

APPENDIX C
PHASES OF MILITARY CONSTRUCTION

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 contracts 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

PHASES	1990	1991	1992	1993	1994	1995	1996	1997
PLANNING, PROGRAMMING AND BUDGETING	User Identifies and Develops Project	Service Inserts Project in FYDP*	Service Completes Planning	Service Finalizes Program and Prepares Budget	OSD Submits Budget to the Congress			
LEGISLATION					Congressional Committees Hold Hearings & Enact Legislation			
DESIGN <u>1/</u>			Service Selects A&E** Negotiates Contract	A&E** Performs 0-35% Design. Service Reviews and Approves	A&E** Performs 35-100% Design. Service Reviews and Approves			
CONSTRUCTION					Service Solicits Bids and Awards Contract	Construction <u>2/</u>		User Occupies Facility
PHASES	1990	1991	1992	1993	1994	1995	1996	1997

- * 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.

ATTACHMENT 2 TO APPENDIX C
PLANT REPLACEMENT VALUE

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.		3. List acquisitions and losses for the current reporting FY in columns 3b and 3c.			
2. Calculate the prior year PRVs with current reporting year values and list in column 3a.		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					
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 & Evaluation					
IC 10 Petroleum, Oil, & 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 Administrative					
IC 15 Troop Housing/Messing					
IC 16 Other Personnel Support Services					
IC 17 Utilities					
IC 18 Real Estate & Ground Structure (less land)					
IC 19 Other Facility Costs					
IC 20 Family Housing					
Total					

**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