |
| 1. List the PRVs reported for the prior FY in column 2.                                       |
| 2. Calculate the prior year PRVs with current reporting year values and list in column 3a.    |
| 3. List acquisitions and losses for the current reporting FY in columns 3b and 3c.            |
| 4. The current year PRVs in column 4 (columns 3a + 3b + 3c).                                  |

| 1. Facility Categories (Enter totals for each category) (Use ICs & FCC cross reference list) | 2. PRV Prior FY | 3. Current FY Value | 4. PRV Current FY |
|                                                                                              |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 01 Aviation Operational                                                                  |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 02 Communication Operational                                                            |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 03 Waterfront Operational                                                               |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 04 Other Operational                                                                    |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 05 Training                                                                            |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 06 Aviation Maintenance                                                                  |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 07 Shipyard Maintenance                                                                  |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 08 Other Maintenance and/or Production                                                  |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 09 Research, Development, Test & Evaluation                                             |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 10 Petroleum, Oil, & Lubricant Supply and/or Storage                                     |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 11 Ammunition Supply and/or Storage                                                     |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 12 Other Supply and/or Storage                                                          |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 13 Medical and/or Dental                                                                |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 14 Administrative                                                                      |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 15 Troop Housing/Messing                                                                |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 16 Other Personnel Support Services                                                     |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 17 Utilities                                                                           |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 18 Real Estate & Ground Structure (less land)                                           |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 19 Other Facility Costs                                                                |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| IC 20 Family Housing                                                                       |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
| Total                                                                                     |                | a. PRV Prior FY | b. Acquisitions | c. Losses |
INVESTMENT CATEGORIES (ICs) AND THREE-DIGIT FACILITY CATEGORY CODE (FCC) CROSS REFERENCE LIST

Operations (all FCCs in the 100s except 171 and 179)

IC 01 - Aviation Operational Facilities

   111 Airfield Pavements - Runways
   112 Airfield Pavements - Taxiways
   113 Airfield Pavements - Aprons
   116 Airfield Pavements - Other
   121 Airfield Fuel Dispensing
   133 Navigation and Traffic Aids - Buildings
   134 Navigation and Traffic Aids - Other than Buildings
   136 Airfield Pavement Lighting
   141 Operational - Buildings
   149 Operational Facilities Other than Buildings

IC 02 - Communication Operational Facilities

   131 Communications - Buildings
   132 Communications - Other than Buildings
   135 Communications - Lines

IC 03 - Waterfront Operational Facilities

   122 Marine Fuel Dispensing
   151 Piers
   152 Wharfs
   153 Cargo Handling or Staging Areas
   154 Sea Walls, Bulkheads, and Quay Walls
   155 Small Craft Berthing
   156 Cargo Handling Facilities and/or Buildings
   159 Other Waterfront Operational
161 Harbor Protection Facilities
162 Coastal Protection Facilities
163 Moorings
164 Marine Improvements
165 Dredging
169 Other Harbor and Coastal

IC 04 - Other Operational Facilities
123 Land Vehicle Fuel Dispensing
124 Operational Fuel Storage
125 Petroleum, Oil, and Lubricant (POL) Pipeline
126 Liquid Fuel and Dispensing - Other
137 Ship Navigation and Traffic Aids - Buildings
138 Ship Navigation and Traffic Aids - Other than Buildings
142 Operational - Helium Plants and Storage
143 Ship and Other Operational - Buildings
148 Ship and Other Operational - Other than Buildings

Training (FCCs 171 and 179)

IC 05 - Training Facilities
171 Training Buildings
179 Training Facilities - Other than Buildings

Maintenance and Production (all FCCs in the 200s)

IC 06 - Aviation Maintenance Facilities
211 Maintenance - Aircraft
221 Production - Aircraft

IC 07 - Shipyard Maintenance Facilities
213 Maintenance - Ships and Spares
223 Production - Ships and Spares

IC 08 - Other Maintenance and or Production Facilities

212 Maintenance - Guided Missiles
214 Maintenance - Tank and Automotive
215 Maintenance - Weapons and Spares
216 Maintenance - Ammunition, Explosives, and Toxic
217 Maintenance - Electronics and Communications Equipment
218 Maintenance - Facilities for Miscellaneous
219 Maintenance - Installation, Repair, and Operation

222 Production - Guided Missiles
224 Production - Tank and Automotive
225 Production - Weapons and Spares
226 Production - Ammunition, Explosives, and Toxic
227 Production - Electronics and Communications Equipment
228 Production - Facilities for Miscellaneous
229 Production - Installation, Maintenance, Repair, and Operations

Research, Development, Test and Evaluation (RDT&E) (all FCCs in the 300s)

IC 09 - RDT&E Facilities

310 Science Labs
311 Aircraft
312 Missile and Space
313 Ship and Marine Equipment
314 Tank and Automotive
315 Weapons and Weapon Systems
316 Ammunition, Explosives, and Toxic
317 Electronic, Communications, and Electrical Equipment
318 Propulsion
319 Miscellaneous Items and Equipment
320 Underwater Equipment
321 Technical Services
371 Range Facilities
390 Other than Buildings

Supply (all FCCs in the 400s)

IC 10 - POL Supply and or Storage Facilities
  411 Liquid Fuel Storage - Bulk
  412 Liquid Storage Other than Water, Fuel, and Propellants

IC 11 - Ammunition Supply and or Storage Facilities
  421 Ammunition Storage - Depot and Arsenal
  422 Ammunition Storage - Installation and Ready Issue
  423 Ammunition Storage - Liquid Propellant
  424 Weapon-Related Battery Storage
  425 Open Ammunition Storage Pad (Other)

IC 12 - Other Supply and or Storage Facilities
  431 Cold Storage - Depot and In-Transit
  432 Cold Storage - Installation and Ready Issue
  441 Storage - Covered - Depot and Arsenal
  442 Storage - Covered - Installation and Organizational
  451 Storage - Open - Depot
  452 Storage - Open - Installation and Organizational

Hospital and Medical (all FCCs in the 500s)

IC 13 - Medical and or Dental Facilities
  510 Medical Center and or Hospital
530  Laboratories
540  Dental Clinics
550  Dispensaries and/or Clinics

Administrative (all FCCs in the 600s)

IC 14 - Administrative Facilities
   610  Administrative Buildings
   620  Administrative Structures - Underground
   690  Administrative Structures - Other than Buildings

Troop Housing and or Messing (all FCCs 721 through 725)

IC 15 - Troop Housing and or Messing Facilities
   721  UPH - Enlisted Personnel
   722  UPH - Mess Facilities
   723  UPH - Detached Facilities
   724  UPH - Officers Quarters
   725  UPH - Emergency

Community (all FCCs 730 through 760)

IC 16 - Other Personnel Support Services Facilities
   730  Personnel Support and Service
   740  Morale, Welfare, and Recreational (MWR) - Interior
   750  Morale, Welfare, and Recreational (MWR) - Exterior
   760  Museums and Memorials

Utilities (all FCCs in the 800s except 851, 852, 860, 871, and 872)

IC 17 - Utilities Facilities
   811  Electrical Power - Source
   812  Electrical Power - Transmission and Distribution Lines
813 Electrical Power - Substations and Switching Stations
821 Heat - Source
822 Heat - Transmission and Distribution Lines
823 Heat and Gas - Source
824 Heat and Gas - Transmission
826 Refrigeration (Air Conditioning) - Source
827 Chilled Water (Air Conditioning) - Transmission and Distribution
831 Sewage and Industrial Waste - Treatment and Disposal
832 Sewage and Industrial Waste - Collection
833 Refuse and Garbage
841 Water - Supply, Treatment, and Storage - Potable
842 Water - Distribution System - Potable
843 Water - Fire Protection
844 Water - Supply and Storage - Nonpotable
845 Water - Distribution System - Nonpotable
880 Fire and Other Alarm Systems
890 Miscellaneous Utilities

Real Estate and/or Roads and/or Grounds (other than land) (all FCCs in the 900s plus 851, 852, 860, 871, and 872)

IC 18 - Real Estate and Ground Structures (less land)
851 Roads
852 Sidewalks and Other Pavement
860 Railroad Tracks
871 Grounds Drainage
872 Ground Fencing, Gates, and Guard Towers
912 Public Domain Withdrawal
923 Foreign Rights
931 Buildings
932 Site Improvement
933 Demolition
939 Other

Other

IC 19 - Other Facility Costs

Family Housing (FCCs 711 through 714)

IC 20 - Family Housing Facilities

711 Family Housing - Dwellings
712 Family Housing - Trailers
713 Family Housing - Trailer Sites
714 Family Housing - Detached Facilities