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ECONOMIC ANALYSIS SUPPORTING THE INCREASE OF THE UNSPECIFIED MINOR MILITARY CONSTRUCTION THRESHOLD

June 2016

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**ECONOMIC ANALYSIS SUPPORTING THE INCREASE OF THE
UNSPECIFIED MINOR MILITARY CONSTRUCTION THRESHOLD**

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Submitted in partial fulfillment of the requirements for the degree of

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from the

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June 2016**

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ABSTRACT

This report analyzes the economical, technological, and environmental challenges U.S. Navy engineers face in constructing quality, usable facilities while meeting the constraints of the Unspecified Minor Military Construction (UMMC) threshold. By examining the Department of the Navy's Minor and Military Construction programs, conducting a comparative analysis of DD Form 1391s from past projects to evaluate cost escalation factors and analyzing construction escalation indices, this report supports the recent increase of the UMMC threshold from \$750K to \$1M and provides recommendations for future threshold determination.

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LIST OF ACRONYMS AND ABBREVIATIONS

A&E	Architectural and Engineering
ADA	Antideficiency Act
APF	Appropriated Fund
APN	Aircraft Procurement, Navy
APOE	Aerial Port of Embarkation
ASD EI&E	Office of the Assistant Secretary of Defense for Energy, Installations and Environment
BCI	Building Cost Index
BES	Budget Estimate Submission
BY	Base Year
CAT5	Category 5
CAT6	Category 6
CEC	Civil Engineer Corps
CPI	Consumer Price Index
CY	Constant Year
DD 1391	Department of Defense Form 1391
DLA	Defense Logistics Agency
DOD	Department of Defense
DON	Department of the Navy
ENR BCI	Engineering News Review Building Cost Index
EPG	Electronic Project Generator
FISC	Fleet Industrial Supply Center
FMR	Financial Management Regulation
FY	Fiscal Year
GAO	Government Accountability Office
LEED	Leadership in Energy and Environmental Design
LID	Low Impact Development
LSI	Lee Saylor, Inc.
MILCON	Military Construction
MINCON	Minor Construction

NAF	Nonappropriated Funds
NAVCOMPT	Navy Comptroller
NAVFAC	Navy Facilities Engineering Command
NAVFACINST	Naval Facilities Engineering Command Instruction
NCF	Naval Construction Force
NWCF	Navy Working Capital Fund
O&M	Operating and Maintenance
O&MN	Operations and Maintenance, Navy
OMB	Office of Management and Budget
OMSI	Operation and Maintenance Support Information
OPN	Other Procurement, Navy
OPNAVINST	Office of the Chief of Naval Operations Instruction
OSD	Office of the Secretary of Defense
PEB	Pre-Engineered Building
POM	Program Objective Memorandum
RDT&E	Research, Development, Test & Evaluation
RFP	Request for Proposal
RLB	Rider Levett Bucknall
RSIP	Regional Shore Infrastructure Plan
SECDEF	Secretary of Defense
SF	Square Foot/Feet
SIOH	Supervision, Inspection, and Overhead
UMMC	Unspecified Minor Military Construction
USGBC	United States Green Building Council
WPN	Weapons Procurement, Navy

I. INTRODUCTION

A. OVERVIEW

Unspecified Minor Military Construction (UMMC) authority grants permission to unit-level military commanders to expend Operating and Maintenance (O&M) funds on capital improvements and facilities construction projects. From 2001 until 2015, section 2805 of title 10, United States Code limited the threshold for UMMC projects to \$750K. With the recent passing of the Carl Levin and Howard P. “Buck” McKeon National Defense Authorization Act for Fiscal Year 2015, Congress increased the threshold by \$250K to \$1M. For large-scale construction projects, over \$1M, commands have to submit their project to the lengthy, Congress-governed military construction (MILCON) process.

For the Navy and Marine Corps, Naval Facilities Engineering Command (NAVFAC) is the executing agent for all construction services. The Navy and NAVFAC refer to UMMC as minor construction (MINCON). Since this paper focuses solely on Navy UMMC, it will furthermore be referred to as MINCON.

Navy MINCON and MILCON projects are prepared and executed in order to support the department’s missions and to meet its goals. The Chief of Naval Operations Instruction 11010.20G (OPNAVINST 11010.20G) *Facilities Project Instruction*, dictates that NAVFAC and its customers are bound to adhere to the guidelines, policies and laws therein. OPNAVINST 11010.20G is the guiding document that Navy engineers use in navigating the facilities construction process. Failure of adherence and expenditures over the \$750K threshold can result in a violation of the Antideficiency Act (ADA). An example of an ADA violation is incrementation or project splitting. Incrementation occurs when a project is split into separate parts that individually stay below the threshold, but collectively exceed it. Violation of the ADA can lead to administrative or penal consequences to the individual responsible, most often the contracting officer or comptroller who authorized the expenditure. Administrative penalties may include

suspension from duty, with or without pay, or possibly removal from position. Penalties imposed may include fines, imprisonment, or both (Antideficiency Act, 1982).

One of the founding principles of our government is the separation of powers. Based on this principle, Congress has been charged with the purse strings and they take that duty very seriously. Congress' power of the purse is evident in their establishment of the MINCON threshold and their authority over MILCON. Their preference is to approve MILCON on a line item basis, but they also understand the flexibility MINCON provides commanders. In the political world, money is power and controlling what money gets spent where is a power that Congress does not want to give up. Allowing unit commanders to use larger amounts of O&M for construction projects essentially reduces their power. Congress has the bite of the law to prevent this. According the Currency Act of 1870,

it shall not be lawful for any department of the government to expend in any one fiscal year any sum in excess of appropriations made by Congress for that fiscal year, or to involve the government in any contract for the future payment of money in excess of such appropriations. (Currency Act, 1870)

B. SIGNIFICANCE OF STUDY

Facing dynamic mission requirements, military unit commanders require an execution vehicle to provide their units with expeditious, quality facility requirements solutions. Even when fast-tracked, the soonest a MILCON project can be brought online is between three and four years. A unit commander's ability to use O&M funds to execute a MINCON project that meets their expeditious mission critical facilities requirements is essential in sustaining a ready force capable of meeting the threats of a modern enemy and maintaining mission readiness. In order to continue to surpass the capabilities of our enemies, it is absolutely critical to ensure the appropriate MINCON threshold, one that allows commanders to purchase the same amount of construction despite cost escalation factors, has been established and that the proper methodology for determining future increases is employed.

The MINCON threshold limits the amount of O&M funds a unit-level commander can spend on capital improvements. The threshold was recently raised to \$1M after being held at \$750K since 2001. This study will evaluate the methodology used by Congress to determine the timing and amount of this increase, compare alternative methods, provide areas of consideration and provide recommendations for future increase considerations.

C. RESEARCH QUESTIONS

The primary research questions are as follows:

- Was the increase to the MINCON threshold the appropriate amount?
- What methodology did Congress employ to determine the increase amount?
- Were increases in environmental, utilities and technology cost factors incorporated into the increase?
- How much should the next increase amount be and when should it occur?

D. BENEFITS OF RESEARCH

The authority to use O&M for capital improvement expenditures is a powerful tool for unit-level commanders. Ensuring that they have the appropriate level of monetary authority, to contend with the dynamic state of their missions, combat debilitating infrastructure, overcome technological requirements and the constraints of environmental and energy savings mandates and to be able to train and maintain their combat forces, is essential to the success of our Navy.

Examining the methodology Congress uses to determine the timing and the amount of increase to this powerful tool will support the process, validate the decision, and present alternative approaches. Addressing excluded cost escalation considerations and exploring ways to incorporate them into the methodology will furthermore substantiate the process and allow the DOD to recognize when to prudently request future increases.

E. LIMITATIONS OF RESEARCH

This report will limit its research to the Navy MINCON and MILCON programs and processes. The majority of the issues, case studies, and examples will be “Navy-centric” and based on the author’s experience and research as a Navy Civil Engineer Corps (CEC) Officer and employee of NAVFAC.

This report will also be limited to open source data supporting Congress’ methodology for MINCON threshold increase determination. Assumptions and inferences will be made and stated as to the rational employed in their methodology.

F. SCOPE

This report is an assessment of the Navy’s MINCON Program and the recent congressional increase to the MINCON threshold. This report examines the purpose of the MINCON threshold, Congress’s methodology for determining the timing and amount of increasing the threshold, the factors that should be considered when determining the timing and amount of increasing the threshold, and if the methodology is appropriate. This analysis identifies whether the methodology is sufficient or if improvements should be made or if alternative methodologies should be considered.

G. METHODOLOGY

This report will use applicable inflation indices, a historical evaluation of MINCON and MILCON projects and previously conducted studies to evaluate the key cost escalation factors of the MINCON threshold increase.

By utilizing the Consumer Price Index (CPI), RS Means Historical Construction Cost Indexes, Naval Center for Cost Analysis’ Inflation Index for MILCON, Office of the Secretary of Defense (OSD) derived inflation index and NAVFAC’s Building Cost Index (BCI) a quick comparison analysis can be conducted to determine the appropriateness of the threshold increase.

In order to determine if environmental, infrastructure and technological cost factor escalations were considered in the threshold increase, an analysis of hand selected, historical Navy minor construction and MILCON projects was conducted. The projects

were retrieved from an online database call Electronic Project Generator (EPG). EPG can be viewed from NAVFAC's employee portal page, which the author has permission to access. The author retrieved 12 MINCON and 12 MILCON projects from FY03 and compared them to 12 MINCON and 12 MILCON projects from FY15. The number 12 was chosen because the number of projects available on EPG in FY03 was the limiting factor. Also, FY03 was chosen vs. FY01 for the same reason, the number of FY01 or FY02 projects available for comparison was insufficient.

The comparison of the projects from EPG allowed the author to attempt to prove that cost factors other than inflation, environmental, infrastructure and technological, were not accounted for in the threshold increase. Lack of consistency in Department of Defense Form 1391 (DD 1391) preparation and deficient pricing data prevented precise environmental analysis. As environmental standards became the norm, delineating the costs by line item ceased to subsist. The author was able to acquire an internal NAVFAC document that approximates the increases in environmental construction costs. This document was used to estimate an environmental cost factor while the EPG DD 1391 analysis was used to estimate an infrastructure cost factor and a technology cost factor.

The combination of the inflation index analysis and the cost escalation factors determination was then used to evaluate the MINCON threshold increase for aptness determination.

H. OBJECTIVES

MINCON projects and the use of O&M funds for capital improvements are critical for the success of military units. Expenditure of these funds is governed by laws and the trust of the American people. The objective of this study is to determine whether Congress is employing the proper methodology and is taking into consideration the appropriate factors when shaping MINCON appropriation limitations. By doing so, this will confirm that military commanders are being given the tools they need to ensure they are properly taking care of their people and are simultaneously able to meet their mission requirements while demonstrating they are being good stewards of taxpayers' money.

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II. NAVY FACILITIES PROGRAM

A. GENERAL INFORMATION AND DEFINITIONS

In order to dissect and show the value of the MINCON program, a basic understanding of the Navy facilities projects program and its terms is required. Chapter Two of the OPNAVINST 11010.20G, *Facilities Projects Instruction* is provided in Appendix A for additional background.

B. MINCON PROGRAM OVERVIEW

The Military Minor Construction Program was established to provide the DOD with the authority to acquire, repair, or construct urgently required permanent or temporary facilities that do not surpass statutory cost limitations. OPNAVINST 11010.20G defines a MINCON project as

A minor construction appropriated fund (APF) project is a single undertaking with a funded cost of \$1,000,000 or less (including contract administration, SIOH, and contingency) at a military installation. The project shall include all work necessary to produce a complete and usable facility, or a complete and usable improvement to an existing facility. All minor construction projects for an addition, expansion, extension or alteration must be supported by the facility planning documents, Regional Shore Infrastructure Plans (RSIPs), or applicable design criteria. (Chief of Naval Operations, 2005, p. 4–2)

MINCON is a highly decentralized program that allows unit-level and installation commanders to acquire minor construction projects utilizing O&M funds. O&M funds are appropriated yearly and typically must be obligated by the end of the fiscal year in which they were appropriated. The funds are appropriated to support activities such as base operating support, travel and training, not to acquire things. This allows commanders the autonomy to fund high priority, low cost and short fused facilities projects without facing heavy scrutiny or a lengthy approval process.

According to the Defense Contingency Contracting Handbook,

O&M funds also pay for maintenance and repair work. “Maintenance” is recurring work to prevent deterioration (to preserve or maintain a facility

so that it is usable for its designated purpose). “Repair” is the restoration of a facility so that it can be used for its designated purpose by overhauling, reprocessing, or replacing parts or materials that have deteriorated because of the elements (or wear and tear) and have not been corrected through maintenance. When construction and maintenance (or repair) are performed together as an integrated project, each type of work is funded separately unless the work is so integrated that the separation of construction from maintenance or repair is not possible. In the latter case, all work is funded as construction. (Department of Defense, 2015, p. 75)

MINCON repair authority is instrumental in permitting commands to sustain mission readiness by ensuring the facilities that they use in the performance of their duties are safe, fully functional and are not impairing or impeding operations. If a critical component or function of a facility is inoperative, the unit has the ability to immediately execute repair services, using O&M funds, to bring the facility back on line. Each command can prioritize their own requirements based on their own O&M budgets.

C. MILCON PROGRAM OVERVIEW

When a construction project exceeds the MINCON threshold of \$1M, it must be appropriated through the multi-faceted and extremely lengthy MILCON process.

MILCON includes construction projects for all types of buildings, facilities, roads, airfield pavements, and utility systems costing more than \$1,000,000. The Navy MILCON program objective is to provide quality facilities to support the Navy mission. A MILCON project includes all construction work necessary to produce a complete and usable facility or complete and usable improvement to an existing facility. (Chief of Naval Operations, 2005, p. 2–2)

The MILCON process begins with the planning and development stage. Here the requirement for a project is identified. Once a requirement is defined and validated, an analysis of alternatives is completed. The analysis of alternatives permits decision makers to choose between different courses of action. The alternative selected as the best course of action will then be documented on a DD 1391. The DD 1391 serves as the justification and budgeting source that will eventually seek OSD and congressional approval. Also, during the planning and development stage, site approvals and environmental analysis is completed in accordance with the National Environmental Policy Act (NEPA) of 1969.

Once planning is complete, the DD 1391 will be submitted for programming. This begins the programming phase. In this phase the project will be prioritized and identified in the Program Objective Memorandum (POM) for the respective service that initiated the project. All projects are then individually listed on the service's Budget Estimate Submission (BES). Next, the services will submit their BES to OSD in the hopes that their projects will make it on the President's Budget request to Congress.

Next comes the approval phase, in this phase Congress can decide whether or not to authorize and appropriate the project. Each MILCON on the President's Budget will be approved line item by line item by congressional committees. After many hearings, reviews and testimonies, legislation is passed that authorizes and appropriates the approved projects.

Finally, once funding is available, the project can be executed in its programmed year. The execution phase involves the design, acquisition and construction portion of the project. Once a design is approved, the designated construction agent puts out a Request for Proposal (RFP), advertises and awards the project, then constructs and closes out the project. The project is then turned over to the original requirement owner for occupancy and operation.

MILCON is not the solution to swift and dynamic facilities requirements. From the time a commander programs a MILCON until the time it is fully operational can be five years. (Figure 1) In today's environment, five years is too long to construct short-term facilities requirements. Due to the high rate of change associated with the DOD's mission and the difficulties associated with forecasting requirements, many MILCON projects require expensive modifications to correct unforeseen deficiencies that were unaccounted for during the planning process. For example, a unit that had programmed a \$30M operations facility in Little Creek, VA was reassigned to Pearl Harbor, HA due to the increased threats in the Pacific Ocean. The unit was reassigned when the project was approximately 60 percent complete with the construction phase (3 years into the MILCON process). Another \$18M had to be programmed into the project in order to modify the building to support a new unit that was commissioned the year prior and had the requirement for an operations facility.

Figure 1. MILCON Project Execution Timeline

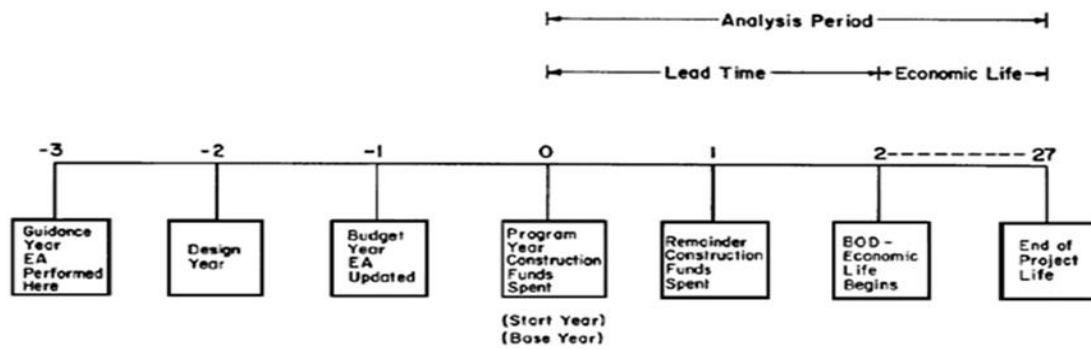


Diagram showing the relationships among key dates in an analysis period for a typical MILCON project. EA preparation usually is in the first part of the guidance year. (See AR 415-15 for more details on the design and budget process.)

Source: Department of the Army (1992, p. 9).

III. MINCON THRESHOLD DETERMINATION

A. OVERVIEW

Although Congress establishes and provides oversight to the construction limits of authority, they do not conduct the research and provide the justification for increases. Congress instead defers to the Office of Management and Budget (OMB) and their escalation rate estimates as a baseline to determine construction inflation levels. If there is a conflict with OMB's estimates or for validation, Congress will turn to OSD or more exactly the Office of the Assistant Secretary of Defense for Energy, Installations and Environment (ASD EI&E). ASD EI&E is charged with providing the primary oversight of the DOD's acquisition, budgetary support, management and policy initiatives associated with base operations and installation energy requirements. Under the policy umbrella, MINCON threshold determination is a primary focus.

In order to ensure the DOD is able to fulfill its mission, the office of the ASD EI&E must provide its subordinates with the proper tools; one of those tools is a MINCON threshold that accounts for construction cost increases. ASD EI&E keeps a close watch on many of the major construction inflation indices and has developed their own inflation index based on correlation analysis. Also, when Congress requests in-depth evaluation due to increased concerns, ASD EI&I will respond to those requests. Following is an example of such a request from the House Armed Services Committee as documented in DOD's Military Construction Pricing Inequities report to Congress in 2008:

Military Construction Pricing Inequities

The Committee remains concerned that the current pricing models used by the Department of Defense understate the overall cost of the military construction program. While the committee understands that the use of the OMB inflation factors for construction has understated the construction industry by 10 percent over the last two years, the committee believes that this has the concurrent effect of reducing the scope of the entire military construction program. Although the committee understands that the OMB cost factors used to support the fiscal year 2008 budget request are

coincidentally close to industry standards, the committee remains concerned about the fluctuation of the account.

Therefore, the committee directs the Secretary of Defense (SECDEF) to submit an analysis of the current inflation factors as they compare to industry cost factors to the congressional defense committees by February 1, 2008. This analysis shall include a review of the program over the last five years, the methods that the Department of Defense employs to overcome a diminished program, an analysis of available industry metrics, and recommendations that the Department proposes to reduce the fluctuation of the military construction account. (Department of Defense, 2008, p. I)

B. OSD ANALYSIS OF CONSTRUCTION INFLATION

Although OSD's analysis focuses primarily on the MILCON program, it gives a comprehensive understanding as to the considerations and key factors used in determining DOD construction inflation calculations and provides the foundation for the methodology and rationale used by Congress in raising the MINCON threshold.

Every year OSD distributes inflation assumptions that DOD components use in establishing their budget requirements. One element of the component's budget is their MILCON program. In order to ensure they are allocating the proper amount to each project, estimates using the OSD inflation assumptions are produced. Although there are many private sector industry indexes available for use, these indexes do not always accurately translate to the DOD's operations. One of the most commonly applied indexes for construction predicted rates is the Engineering News Record Building Cost Index (ENR BCI).

Table 1 compares OSD's assumed rates and ENR BCI predicted rates over four, consecutive three-year intervals from 2002 and 2007. The table also shows the OSD assumed rates registering below the ENR BCI rates for the same time periods, with cumulative shortages averaging 3.4 percent.

Table 1. OSD vs. ENR BCI Compounded Inflation Predictions

	% Inflation Per Year						Compounded Rate	Variance
	2002	2003	2004	2005	2006	2007		
OSD Assumed Rates	1.60	1.60	1.80				5.08	-
		1.30	1.60	1.60			4.57	-
			1.40	1.50	1.80		4.77	-
				2.00	2.10	2.10	6.34	-
ENR BCI Predicted Rates	2.29	2.29	2.29				7.03	1.95
		2.25	2.25	2.25			6.90	2.33
			3.01	3.01	3.01		9.30	4.53
				3.59	3.59	3.59	11.16	4.83

Source: Office of the Secretary of Defense (2008, p. 2–3).

To further demonstrate how different OSD rates are compared to industry rates, a comparison of OSD assumed rates to actual rates was completed, using four of the top industry indexes (the RS Means indexes, the Boeckh index, the Lee Saylor, Inc. (LSI) Subcontractor Index and the Rider Levett Bucknall (RLB) index). According to OSD's report to Congress

data from these four historical indices was averaged to generate a representative annual historical inflation rate for the MILCON program. Table 2 displays these rates across successive three-year time periods between 2002 and 2007, and then compares the compounded three-year rates with the OSD rates previously identified in Table 1. (Department of Defense, 2008, p. 2–4)

Table 2. Top 4 Indexes' Average Historical Inflation Rates over a Three-Year Period

	Avg % Inflation Per Year						Historical Compounded Rates	OSD/OMB Compounded Rates	Variance
	2002	2003	2004	2005	2006	2007			
Top 4 Avg Hist Rates	3.92	1.56	8.15				14.14	5.08	9.06
		1.56	8.15	6.63			17.12	4.57	12.55
			8.15	6.63	7.74		24.25	4.77	19.48
				6.63	7.74	4.89	20.50	6.34	14.16

Source: Office of the Secretary of Defense (2008, p. 2–4).

What these tables show is that the DOD has historically underestimated its assumed construction escalation rates. From these actions it can be inferred that construction limits of authority, like the MINCON threshold, were not keeping pace with actual construction costs and were limiting the amount of construction that could be purchased. With regards to the MILCON program, OSD stated. “This escalation shortfall impacted the MILCON program during the last two to three years, resulting in lost scope, reprogramming actions, and delayed projects” (Department of Defense, 2008). In order to mitigate the effects of the shortfall, OSD has implemented counter measures, such as scope reductions and improved acquisition methods,

C. ANALYSIS OF INDICES

When OSD did their analysis of the construction industry’s leading inflation indices, they looked at several components of each index to determine how closely each index represented historical MILCON inflation. Each index uses different components and thus some better represent the MILCON program than others.

The majority of the indices incorporate input costs such as material and labor and use historical data on completed construction contracts to ascertain escalation rates. Some even go as far as including productivity rates, taxes and insurance costs. A complete breakdown, conducted by OSD, of all the major indices and their key components can be found in Appendix B.

Although the analysis of the indices shows that certain indices more closely correlate to historical MILCON rates, they do not take into account key factors that directly drive DOD construction. Government directives and initiatives compel Navy engineers to incorporate environmental, energy savings and legal cost drivers, into facilities construction. These cost drivers are not always required in the private sector. This creates even further disparity and justifies further analysis.

D. ESCALATION DETERMINATION CHALLENGES

OSD faces many challenges in determining when a request to increase the MINCON threshold should be submitted. As previously discussed, cost drivers that only affect the DOD and cannot be easily calculated make it difficult to use private sector

indices as an approach to sustain a MINCON threshold that maintains a commander's purchasing power.

1. Time Value of Money

When Congress increased the MINCON threshold to \$750K in 2001, it had done so because the prior threshold of \$500K had become inadequate. For this same reason, Congress increased the threshold from \$750K to \$1M in 2015. The primary reason these thresholds become obsolete over time is due to inflation and the time value of money. The time value of money concept states that a dollar today is worth more than a dollar tomorrow based on the interest you could have earned by investing that dollar. This means that over a long period of time a dollar, not invested, loses more and more of its value. In the case of the MINCON threshold and based solely on this factor, \$750K worth of construction in 2001 was definitely a higher value than \$750K worth of construction in 2015.

2. Aging Infrastructure

The DOD's installation inventory consists of more than 555,000 facilities, on over 5,000 installations. The cost of operating and maintaining these facilities at an acceptable level is extremely costly and often takes a lower priority to the more significant, mission critical items. This subordinate classification has led to the degradation of a large percent of the DOD's installation portfolio. The Government Accountability Office (GAO) documented this in their report, *Defense Infrastructure: Long-term Challenges in Managing the Military Construction Program*, and determined that a \$164B construction shortfall existed (Holman, 2004). This degradation has placed an undue burden on military commanders who are now required to allot a small portion of their already limited O&M budget on infrastructure upgrades. These upgrades are necessary to support the modern facilities commanders need in order to be fully mission capable and in some cases to sustain current operations.

3. “Green” Construction

Since the passing of Executive Order 13148-Greening the Government through Leadership in Environmental Management in April of 2000, there has been a large “green” movement within the DOD. Environmental initiatives in construction have resulted in increased costs in sustainable processes, environmentally friendly material and energy efficient equipment. These escalating cost factors are reducing the purchasing power a commander can execute while staying under the MINCON threshold.

Established in 1993, the U.S. Green Building Council (USGBC) has developed a green building rating system that eventually became Leadership in Energy and Environmental Design (LEED). LEED is internationally recognized as the industry leader for establishing and recognizing environmentally sound facilities. “LEED certification earns points across several areas that address sustainability issues. Based on the number of points achieved, a project then receives one of four LEED rating levels: Certified, Silver, Gold and Platinum. LEED-certified buildings are resource efficient. They use less water and energy and reduce greenhouse gas emissions. As an added bonus, they save money” (“About LEED,” n.d., About LEED section, para. 3). In accordance with the Department of Defense Sustainable Buildings Policy, all new construction executed within the DOD mandates at least LEED Silver certification, thus increasing the upfront construction costs of the project (Department of Defense, 2005).

4. Technology

When the \$750K MINCON threshold was established in 2001, a study conducted by Steven Hipple and Karen Kosanovich, economists with the Bureau of Labor Statistics, showed that only 67 percent of federal government workers used computers at work and only 52.5 percent used the Internet at work (Hipple and Kosanovich, 2004). As technology advanced exponentially in the 2000’s, more and more workers in the federal government required the use of interconnected computers for their daily functions. This requirement led to additional construction costs associated with information technology infrastructure.

Modern facilities are now designed with information technology requirements that were not even considerations in 2001. Today, all workstations are required to have at least one, sometimes two Internet junction boxes that use expensive category 5 (CAT5) or category 6 (CAT6) cable to connect to the server rooms. Increased electrical outlets and cabling is also required to support the additional computer systems and peripherals. Depending on the size and purpose of the facility a server room may be required. Each server room requires a large electrical infrastructure, a battery back-up system, and a self-contained cooling unit to maintain the room at the lower, optimal temperatures servers require.

Since technology is primarily driven by automation through electrical devices and even though those devices, over time, require less power, the costs associated with constructing and installing the infrastructure to support those technologies is often overlooked. These costs rise proportionally with improved technology and should be considered in threshold determination.

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IV. RESULTS AND ANALYSIS

A. METHODOLOGY

An analysis of the \$250K increase to the MINCON threshold by Congress compared to increases based on industry and DOD historical escalation indices will show whether or not the increase was sufficient to provide commanders with the same purchasing power they had in 2001. An analysis of historical indices will show the actual purchasing power of the threshold for all types of construction instead of concentrating primarily on MILCON like the previous indices mentioned.

B. DATA AND ANALYSIS

The private industry provides open source information that allows for comparison analysis of construction escalation rates. That information combined with DOD data sources provided the results.

1. Inflation and the CPI

Based solely on inflation and using the average CPI, \$750K in 2001 would be the equivalent of \$1,003,742 in 2015. A simple calculation can be conducted on the Bureau of Labor Statistics' website by using their CPI calculator or by using the CPI History Table (Appendix C) and using this formula:

$$\text{2001 Price} \times (\text{2015 CPI} / \text{2001 CPI}) = \text{2015 Price}$$

Therefore:

$$\$750,000 \times (237.017/177.1) = \$1,003,742$$

2. Construction Escalation Indices

Deciding which construction escalation index or indices to use when comparing construction costs from 2001 to 2015 can be difficult. Many of the private sector indices incorporate location cost factors, labor cost factors and material cost factors into their

methodology. Since the DOD is reasonably unaffected by those cost factors an analysis of the most relative indices is required.

a. Building Cost Historical Index

According to the 2014 National Building Cost Manual, construction costs have increased by approximately 64 percent since the MILCON threshold of \$750K was established in 2001 (Appendix D). Combine that with the fact that present day facilities require more expensive infrastructure in order to support information technology systems and commanders are relegated to purchase significantly less construction today compared to 2001. For example, a 5,000 square foot, steel framed pre-engineered building (PEB) constructed in 2001 with a price tag of \$750K would have cost approximately \$1,230,000 in 2015 (Figure 2).

Figure 2. Comparison of PEB Construction Costs



Year: 2001
Type: PEB
SF: 5,000
Cost: \$750K

Year: 2015
Type: PEB
SF: 5,000
Cost: \$1,230K

b. RS Means Historical Cost Index

According to the RS Means Historical Cost Indexes (Appendix E), one of the most trusted references in the construction industry, \$750,000 of construction in 2001 would be the equivalent of \$1,236,211 in 2015.

Time Adjustment Using the RS Means Historical Cost Indexes:

$$(\text{Index for 2015}/\text{Index for 2001}) \times \text{Cost in 2001} = \text{Cost in 2015}$$

Therefore:

$$(206.2/125.1) \times \$750,000 = \$1,236,211$$

c. Naval Center for Cost Analysis Inflation Index for MILCON

Using the Naval Center for Cost Analysis' Inflation Index for MILCON (Appendix F) we can determine that \$750,000 of construction in 2001 would be equivalent to \$958,728 in 2015.

This is found using a Base Year of 2010 (BY10), which has a raw index of 1.00. The raw index for Constant Year 2001 (CY01) is 0.8444, so $\$750,000/0.8444 = \$888,205$. This normalizes the \$750K to BY10. Next to convert to 2015, you use the raw index of 1.0794 for Constant Year 2015 (CY15) and $\$888,205 \times 1.0794 = \$958,728$.

d. NAVFAC Building Cost Index

Using NAVFAC's Building Cost Index (Appendix G) we can determine that \$750,000 of construction in 2001 would be equivalent to \$1,049,365 in 2015. This is found using the formula:

$$\text{Escalation Factor} = \text{"Escalated to" date} / \text{"Escalated from" date}$$

Therefore:

$$\text{Cost in 2015} = 4960/3545 \times \$750,000 = \$1,049,365$$

3. Environmental Cost Escalation

Since 2001 the large green movement within the DOD has resulted in increased costs in construction processes, environmentally friendly material and energy efficient equipment. Everything from recycling construction waste to Low Impact Development (LID) increases the overall cost of a project and reduces the actual construction a commander can purchase.

In order to quantify these costs, industry professionals at NAVFAC have developed a LEED for New Construction Workbook. In it they created a LEED checklist and cost list to determine the percent cost to acquire LEED certification on a new construction project by facility type. Of the 16 facility types identified, 10 facilities exceeded 4 percent the total cost of the building in order to achieve the lowest LEED certification and only four did not. (Appendix H)

From this it can be inferred that the total environmental cost of a construction project is at least 4 percent. Thus, 4 percent of \$750,000 is \$30,000 and 4 percent of \$1,000,000 is \$40,000.

4. Technological Cost Escalation

As technology advances in all aspects of life, construction is no different. Buildings are being constructed with technology that is designed to increase energy efficiency and decrease operation and maintenance costs over the life of the building. Some examples of these technologies are motion activated light switches, automatic control systems, equipment monitoring systems and web-enabled security systems. The increased costs associated with procuring and installing the smart technologies will be recovered by the savings they will generate over the operational life of the facility. These savings, however, do not reduce the initial cost of construction and the increased costs are not accounted for in threshold determination.

Information technology infrastructure is another area that increases the construction costs of new facilities. With more and more employees within the DOD being designated as knowledge workers, the infrastructure required to support the equipment for their duties is increasing the cost of facilities. High speed cable, multiple computer connections at every work station, server rooms, temperature control equipment, battery back-up devices and increased electrical capacity are all technology based cost drivers. For example, barracks or recreational facilities have increased requirements as cable or satellite television, electric card locks, high speed Internet connections and Wi-Fi have become mandatory quality of life staples.

Comparative analysis of DD 1391s from MINCON and MILCON projects from FY03 and FY15 shows that there has been a 2.43 percent increase in the amount and quantity of expenditures for information systems and technology for MINCON projects and only 0.4 percent increase for MILCON projects. (Appendix I)

5. Infrastructure Cost Escalation

The Department of the Navy and the DOD has seen a long-term degradation of its installations. Due to the long wars in Iraq and Afghanistan and coupled with the fact that spending money upgrading aging infrastructure not being high on the priority list has directly affected the MINCON program. It is not uncommon for a large portion of a MINCON project's budget to be spent on upgrading the degraded infrastructure so that it can support the new facility being built. GAO's report on defense infrastructure stated that OSD had recognized the need to halt the degradation of defense facilities. The report also went on to state

Increasing current funding thresholds for using construction funds and operation and maintenance funds for unspecified minor military construction projects would give DOD more funding flexibility at the installation level but might need to be balanced against reducing congressional oversight of funding for the projects affected by these thresholds. Construction costs have increased 41 percent since the existing \$1.5 million threshold for using unspecified minor construction funds and 7 percent since the existing \$750,000 threshold for using operation and maintenance funds were last adjusted respectively upward in 1991 and 2001. As a result, fewer projects that are smaller in scope can now be completed using unspecified minor military construction funds or operation and maintenance funds. (Holman, 2004, p. 6)

Comparative analysis of DD 1391s from MINCON and MILCON projects from FY03 and FY15 shows that there has been a 7.54 percent increase in the amount and quantity of expenditures for infrastructure upgrades for MINCON projects and a 1.32 percent decrease for MILCON projects. (Appendix I)

C. SUMMARY

Based on results of the DD 1391 comparative analysis and NAVFAC's LEED analysis; environmental, technological and infrastructure cost escalation factors do affect

construction escalation rates and should not be considered negligible when determining increases to the MINCON threshold.

Table 3. Summary of DD 1391 Analysis

	Cost Factor Increase			
	Infrastructure	Technological	Environmental	Total
MINCON	7.5%	2.4%	4.0%	13.9%
MILCON	-1.3%	0.4%	4.0%	3.1%

Inflation indices used within the DOD are significantly lower than private sector indices and historical cost indices provide the most significant impact on threshold determination. Congress' decision to raise the MINCON threshold by \$250k was correct but inadequate as \$1M in 2015 does not provide the same purchasing power as \$750K in 2001. Taking into account that the majority of the inflation indices already show that a threshold of \$1M is already below current escalated costs (Table 4), the fact that cost escalation factors not considered in inflation indices add an additional 13.9 percent to the escalation and longevity assurance of the threshold, the increase should have been considerably greater.

Table 4. Summary of Inflation Indices Analysis

Cost Escalation Indices	2001	2015
Consumer Price Index (CPI)	\$750,000	\$1,003,743
Building Cost Historical Index	\$750,000	\$1,230,000
RS Means Historical Index	\$750,000	\$1,236,211
Naval Center for Cost Analysis Inflation Index	\$750,000	\$958,728
NAVFAC Building Cost Index	\$750,000	\$1,049,365

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A. SUMMARY OF FINDINGS

By using comparative analysis, standard industry inflation indices, government produced reports and a detailed breakdown and evaluation of hand selected DD 1391s from FY03 and FY15, this report attempted to determine the adequacy of the congressional increase to the MINCON threshold.

B. CONCLUSIONS

This project aspired to address the following issues:

- Was the increase to the MINCON threshold the appropriate amount?
- What methodology did Congress employ to determine the increase amount?
- Were increases in environmental, utilities and technology cost factors incorporated into the increase?
- What should the next increase amount be and when should it be applied?

1. Amount

The results of this study show that the amount of the increase to the MINCON threshold was on the lower end if you took into consideration factors that are typically not considered. If you take away environmental, technological and infrastructure factors, the threshold increase to \$1M provides approximately the same buying power as \$750K in 2001. However, each year the threshold remains unchanged buying power is reduced.

2. Methodology

Congress relies on OMB and OSD to provide them reports on inflation indices and recommendations for increasing thresholds. Ultimately, it is up to Congress to decide when to raise and by how much, but OMB and OSD input is critical. Their analysis and

estimation of military construction escalations rates closely resembles actual private sector escalation but does not factor in DOD specific cost increase factors.

3. Cost Factors

Environmental, infrastructure and technology cost factors were not considered in the recent increase. Under the assumption that these cost factors are not being considered in the industry indices, Congress, OMB and OSD are neglecting significant cost drivers that will continue to have immense limiting effects on the MINCON program.

4. Future Increases

The best way to gage when the next threshold increase should be will be by averaging the RS Means, Boeckh, LSI Subcontractor and RLB indices. In order to stick to the \$250k theme, it is recommended that the increase should be instituted when the average of those four indices show an escalation rate that equates a FY15 value of \$1M to a CY value of \$1.25M. However, if a percentage themed increase is utilized, the increase should occur when the FY 15 value of \$1M equals a CY value of \$1.33M (\$750K to \$1M is a 33 percent increase). According to NAVFAC's Building Cost Index, if escalation rates continue at the current rate the next increase would occur in FY 2025. (Appendix G)

C. RECOMMENDATIONS

1. Threshold Increases

The current system used to evaluate MINCON threshold increases could be improved. However, the ability to determine escalation factors on characteristics that are not adequately measured proves too nebulous and cumbersome to be considered. The system that is in place accomplishes the mission as precisely and accurate as possible while minimizing the level of effort involved and given the limited amount of data available.

The timing of the threshold increases could also be improved upon. Instead of increasing the threshold as a step function with large step increases over long periods of

time, shorter steps of smaller amounts over shorter periods of time would enable the threshold to more closely follow actual escalation.

2. Future Research

A study that analyzes the feasibility of a MINCON threshold that increases every year according to the NAVFAC BCI would provide interesting and valuable results. Evaluation of increasing the MINCON threshold by a percentage amount instead of a blanket \$250K could provide a more adequate amount and increase the longevity of future threshold increases. Also, further research into the amount of O&M funds being expended on improving degraded infrastructure in order to allow commanders to perform their missions would be beneficial to show the lack of priority the Department of the Navy (DON) places on debilitating infrastructure.

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APPENDIX A. CHAPTER 2 OF FACILITIES PROJECT INSTRUCTION, OPNAVINST 10010.20G

2. PROCEDURES FOR FACILITIES PROJECTS

2.1 GENERAL INFORMATION

2.1.1 Definitions

a. Contract Administration

Contract Administration is a service performed by COMNAVFACENGCOM as identified in NAVFACINST 7820.1J or other source, for example Defense Logistics Agency (DLA) or Fleet Industrial Supply Center (FISC), in administering and executing maintenance, repair, minor construction, and service contracts.

b. Funded Project Costs

Funded project costs are costs used to determine who holds approval authority for a facilities project. (See FMR Volume 3, Chapter 17, paragraph 170203.) Funded project costs for facilities projects include the following:

(1) Construction Equipment

Costs applicable to maintenance and operation of government-owned equipment used in the execution of a project or costs applicable to construction equipment rentals at contractor or government expense.

(2) Equipment

The cost of all built-in equipment (government or contractor furnished).

(3) Labor

Labor costs for in-house civilian employees are calculated based upon guidance in the FMR. When the work is accomplished by contract, include the labor component of all contract costs, except architectural and engineering (A&E) fees. Military labor is not a funded cost. See paragraph 2.1.1.k(2).

(4) Land

The cost of land for the proposed project is a funded cost only if acquired under the authority of 10 U.S.C. Section 2673.

(5) Material

The cost of direct material (government or contractor furnished) used in accomplishing the project.

(6) Overhead

That portion of installation operations or support that represents additional overhead costs and would not have been incurred were it not for the project. Contractor overhead and profit is a funded cost. Government Supervision, Inspection, and Overhead (SIOH) and contract administration as identified in NAVFACINST 7820.1J are funded costs. SIOH for O&MN and O&MNR projects is transferred from NAVCOMPT to COMNAVFACENGCOM for those projects. SIOH for MILCON projects is funded with each project.

(7) Project Design

Design/Build costs can include design, post construction award of A&E service (PCAS) and Operation and Maintenance, Support Information (OMSI) work.

(8) Surplus Stock

Cost of materials, supplies, and items of installed equipment obtained from surplus stocks within the Navy or Marine Corps. Pricing of the property must be equal to that charged by the surplus stock manager or at the estimated fair market value.

(9) Transportation

The costs applicable to transportation of materials, supplies, Class 2 equipment (see paragraphs 2.1.4 and 4.1.1.h) and government owned material and equipment. Projects accomplished by Naval Construction Forces (NCF) shall include these costs only when a deployment is intended for the sole purpose of accomplishing that particular project. The cost of transportation of materials transferred between supply offices is not included as a funded project cost.

(10) Travel

The cost of travel and per diem applicable to Seabee labor is a funded project cost only when a deployment is intended for the sole purpose of accomplishing that particular project.

c. Military Construction Project

Military Construction, as defined in 10 U.S.C. Section 2801, includes any construction, development, conversion, or extension of any kind carried out with respect to a military installation. MILCON includes construction projects for all types of buildings, roads, airfield pavements, and utility systems with a funded project cost greater than \$750,000. Planning, programming, and documentation requirements for MILCON projects are explained in Chapters 2 and 4.

d. Navy Working Capital Fund (NWCF)

NWCF is a revolving fund established to finance a cycle of operations to which reimbursements and collections are returned for reuse in such a manner as to maintain the principal of the fund. It is established to finance inventories of supplies or to provide working capital for industrial type installations.

e. Plant Replacement Value (PRV)

The Plant Replacement Value is the cost to construct a replacement facility to current building codes, design criteria, and materials. PRV is calculated using the size of the current facility, published DOD unit costs for that type of the local area cost factor, design, contingency, SIOH, and historic adjustment factor. Project documentation shall reflect the “PRV (at EOY)” field from the Internet Navy Facility Assets Data Store (iNFADS). See DOD Facilities Pricing Guide, UFC 3-701-FY and FMR Volume 3, Chapter 17, Appendix C, Attachment 2.

f. Project

A single planned undertaking of construction, repair, maintenance, or equipment installation, performed either separately or in combination, to satisfy a finite requirement of work.

g. Real Property Facility

A real property facility is a separate and individual building, structure, or other real property improvement assigned a 5-digit category code (DODINST 4165.3 and NAVFAC P-72). The 5-digit category code making up the largest floor area in the building is used as the category code for a multiple-use facility. All Real Property Facilities shall have a property record card in the Real

Property Inventory (RPI) of the Internet Navy Facility Assets Data Store (iNFADS).

h. Real Property Requirements Generators

After the stand-up of CNI, the eight former Installation Major Claimants (IMCs) became known as “Enterprise Claimants.” ASN (FM&C) has eliminated the use of the term Claimant. In this OPNAVINST, these commands will be referred to as Real Property Requirements Generators (RPRG). They are Commander, U.S. Atlantic Fleet (now Commander, Fleet Forces Command); Commander, U.S. Pacific Fleet; Commander, U.S. Naval Forces Europe; Commander, Naval Reserve Forces; Director, Field Support Activity; Commander, Naval Education and Training Command; Commander, Naval Sea Systems Command; and Commander, Naval Air Systems Command.

i. Special Project

A project whose funded cost exceeds the Regional Commander’s approval limits as specified in Appendix C, and in the case of construction projects, is below the Military Construction (MILCON) threshold for cost. Regional Commanders may set the approval limits of their installations at levels below those contained in this instruction.

j. Supervision, Inspection, and Overhead (SIOH)

These are funded costs charged by Naval Facilities Engineering Command (COMNAVFACENGCOM) for support associated with the administration of contracts for facilities projects. See NAVFACINST 7820.1J.

k. Unfunded Project Costs

Costs excluded when determining who holds approval authority for a facilities project. See FMR Volume 3, Chapter 17 for additional information. Unfunded project costs for facilities projects include the following:

(1) Depreciation

Costs applicable to the depreciation of government-owned equipment.

(2) Military labor

All costs financed from Military Personnel Appropriations. See also FMR Volume 11A, Chapter 1, paragraph 010203.B.1.

(3) Personal property

Items bought from appropriated funds (OPN, APN, O&MN, O&MNR, RDT&E), revolving funds (NWCF), or nonappropriated funds (NAF) for procurement. Class 3 and Class 4 plant property are defined in paragraph 2.1.4.

(4) Professional services

Cost associated with engineering services, (ex: soil boring, surveys, inspections, and various types of testing and analyses, and post construction award services (PCAS)).

(5) Project design

Costs associated with preparation of design plans and specifications (Architect and Engineering (A&E) contracts and in-house design and review costs) and costs to develop Operation and Maintenance Support Information (OMSI) products for specific projects. However, in design/build contracts, the cost of design is part of the project funded cost. The cost of preparing the design/build request for proposal (RFP) is an unfunded design cost. Costs to develop OMSI and electronic as-built deliverables after award of construction shall be project funded. For MILCON projects, the design does not pay for OMSI. OMSI is covered within the project construction cost.

(6) Surplus stock from outside the Navy or Marine Corps

Cost of materials, supplies, and items of installed equipment obtained for a project from sources outside the Navy or Marine Corps (ex: excess distributions from other government agencies).

2.1.2 Limits of Authority

Approval authority limits for facilities projects are listed in Appendix C. The dollar amounts listed are total funded project cost as discussed in paragraph 2.1.1.b.

2.1.3 Fund Sources

Facilities projects are financed from one of three broad categories of funding sources.

a. Appropriated Funds

Appropriated Funds are funds provided by Congress through specific legislation. Examples include MILCON appropriations, operations and maintenance (O&M) appropriations, and

appropriations for procurement such as Other Procurement, Navy (OPN) or Weapons Procurement, Navy (WPN).

b. Nonappropriated Funds (NAF)

NAF consist of cash, investment income, and/or other assets received from sources other than that appropriated by Congress. Examples include revenues generated from retail sales, services, or private funds received from non-government entities, and public funds from governments other than the United States of America.

c. Working Capital Funds

Working capital funds are generated locally through the sale of products and services (generally industrial). The predominant working capital fund in the Navy is the Navy Working Capital Fund (NWCF).

2.1.4 Classification of Government Property

When a facility requirement is identified, the government property must first be classified according to the classification of Government property. Government property includes all physical assets owned by the government. The Navy Comptroller (NAVCOMPT) Manual, which has been superseded by the DOD Financial Management Regulation (FMR), introduced the definitions of the four classes of plant property in Volume 3, Chapter 6. While the FMR Volume 4, Chapter 6 does not reference these definitions, they are still in use. The four classes of plant property (Navy-owned real property and personal property of a capital nature) are:

a. Class 1

Land is Class 1 property.

b. Class 2

Real property improvements to land are Class 2 property. Class 2 property can include improvements such as buildings, structures, ground improvement structures, and utilities located within a building or structure. Class 2 property also includes installed or “built-in” equipment (see paragraph 4.1.1.h).

c. Class 3

Personal property of a capital nature, other than industrial plant equipment, having an estimated fair market value or initial acquisition cost that meets or exceed the DOD capitalization threshold of \$100,000 is Class 3 property. (See FMR Volume 4, Chapter 6, paragraph 060103.)

d. Class 4

Industrial plant equipment (personal property) having an estimated fair market value or initial acquisition cost that meets or exceeds the DOD capitalization threshold or \$100,000 is Class 4 property. This equipment is generally used for cutting, abrading, grinding, shaping, forming, joining, testing, measuring, heating, treating, or otherwise altering the physical, electrical or chemical properties of materials. SECNAVINST 7320.10 establishes policies and procedures for personal property management that meet accounting and accountability requirements for personal property.

2.1.5 Classification of Work

The work associated with satisfying that requirements must be classified according to the four Classifications of Work. Once the classification of work is determined, the appropriate funding source for the requirement can be determined. The four Classifications of Work are:

a. Repair

Work to restore a real property facility, system, or component to such a condition that it may be effectively used for its designated functional purpose. (Reference 10 U.S.C. Section 2811) For additional information on Repair, see Chapter 3.

b. Construction

Work to build or expand a new facility, add to an existing facility, or alter an existing facility. For additional information on Construction, see Chapter 4.

c. Maintenance

Work to maintain an existing facility and existing facility components in their customary state of operating efficiency. For additional information on Maintenance, see Chapter 5.

d. Equipment Installation

Work to support the installation of an item of personal property in other than new real property facility. For additional information on Equipment Installation, see Chapter 6.

2.2 SPECIAL PROJECT DOCUMENTATION

Special Project documentation is a critical first step in the planning process with three principal objectives. First, documentation provides a clear methodology for addressing all aspects of the facilities requirement including operational, technical, financial, legal, environmental, and social. Second, documentation provides a vehicle for obtaining, when required, approval and/or funding. Third, documentation provides a record of what actions were taken to address a

particular facilities requirement and how those actions were funded. Detailed procedures for project documentation are discussed in the following sections.

2.2.1 Special Project Planning, Programming, and Budgeting

Planning and programming are administrative steps involving projecting requirements into the future and allocating resources to the highest priority needs. These actions are generally carried out at the local level for NWCF funded commands, and at the installation, Region, and CNI levels for mission funded commands. The purpose for these steps is to provide a mechanism for making investment decisions concerning real property assets.

2.2.2 Special Project Documentation Requirements

Documentation is required for all projects over \$500,000 (see Tables of Authorities in Appendix C). Dollar amounts are total funded project costs as discussed in paragraph 2.1.1.b. CNI or Regional Commanders may set lower cost thresholds to correspond to approval authority delegated to Installations. The project documentation needs to include discussion of the Classification of Work, Facility Investment SIC, and appropriation(s) or funding source. Note, the documentation requirements listed below do not apply to MILCON projects. Planning, programming, and documentation requirements for MILCON projects are discussed at the end of this Chapter and also in Chapter 4.

2.2.3 Special Project Documentation

a. The DD1391 is the primary format to document facilities projects. This form may also be used for those projects for which specific documentation requirements do not apply. Appendix D contains a sample DD1391 for a Special Project.

b. Supporting documentation in the form of attachments is required to the extent necessary to fully communicate the location, scope, complexity, cost, and urgency of the project. Common attachments include (but are not limited to) the following:

- (1) Brief Sheet
- (2) Vicinity Plan
- (3) Site Plan
- (4) Photographs
- (5) Detailed Cost Estimate

(6) Economic Analysis

(7) National Environmental Protection Act (NEPA) Documents

(8) Basic Facility Requirements (BFR), Facility Planning Document (FPD)

(9) Facility Data from Facility Readiness Evaluation System (FRES) and Internet Navy Facility Assets Data Store (iNFADS)

(10) Engineering Evaluation

2.2.4 Electronic Project Generator (EPG)

Special Project documentation will be submitted using the Electronic Project Generator (EPG) online at: <https://jersey-navfac.navy.mil/prd/epg.htm>. See Appendix D for a sample DD1391 and additional information on EPG.

2.2.5 Special Project Numbering and Project Titles

Each Special Project must be assigned an identification number. Each project identification number shall consist of a two-letter prefix followed by a five-digit number. These identification numbers are recorded on the DD 1391 and are used throughout the project's life. Project numbers are also used for updating key components of CNI's Facilities Investment Model (FIM), shown in Appendix C. Components of the FIM include the Facility Condition Assessment Program (FCAP), Facility Readiness Evaluation System (FRES), and the Internet Navy Facility Assets Data Store (iNFADS).

a. Regions shall assign project numbers and maintain an ongoing annual list to ensure that no two projects from each Region have the same five-digit project number, regardless of program year, Special Interest Code (SIC) or Classification of Work.

b. The two-letter prefix of the project identification number shall represent the Special Interest Code (SIC) indicating the project investment account as follows below. The two-letter prefix for projects with a combination of more than one investment type of work shall reflect the predominant type of investment work in the project, calculated by cost.

(1) "ST" for Sustainment

(2) “RM” for Restoration and Modernization (Recapitalization)

(3) “NF” for New Footprint

(4) “DE” for Demolition

c. Follow the two-letter prefix with a five-digit number. The first three digits of this number shall be assigned in numerical sequence, running consecutively as projects are identified within a fiscal year, regardless of the SIC or Classification of Work involved. The last two digits of the project identification number shall represent the fiscal year the project was identified. A dash (“-”) shall separate the first three digits from the last two digits.

d. Project identification numbers shall not be used to indicate project priority.

e. The project identification number will not change when the work is accomplished in phases. The project documentation must include the cost of each phase. The phase of the project should be reflected in the project title as “Phase I,” “Phase II,” etc.

f. Project titles must be specific; a vague or misleading title for a project may confuse reviewers. The title should specifically identify the facility function, building number, and the type of work to be done.

(1) Construction project titles shall include the terms addition, extension, alteration, restoration, replacement, and expansion, as appropriate.

(2) Titles for equipment installation projects shall use wording that indicates the work applies to installation of personal property, (ex: “Installation of Computer System, Building 43” or “Alterations and Equipment Installation of UPS, Building 21”).

(3) Repair project titles shall include the terms “repair” or “replace” as appropriate; avoid less specific terms such as “rehabilitation” or “renovation.”

4) Demolition and Consolidation project titles shall include the terms “demolish” or “consolidate” as appropriate.

g. Combination projects shall include in the title terms that highlight the major types of work being accomplished

h. Examples of project identification numbers are listed below:

(1) ST101-04, Repair Roof, Administration Building 162.

(2) NF102-04, Construct Addition to Warehouse Building 64.

(3) RM103-04, Replace HVAC, Administration Building 261

(4) DE104-04, Demolish 22 Buildings at NAVSTA

(5) DE105-04, Consolidate FISC to Building 44.

2.2.6 Special Project Scope

a. The Special Project scope is developed from the requirement to satisfy a facility deficiency or deficiencies. The project scope must include all work necessary to produce a complete and usable facility, or a complete and usable portion of a facility. Complete and usable is defined as having all necessary or normal parts, components, or steps, as well as being fit for the intended purpose of the facility or project.

b. Facilities Special Projects generally encompass a single real property facility. All work associated with meeting a requirement in a particular facility must be incorporated into the project scope.

(1) Where multiple projects are contemplated in a single real property facility, see paragraphs 3.2.2, 3.2.3, and 4.2.3.

(2) Where a requirement may involve work in more than one real property facility, see paragraphs 3.2.2 and 4.2.1.

c. Projects that repair or construct facilities that also require extensions to utility systems to be complete and usable must include these utility extensions as part of the project scope and cost.

d. Properly identifying the project scope is independent of the selected method(s) of accomplishing the work. If the selected

method of accomplishment is a construction contract, then appropriate consideration should be given to the proper scope of the contract. There is, however, no direct relationship between contract scope and project scope. Additional guidance on project scope can be found in paragraphs 3.2.2, 4.2, and Appendix D.

2.2.7 Special Project Justification

The project justification must clearly describe the requirement for the project in terms of impact to mission, life-cycle economics, health and safety situation, environmental compliance aspect, quality of life improvement, or some combination of the above. The project must include a verifiable cost estimate that correlates to the project description and scope. Project requirements for repair and maintenance should also list the Facility Readiness Evaluation System (FRES) Quality (Q) rating for the associated Facility Analysis Category (FAC). Projects with any minor construction work should state the FRES Quantity (N) rating.

2.2.8 Special Project Technical Solution

The proposed solution to a facilities requirement must withstand critical review by competent technical experts. Technical solutions should be responsive to all performance criteria and should address concerns for reliability, maintainability, constructability, and safety. When applicable, technical solutions must also address concerns for legal compliance, energy conservation, environmental compliance, and the use of unproven technologies. In all cases, the benefits resulting from the technical solution must be weighed against the cost through a formal or informal cost/benefit analysis.

2.2.9 Economic Analysis

a. A formal net present value life-cycle economic analysis is required for:

(1) All maintenance and repair projects with an estimated cost that is greater than \$500,000 and more than 50 percent of the facility plant replacement value (PRV).

(2) All repair projects with an estimated cost greater than \$2,000,000.

b. Maintenance dredging does not require an economic analysis.

c. If an economic analysis is required for your project, the Net Present Value (NPV) of each alternative considered must be included in Block 11 of the DD1391. The Office of Management

and Budget (OMB) publishes discount rates annually at www.whitehouse.gov/omb/circulars/index.html.

d. Guidelines and formats for preparing economic analyses are contained in the NAVFAC P-442. Results of analyses are to be summarized and listed on the DD 1391. Economic Analysis should be prepared using Army Corps of Engineers Econpack software.

2.2.10 Special Project Detailed Cost Estimate

a. Detailed cost estimates shall be accurately reflected in Block 9 of the DD1391. For combination projects, the cost estimate must identify the Classification of Work (repair, construction, maintenance, or equipment installation) and respective Special Interest Code (sustainment, restoration and modernization, new footprint, or demolition) for each line item or group of line items in the cost estimate.

b. The project cost estimate shall include separate line items for SIOH, contingency, and the design cost of a design/build project. Funded and unfunded project costs are discussed in paragraphs 2.1.1.b and 2.1.1.k.

c. Itemize specific quantities and unit costs for each item whenever possible, instead of using lump sum costs.

d. Identify separately all government furnished or installed equipment and materials that are funded costs.

e. Identify non-additive costs for design (Special Projects only, not MILCON) and equipment furnished by others.

f. Estimated costs must be based on current prices and escalated to the year proposed for project execution. The year should be clearly indicated on the DD1391.

g. When a project is phased, a cost estimate must be prepared for each phase. Combination projects that include minor construction must show the construction cost (including SIOH and contingency) in each phase to assure the \$750,000 minor construction threshold is not exceeded. This minor construction threshold applies to the project as a whole, the sum of all phases. See paragraph 2.5.4.

h. For real property projects outside the United States, the international balance of payment evaluation process required by

DODINST 7060.1 must be included in the cost estimate at the 35 percent design stage.

2.3 SPECIAL PROJECT SUBMISSION

2.3.1 Special Project Submission Process

Figure 2.1 illustrates the typical process flow for facilities Special Projects. This process balances the Navy's decentralized operation and maintenance of physical plant assets with appropriate Region and CNI oversight to ensure consistency and integrity. Figure 2.1 does not attempt to address the process flow for all projects under all circumstances, but rather provides a general framework for satisfying a facilities requirement from project documentation to execution. Regions can request the servicing Facilities Engineering Command (FEC) to conduct an independent technical review and endorsement of Special Projects. Regions should consult with CNI for specific submission requirements. Key steps in the process are discussed in the following paragraphs.

2.4 SPECIAL PROJECT VALIDATION

2.4.1 Special Project Regional Validation

a. The Regional Commander is responsible for the validity and accuracy of facilities Special Projects prepared for his or her plant account, including satisfying requirements for site approval such as explosive or airfield safety and seismic safety investigation. When required, the Regional Commander will forward project documentation to CNI for review and approval. The Regional Commander may delegate these responsibilities to the Regional Engineer. See the Tables of Authorities in Appendix C. Lower installation authority thresholds may be established at the discretion of the Regional Commander.

b. The Regional Commander will validate all Special Projects that meet the criteria listed below; dollar amounts are total funded project costs as discussed in paragraph 2.1.1.b.:

(1) Minor construction projects over \$500,000.

(2) Repair or specific maintenance projects over \$500,000 for O&MN or O&MNR funded work.

(3) Repair or specific maintenance projects over \$3,000,000 for NWCF or RDT&E funded work.

(4) Equipment installation projects over \$500,000.

(5) Combination projects (more than one Classification of Work) over \$500,000.

(6) Repair projects over \$500,000 and in excess of 50 percent of plant replacement value (PRV).

c. Prior to submitting projects to CNI, the Regional Commander should ensure the following:

(1) Proper classification of government property.

(2) Proper Classification of Work (i.e., maintenance, repair, construction, or equipment installation).

(3) Proper classification of Special Interest Code (SIC).

(4) Proper source of funds.

(5) Adequacy of technical solution.

(6) Completeness of scope and cost estimate.

(7) Adequacy of economic analysis (when required).

(8) Compliance with the Shore Facilities Planning System.

(9) Environmental compliance, environmental review (see OPNAVINST 5090.1), cultural resources compliance, and safety compliance.

(10) Proper site approval (as required).

d. For projects requiring additional approvals, the Regional Commander will prepare an endorsement and forward the project to the appropriate approval authority. Such endorsement can either be in the form of the Regional Engineer's signature on the DD1391 or an electronic signature in EPG. The Regional Commander shall approve valid projects requiring no further approvals, either by letter of approval to the submitting installation or by directly authorizing design and/or construction of the project. Alternatively, the project may be returned to the installation disapproved, or with comments and desired actions. The Regional

Engineer shall retain a copy of installation project documentation, correspondence, and project validations, approvals, and authorizations in the Region's project files for a minimum of 5 years.

e. Although project validation by NAVFAC Facilities Engineering Command (FEC) is not required, the Region may request the FEC to provide technical review of Special Projects. At the request of the respective Region or installation, the servicing FEC will assist the Regional Engineer and make recommendations concerning Special Projects with emphasis on the technical review. The FEC will forward their recommendations to the Regional Engineer or preparing installation as appropriate.

f. Projects involving restricted facilities, as discussed in paragraph 11.6, should be forwarded by the Region to the appropriate approval authority. g. Projects involving work classified as construction exceeding \$750,000 (including SIOH and contingency) follow a different process (see paragraph 2.10) since they are MILCON scope.

2.4.2 Commander, Navy Installations (CNI) Approval for Special Projects

a. Special Projects Exceeding Regional Engineer's Authority
Special Projects above the Regional Engineer's authority must receive approval by CNI N4 (SRM) or higher authority. The approval levels for approval of facilities projects are shown in the Table of Authorities in Appendix C.

b. Special Project Notifications
Projects will be documented, validated, and approved in accordance with paragraphs 2.2 and 2.4 of this instruction. An endorsement by CNI indicates the project has been validated and approved for funding at a specific funded cost level.

c. Special Project Cost Increases and Approvals
Cost increases due to changes at any time during execution are funded at the installation or regional level even if the project was originally centrally funded by CNI. If the increase in the construction portion of the Special Project cost is within 10 percent of the construction threshold (i.e., over \$675,000 including SIOH), then the project shall be submitted to CNI N4 (SRM) or higher authority for approval and should address any changes in scope, the reason for cost increase, and include an updated cost estimate in as much detail as required.

d. CNI Special Project Documentation Requirements

The CNI Special Project Checklist is included Appendix D for reference. This checklist is used by the CNI Program Manager to ensure all required documents have been submitted for each project.

2.4.3 Assistant Secretary of Navy (I&E) Approval for Special Projects

a. Delegation of Approval Authority

ASN (I&E) delegated approval authority to DASN (I&F) by Memorandum in May 1995.

b. Special Projects Exceeding \$5,000,000

In addition to the project validation discussed in the preceding paragraphs, repair projects exceeding \$5,000,000 must receive an additional review by OPNAV N46 via CNI N4 (SRM) and must be approved by DASN (I&F). Any repair project originally having a current working estimate (CWE) greater than \$4,900,000 or that may exceed \$5,000,000 (due to changes during execution) shall be submitted to OPNAV N46 via CNI N4 (SRM) and approved by DASN(I&F) prior to being granted authority to advertise (ATA) by CNI.

c. Special Project Notifications

Projects should be forwarded to OPNAV N46 with CNI endorsement. The project documentation and endorsement should indicate the fiscal year (or years in the case of “swing” or phased projects) in which the project will be funded.

d. Special Project Cost Increases over 25 Percent

Once approved by DASN (I&F) at a specific cost level, that amount may not be exceeded by more than 25 percent during execution without additional approval. CNI may approve within-scope cost increases if the project cost exceeds the original DASN (I&F) approved amount by up to 25 percent. Requests for increased authority over 25 percent must be submitted to DASN (I&F) via CNI. Installations, in coordination with the contracting office handling the construction contract, must advise the Region and CNI of pending changes which will result in exceeding the prior approved amount. The following supporting documents will expedite the process:

- (1) Endorsement letter from the Regional Engineer or electronic signature in EPG

(2) Revised DD1391 showing new funded cost and indicating the original approved amount, identifying work classifications, and including endorsement from NAVFAC

(3) Description and detailed estimate if necessary of new work items and justification for the increase

(4) New economic analysis using current discount rate

(5) Regions in coordination with the contracting agent handling the construction contract must advise OPNAV N46 via CNI N4 (SRM) of pending changes that will result in exceeding the prior approved amount.

e. Special Projects Cost Increases Exceeding \$7,500,000

Projects with a current working estimate (CWE) cost greater than \$7,000,000 or that may exceed \$7,500,000 (due to changes during execution) shall be submitted to OPNAV N46 via CNI N4 (SRM) for

Congressional notification to the Appropriations and Authorization Committees of Congress. The Congressional notification process must be completed before issuing the contract change order.

f. CNI Special Project Documentation Requirements

The CNI Special Project Checklist is included Appendix D for reference. This checklist is used by the CNI N4 (SRM) Program Manager to ensure all required documents have been submitted for each project. g. End of Year (EOY) Regions requesting DASN (I&F) project approval should submit completed documentation to OPNAV N46 via CNI N4 (SRM) no later than 15 July of each fiscal year to ensure sufficient review and approval time.

h. Appropriated and Nonappropriated Funded Minor Construction Projects

Projects that include minor construction and combine appropriated and nonappropriated funds (NAF) in a single undertaking must also be approved by ASN (I&E) and are discussed further in Chapter 12. These projects shall be submitted by OPNAV N46 via CNI N4 (SRM).

2.4.4 Congressional Notification for Special Projects

a. Background

Congressional Notification is a period of 21 calendar days in which Congress is given an opportunity to comment on the project. This is not an approval or disapproval, simply a notification. Installations and Regions must verify with CNI that the ASN (I&E) approval has been granted and the congressional notification phase is completed. No project shall be awarded until the ASN (I&E) approval and Congressional notification process is complete and the 21-day notification period has expired. (Reference: 10 U.S.C. Section 2811).

b. Special Project Notifications

In addition to the project validation discussed in the preceding paragraphs, DASN (I&F) shall submit a 21-day notification for any project estimate over \$7,500,000. Notifications will be made to the Appropriations and Authorization Committees.

c. Phased Special Projects

Phased projects shall consider the sum of all phases for Congressional notification threshold.

d. Special Projects Cost Increases Exceeding \$10,000,000

Special Projects awarded after the Congressional notification process has been completed with a total project cost greater than \$7,500,000 that may exceed \$10,000,000 (due to changes during execution) do not require additional notification to Congress. However, additional notifications will be made to Appropriations and Authorization Committees to advise them that the project cost will exceed \$10,000,000 and will reference the original Congressional notification. DASN (I&F) may require additional notifications as deemed appropriate. The installation shall forward a memo through the Region to CNI N4 (SRM) stating the current situation for this purpose.

e. Procedures

Projects that require Congressional notification will be forwarded to the Authorization and Appropriations Committees after DASN (I&F) approval. f. Pre-Award Considerations The contracting officer must have a commitment of funds prior to issuing a Request for Proposal (RFP). The contract cannot be awarded until after the 21-day Congressional notification period has expired.

2.5 SPECIAL PROJECT EXECUTION

2.5.1 Special Project Execution Options

Once approved and programmed for funding, a facilities Special Project may be executed. The execution agent may be the installation, the Region, the servicing FEC, or a special program sponsor. Options for accomplishing the work include using in-house shop forces, a construction contract, tasking a Base Operating Support (BOS) contractor, utilizing a turnkey contract, employing the Naval Construction Forces (NCF), applying self-help labor, or a combination of the above. Whichever option is selected, installations and Regions must continually balance workload, resources, and readiness to optimize the condition of their real property assets.

2.5.2 Execution Packaging for Special Projects

a. Installations and Regions are afforded maximum flexibility in packaging work for execution as necessary to enhance readiness and to take advantage of economies of scale. Work planned for execution by contract may, for example, be packaged in any of the following ways:

- (1) A single project accomplished with a single contract.
- (2) A single project accomplished with multiple contracts.
- (3) Multiple projects accomplished with a single contract.
- (4) Multiple projects accomplished with multiple contracts.

b. Decisions regarding execution packaging must be based on an understanding of the distinction between project scope and contract scope. Project scope is addressed in this instruction. Contract scope is addressed in the Federal Acquisition Regulation (FAR) and implementing directives.

2.5.3 Combination Special Projects

Combination projects consist of more than one Classification of Work or more than one Special Interest Code. They generally require special handling during execution because of funding concerns.

a. Classification of Work and Special Interest Code

Classification of Work and SIC shall be clearly delineated in Cost Estimate (Block 9 of DD1391), Description of Proposed Construction (Block 10 of DD1391), Scope (Block 11 of DD1391), and Detailed Cost Estimate (attached electronically in EPG) at a minimum.

b. Special Project Numbers

Project numbering will reflect the predominant Special Interest Code, calculated by majority of cost.

c. Execution Agents

Execution agent(s) shall be familiar with Classifications of Work as they pertain to the scope of work to be accomplished.

d. Split Funded Special Projects

Appropriations from more than one source, such as for equipment procurement and installation, shall follow applicable instructions.

e. Minor Construction Changes

CNI shall be notified of any increases in minor construction throughout the Construction contract from any type of appropriation.

f. Minor Construction Threshold

CNI N4 (SRM) shall be notified when the statutory limitation of minor construction is exceeded or is imminent. (See paragraph 2.4.2.c). Work on the Special Project shall cease.

2.5.4 Special Project Phasing

Large projects may be phased to ensure efficient use of available resources. Phasing is also possible in combination projects (i.e., projects with more than one Classification of Work). Regions and installations shall determine whether phasing is advantageous and cost effective. Projects shall not be phased for purposes of incrementation. See paragraphs 2.2.6, 2.2.10(g), and 3.2.3. Phasing requires approval of the entire project scope at a total cost for all phases of the project in advance. Incrementation is sub-dividing a project into smaller projects to avoid higher approval thresholds.

a. Phased Special Project Documentation

Phased projects shall be documented per paragraph 2.2. In addition, phased projects that include minor construction must show the construction cost in each phase and sum of construction costs to ensure that the \$750,000 minor construction threshold is not exceeded. Supporting documentation shall represent how phases are to be accomplished.

b. Special Project Scope

The entire project scope must be submitted for approval prior to funding of any individual phases. Each phase must be a complete and useable portion of the entire approved project. "Complete"

means having all necessary or normal parts, components, or steps. "Useable" means fit for use, convenient to use, or that which can be used.

c. Phased Special Project Validation

Phased projects shall be considered in their entirety with respect to project validation.

2.5.5 Self-Help

Department of Defense policy requires that real property projects must be accomplished through the most economic means available, consistent with military and statutory requirements. To support the morale and retention of Navy personnel, there is a continuing need to enhance the habitability of Bachelor Quarters and improve personnel support, welfare, and recreational facilities. A Self-Help Program can make such improvements using military personnel for maintenance, repair, alterations, and new construction. Additional guidance and responsibilities have been provided to all Navy commands for the development and use of local Self-Help Programs (see OPNAVINST 11000.8H).

2.6 MILITARY CONSTRUCTION PROJECTS

Military Construction (MILCON), as defined in 10 U.S.C. Section 2801, includes any construction, development, conversion, or extension of any kind carried out with respect to a military installation. MILCON includes construction projects for all types of buildings, facilities, roads, airfield pavements, and utility systems costing more than \$750,000. The Navy MILCON program objective is to provide quality facilities to support the Navy mission. A MILCON project includes all construction work necessary to produce a complete and usable facility or complete and usable improvement to an existing facility. Additionally, instances may occur when maintenance and repair work will be accomplished as MILCON as part of a large project.

2.6.1 MILCON Project Authority

Authority to carry out a MILCON project includes authority for surveys and site preparation, acquisition, conversion, rehabilitation, or installation of facilities; acquisition and installation of equipment and appurtenances integral to the project; acquisition and installation of supporting facilities (including utilities) and appurtenances incident to the project; and planning, supervision, administration, inspection, and overhead incident to the project.

2.6.2 Project Limitations

Each MILCON shall result in a complete and usable facility or improvement to a facility. Combining multiple facilities of different types into a single MILCON project is not recommended, except when each

project is in the same Facility Class (FC) and the required completion date of each facility necessitates programming all of the facilities in the same fiscal year.

2.7 MILCON PROGRAMMING

Programming is the process of developing and obtaining approval and funding for Military Construction (MILCON) Projects. The programming process for Military Construction Projects, Navy (MILCON) from the shore installation level to Navy Comptroller (FMB) is illustrated in Figure 2.2, MILCON Programming Process.

2.7.1 Shore Installation to Navy Comptroller

Shore installations identify, develop, and validate MILCON projects and submit their projects to their respective Regions. Each Region will prioritize their projects and submit to OPNAV N46/CNI N4 (MILCON) in an Integrated Priority List (IPL). After OPNAV N46/CNI N4 (MILCON) and NAVFAC staffs assess and score each project, a Draft MILCON Programming Board IPL is sent out to the Regions and Real Property Requirements Generators (RPRG) in preparation for the OPNAV N46/CNI MILCON Programming Board. Each region presents their respective

projects (program year and program year +1) at the OPNAV N46/CNI MILCON Programming Board. A Programming Board IPL is developed and sent to the Regional Engineers and RPRG Engineers for review. After obtaining feedback from Regional Engineers, a Pre-Final IPL is sent out to the Regional Commanders and Real Property Requirements Generators (RPRG) for review. Following their review, OPNAV N46/CNI N4 (MILCON) will provide the OPNAV N46/CNI MILCON IPL to OPNAV N4 who then submits the program to N8 then to the Navy Comptroller.

2.8 MILCON BUDGETING

The Budgeting process starts with the submission of the CNO program to the Navy Comptroller (FMB). FMB submits the Navy's Budget to OSD.

2.8.1 MILCON and Program Objective Memorandum Schedules

The Navy Comptroller (FMB) submits a biennial MILCON budget (two fiscal years at one time) to OSD and Congress each even numbered fiscal year. OSD reviews both years in detail and issues decisions on each. Congress, however, does not normally review the second year program, and therefore, that program is resubmitted by the Navy to OSD the next year as an amended program. OSD reviews the amended program, and after approval, it is submitted to Congress as part of the President's Budget (PB) for that respective year. Additionally, each even numbered year, a six-year MILCON program or Future Year Defense Program (FYDP) is developed for the Program Objective Memorandum (POM), which outlines the forces and resources proposed for the next six years.

Scheduling of these submittals is subject to change and guidance is provided annually by CNI.

2.8.2 Office of the Secretary of Defense Budget Review

The Navy submits the MILCON budget to OSD by facility category (such as operations and training facilities, maintenance and production facilities, research and development facilities, etc.). OSD reviews every project submitted and issues Program Budget Decisions (PBDs) that transmit their proposed decision on every project (approve, disapprove, revise, or defer to a future year). OSD provides reasons for their decisions. If the Navy is not satisfied with these decisions and a strong case can be made to rebut the proposed decision, a reclama is developed and submitted. OSD review and consideration of these reclamationas, along with senior level negotiations, determine the final PBD decision and ultimately the content and size of the MILCON program to be included in the President's Budget. The total Navy budget goes through a similar process. After approval by OMB and the President, the budget is submitted to Congress.

2.8.3 MILCON Congressional Review

The Secretary of Defense submits the MILCON portion (for all services and DOD Agencies) of the President's Budget to Congress in listings aggregated by country and state. The Secretary of Defense requests both authorization and appropriation from Congress.

2.8.4 MILCON Congressional Authorization

Authorization of MILCON projects is provided by the National Defense Authorization Act that includes authorization requests for other Defense accounts such as Procurement; Research, Development, Test and Evaluation; Operations and Maintenance; and Military Personnel. Normally, all projects that comprise the MILCON total obligation authority are included in the authorization request. However, items authorized in a prior year for which only appropriation is being requested are not included in the authorization request. They are included in the appropriation request only.

2.8.5 Armed Services Committees

The House and Senate Armed Services Committees review the MILCON authorization request and hold hearings attended by witnesses from each service. These two committees then issue reports detailing their recommendations. The full House and Senate then act on the committees' recommendations and each pass its own version of the authorization program (referred to as committee marks).

2.8.6 Congressional Authorization Conference Actions

Differences between the House and Senate versions are resolved by a conference of the Armed Services Conference Committee that also issues a report that shows how the differences were resolved. Congress then passes the authorization program approved by the conference that becomes the authorization act. After the President signs the act, it becomes law (National Defense Authorization Act).

2.8.7 MILCON Authorization Expirations

If no obligation is made for a project within three years after an authorization act becomes law, the authorization for that project will expire, unless an authorization extension is included in the authorization act passed before the end of the third year. Navy Regions shall submit requests for extensions to OPNAV N46/CNI N4 (MILCON) via NAVFAC describing the circumstances that prevented obligation. OPNAV N46/CNI N4 (MILCON) will validate the request and ask OSD, through FMB, to include requests for the extension in the authorization bill submitted to Congress.

2.8.8 MILCON Congressional Appropriation

The Secretary of Defense requests, for all services, appropriations for all items in the MILCON total obligation authority. The MILCON appropriation is a separate bill from all other DOD appropriations. The House and Senate Appropriations Committees follow the same procedure outlined for the Armed Services Committees in reviewing the appropriation request. After the President signs the Appropriations Bill, which includes Military Construction, it becomes law. MILCON funds are normally available for obligation for five years. At the end of the five years, the MILCON appropriations expire. From time to time, general reductions and rescissions reduce funds available in prior years. Supplemental Appropriations are discussed in Section 4.4.

2.8.9 MILCON Incremental Appropriations

Generally MILCON projects greater than \$50,000,000 will be programmed for incremented appropriation amounts. The project will receive full authorization during the programmed year and will be appropriated for the amount of expected expenditure in the program year (typically no more than \$50,000,000 per year) and outyears. The project will keep the same P number coded alpha-numerically (A,B,C) for the follow-on increments in the program years +1, +2 , +3. The project title will include Project Description and INC I of XX (# of increments). Individually, incremented MILCON appropriations do not produce complete and useable facilities, but rather in aggregate produce a complete and useable facility.

2.9 MILCON PROJECT DEVELOPMENT

2.9.1 Advanced Planning for Military Construction Projects

The Military Construction Codification Act, Report of the Committee on Armed Services, dated 17 June 1982, addresses Architectural and Engineering Services and Construction Design. The Act authorizes the Navy to carry out architectural and engineering services and construction design for any military construction project or land acquisition project using appropriated military construction funds. It permits the use also of such appropriations for construction management of projects that are funded by foreign governments for which funds would not be available for the normal United States oversight functions of design review and supervision and inspection of construction including associated overhead costs. It is not intended that functions related to the planning process be performed under the authority of this section. Advance planning functions are: (1)

developing the requirement for a military construction project, (2) developing a master plan for an installation, (3) alternative site studies, (4) developing and validating military construction project documentation prior to commencing project design, (5) preparing engineering analyses and studies to develop technical design parameters, and (6) preparing environmental impact assessments and statements. Planning should be funded from funds available in the operations and maintenance (O&MN, O&MNR, NWCF, RDT&E) accounts. 2.9.2 MILCON Team Planning and Programming Process (MTP3) The project development process for Military Construction Projects (MILCON) is called the MILCON Team Planning and Programming Process (MTP3). Project development is one of the most important actions in MILCON programming and is documented using a DD Form 1391. The MTP3 guidance provides specific details of DD1391 preparations with respect to the submission timeline and level of review. The DD Form 1391, by itself, shall explain and justify the project to all levels of the Navy, OSD, OMB and Congress. Justification data shall clearly describe the impact on mission, people, productivity, life-cycle cost, etc., if the project is not accomplished. This process is explained in detail in the paper “MILCON Team Planning and Programming (MTP3) Guidance which is available at the website, <http://navfacilitator.navfac.navy.mil/mcn/progdir.htm>. Also available at this website is a MILCON checklist and a DD1391 example developed for the use of MILCON teams in the MTP3 process.

2.9.3 Electronic Project Generator (EPG)

The Electronic Project Generator (EPG) will be used for all DD1391 preparation, routing, and review by Navy and Marine Corps installations worldwide, Real Property Requirements Generators (RPRG), the Marine Corps, Regional Commands, OPNAV, CNI, and Naval Facilities Engineering Command (NAVFAC). EPG is available for registered users at <http://jersey-3.navfac.navy.mil/prd/epg.htm>.

2.9.4 Integrated Priority List (IPL)

Each installation will submit DD1391's to their respective regions. Regions are required to submit their Integrated Priority List (IPL) and Requirements List (RL) via the web-based application Internet Navy Facility Assets Data Store (iNFADS), located at website <https://jersey3.navfac.navy.mil/prd/nfa.htm>. A user manual is available in the IPL/RL guide at the website <http://navfacilitator.navfac.navy.mil/mcn/progdir.htm>.

2.10 MILCON PROJECT VALIDATION

Each project is reviewed and validated at each tier as indicated in Section 2.7. Prior to release of construction funds, the cognizant NAVFAC office is responsible for obtaining a certification from the Installation Commander that the project is still a valid requirement.

2.10.1 Installation Validation of MILCON Projects

The installation Commanding Officer and Real Property Requirements Generators (RPRG) (if applicable) are responsible for the validity and accuracy of facilities projects prepared for his or her plant account, including satisfying requirements for site approval such as explosive or airfield safety and seismic safety investigation (see NAVFACINST 11012.145). At the request of the installation or region, the servicing FEC will provide assistance in preparation of 1391 documentation. The Installation Commander will forward project documentation to the Regional

Commander for review and approval. The Regional Commander may delegate his/her responsibilities to the Regional Engineer. Submission of the Activity 1391 to the Region via EPG is considered the Installation's validation of the requirement.

2.10.2 Regional Validation of MILCON Projects

a. The Regional Commander will validate all MILCON projects by verifying the requirements that create the need for the proposed projects and confirming that proposed projects are the most cost effective means of satisfying the requirements. Regions will ensure that all alternatives have been exhausted prior to submission of a MILCON project. Regional Commanders shall prioritize their installations' MILCON facility requirements. Regional Commanders shall also take into consideration Real Property Requirements Generators' (RPRG) priorities in development of their region's MILCON priorities (Integrated Priority List). Submission of Region's Integrated Priority List to OPNAV N46/CNI N4 (MILCON) through the Internet Navy Facilities Data Store (iNFADS) is the Regional Commanders' requirement

validation. NAVFAC FEC's will validate technical requirements of projects through submission of EFD 1391 to NAVFAC HQ and OPNAV N46/CNI N4 (MILCON) through Electronic Project Generator (EPG).

2.11 MILCON PROJECT EXECUTION

After the President signs the Appropriations Act which includes Military Construction, the funding is made available for execution. Naval Facilities Engineering Command will coordinate the execution of most Navy Military Construction Projects. NAVFAC will develop and execute an Acquisition Strategy for each project. In certain cases, the U.S. Army Corps of Engineers may be the construction agent for Navy Military Construction projects. See DOD Directive 4270.5 for additional information.

2.12 SCOPE CHANGES ON PROJECTS AUTHORIZED BY CONGRESS

2.12.1 Definition of MILCON Project Scope:

a. The scope of an individual project is defined by the following, in order of precedence:

(1) Public Law

(2) Comments contained in committee reports

(3) Military Construction Project Data, DD Form 1391, certified "as enacted" by NAVFAC MILCON

(4) Military Construction Project Data, DD Form 1391, presented to Congress as justification for each project

(5) Testimony before the Congressional committees

(6) Witness data, if applicable, prepared for use during Congressional hearings, or

(7) Documents contained in NAVFACENGCOM files which describe the content, intent, and cost estimate for the project at the time of submission to Congress.

b. For the purposes of “Scope Variation” the term “scope” designates the major quantitative unit of measure of the primary facility of a project, such as 10,000 SF administrative building. While major emphasis must be placed on monitoring the scope of the primary facility, it is also necessary to maintain control of the supporting facilities since they often contribute significantly to the total cost of a project.

2.12.2 General Principle

The general principle for evaluating requests for project scope changes is based the Navy’s intent at the time the project was presented to Congress. Although project scope changes may be necessary and desirable on occasion, these changes can only be accommodated when consistent with the original intent of Navy, Office of the Secretary of Defense (OSD), and Congress.

2.12.3 MILCON Project Scope Changes

All changes to the scope of a MILCON project must first be approved by OPNAV N46, CNI N4 (MILCON), and NAVFAC MILCON.

a. MILCON Project Scope Decreases

(1) A reduction in the Congressionally approved scope of a project may be necessitated by funding limitations or may be desired due to a change in requirements or mission. However, before any scope reduction can be approved, two basic requirements must be met. First, the reduced scope must still provide a functionally complete and usable facility. If a proposed scope reduction will require follow-on authorization to provide a complete and usable facility, it will not normally be approved. Secondly, it is mandatory that the reduced scope still meet the original intent of the project as approved by Congress. A facility that will not perform the basic function that Congress approved shall not be constructed.

(2) A report of the facts relating to the scope reduction must be submitted to Congress prior to award if the proposed change will reduce the approved scope of the project by more than 25

percent, or Congress has otherwise mandated the scope.

(3) Proposed scope changes that meet the above criteria must be submitted to the Congress per the requirements of 10 U.S.C. Section 2853 (10 U.S.C. Section 18233a for MCNR) regardless of the reason for the scope reduction. The 21-day notification period is still required before construction at this reduced scope may proceed.

(4) Scope reduction on projects for which the primary facility scope is defined as “lump sum” or for which the primary facility scope is otherwise difficult to quantify shall be submitted to NAVFAC MILCON for review and approval.

(5) To ensure a construction contract award within the dollar availability, NAVFAC FEC’s may adjust the scope of a contract to provide for a base bid item and one or more additive bid items. The base bid item must provide a complete and usable facility within the original intent of the project, should have user concurrence, and the scope must not be reduced in excess of 25 percent. The FEC is authorized to proceed with scope reductions that are consistent with this policy.

b. MILCON Project Scope Increase

(1) The Navy has no authority under law to increase the scope of a project after enactment. However, modification or “redefinition” of scope may be considered under the following circumstances provided it is considered within the intent of the enacted scope:

(a) Planning, design, or construction deficiencies uncovered after the project was approved by Congress require corrective action in order to provide a complete and useable facility

(b) Changes are necessary to conform to a revised external requirement, (ex: laws,

environmental permit requirements, building codes, or criteria revisions related to safety and adequacy), or

(c) Changes in methods or technology disclose a superior means of accomplishment that logic or economics indicate should be adopted.

(2) OPNAV N46/CNI N4 (MILCON) and NAVFAC MILCON must approve redefinition of primary facility scope. Changes to supporting utilities and roads may be made by the FEC within budgetary limits, providing there is no change in the basic concept of the supporting utilities and roads and there is no change in scope or concept of the primary facility. Any other changes to supporting facilities must be submitted to OPNAV N46/CNI N4 (MILCON) and NAVFAC MILCON for approval.

c. A request must be submitted to OPNAV N46/CNI N4 (MILCON) and NAVFAC MILCON whenever a scope decrease in excess of 25 percent or any scope redefinition is recognized except as previously noted with regard to supporting facilities.

d. When the redefinition of scope causes an increase in the project cost by 25 percent, reprogramming and cost variation procedures must be followed.

2.13 MILCON REPROGRAMMING AND COST VARIATION PROVISIONS

2.13.1 MILCON Project Reprogramming

The Services are required to obtain Congressional House and Senate Appropriations Committees (HAC & SAC) approval prior to exceeding the project's appropriated amount (reprogramming base) by more than the lesser of 25 percent or \$2,000,000 based on the total funding requirements. Approval is obtained through a formal reprogramming request to the HAC and SAC that requires processing through NAVFAC, OPNAV N46/CNI N4 (MILCON), NAVCOMPT, and OSD (COMPT). This reprogramming procedure is in addition to the Cost Variation procedure that is required by 10 U.S.C Section 2853 if the cost increase exceeds the lesser of 25 percent or \$3,000,000, and may be in addition to a Scope Variation procedure. See FMR Volume 3, Chapter 7. Reprogramming approval requires a written

response by the Appropriation Committees, not just expiration of a waiting period. Courtesy notifications to the HASC and SASC are also required for any reprogramming request for which a Cost Variation is not required (i.e., below cost variation threshold). A description of the cost problem should be forwarded to NAVFAC MILCON for a case-specific reprogramming determination. Reprogramming may not be required in the following instances:

- a. Completing a project in its entirety with expired funds may not require reprogramming. Project cost increases are only allowable for valid upward price adjustments which exclude any work not in the scope of the original contract.
- b. Cost increase above threshold is due solely to the final resolution of a contractor claim.
- c. Cost increase above threshold is due solely to the excess cost attributable to a procurement contract. The basis for not reprogramming is based upon ultimate anticipated recovery from surety. The reprogramming process is not available to initiate a new project or to fund a project that was denied appropriation in the Congressional budget cycle. The only exception is for projects qualifying under authority for Exceptional Construction, including Unspecified Minor Construction (UMC), Emergency Construction and Restoration of Damage or Destroyed Facilities projects, and Contingency Construction projects. Other exceptions are made for urgent land acquisition per 10 U.S.C. Section 2672a or for new Reserve component projects when the requirement was not known in time to be included in the annual budget submission.

2.13.2 MILCON Project Escalation (below threshold reprogramming)

When projects are increased above the appropriated amount but less than the reprogramming threshold, the action is referred to as a below threshold reprogramming or “escalation.” The authority to approve below threshold escalations is given to SECNAV per 10 U.S.C. Section 2852 (10 U.S.C. Section 18233a for MCNR) and further delegated to NAVFAC.

2.13.3 MILCON Project Cost Variation 10 U.S.C. Section 2853 (10 U.S.C. Section 18233a for MCNR) requires approval in writing from the Service Secretary and notification to the Congressional Committees when increasing a MILCON project funding amount above the appropriated amount by more than the lesser of 25 percent or \$3,000,000 based on the total funding requirement. The Congressional criteria for evaluating the need to increase a project funding amount above this limitation are: (1) it must be required for the sole purpose of meeting unusual variation in cost,

and (2) it could not have been reasonably anticipated at the time the project was originally approved by Congress. Cost Variations for the purpose of accommodating scope increases will not be approved.

a. MILCON Project Cost Variation

Project cost increases exceeding the lesser of 25 percent above the appropriated amount or \$3,000,000 (for other than within-scope change orders to a contract or final settlement of a contractor claim) require NAVFAC, OPNAV N46/CNI N4 (MILCON), and SECNAV approval, Congressional notification, and expiration of a 21-day waiting period.

b. MILCON Project Cost Notification

NAVFAC approval, OPNAV N46/CNI N4 (MILCON) approval, and Congressional notification (no waiting period) are required in the following instances after a contract for a project has been awarded:

(1) Project cost increases exceeding the lesser of 25 percent above the appropriated amount or \$3,000,000 for within-scope change orders to a contract

(2) Final settlement of a contractor claim

(3) Reprocurement

(4) Project completed in its entirety with expired funds. Cost Notification procedures do not apply to MCNR projects. MCNR is not appropriated by individual project. Therefore, the cost variation provisions apply to the appropriation in its entirety and not to an individual project. Reprogramming limits do apply to individual MNCR projects in the same manner as MILCON.

c. Subsequent MILCON Project Cost Increases

Once a project has been given Congressional approval to exceed the cost increase limits in 10 U.S.C., additional Cost Variation/Notification requests may or may not be required for further increases. All such cases must be directed to NAVFAC MILCON who will make the final determination and seek appropriate approvals.

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APPENDIX B. ANALYSIS OF INDUSTRY CONSTRUCTION COST INDICES

INDEX/ INDEX TYPE	DESCRIPTION	GEO- GRAPHIC COMPO- NENTS	COMPONENTS OF HISTORICAL (ACTUAL) INDEX	COMPONENTS OF PREDICTIVE INDEX
Engineering News Record Building Cost Index (ENR BCI)	The ENR BCI is a weighted aggregate index of the prices of constant quantities of structural steel, portland cement, lumber and common labor. The labor component is the average union wage rate, plus fringes, for carpenters, bricklayers and structural ironworkers. The baseline is a cost of \$100 for this package of construction items in 1913. The costs are derived from 20 US cities, and are quoted from the same suppliers each month.	The ENR BCI is developed from the average cost of materials and labor from 20 US cities.	68.38 hours of skilled labor at the 20-city average of bricklayers, carpenters and structural ironworkers rates, plus fringes	ENR incorporates the new wage rates for multiyear, collective-bargaining agreements and estimates for areas where new contract terms will be negotiated
General Purpose Index			25 cwt of fabricated channel beams, I-beams and wide-flanges at the 20-city price	ENR estimates the materials component by studying consumption forecasts and price trends
			1.128 tons of portland cement at the 20-city price	
			1,088 board ft of 2X4 lumber at the 20-city price	
Turner Building Cost Index (Turner BCI)	Turner issues a quarterly cost index, which they term a "forecast", but in reality is more a historical reporting index. The "forecast" is issued 2 months into the current quarter being forecast, therefore, providing historical data only. The index is widely used by the construction industry and Federal and State governments. Turner has issued these quarterly forecasts for more than 75 years.	Turner gets data from their offices located in 39 different cities in the US.	The index is determined by several factors considered on a nationwide basis- labor rates and productivity, material prices and the competitive condition of the marketplace.	N/A. Historical Index Only
Selling Price Index				

Source: Office of the Secretary of Defense (2008, A-1).

INDEX/ INDEX TYPE	DESCRIPTION	GEO- GRAPHIC COMPO- NENTS	COMPONENTS OF HISTORICAL (ACTUAL) INDEX	COMPONENTS OF PREDICTIVE INDEX
Boeckh: Commercial / Manufacturing Index Valuation Index	The E.H. Boeckh and Marshall & Swift companies merged in 2000 to form Marshall & Swift/Boeckh (MS/B). Even after the merger, the company still issues two separate valuation indices: the Boeckh Commercial/Manufacturing index, and the M&S Industrial index. Data for both indexes come from over 2,700 zip codes in the US, hundreds of material and labor prices, and data from the Bureau of Labor Statistics.	The index covers 213 cities throughout the US and 53 cities in Canada.	The index covers 11 building types in each of the 213 cities. The index has costs for 115 elements in each location – 19 building trades, 89 materials and 7 tax and insurance elements. Boeckh researches both union and merit shop wage rates, and the indices utilize the prevailing wage for a specific location.	N/A. Historical Index Only
Marshall & Swift: Industrial Index Valuation Index	The E.H. Boeckh and Marshall & Swift companies merged in 2000 to form Marshall & Swift/Boeckh (MS/B). Even after the merger, the company still issues two separate valuation indices: the Boeckh Commercial/Manufacturing index, and the M&S Industrial index. Data for both indexes come from over 2,700 zip codes in the US, hundreds of material and labor prices, and data from the Bureau of Labor Statistics.	The index averages costs over 100 US cities.	The index is an average of 100 US cities that M&S combines into various regional, district and national indices. These basic indices can be further divided into 5 building types: fire-proofed steel, reinforced concrete, masonry, wood and pre-engineered steel frames. Selected materials, labor rates, taxes, business factors, as well as the cost of construction funds, are factored into the indices.	N/A. Historical Index Only

Source: Office of the Secretary of Defense (2008, A-2).

INDEX/ INDEX TYPE	DESCRIPTION	GEO- GRAPHIC COMPO- NENTS	COMPONENTS OF HISTORICAL (ACTUAL) INDEX	COMPONENTS OF PREDICTIVE INDEX
RSMeans Index General Purpose Index	To create this General Purpose Index, RSMeans used the nine most constructed building types to create a composite model. The various material, labor and equipment rental rates are combined to form a composite building representing as closely as possible the actual usage of materials, labor and equipment used in the North American Building Construction Industry. All costs are updated for each city on a quarterly basis. Material and equipment price quotations are gathered quarterly from 316 cities in the US and Canada and reflect the latest negotiated labor wage rates for 21 different building trades.	The RSMeans Index averages the costs of the building model over 30 US cities, however, they collect material and price quotations from 316 cities in the US and Canada.	The index is based on pricing a building model made up of 9 of the most constructed commercial building types. This model is priced quarterly based on 66 materials, 21 trades and specific days of equipment rental for 6 types of construction equipment used to install the 66 materials by the 21 trades. Each of these components is priced in 30 US cities, getting quotes from 3 different supplies from each city and averaging the cost. Labor component is derived from a database of union wage rates or Davis-Bacon rates for the 21 most common trades.	N/A. Historical Index Only. RSMeans' parent company, Reed Construction Data, may produce an annual forecast, but we were unable to obtain this data during the study timeframe.

Source: Office of the Secretary of Defense (2008, A-3).

INDEX/ INDEX TYPE	DESCRIPTION	GEO- GRAPHIC COMPO- NENTS	COMPONENTS OF HISTORICAL (ACTUAL) INDEX	COMPONENTS OF PREDICTIVE INDEX
Factory Mutual: Industrial Index General Purpose Index	As one of the world's largest commercial and industrial property insurance and risk management organizations specializing in property protection, FM has an extensive database of construction cost information which they utilize to build their historical and predictive cost indices.	The FM Industrial Index is the average of 164 locations in the US.	The FM Industrial Index is a weighted aggregate cost index based on the wage rates of eight trades and costs of seven materials. The weight of these factors in the index is derived from an analysis of construction inputs to five typical industrial buildings, ranging from a single-story, steel framed warehouse to a multistory, reinforced-concrete building.	N/A. Historical Index Only
Rider Levett Bucknall Comparative Cost Index (RLB CCI) Selling Price Index	RLB provides a quarterly look at the comparative cost of construction in 12 US cities, indexing them to show how costs are changing in each city in particular, and against the costs in the other 11 locations. Their CCI tracks the true bid cost of construction.	The CCI locations include: Boston, MA; Denver, CO; Honolulu, HI; Las Vegas, NV; Los Angeles, CA; New York, NY; Orlando, FL; Phoenix, AZ; Portland, OR; San Francisco, CA; Seattle, WA; and Washington, DC.	The index includes labor and material costs for the typical 16 trades found in most construction contracts in a 12-city data set. General Contractor and subcontractor overhead costs and fees (profit) are also included. All applicable sales or use taxes on typical construction contracts are considered as well.	The RLB forecast does not provide quantitative data from which to compare against the historical reporting of the index. The forecast is a general narrative of anticipated economic conditions and their effect, in general, on construction cost prices in the upcoming year.

Source: Office of the Secretary of Defense (2008, A-5).

INDEX/ INDEX TYPE	DESCRIPTION	GEO- GRAPHIC COMPO- NENTS	COMPONENTS OF HISTORICAL (ACTUAL) INDEX	COMPONENTS OF PREDICTIVE INDEX
Saylor Consulting Group (formerly Lee Saylor Inc.) Material/Labor Index General Purpose Index	The Labor-Material Index, which weighs labor and materials at 54% and 46%, respectively. The index can be broken out by concrete, steel, and wood frame construction. This index is a good predictor of pricing over the long term, but cannot address rapid change over short periods of time.	The labor portion of the Labor-Material Index is an average of 16 US cities. The materials component of the index is the average over 20 US cities.	The labor factor is based on quotes for 9 trades (carpenters, bricklayers, iron workers, laborers, operating engineers, plasterers, plumbers, electricians, and teamsters) in 16 cities. The materials factor reflects 23 materials in 20 cities.	The Labor-Material Index weighs labor at 54% and materials at 46%. The labor factor is based on quotes for 9 trades in 16 cities. The materials factor reflects 23 materials in 20 cities. The index can be broken out by concrete, steel, and wood frame construction.
Saylor Consulting Group (formerly Lee Saylor Inc.) Subcontractor Index Selling Price Index	The Subcontractor Index expresses an unweighted composite of in-place unit prices for 21 materials. This index provides a faster moving index of "real" world costs.	The index tracks installed prices from a 12 US city data set.	The Subcontractor Index expresses an unweighted composite of in-place unit prices for 21 materials: acoustic tile, brick veneer, ceramic tile, copper tubing, ductwork, flooring, glass, glu-lam beams, GWB, insulation, metal roof deck, paint, piles, plywood deck, BUR, reinforcing steel, structural steel, stucco, VCT, wiring, and wood studs.	The Subcontractor Index expresses an unweighted composite of in-place unit prices for 21 materials: acoustic tile, brick veneer, ceramic tile, copper tubing, ductwork, flooring, glass, glu-lam beams, GWB, insulation, metal roof deck, paint, piles, plywood deck, BUR, reinforcing steel, structural steel, stucco, VCT, wiring, and wood studs.

Source: Office of the Secretary of Defense (2008, A-6).

INDEX/ INDEX TYPE	DESCRIPTION	GEO- GRAPHIC COMPO- NENTS	COMPONENTS OF HISTORICAL (ACTUAL) INDEX	COMPONENTS OF PREDICTIVE INDEX
Bureau of Reclamation (BuRec) Construction Cost Trends (CCT) Index General Purpose Index	The Bureau of Reclamation publishes construction cost indices for 34 types of projects including dams, pumping plants, powerplants, pipelines, canals, tunnels, distribution/lateral pipelines and transmission lines, roads, bridges, and general property (offices and maintenance buildings associated w/ BuRec projects). The index profiled here is the general property index. The indices were originally developed based on the actual data from the substantial amount of construction work performed by the Bureau, however, a significant decline in projects necessitated the creation of cost models consisting of appropriate labor, equipment, and materials as the principal costs reference in lieu of actual field data. The data for the models is extracted from PPI, ENR, and Price Trends for Federal-Aid Highway Construction.	BuRec pulled their data from actual construction projects under their jurisdiction in 17 states: AZ, CA, CO, ID, KS, MT, NE, NV, NM, ND, OK, OR, SD, TX, UT, WA and WY.	The BuRec indices all consist of two elements: contractor labor and equipment costs, and contractor supplied materials and equipment.	N/A. Historical Index Only

Source: Office of the Secretary of Defense (2008, A-7).

APPENDIX C. CPI HISTORY TABLE

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1913	9.8	9.8	9.8	9.8	9.7	9.8	9.9	9.9	10.0	10.0	10.1	10.0
1914	10.0	9.9	9.9	9.8	9.9	9.9	10.0	10.2	10.2	10.1	10.2	10.1
1915	10.1	10.0	9.9	10.0	10.1	10.1	10.1	10.1	10.1	10.2	10.3	10.3
1916	10.4	10.4	10.5	10.6	10.7	10.8	10.8	10.9	11.1	11.3	11.5	11.6
1917	11.7	12.0	12.0	12.6	12.8	13.0	12.8	13.0	13.3	13.5	13.5	13.7
1918	14.0	14.1	14.0	14.2	14.5	14.7	15.1	15.4	15.7	16.0	16.3	16.5
1919	16.5	16.2	16.4	16.7	16.9	16.9	17.4	17.7	17.8	18.1	18.5	18.9
1920	19.3	19.5	19.7	20.3	20.6	20.9	20.8	20.3	20.0	19.9	19.8	19.4
1921	19.0	18.4	18.3	18.1	17.7	17.6	17.7	17.7	17.5	17.5	17.4	17.3
1922	16.9	16.9	16.7	16.7	16.7	16.7	16.8	16.6	16.6	16.7	16.8	16.9
1923	16.8	16.8	16.8	16.9	16.9	17.0	17.2	17.1	17.2	17.3	17.3	17.3
1924	17.3	17.2	17.1	17.0	17.0	17.0	17.1	17.0	17.1	17.2	17.2	17.3
1925	17.3	17.2	17.3	17.2	17.3	17.5	17.7	17.7	17.7	17.7	18.0	17.9
1926	17.9	17.9	17.8	17.9	17.8	17.7	17.5	17.4	17.5	17.6	17.7	17.7
1927	17.5	17.4	17.3	17.3	17.4	17.6	17.3	17.2	17.3	17.4	17.3	17.3
1928	17.3	17.1	17.1	17.1	17.2	17.1	17.1	17.1	17.3	17.2	17.2	17.1
1929	17.1	17.1	17.0	16.9	17.0	17.1	17.3	17.3	17.3	17.3	17.3	17.2
1930	17.1	17.0	16.9	17.0	16.9	16.8	16.6	16.5	16.6	16.5	16.4	16.1
1931	15.9	15.7	15.6	15.5	15.3	15.1	15.1	15.1	15.0	14.9	14.7	14.6
1932	14.3	14.1	14.0	13.9	13.7	13.6	13.6	13.5	13.4	13.3	13.2	13.1
1933	12.9	12.7	12.6	12.6	12.6	12.7	13.1	13.2	13.2	13.2	13.2	13.2
1934	13.2	13.3	13.3	13.3	13.3	13.4	13.4	13.4	13.6	13.5	13.5	13.4
1935	13.6	13.7	13.7	13.8	13.8	13.7	13.7	13.7	13.7	13.7	13.8	13.8
1936	13.8	13.8	13.7	13.7	13.7	13.8	13.9	14.0	14.0	14.0	14.0	14.0
1937	14.1	14.1	14.2	14.3	14.4	14.4	14.5	14.5	14.6	14.6	14.5	14.4
1938	14.2	14.1	14.1	14.2	14.1	14.1	14.1	14.1	14.1	14.0	14.0	14.0
1939	14.0	13.9	13.9	13.8	13.8	13.8	13.8	13.8	14.1	14.0	14.0	14.0
1940	13.9	14.0	14.0	14.0	14.0	14.1	14.0	14.0	14.0	14.0	14.0	14.1
1941	14.1	14.1	14.2	14.3	14.4	14.7	14.7	14.9	15.1	15.3	15.4	15.5
1942	15.7	15.8	16.0	16.1	16.3	16.3	16.4	16.5	16.5	16.7	16.8	16.9
1943	16.9	16.9	17.2	17.4	17.5	17.5	17.4	17.3	17.4	17.4	17.4	17.4
1944	17.4	17.4	17.4	17.5	17.5	17.6	17.7	17.7	17.7	17.7	17.7	17.8
1945	17.8	17.8	17.8	17.8	17.9	18.1	18.1	18.1	18.1	18.1	18.1	18.2
1946	18.2	18.1	18.3	18.4	18.5	18.7	19.8	20.2	20.4	20.8	21.3	21.5
1947	21.5	21.5	21.9	21.9	21.9	22.0	22.2	22.5	23.0	23.0	23.1	23.4
1948	23.7	23.5	23.4	23.8	23.9	24.1	24.4	24.5	24.5	24.4	24.2	24.1
1949	24.0	23.8	23.8	23.9	23.8	23.9	23.7	23.8	23.9	23.7	23.8	23.6
1950	23.5	23.5	23.6	23.6	23.7	23.8	24.1	24.3	24.4	24.6	24.7	25.0
1951	25.4	25.7	25.8	25.8	25.9	25.9	25.9	25.9	26.1	26.2	26.4	26.5
1952	26.5	26.3	26.3	26.4	26.4	26.5	26.7	26.7	26.7	26.7	26.7	26.7
1953	26.6	26.5	26.6	26.6	26.7	26.8	26.8	26.9	26.9	27.0	26.9	26.9
1954	26.9	26.9	26.9	26.8	26.9	26.9	26.9	26.9	26.8	26.8	26.8	26.7
1955	26.7	26.7	26.7	26.7	26.7	26.7	26.8	26.8	26.9	26.9	26.9	26.8
1956	26.8	26.8	26.8	26.9	27.0	27.2	27.4	27.3	27.4	27.5	27.5	27.6
1957	27.6	27.7	27.8	27.9	28.0	28.1	28.3	28.3	28.3	28.3	28.4	28.4
1958	28.6	28.6	28.8	28.9	28.9	28.9	29.0	28.9	28.9	28.9	29.0	28.9
1959	29.0	28.9	28.9	29.0	29.0	29.1	29.2	29.2	29.3	29.4	29.4	29.4
1960	29.3	29.4	29.4	29.5	29.5	29.6	29.6	29.6	29.6	29.8	29.8	29.8
1961	29.8	29.8	29.8	29.8	29.8	29.8	30.0	29.9	30.0	30.0	30.0	30.0
1962	30.0	30.1	30.1	30.2	30.2	30.2	30.3	30.3	30.4	30.4	30.4	30.4
1963	30.4	30.4	30.5	30.5	30.5	30.6	30.7	30.7	30.7	30.8	30.8	30.9
1964	30.9	30.9	30.9	30.9	30.9	31.0	31.1	31.0	31.1	31.1	31.2	31.2
1965	31.2	31.2	31.3	31.4	31.4	31.6	31.6	31.6	31.6	31.7	31.7	31.8
1966	31.8	32.0	32.1	32.3	32.3	32.4	32.5	32.7	32.7	32.9	32.9	32.9
1967	32.9	32.9	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9
1968	34.1	34.2	34.3	34.4	34.5	34.7	34.9	35.0	35.1	35.3	35.4	35.5
1969	35.6	35.8	36.1	36.3	36.4	36.6	36.8	37.0	37.1	37.3	37.5	37.7

Source: Bureau of Labor Statistics (2016, p. 68).

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APPENDIX D. NATIONAL BUILDING COST MANUAL INDEX

Building Cost Historical Index

Use this table to find the approximate current dollar building cost when the actual cost is known for any year since 1948. Multiply the figure listed below for the building type and year of construction by the known cost. The result is the estimated 2015 construction cost.

Year	Masonry Buildings	Concrete Buildings	Steel Buildings	Wood-Frame Buildings	Agricultural Buildings	Year of Construction
1948	14.58	15.62	18.33	13.60	12.22	1948
1949	14.66	15.44	18.25	13.77	12.60	1949
1950	13.95	14.74	17.90	13.16	11.71	1950
1951	13.05	13.92	16.25	12.31	10.87	1951
1952	12.58	13.58	15.90	12.10	10.77	1952
1953	12.41	13.13	15.18	11.80	10.54	1953
1954	12.18	12.66	15.18	11.80	10.54	1954
1955	11.68	12.08	14.38	11.17	10.08	1955
1956	11.08	11.55	13.24	10.70	9.66	1956
1957	10.76	11.11	12.71	10.63	9.43	1957
1958	10.46	10.69	12.10	10.60	11.24	1958
1959	10.13	10.35	11.81	10.15	9.01	1959
1960	9.89	10.16	11.62	10.00	8.83	1960
1961	9.69	10.12	11.43	9.81	8.80	1961
1962	9.48	9.82	11.15	9.70	8.67	1962
1963	9.33	9.57	11.02	9.51	7.86	1963
1964	9.06	9.46	10.86	9.19	8.26	1964
1965	8.77	9.21	10.49	8.99	8.04	1965
1966	8.38	8.95	10.09	8.60	7.81	1966
1967	8.18	8.52	9.44	8.18	7.50	1967
1968	7.84	8.05	9.01	7.73	7.17	1968
1969	7.41	7.69	8.70	7.45	6.76	1969
1970	7.11	7.35	8.26	7.08	6.43	1970
1971	6.67	6.73	7.67	6.09	5.99	1971
1972	6.20	6.23	7.17	6.11	5.57	1972
1973	5.66	5.91	6.37	5.64	5.23	1973
1974	5.04	5.42	5.98	5.27	4.86	1974
1975	4.58	4.78	5.38	4.96	4.33	1975
1976	4.29	4.56	5.10	4.77	4.10	1976
1977	4.00	4.27	4.85	4.43	3.86	1977
1978	3.72	4.00	4.48	4.08	3.49	1978
1979	3.42	3.56	4.00	3.74	3.31	1979
1980	3.10	3.23	3.56	3.35	2.99	1980
1981	2.92	3.05	3.26	3.20	2.80	1981
1982	2.83	2.92	3.16	3.09	2.69	1982
1983	2.69	2.83	3.10	2.95	2.54	1983
1984	2.52	2.66	2.96	2.72	2.47	1984
1985	2.45	2.52	2.88	2.64	2.43	1985
1986	2.39	2.50	2.83	2.60	2.38	1986
1987	2.38	2.45	2.80	2.55	2.36	1987
1988	2.33	2.36	2.74	2.53	2.32	1988
1989	2.27	2.32	2.61	2.48	2.24	1989
1990	2.14	2.22	2.48	2.30	2.14	1990
1991	2.32	2.19	2.36	2.18	2.03	1991
1992	2.07	2.16	2.33	2.17	2.01	1992
1993	2.02	2.14	2.24	2.14	1.98	1993
1994	1.97	2.00	2.16	2.06	1.84	1994
1995	1.87	1.83	2.00	1.94	1.73	1995
1996	1.81	1.80	1.95	1.89	1.70	1996
1997	1.74	1.74	1.87	1.85	1.66	1997
1998	1.66	1.66	1.80	1.77	1.64	1998
1999	1.60	1.60	1.75	1.75	1.61	1999
2000	1.56	1.56	1.68	1.69	1.56	2000
2001	1.51	1.51	1.65	1.63	1.52	2001
2002	1.47	1.47	1.61	1.61	1.49	2002
2003	1.45	1.45	1.57	1.60	1.46	2003
2004	1.39	1.39	1.53	1.56	1.42	2004
2005	1.29	1.29	1.37	1.39	1.39	2005
2006	1.21	1.21	1.26	1.25	1.24	2006
2007	1.17	1.17	1.20	1.16	1.15	2007
2008	1.10	1.10	1.14	1.11	1.09	2008
2009	1.09	1.09	1.10	1.11	1.09	2009
2010	1.07	1.07	1.04	1.10	1.08	2010
2011	1.08	1.08	1.07	1.12	1.11	2011
2012	1.07	1.07	0.96	1.08	1.09	2012
2013	1.02	1.02	1.02	1.02	1.02	2013
2014	1.01	1.01	1.01	1.01	1.01	2014
2015	1.00	1.00	1.00	1.00	1.00	2015

Source: Moselle (2014, p. 9).

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APPENDIX E. RS MEANS HISTORICAL COST INDEXES

Historical Cost Indexes

The table below lists both the RSMeans® historical cost index based on Jan. 1, 1993 = 100 as well as the computed value of an index based on Jan. 1, 2016 costs. Since the Jan. 1, 2016 figure is estimated, space is left to write in the actual index figures as they become available through the quarterly *RSMeans Construction Cost Indexes*.

To compute the actual index based on Jan. 1, 2016 = 100, divide the historical cost index for a particular year by the actual Jan. 1, 2016 construction cost index. Space has been left to advance the index figures as the year progresses.

Year	Historical Cost Index Jan. 1, 1993 = 100		Current Index Based on Jan. 1, 2016 = 100		Year	Historical Cost Index Jan. 1, 1993 = 100		Current Index Based on Jan. 1, 2016 = 100		Year	Historical Cost Index Jan. 1, 1993 = 100		Current Index Based on Jan. 1, 2016 = 100	
	Est.	Actual	Est.	Actual		Actual	Est.	Actual	Actual		Est.	Actual		
Oct 2016*	207.2		100.0	100.0	July 2001	125.1	60.4		July 1983	80.2	38.7			
July 2016*					2000	120.9	58.3		1982	76.1	36.8			
April 2016*					1999	117.6	56.8		1981	70.0	33.8			
Jan 2016*					1998	115.1	55.6		1980	62.9	30.4			
July 2015		206.2			1997	112.8	54.4		1979	57.8	27.9			
2014		204.9			98.9	1996	110.2		53.2	1978	53.5		25.8	
2013		201.2			97.1	1995	107.6		51.9	1977	49.5		23.9	
2012		194.6			93.9	1994	104.4		50.4	1976	46.9		22.6	
2011		191.2			92.3	1993	101.7		49.1	1975	44.8		21.6	
2010		183.5	88.6		1992	99.4	48.0		1974	41.4	20.0			
2009		180.1	86.9		1991	96.8	46.7		1973	37.7	18.2			
2008		180.4	87.1		1990	94.3	45.5		1972	34.8	16.8			
2007		169.4	81.8		1989	92.1	44.5		1971	32.1	15.5			
2006		162.0	78.2		1988	89.9	43.4		1970	28.7	13.9			
2005		151.6	73.2		1987	87.7	42.3		1969	26.9	13.0			
2004		143.7	69.4		1986	84.2	40.7		1968	24.9	12.0			
2003		132.0	63.7		1985	82.6	39.9		1967	23.5	11.3			
2002		128.7	62.1		1984	82.0	39.6		1966	22.7	11.0			

Adjustments to Costs

The "Historical Cost Index" can be used to convert national average building costs at a particular time to the approximate building costs for some other time.

Time Adjustment Using the Historical Cost Indexes:

$$\frac{\text{Index for Year A}}{\text{Index for Year B}} \times \text{Cost in Year B} = \text{Cost in Year A}$$

Example:

Estimate and compare construction costs for different years in the same city.

To estimate the national average construction cost of a building in 1970, knowing that it cost \$900,000 in 2016:

INDEX in 1970 = 28.7

INDEX in 2016 = 207.2

$$\frac{\text{INDEX 1970}}{\text{INDEX 2016}} \times \text{Cost 2016} = \text{Cost 1970}$$

$$\frac{28.7}{207.2} \times \$900,000 = .139 \times \$900,000 = \$124,662$$

The construction cost of the building in 1970 was \$124,662.

Note: The city cost indexes for Canada can be used to convert U.S. national averages to local costs in Canadian dollars.

Source: "Historical Cost Indexes" (n.d.).

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APPENDIX F. NAVAL CENTER FOR COST ANALYSIS INFLATION INDEX

MILCON (Purchases) = Military Construction, Navy (1205)					
NAVY		Base Year = 2010			14-Jul-11
Fiscal Year	Inflation Rate %	Raw Index	Weighted Index	Budget Year Index	Budget Year Inflation Rate %
1970	7.84%	0.1945	0.2251	0.2199	
1971	8.69%	0.2114	0.2390	0.2336	6.19%
1972	5.94%	0.2239	0.2561	0.2503	7.16%
1973	5.55%	0.2364	0.2798	0.2734	9.23%
1974	11.76%	0.2642	0.3134	0.3062	12.01%
1975	16.12%	0.3067	0.3373	0.3296	7.64%
1976	3.02%	0.3160	0.3524	0.3443	4.45%
1977	1.56%	0.3209	0.3738	0.3653	6.09%
1978	2.80%	0.3299	0.3753	0.3667	0.39%
1979	7.68%	0.3553	0.4139	0.4044	10.28%
1980	9.31%	0.3883	0.4226	0.4130	2.12%
1981	10.59%	0.4295	0.4879	0.4767	15.44%
1982	10.61%	0.4750	0.5168	0.5050	5.92%
1983	7.60%	0.5111	0.5455	0.5330	5.55%
1984	4.90%	0.5362	0.5649	0.5520	3.56%
1985	3.80%	0.5565	0.5842	0.5708	3.42%
1986	3.40%	0.5755	0.6018	0.5880	3.01%
1987	2.80%	0.5916	0.6196	0.6054	2.96%
1988	2.70%	0.6076	0.6407	0.6261	3.41%
1989	3.00%	0.6258	0.6640	0.6488	3.64%
1990	4.20%	0.6521	0.6906	0.6748	4.00%
1991	4.00%	0.6781	0.7110	0.6947	2.95%
1992	4.30%	0.7073	0.7366	0.7197	3.60%
1993	2.80%	0.7271	0.7545	0.7372	2.42%
1994	2.70%	0.7467	0.7694	0.7518	1.98%
1995	2.00%	0.7617	0.7878	0.7698	2.39%
1996	1.90%	0.7761	0.8009	0.7826	1.66%
1997	2.00%	0.7917	0.8116	0.7930	1.33%
1998	1.80%	0.8059	0.8166	0.7979	0.62%
1999	0.70%	0.8116	0.8240	0.8052	0.91%
2000	0.80%	0.8181	0.8371	0.8179	1.58%
2001	1.40%	0.8295	0.8479	0.8285	1.29%
2002	1.80%	0.8444	0.8575	0.8378	1.13%
2003	0.80%	0.8512	0.8697	0.8498	1.43%
2004	1.00%	0.8597	0.8890	0.8687	2.23%
2005	2.00%	0.8769	0.9123	0.8914	2.62%
2006	2.80%	0.9015	0.9382	0.9167	2.83%
2007	3.10%	0.9294	0.9637	0.9416	2.72%
2008	2.70%	0.9545	0.9829	0.9604	2.00%
2009	2.40%	0.9774	0.9986	0.9757	1.59%
2010	1.50%	0.9921	1.0096	0.9865	1.11%
2011	0.80%		1.0234		1.37%
2012	1.30%	1.0130	1.0389	1.0151	1.51%
2013	1.40%	1.0272	1.0559	1.0317	1.64%
2014	1.60%	1.0436	1.0738	1.0492	1.69%
2015	1.70%	1.0614	1.0921	1.0671	1.70%
2016	1.70%	1.0794	1.1106	1.0852	1.70%
2017	1.70%	1.0978	1.1295	1.1037	1.70%
2018	1.70%	1.1164	1.1487	1.1224	1.70%
2019	1.70%	1.1354	1.1682	1.1415	1.70%

Source: "Joint Inflation Calculator" (n.d., Multi Appn tab).

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APPENDIX G. NAVFAC BUILDING COST INDEX

NAVFAC Building Cost Index (BCI) 2016-05-25(1200)
Consistent With DoD UFC 3-701-01 March 2011; Change 10, May 2016 *

Fiscal Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1995	3116	3109	3110	3112	3111	3103	3100	3096	3095	3114	3121	3109
1996	3117	3131	3128	3127	3131	3135	3148	3161	3178	3190	3218	3239
1997	3277	3295	3302	3323	3324	3316	3364	3377	3396	3392	3385	3378
1998	3372	3350	3370	3363	3372	3368	3375	3374	3379	3382	3391	3414
1999	3423	3424	3419	3425	3417	3411	3421	3422	3433	3460	3474	3494
2000	3505	3498	3497	3503	3523	3536	3534	3558	3553	3545	3546	3539
2001	3547	3541	3548	3545	3536	3542	3541	3547	3572	3626	3605	3597
2002	3603	3596	3548	3581	3581	3597	3583	3612	3624	3652	3648	3655
2003	3651	3654	3640	3648	3655	3649	3652	3660	3667	3683	3712	3717
2004	3745	3765	3757	3767	3802	3859	3908	3956	3996	4013	4027	4102
2005	4129	4128	4123	4112	4116	4127	4168	4189	4195	4197	4210	4219
2006	4265	4312	4329	4335	4337	4330	4335	4331	4340	4356	4359	4375
2007	4431	4462	4440	4432	4432	4411	4416	4475	4471	4493	4513	4533
2008	4535	4555	4574	4594	4612	4630	4649	4668	4688	4708	4724	4741
2009	4757	4753	4748	4744	4683	4623	4562	4537	4512	4487	4469	4451
2010	4459	4420	4408	4396	4393	4390	4388	4390	4393	4395	4394	4392
2011	4391	4396	4401	4406	4417	4427	4438	4449	4461	4473	4483	4493
2012	4503	4511	4519	4527	4534	4540	4546	4551	4555	4559	4566	4574
2013	4582	4594	4606	4618	4630	4643	4656	4668	4681	4693	4710	4727
2014	4744	4759	4774	4788	4800	4812	4824	4841	4859	4876	4896	4917
2015	4938	4954	4970	4986	5000	5014	5028	5044	5061	5077	5098	5118
2016	5139	5146	5154	5162	5169	5177	5185	5193	5200	5208	5216	5224
2017	5231	5239	5247	5255	5264	5272	5280	5289	5297	5306	5314	5322
2018	5330	5338	5347	5356	5365	5374	5383	5392	5401	5410	5419	5428
2019	5436	5445	5454	5463	5472	5481	5490	5499	5508	5518	5527	5536
2020	5545	5554	5563	5572	5582	5591	5600	5610	5619	5628	5638	5647
2021	5656	5665	5674	5684	5693	5703	5712	5722	5731	5741	5750	5760
2022	5769	5778	5788	5797	5807	5817	5826	5836	5846	5856	5865	5875

Escalation Factor = $\frac{\text{Index of the "escalated to" date}}{\text{Index of the "escalated from" date}}$

* See DoD UFC 3-701-01 March 2011; Change 10, May 2016 Table 4-2: Military Construction Escalation Rates

Note 1: The index from OCT FY1993 (OCT CY1992) through OCT FY2008 (OCT CY2007) is the Engineering News Record (ENR) Building Construction Index (BCI). The ENR BCI is a historical index that tracks the cost of three basic materials and one skilled labor type, but does not account for other pricing influences (such as risk and competition) that impact total delivered price to the project owner.

Note 2: The index from OCT FY2008 (OCT CY2007) through OCT FY2016 (OCT CY2015) is consistent with the DoD Selling Price Index (SPI). The SPI is a historical index representing the average of the RLB Construction Cost Index, Turner Construction Cost Index, and Saylor Subcontracting Index. Saylor ceased publishing their index in OCT 2009, and the BLS PPI for NAICS 236223 is now the third index used in the computation. DoD established the SPI to more accurately represent actual (historical) market escalation as experienced by DoD as the project owner for the type of construction in the portfolio.

Note 3p: The index from OCT FY2016 (OCT CY2015) through OCT FY2022 (OCT CY2021) is projected based on annual rates for military construction budget authority published by USD (Comptroller) in FEB 2016.

Source: "NAVFAC Building Cost Index" (n.d.).

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APPENDIX H. NAVFAC'S LEED FOR NEW CONSTRUCTION WORKBOOK SUMMARY OF COST TABLES

LEED for New Construction v2.2 NAVY Administrative Building Project Cost List					
Project Title:	Test Project	Year of Project:	2008		
Project Number:	P-001	Cost of Primary Facility:	19,000,000		
Project Location:	NAS Anywhere, Some City, XX	Size of Primary Facility (m2):	13,880		
Prepared By:	I.M. Someone	Number of Occupants:	396		
LEED Total Cost Less Than 4% of Primary Facility Cost					
LEED for New Construction v2.2 NAVY Administrative Building Project Cost List					
Project Title:	Test Project	Year of Project:	2008		
Project Number:	P-001	Cost of Primary Facility:	19,000,000		
Project Location:	NAS Anywhere, Some City, XX	Size of Primary Facility (m2):	13,880		
Prepared By:	I.M. Someone	Number of Occupants:	396		
LEED Total Cost Less Than 4% of Primary Facility Cost					
LEED for New Construction v2.2 NAVY Airfield Pavement Project Cost List					
Project Title:	Test Project	Year of Project:	2008		
Project Number:	P-001	Cost of Primary Facility:	19,000,000		
Project Location:	NAS Anywhere, Some City, XX	Size of Primary Facility (m2):	13,880		
Prepared By:	I.M. Someone	Number of Occupants:	396		
LEED Total Cost Less Than 4% of Primary Facility Cost					
LEED for New Construction v2.2 NAVY Air Traffic Control Facility and Tower Project Cost List					
Project Title:	Test Project	Year of Project:	2008		
Project Number:	P-001	Cost of Primary Facility:	19,000,000		
Project Location:	NAS Anywhere, Some City, XX	Size of Primary Facility (m2):	13,880		
Prepared By:	I.M. Someone	Number of Occupants:	396		
LEED Total Cost Exceeds 4% of Primary Facility Cost					
LEED for New Construction v2.2 NAVY Bachelor Quarters Project Cost List					
Project Title:	Test Project	Year of Project:	2008		
Project Number:	P-001	Cost of Primary Facility:	19,000,000		
Project Location:	NAS Anywhere, Some City, XX	Size of Primary Facility (m2):	13,880		
Prepared By:	I.M. Someone	Number of Occupants:	396		
LEED Total Cost Exceeds 4% of Primary Facility Cost					
LEED for New Construction v2.2 NAVY Child Development Center Project Cost List					
Project Title:	Test Project	Year of Project:	2008		
Project Number:	P-001	Cost of Primary Facility:	19,000,000		
Project Location:	NAS Anywhere, Some City, XX	Size of Primary Facility (m2):	13,880		
Prepared By:	I.M. Someone	Number of Occupants:	396		
LEED Total Cost Exceeds 4% of Primary Facility Cost					

Source: "Leed for New Construction Workbook" (n.d.).

LEED for New Construction v2.2			
NAVY Communications Centers Project Cost List			
Project Title:	Test Project	Year of Project:	2008
Project Number:	P-001	Cost of Primary Facility:	19,000,000
Project Location:	NAS Anywhere, Some City, XX	Size of Primary Facility (m2):	13,860
Prepared By:	T.M. Someone	Number of Occupants:	396
LEED Total Cost Exceeds 4% of Primary Facility Cost			
LEED for New Construction v2.2			
NAVY Fire Station Project Cost List			
Project Title:	Test Project	Year of Project:	2008
Project Number:	P-001	Cost of Primary Facility:	19,000,000
Project Location:	NAS Anywhere, Some City, XX	Size of Primary Facility (m2):	13,860
Prepared By:	T.M. Someone	Number of Occupants:	396
LEED Total Cost Exceeds 4% of Primary Facility Cost			
LEED for New Construction v2.2			
NAVY Fitness Center Project Cost List			
Project Title:	Test Project	Year of Project:	2008
Project Number:	P-001	Cost of Primary Facility:	19,000,000
Project Location:	NAS Anywhere, Some City, XX	Size of Primary Facility (m2):	13,860
Prepared By:	T.M. Someone	Number of Occupants:	396
LEED Total Cost Exceeds 4% of Primary Facility Cost			
LEED for New Construction v2.2			
NAVY Magazine Project Cost List			
Project Title:	Test Project	Year of Project:	2008
Project Number:	P-001	Cost of Primary Facility:	19,000,000
Project Location:	NAS Anywhere, Some City, XX	Size of Primary Facility (m2):	13,860
Prepared By:	T.M. Someone	Number of Occupants:	396
LEED Total Cost Exceeds 4% of Primary Facility Cost			
LEED for New Construction v2.2			
NAVY Operation Training Facility Project Cost List			
Project Title:	Test Project	Year of Project:	2008
Project Number:	P-001	Cost of Primary Facility:	19,000,000
Project Location:	NAS Anywhere, Some City, XX	Size of Primary Facility (m2):	13,860
Prepared By:	T.M. Someone	Number of Occupants:	396
LEED Total Cost Exceeds 4% of Primary Facility Cost			
LEED for New Construction v2.2			
NAVY Ordnance Operations Project Cost List			
Project Title:	Test Project	Year of Project:	2008
Project Number:	P-001	Cost of Primary Facility:	19,000,000
Project Location:	NAS Anywhere, Some City, XX	Size of Primary Facility (m2):	13,860
Prepared By:	T.M. Someone	Number of Occupants:	396
LEED Total Cost Exceeds 4% of Primary Facility Cost			

Source: "Leed for New Construction Workbook" (n.d.).

LEED for New Construction v2.2 NAVY Pier Project Cost List			
Project Title:	Test Project	Year of Proj/Proj Facility:	2008
Project Number:	P-001	Cost of Prim Proj Facility:	19,000,000
Project Location:	NAS Anywhere, Some City, XX	Size of Prim Proj Facility (m2):	13,880
Prepared By:	I.M. Someone	Number of CPrepays:	396
LEED Total Cost Less Than 4% of Primary Facility Cost			

LEED for New Construction v2.2 NAVY Vehicle Maintenance Project Cost List			
Project Title:	Test Project	Year of Proj/Proj Facility:	2008
Project Number:	P-001	Cost of Prim Proj Facility:	19,000,000
Project Location:	NAS Anywhere, Some City, XX	Size of Prim Proj Facility (m2):	13,880
Prepared By:	I.M. Someone	Number of CPrepays:	396
LEED Total Cost Exceeds 4% of Primary Facility Cost			

LEED for New Construction v2.2 NAVY General Warehouse (High Bay) Project Cost List			
Project Title:	Test Project	Year of Proj/Proj Facility:	2008
Project Number:	P-001	Cost of Prim Proj Facility:	19,000,000
Project Location:	NAS Anywhere, Some City, XX	Size of Prim Proj Facility (m2):	13,880
Prepared By:	I.M. Someone	Number of CPrepays:	396
LEED Total Cost Exceeds 4% of Primary Facility Cost			

LEED for New Construction v2.2 NAVY Project Cost List			
Project Title:	Test Project	Year of Proj/Proj Facility:	2008
Project Number:	P-001	Cost of Prim Proj Facility:	19,000,000
Project Location:	NAS Anywhere, Some City, XX	Size of Prim Proj Facility (m2):	13,880
Prepared By:	I.M. Someone	Number of CPrepays:	396
LEED Total Cost Less Than 4% of Primary Facility Cost			

Source: "Leed for New Construction Workbook" (n.d.).

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APPENDIX I. COMPARATIVE ANALYSIS OF DD 1391S

2003 Minor Construction Projects							
Project Number	Project Total	Environmental Total	Env %	Utilities Total	Utilities %	IT Total	IT %
H-65-97	\$410,000	\$11,000	0.00	\$37,000	0.00	\$0	0.00
H-1-03	\$437,000	\$28,000	6.41	\$39,000	0.00	\$0	0.00
CT C11-03	\$456,000	\$0	0.00	\$90,000	0.00	\$0	0.00
H-646	\$326,000	\$9,000	2.76	\$30,000	0.00	\$0	0.00
H-2-97	\$468,000	\$80,000	17.09	\$69,000	14.74	\$0	0.00
H-01-21	\$536,000	\$15,000	2.80	\$49,000	9.14	\$0	0.00
PR3-03	\$690,000	\$30,500	4.42	\$100,000	14.49	\$0	0.00
H-1-01	\$333,000	\$9,000	2.70	\$30,000	9.01	\$0	0.00
PC15-03	\$730,000	\$0	0.00	\$40,000	5.48	\$0	0.00
H-3-1	\$400,000	\$26,000	6.50	\$36,000	9.00	\$43,949	0.00
PC11-03	\$196,000	\$0	0.00	\$0	0.00	\$0	0.00
H-66-97	\$392,000	\$27,000	6.89	\$18,000	4.59	\$0	0.00
Total	\$5,374,000	\$235,500	4.38	\$538,000	10.01	\$43,949	0.82
2015 Minor Construction Projects							
Project Number	Project Total	Environmental Total	Env %	Utilities Total	Utilities %	IT Total	IT %
RM 13-1202	\$521,000	\$16,000	3.07	\$0	0.00	\$248,000	47.60
NF 15-0158	\$649,000	\$0	0.00	\$18,000	2.77	\$0	0.00
NF 14-2665	\$675,000	\$0	0.00	\$240,000	35.56	\$0	0.00
NF 09-2001	\$690,000	\$0	0.00	\$47,000	6.81	\$20,000	2.90
NF 10-9028	\$699,000	\$0	0.00	\$0	0.00	\$0	0.00
NF 09-0459	\$699,000	\$17,600	2.52	\$0	0.00	\$0	0.00
RM 14-2179	\$700,000	\$8,000	1.14	\$371,000	53.00	\$0	0.00
NF 09-3040	\$704,000	\$0	0.00	\$0	0.00	\$0	0.00
RM 15-2888	\$704,000	\$0	0.00	\$600,000	85.23	\$0	0.00
RM 15-0406	\$707,000	\$0	0.00	\$160,000	22.63	\$0	0.00
ST 12- 1334	\$745,000	\$0	0.00	\$10,000	1.34	\$0	0.00
RM 12-2159	\$748,000	\$0	0.00	\$0	0.00	\$0	0.00
Total	\$8,241,000	\$41,600	0.50	\$1,446,000	17.55	\$268,000	3.25

2003 MILCON Projects							
Project Number	Project Total	Environmental Total	Env %	Utilities Total	Utilities %	IT Total	IT %
P026	\$2,432,000	\$0	0.00	\$120,000	4.93	\$69,660	2.86
P271	\$5,349,000	\$190,000	3.55	\$430,000	8.04	\$60,000	1.12
P182	\$6,547,000	\$0	0.00	\$110,000	1.68	\$73,400	1.12
P465	\$6,844,000	\$0	0.00	\$0	0.00	\$0	0.00
P199	\$6,973,000	\$0	0.00	\$880,000	12.62	\$359,990	5.16
P345	\$8,996,000	\$0	0.00	\$580,000	6.45	\$0	0.00
P138	\$7,340,000	\$80,000	1.09	\$280,000	3.81	\$0	0.00
P293	\$18,863,000	\$199,433	1.06	\$100,000	0.53	\$275,080	1.46
P149	\$17,650,000	\$160,000	0.91	\$2,940,000	16.66	\$0	0.00
P735	\$36,085,000	\$0	0.00	\$2,690,000	7.45	\$0	0.00
P243	\$59,010,000	\$3,340,000	5.66	\$1,780,000	3.02	\$0	0.00
Total	\$176,089,000	\$3,969,433	2.25	\$9,910,000	5.63	\$838,130	0.48
2015 MILCON Projects							
Project Number	Project Total	Environmental Total	Env %	Utilities Total	Utilities %	IT Total	IT %
P658	\$15,190,000	\$790,000	5.20	\$1,670,000	10.99	\$83,705	0.55
P112	\$15,550,000	\$0	0.00	\$520,000	3.34	\$63,173	0.41
P755	\$15,810,000	\$390,000	2.47	\$1,960,000	12.40	\$320,000	2.02
P723	\$20,980,000	\$350,000	1.67	\$900,000	4.29	\$0	0.00
P479	\$22,990,000	\$290,000	1.26	\$1,070,000	4.65	\$580,000	2.52
P450	\$26,901,000	\$980,000	3.64	\$400,000	1.49	\$0	0.00
P287	\$27,313,000	\$270,000	0.99	\$860,000	3.15	\$850,000	3.11
P975	\$36,936,000	\$640,000	1.73	\$2,570,000	6.96	\$0	0.00
P745	\$38,570,000	\$280,000	0.73	\$2,190,000	5.68	\$490,000	1.27
P648	\$42,240,000	\$410,000	0.97	\$1,230,000	2.91	\$0	0.00
P900	\$47,560,000	\$1,180	0.00	\$1,250,000	2.63	\$1,550	0.00
P452	\$58,970,000	\$420,000	0.71	\$1,290,000	2.19	\$721,416	1.22
Total	\$369,010,000	\$4,821,180	1.31	\$15,910,000	4.31	\$3,109,844	0.84

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