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**A REVIEW OF ARCHITECTURAL CONTRACT SERVICE PROCEDURES  
FOR CORPS OF ENGINEER CONSTRUCTION PROJECTS:  
IDENTIFICATION OF PROBLEM AREAS IN THE CURRENT  
WORKING RELATIONSHIPS**

**A THESIS SUBMITTED TO THE GRADUATE DIVISION OF THE  
UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF**

**MASTER OF ARCHITECTURE**

**DECEMBER 1991**

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## ACKNOWLEDGEMENTS

I wish to express my appreciation to the leadership and members of the Pacific Ocean Division (POD) for their assistance and for allowing me access to their documents and files. A special thanks to project managers who took time from their busy schedule to complete the survey and grant me personal interviews.

In the private sector, my appreciation goes to all the architects who responded to my surveys, with a special thank-you to those who granted me personal interviews.

To my committee members: Professors F. Creager, P. Jordan and L. Ingleson who provided excellent guidance and dedicated time to review several iterations of this document.

Finally, to my family who have been patient and supportive throughout this entire process.

## ABSTRACT

This is an analysis of the working relationship between the U.S. Army Corps of Engineers and private-sector architects contracted to provide professional design services on Corps projects in Hawaii. The architects, and project managers perceptions of the Corps administration of the design contract identifies issues that are hindrances to a satisfying, trouble-free working relationship. Specifically, this thesis examines design, quality, compensation, and other issues related to the design contract.

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## LIST OF ABBREVIATIONS

|          |                                         |
|----------|-----------------------------------------|
| A-E      | Architect-Engineer                      |
| AFAR     | Army Federal Acquisition Regulation     |
| ARB      | Architectural Review Board              |
| ASPR     | Armed Services Procurement Regulation   |
| DFAR     | Defense Federal Acquisition Regulation  |
| DFE      | Directorate of Facility Engineers       |
| DoD      | Department of Defense                   |
| ECC      | Estimated Cost of Construction          |
| EFAR     | Engineer Federal Acquisition Regulation |
| FAR      | Federal Acquisition Regulation          |
| FED      | Far East District                       |
| HED      | Honolulu Engineer District              |
| JED      | Japan Engineer District                 |
| MilCon   | Military Construction                   |
| NAF      | Non-Appropriated Fund                   |
| POD      | Pacific Ocean Division                  |
| ProjMgrs | Project Managers                        |
| SB       | Small Business                          |
| SDB      | Small Disadvantaged Business            |
| SF254    | Standard Form 254                       |
| SF255    | Standard Form 255                       |
| SF252    | Standard Form 252                       |
| U.S.     | United States                           |
| USACE    | United States Army Chief Engineer       |
| USC      | United States Code                      |

## CHAPTER 1

### INTRODUCTION

#### 1.1 Introduction

The United States Army Corps of Engineer's Pacific Ocean Division (POD) is the Army's construction representative in the Pacific basin. In this capacity, it contracts for professional design services with local and mainland registered architects and engineers. POD has paid over \$69 million dollars in A-E fees from 1984-90 for design services on projects within its area of responsibility.<sup>1</sup> These projects, although mostly regarded by architects as less interesting and exciting as work in the private sector, are a good source of income when the economy slows and provide an opportunity for design firms to gain experience on government projects. Federal projects are less affected by economic trends that influence private clients such as developers and corporations, making the projects especially desirable during periods of economic decline and recession.

The Corps, unlike private clients, must abide by Federal statutes that dictate methods and procedures for planning, coordinating and executing its projects. This includes how the Corps announces, selects and contracts for professional architectural services. These procedures, as

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<sup>1</sup>Interview with Sue Kim, Pacific Ocean Division, Honolulu Hawaii, 17 July 1991.

well as others requiring action of the Corps, are addressed in the Brooks Bill, Armed Services Procurement Regulation (ASPR), and Federal Acquisition Regulation (FAR). These statutes provide more security for the architects, in terms of payment for services rendered, as compared to the uncertainty that exists with private clients. Certainty of work and guarantee of prompt payment are strong incentives for firms to seek Corps projects.

Relying heavily on work with the Corps however, does have certain drawbacks. First, as in the private sector, the architect is not always certain to be awarded a Corps project. There are many firms seeking to capitalize on this market and secure some of the "profitable fees" expected from huge project costs. This demand is evident in the large number of firms applying for consideration for selection on these projects. The Corps tries to insure an equal distribution of its projects among all qualified firms. Second, there are numerous statutes, administrative and technical requirements that apply when the Corps contracts for professional design services. These requirements are often restrictive in nature, can be frustrating when the professional is unfamiliar with them, and do not allow architects to exercise the type of creativity and innovation commonly encouraged in the private sector.

In initial interviews, private firms in Hawaii have expressed opinions ranging from praise to disdain regarding working with the Corps. Their concerns have been with such issues as low fees, untimely decision making, and numerous "unnecessary" changes that cost them time or money and unnecessary frustration. When asked why these incidents occur, the responses were vague generalities about the inadequacy of the Corps' system. In several instances the complainant responded with "That's just the way the Corps does it."

This research is not an analysis of the products of these design services, but will focus on the process by which the services are acquired and administered. Its intent is to identify the Pacific Ocean Division's and architectural firm's perceptions of the nature of the working relationship in the course of contract administration. This will be accomplished through the examination of statutes and documents applicable to these types of contracts, surveys and interviews with representatives of both POD and the architectural community.

## **1.2 Background**

The United States Army Corps of Engineers is a unique organization among the U.S. Armed Forces because it engages in combat as well as civil and military construction

activities.<sup>2</sup> Its Civil Works program focuses on nationwide water resources development which includes investigations, surveys, planning, construction, operation and maintenance of flood control, rivers and harbors, beach erosion, and multiple purpose power projects.<sup>3</sup> Its military construction activities involve planning, coordination, and execution of construction projects for military purposes. The Corps' military construction responsibility makes it the design and construction agent for the US Army, Air Force, and other Federal agencies, including the Postmaster General.<sup>4</sup> These construction roles, both civil and military, are fulfilled by military personnel and civilian employees in Engineer Districts and Divisions. The Corps combat role, fulfilled by tactical units, involves traditional missions of mobility, countermobility, and survivability support it provides to the Army's fighting units.

The Office of the Chief of Engineers in Washington D.C. is responsible for insuring the adequacy of the engineering and design of these projects through high standards of

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<sup>2</sup>U.S., Army Corps of Engineers, Mission and Command Organization of the Chief of Engineers. Engineer Regulation 10-1-1, Office of the Chief of Engineers, March 1973, p. B-1.

<sup>3</sup>American Institute of Architects, The Federal Market Place: Are You Prepared?, 1976, p.12.

<sup>4</sup>U.S., Army Corps of Engineers, Architect- Engineer Contracts, Engineers Pamphlet 715-1-4, Office of the Chief of Engineers, June 1990, p.i.

professional skills, experience, and management practices.<sup>5</sup> Achieving the purpose of its civil and military construction programs requires the delegation of responsibility and authority to 13 U.S. Army Engineer Divisions, consisting of 39 Districts, throughout the U.S., Europe, and the Pacific.<sup>6</sup> These divisions and districts plan, manage, and coordinate all of the Corps' civil and military construction projects.

The Corps' construction projects vary in type and size, ranging from simple to extremely complex. These projects may include simple renovation of an office to complete design of new facilities such as barracks, dining facilities, or something as unique as a world-wide communication center. The construction costs of these projects are often larger than what most architectural firms are accustomed to. The Corps spends more than \$1 billion dollars annually on civil and military construction projects.<sup>7</sup> Although the Corps has licensed architects and engineers on their civilian and military staff, the quantity of work which they are routinely engaged exceeds the capabilities of this professional group. This constraint along with the occasional need for specific technical

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<sup>5</sup>U.S., Army Corps of Engineers, Design Policy for Military Construction, Engineer Regulation 1110-345-100: Office of the Chief of Engineers, 28 June 1985, p.2.

<sup>6</sup>U.S., Army Corps of Engineers, Engineer Officer Bulletin, January 1991, pp.49-50.

<sup>7</sup>American Institute of Architects, The Federal Marketplace: Are You Prepared?, 1976, p.12.

expertise from private firms, prompted the Corps to start contracting for outside services in 1939.<sup>8</sup>

### **1.3 Roots of Federal Architect-Engineer Procurement Practices**

The Army Corps of Engineers' origin dates back to 1775 when the First Continental Congress authorized its organization.<sup>9</sup> Its primary purpose was to support the Continental Army through the installation and breaching of battlefield fortifications, mapping of terrain and laying out encampments during the American Revolution.<sup>10</sup> In 1783, the Corps was deactivated, but was reestablished 19 years later in 1802.<sup>11</sup> Since then, the Corps has played a significant role in the development of the nation's transportation infrastructure, both waterways and roads, as the country expanded westward.<sup>12</sup> Responsibility for managing this infrastructure expansion was given to the Corps because no other government agency had the capability

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<sup>8</sup>U.S., Army Corps of Engineers, Architect-Engineer Contracting Procedures and Negotiations Guide, Corps of Engineer Training Center: Huntsville, AL, p. A-1.

<sup>9</sup>Paul K. Walker, Engineers of Independence, (Washington DC: US Government Printing Office, 1981), p. 29.

<sup>10</sup>Ibid, p.v.

<sup>11</sup>Arthur Maass, Muddy Waters. (Cambridge: Harvard University Press, 1951), p.21.

<sup>12</sup>Ibid, p.21.

or experience to manage such rapid development.<sup>13</sup> The Corps' responsibilities gradually expanded to include management of facility construction for the Army, Air Force, and other Department of Defense (DoD) and Federal agencies. Through much of the country's development, the Corps relied on its internal resources for architectural and engineering work. A significant increase in government construction at the advent of World War II increased demand for these services, exceeding the Corps capabilities.<sup>14</sup>

In 1939, Congress enacted legislation to accomplish a vigorous military construction program to improve existing facilities and construct new facilities on military installations.<sup>15</sup> This legislation, the Public Works Act of 1939, authorized the Secretary of War and the Secretary of the Navy to contract with professional architects and engineers for the production of "designs, plans, drawings, and specifications."<sup>16</sup> This legislation enabled public agencies to contract for professional design services

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<sup>13</sup>Forest G. Hill. Roads, Rails and Waterways. (Norman: University of Oklahoma press, 1959), p. 4.

<sup>14</sup>U.S., Army Corps of Engineers, Architect-Engineer Contracting Procedures and Negotiation Guide, Huntsville: Corps of Engineer Training Center, p. A-1.

<sup>15</sup>Ibid, p. A-1.

<sup>16</sup>Ibid, p. A-1.



without regard to statutes requiring advertising and competitive bidding.<sup>17</sup>

Legislation eventually changed in response to the call for equal distribution of contracts and fair competition for government projects. The Armed Services Procurement Regulation (ASPR) of 1947, Title 10 United States Code<sup>18</sup> was enacted in response to this concern. The ASPR is the general procurement statute governing the acquisition process for obtaining services and products for the United States Armed Forces. Its purpose is to "insure national defense preparedness, conserve fiscal resources, and enhance defense production capability by acquiring property and services in the most timely, economic, and efficient manner."<sup>19</sup> In brief, this act states that the general defense procurement policy for acquiring services or products emphasizes that DoD contracting:

- a) "Should promote full and open competitive procedures;
- b) May use any kind of contract, including multi-year contracts, provided they promote the interest of the United States. The only contractual method prohibited is the cost-plus-a-percentage-of-cost contract;
- c) When appropriate, contracts should provide incentives to contractors to improve productivity through investment in capital facilities, equipment, and advanced technology;

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<sup>17</sup>Ibid, p. A-1.

<sup>18</sup>U.S., Department of Defense, Armed Services Procurement Regulation, Washington D.C.: U.S. Government Printing Office, secs. 2301-14 (1976).

<sup>19</sup>Ibid, sec. 2301.

- d) Contracts for parts and materials should be negotiated to achieve economic lot purchases and more efficient production rates;
- e) DoD agencies will use advance procurement and market research and prepare contract specifications in such a way to obtain full and open competition with due regard to the nature of the property and services to be acquired;
- f) DoD agencies are required to develop and maintain a professional procurement work force;
- g) Agencies practicing sealed-bid procedures shall not include a clause providing for the evaluation of prices under the contract for options to purchase additional supplies and services under the contract unless there is a reasonable likelihood that the option will be exercised."<sup>20</sup>

Sections of the ASPR specifically addressed at procurement procedures require that:

- a) These procedures be implemented to support the requirements of each branch in time of war or national emergency as well as in peacetime;
- b) They promote responsiveness of the procurement system to agency needs by simplifying and streamlining procurement processes;
- c) They promote the attainment and maintenance of essential capability in the defense industrial base and the capability of the United States for industrial mobilization;
- d) They provide incentives to encourage contractors to take actions and make recommendations that would reduce the costs to the United States relating to the purchase or use of property or services to be acquired under contracts;
- e) They promote the use of commercial products whenever practical;

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<sup>20</sup>Ibid, p.520.

- f) They require descriptions of agency requirements, whenever practicable, in terms of functions to be performed or performance required.<sup>21</sup>

Enforcement of the Armed Services Procurement Regulation (ASPR) is closely scrutinized because of congressional findings of excessive payments by the Department of Defense for replenishment of parts and services.<sup>22</sup> These findings have undermined public confidence in the Congress and in the defense procurement system.<sup>23</sup> The Secretary of Defense, in an effort to curb abuses and recover unjustified payments, directed Defense agencies not to enter contracts unless the proposed contracts were fair and reasonable.<sup>24</sup> This requirement was aimed at improving defense contracting procedures, encouraging competition, and assuring fair and reasonable prices.<sup>25</sup>

The Armed Services Procurement Regulation (ASPR) requires that the Secretary of Defense establish criteria that ensures contract proposals for professional and technical services are fairly evaluated.<sup>26</sup> The intent of

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<sup>21</sup>Ibid, sec 2303, p.525.

<sup>22</sup>Ibid, sec 2301, p.523.

<sup>23</sup>Ibid, sec 2301, p.523.

<sup>24</sup>Ibid, sec 2301, p.523.

<sup>25</sup>Ibid, sec 2301, p.523.

<sup>26</sup>Ibid, sec 2302, p.523.

this statute is to ensure the government receives the best quality service for the money expended; and that contractors supplying such services follow sound personnel management practices and observe established labor management policies and regulations.<sup>27</sup>

Public Law 92-582; "Title IX-- Selection of Architects and Engineers,"<sup>28</sup> frequently referred to as the Brooks Bill, was introduced in 1972 in response to concerns about pricing negotiation requirements. Although it was drafted and passed for use by Federal agencies other than the Department of Defense, DoD adopted other statutes and regulations based on this bill. The Federal Acquisition Regulation (FAR)<sup>29</sup> and more specifically, the Corps of Engineer selection process for architect and engineer services, are based on this law. The Brooks Bill sets government-wide policy for the selection of architects and engineers for performance of these services on federal projects. It defines architect-engineer services, states how prospective contract awards are to be announced, and clarifies procedures for selecting architects and negotiating contracts. It is short,

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<sup>27</sup>Ibid, sec 2303.

<sup>28</sup>Selection of Architects and Engineers, Statutes at Large 86, sec 901-4 (1972).

<sup>29</sup>U.S., Department of Defense, Federal Acquisition Regulation, Construction and Architect-Engineer Contracts Part 36, U.S. Government Printing Office (1990).

succinct, and allows for a logical method for obtaining A-E services. The Brooks Bill emphasizes:

- a) "Openness- the need for services will be publicly announced;
- b) Selection based on qualification- Selection of architects and engineers will be negotiated on the basis of demonstrated competence and qualification;
- c) Fair pricing- services will be acquired at fair and reasonable prices.
- d) Limits on compensation- fees for services will not exceed 6% of the project construction cost."<sup>30</sup>

The Brooks Bill defines architectural and engineering services as, "professional services of an architectural or engineering nature as well as incidental services that members of these professions or their employees logically perform."<sup>31</sup> It also states that agencies contracting for architectural services shall encourage A-E firms to submit annual statements of qualification or performance data as a reference.<sup>32</sup>

Prior to 1972, the selection of architects and engineers was usually a matter of knowing the people on the selection board and providing sufficient information on the firms application to indicate capability.<sup>33</sup> The enactment

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<sup>30</sup>Selection of Architects and Engineers, Statutes at Large vol. 86, p. 1278 (1972).

<sup>31</sup>Ibid, p.1278.

<sup>32</sup>Ibid, p.1278.

<sup>33</sup>R.L. Phillips, "The A/E Selection Process," The Military Engineer, (July 1985), p. 276.

of the Brooks Bill changed this procedure by introducing a well-defined, clear, and unbiased procedure emphasizing fair competition and provision of quality service to the government.<sup>34</sup>

The Corps' work and procedures are further governed by the Federal Acquisition Regulation (FAR) and its various supplements, specifically the Defense Federal Acquisition Regulation (DFAR), the Army Federal Acquisition Regulation (AFAR), and the Engineer Federal Acquisition Regulation (EFAR).<sup>35</sup> The DFAR, AFAR and EFAR are organized similar to the FAR. The FAR was established in 1984 and is divided into 53 parts, each dealing with a particular aspect of procurement.<sup>36</sup> The first twelve parts address procurement and acquisition planning, while Part 13 covers contracts under \$25,000. Parts 14 and 15 cover contracts over \$25,000.<sup>37</sup> The remaining parts deal with topics such as labor, cost principles, competition, standard clauses, and forms. Part 36 of the FAR specifically addresses Architect-Engineer Services. The FAR system provides a degree of stability to a potentially chaotic situation at the expense of relative inflexibility and lengthy administrative

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<sup>34</sup>Ibid, p.276.

<sup>35</sup>Joseph S. Legath, "The FAR System," The Military Engineer, September 1986, p. 524.

<sup>36</sup>Ibid, p. 524.

<sup>37</sup>Ibid, p. 524.

procedures. Its value is especially realized considering that the Federal government awards over \$100 billion dollars in service contracts annually, which include design, construction and maintenance.<sup>38</sup> Architectural firms interested in providing services to the Corps need to understand these provisions, or risk turning a reasonably profitable project into a deficit-producing venture; moreover, the firm could develop a reputation as an unresponsive performer on government work.<sup>39</sup>

In addition to complying with the statutes mentioned above the Corps must set-aside a percentage of their projects for Small Businesses and Small Disadvantaged Businesses. In 1968 Congress passed the Small Business Act (15 USC 637(d)(4)(B))<sup>40</sup> requiring that a fair proportion of the purchases and contracts let be placed with minority and small business concerns. The goal of this policy is to award at least 5% of federal contracts to small, disadvantaged, or women-owned businesses.

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<sup>38</sup>Ibid, p. 525-526.

<sup>39</sup>Ibid, p. 526.

<sup>40</sup>Ibid, sec.2301.

## CHAPTER 2

### PACIFIC OCEAN DIVISION

#### 2.1 Pacific Ocean Division (POD)

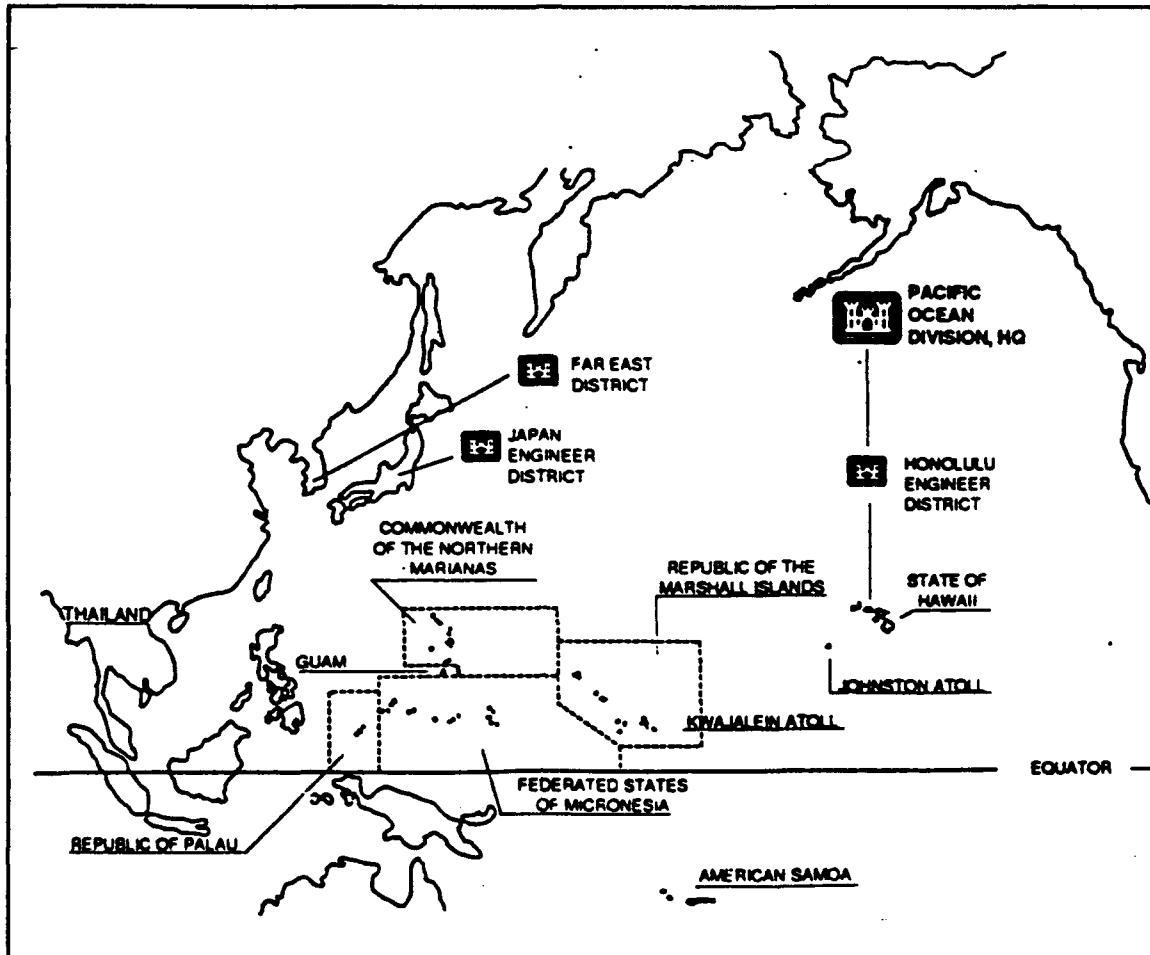
The Pacific Ocean Division (POD) is one of 13 Corps of Engineer Divisions in the United States Army. POD has the mission of supervising, overseeing and directing waterways, civil and military construction projects in Hawaii and the Pacific basin. POD's area of responsibility encompasses a large geographical area extending from as far south as American Samoa, across Polynesia and Micronesia to Japan, Korea and Thailand.<sup>1</sup>

POD, located at Fort Shafter, is the Headquarters of the Honolulu Engineer District (HED), Japan Engineer District (JED), and the Far East District (FED) in Korea. Although structured like other Corps divisions, POD is different in that it is considered an operating division. As an operating division, POD performs typical division functions as well as functions normally accomplished at the district level. Specifically, it accomplishes design and engineering functions normally accomplished at the district level; as well as provides administrative support for the Honolulu Engineer District.

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<sup>1</sup>Erwin N. Thompson. Pacific Ocean Engineers, History of the U.S. Army Engineers in the Pacific 1905-1980. Honolulu, 1980, p. 380.





**Figure 1.** Pacific Ocean Division area of responsibility and Honolulu Engineer District Resident offices in Thailand and Kwajalein.

POD's origin dates back to 1905 when the Honolulu Engineer District was first established.<sup>2</sup> At that time, its mission was the construction of light houses and seacoast fortifications for the defense of Honolulu and Pearl

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<sup>2</sup>Ellen van Hoften. History of the Pacific Ocean Division, Corps of Engineers 1957- 1967. Honolulu, 1972, p. 3.

Harbor.<sup>3</sup> During World War II, its effort was concentrated on the coastal defenses of Hawaii and the construction of airfields throughout the Pacific.<sup>4</sup> After World War II, POD's responsibilities in the Pacific expanded to include military construction projects in Korea and Okinawa as well as civil works in Hawaii. In 1957, the division was officially established. It assumed the task of constructing the Kwajalien Missile Range and continuing military construction in the far east, as well as military and civil construction in Hawaii.<sup>5</sup> In 1970, POD became fully operational rendering both operational and administrative support to all three of its Districts.<sup>6</sup>

## **2.2 Honolulu Engineer District (HED)**

The Honolulu Engineer District (HED), established in 1905 as an engineer district, was reorganized into an area office in 1950, and reorganized again to a district in 1957.<sup>7</sup> HED is responsible for coordinating, supervising and directing civil and military construction projects in Hawaii

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<sup>3</sup>Erwin N. Thompson. Pacific Ocean Engineers, History of the U.S.Army Corps of Engineers in the Pacific 1905-1980. Accession Number 6771, 1980, p. 77.

<sup>4</sup>Ibid. pp. 81-87.

<sup>5</sup>Ibid. pp. 192-205.

<sup>6</sup>Ibid. p. 311.

<sup>7</sup>Ellen van Hoften. History of the Honolulu Engineer District 1905-1965. Honolulu: U.S. Army District, June 1970, p.75.

and the Pacific. Its mission is similar to PODs except that its area of responsibility covers the Hawaiian Islands, Kwajalein, Johnston Island, Guam, American Samoa, and Thailand. In 1970 HED, although initially established as a fully functioning engineer district, was reduced in size as a result of a decline in workload in Hawaii.<sup>8</sup> Today it continues to manage and coordinate civil and military construction projects through three resident offices in Kwajalein, Thailand, and Hawaii. HED accomplishes these tasks without organic administrative and support staff sections normally found in engineer districts. Planning, administration, and coordination functions for construction projects typical of an engineer district are provided by POD. Another characteristic that further distinguishes HED from other districts is that it is the only district in the U.S. Army Corps of Engineers with the unique mission of working in an island environment.

### **2.3 Types of Projects:**

Projects in the Corps fall within two major categories; military construction (MilCon) or civil construction (Civil). Military construction projects are diverse and include all projects built for the purpose of supporting the quality of life, training or mission of soldiers or airmen and their families. Some examples of these projects are

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<sup>8</sup>Ibid. p. 311.

family housing, post chapels, missile pads and satellite tracking stations.<sup>9</sup> Two of the more prominent military construction projects completed by the Honolulu Engineer District (HED) are the Tripler Army Medical Center and the Punchbowl National Cemetery.

HED's Civil Works activities have involved projects in Hawaii and throughout the Pacific. They have included construction of deep water and small boat harbors, shoreline erosion control, flood plain control and studies, and harbor projects. These projects involve planning of aqueducts for the removal of waters in flood prone areas, monitoring river and shoreline construction, improvements to harbors and shores, and disaster relief planning for removal of debris. Civil works projects are usually related more to the engineering disciplines than to architecture.

The Honolulu Engineer District (HED) has spent in excess of \$544 million dollars in civil and military construction in Hawaii and the Pacific region since 1960.<sup>10</sup> In 1960- 1970 HED spent \$151.3 mil on military construction projects and only 5% of that (\$8.81 mil) on civil construction. This figure increased in 1970- 1980 to \$348.9 mil on military construction and \$35.24 mil (35%) on civil construction.

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<sup>9</sup>Erwin N. Thompson. p. 386.

<sup>10</sup>Ibid., p. 402.

Projects requiring professional architectural services in POD or HED are mainly MilCon projects located throughout Hawaii and the Pacific. They can be classified in one of the following project types: new facility construction, renovations of existing facilities, or operations and maintenance (O&M). Occasionally, the Corps will contract with architectural firms for programming services or studies.<sup>11</sup> New facility construction projects involve design development of barracks, family housing, recreation facilities such as arts and craft shops and bowling alleys. Renovation projects involve extensive refurbishing of existing facilities. Operations and maintenance projects (O&M) are mostly small projects involving the repair and upkeep of existing facilities.

Since 1985, HED has awarded approximately 22 new facility design contracts and 30 renovation or O&M contracts.<sup>12</sup> O&M contracts which are usually less than \$75,000 in construction cost are normally awarded to firms retained by the Corps under open-ended or Indefinite-Delivery/ Quantity contracts.<sup>13</sup>

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<sup>11</sup>Interview with Ryo H. Jyo, Pacific Ocean Division, Honolulu, Hawaii, 14 February 1991.

<sup>12</sup>Pacific Ocean Division. A-E Contract Ledger, 1985-1990.

<sup>13</sup>Interview with Ryo H. Jyo, Pacific Ocean Division, Honolulu, Hawaii, 14 February 1991.

## **CHAPTER 3**

### **DESIGN FIRMS, SERVICES AND REVIEWS**

#### **3.1 Design Firms**

Corps of Engineer construction projects attract many design firms for reasons varying from expectation of large design fees to acquiring government design experience. Any architectural firm desiring work with the Corps of Engineers may compete for these projects by submitting a Standard Form 254 (SF254) and Standard Form 255 (SF255) to the district or division managing the project. In the Pacific Ocean Division, over 300 A-E firms (117 offering architectural services) have submitted SF254s for consideration on POD's projects.

Firms applying for POD projects in Hawaii include many local and mainland firms. However, firms selected to provide professional design services for projects in Hawaii are usually locally owned or locally registered. Mainland firms which are contracted for architectural services in HED or POD are usually specialty firms with an expertise in specific methods or trades that exceed the capabilities of local firms. These mainland firms tend to submit SF254s and SF255s on those projects that promise a high fee. A review of SF254s at POD, show that firms interested in Corps projects vary in size from five person firms to larger firms with numerous architects and engineers on staff.

One important criterion for selection, is the firm's geographic location. This criterion is used by all districts throughout the U.S. and it gives the local firms an advantage during the selection process. The rationale is that local firms are more familiar and knowledgeable about site conditions. The closer a firm is to a project site, the better its chances of being awarded a contract. Although this is not the single most significant criterion for selection, it is given strong consideration.

Many of the architectural firms who have filed SF254s with POD indicate that they qualify as a Small Business (SB) or Small Disadvantaged Business (SDBs). This means that the firm is at least 51% owned by one or more individuals who are both economically and socially disadvantaged, and has its management and daily business controlled by these individuals.<sup>1</sup> Firms owned, or partially owned by a woman, or a person of a minority ethnic group fit into this category. These firms also make less than \$3 million dollars in gross earnings over a three year period. POD has no difficulty meeting the Federal requirement to set-aside or award 5% of their projects to SBs or SDBs. Records at POD show that the majority of locally registered A-E firms who have provided services to POD since 1985, indicated on their SF254 and 255s that they qualified as Sbs or SDBs.

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<sup>1</sup>U.S., Army Corps of Engineers, "Architect- Engineer Contracts," Pamphlet 715-1-4, p.5.

### 3.2 A-E Services

Architectural services, as defined in the Brooks Bill, are," professional services of an architectural or engineering nature as well as incidental services that members of these professions or their employees logically perform."<sup>2</sup> Although this definition includes all traditional architectural services, these same statutes place restrictions on the amount and types of service. Architectural services the Corps contracts for are dictated by the Brooks Bill, the FAR, and its supplements. These statutes also limit the fee payable to an architect or engineer to 6% of the estimated cost of construction. The services are limited to the production and delivery of designs, plans, drawings, and specifications.<sup>3</sup> Other services such as site investigations, meetings, soils analysis, and construction administration may be contracted for by the Corps; however, these additional services are not included as part of the 6% fee limit.

The architectural service provided by a design firm is based on the scope of work as defined in the Department of Defense form 1391 (DD1391), which is the basis for the funding of the project. These DD1391s are normally prepared

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<sup>2</sup>Selection of Architects and Engineers, Statutes at Large, vol. 86, p.1278 (1972).

<sup>3</sup>Harold F. Blasky et al., Contracting with the Federal Government, Committee on Federal Procurement of A-E Services, (Maryland: Federal Publications Inc. 1974), p. 32.



to acquire funding for the Corps projects. DD1391s must be clear and well prepared to alleviate problems in the budget as the project is designed and constructed. The negotiations and schedule for reviews and submittal are based on this document.

Submittals for each project may vary depending on the schedule and complexity of the project, but generally, they occur in five phases. These are conceptual design, 10%, 35%, 90% submittal, and a 100% backcheck. A comprehensive list of submittal requirements can be found in Appendix D. These requirements are established in various Corps regulations and other related documents.

Firms selected to provide architectural or engineering services on Corps projects must meet specific established performance requirements. These requirements are stated clearly in contract "boiler plate," in appendices, and in specific Corps regulations and technical manuals. Some general expectations of firms providing services to the Corps are:

a) Firms are expected to stay within the contract price and statutory cost of the project. Any cost in excess of the negotiated fee is the sole responsibility of the firm.

b) Drawings and specifications must be accurate, explicit and clearly understood during the bidding and construction phases. These documents must be completely

coordinated between all disciplines involved in their preparation. Correction of design deficiencies resulting from errors or omissions will be at the expense of the A-E firm without additional fee. The firm will prepare all drawings, sketches, amended drawings, amended specifications, or estimates necessary to correct the deficiency. Construction Change Orders resulting from errors or omissions will be investigated to determine if the architect should be held liable for compensation to the Corps.

c) Architects are expected to maintain quality control during preparation of these documents. As a minimum, they are expected to review and check their work to insure it meets the Corps' requirements. These checks are to be documented and a record maintained in the event there is a need to verify the process.

### **3.3 Reviews**

After the architect begins providing design services to the Corps, the majority of their interaction will occur during review submittals. These reviews are milestones for tracking the projects progress. They are extensive, thorough and time consuming, but necessary to insure all of the Corps' requirements are satisfied.

The primary purpose of the Corps' extensive review is to insure that projects are designed and developed in

conformance with the guidance provided, and are within the authorized scope and budget. The reviews are accomplished by Corps' Technical Branch and Construction Operations Branch qualified in the discipline required for the work or submittal, the user, and the installation engineer (Directorate of Facility Engineer (DFE)). On certain projects, specifically those involving new structures, facility exterior alterations, landscaping or above-ground utility lines, the design will be reviewed by an Architectural Review Board (ARB). The ARB focuses on items such as handicapped access, life cycle cost, functional requirements, energy use, interior and exterior details, conformance with the installation plan, and compatibility with surrounding facilities.

When an architect submits design documents to the project manager for review, the documents are checked for completeness then distributed to the four reviewers listed above. The project manager, although not involved in the actual review of work, coordinates this effort to insure that all reviews are accomplished expeditiously. The four reviewers check the documents, each with a different purpose as follows:

- a) The user reviews the submittal to insure the building design meets their particular functional requirements.

b) POD's Technical Review Branch reviews the work focusing on compliance with the requirements of the basic disciplines (civil, mechanical, electrical and design).

c) The Construction Operations branch reviews the work for constructability.

d) The installation's Directorate of Facility Engineering (DFE) insures the facility meets the installation needs, enhances the installation character and is appropriate to the site.

This review normally take four to six weeks, depending on the complexity of the project. Once the reviewers complete their reviews, they prepare and submit comments to the Project Manager. The Project Manager screens the comments for clarity, redundancy, and validity. Although comments may be made on technical aspects of the architects work, responsibility for the technical adequacy of all documents rests with the architect.

When the comments have been compiled and reviewed, a meeting with the architect is convened to discuss them. Upon receipt of the review comments, the architect is expected to incorporate the comments into the final design drawings and provide acceptable technical justification for comments not incorporated. The architect is required to respond to every review comment received. Each comment must be addressed on a review comment sheet, stating what action is being taken to resolve the comment.

## CHAPTER 4

### CONTRACTING AND NEGOTIATION

#### 4.1 Contract Negotiation

The selection process for architectural firms is comprised of several steps and, unlike contracts for other services, is not based on competitive bidding. Selection of architectural firms is based on location, experience, professional capabilities, and the firms capacity with respect to the work.<sup>1</sup> This process, which precedes contract negotiation, is discussed in more detail in Appendix A.

Contract negotiation is a complex and involved process that begins after the District Engineer or the Division Engineer approves the final prioritized list of firms. The project manager is the Corps' primary representative during negotiation with the design firm. He or she negotiates with the architectural firm and have at his or her disposal Corps resources including technical, legal, auditing, pricing and other specialists for assistance on complex projects. The project manager directs the negotiation and attempts to accomplish four objectives. These objectives are:

- a) To insure the A-E has a clear understanding of the project requirements.
- b) To insure that the A-E has the necessary resources

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<sup>1</sup>American Institute of Architects, "The Federal Market Place: Are You Prepared?", 1976, p.51.

and will use these resources to insure the work is completed within the schedule.

c) To determine if the A-E can provide a design that can be constructed within the established project budget.

d) To reach a mutual agreement on the effort required to perform the work including a fair and reasonable price for the required work.

Once the selected firms have been prioritized, a "Letter of Selection" is sent to the most qualified, interested firm, requesting that they submit their wage rates and fee proposal for Fixed- Price contracts. On Indefinite- Delivery contracts, firms are asked to submit only their proposed wage rates. In addition, the selected firm must complete and submit Certificates of Clarification and Representation provided by POD.<sup>2</sup> These certificates are formalities required of anyone contracting with the Corps. They confirm that the firm understands and abides by the FAR requirements of equal opportunity, conflict of interest, and other similar issues.

The project manager and the firm's representatives then meet to work on the four negotiation objectives mentioned earlier. If negotiations are successful, a packet consisting of the basic contract documents with boiler plate, and appendices, and Letter of Memorandum for Price

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<sup>2</sup>Interview with Sue Kim, Pacific Ocean Division, Honolulu, Hawaii, 17 July 1991.

Negotiation is prepared by the project manager. The packet is sent to the Contract Branch of POD where it is reviewed for completeness and accuracy. Contract Branch then prepares and issues a Standard Form 252, Architect-Engineer Contract, based on the negotiated conditions. The firm then begins work on the project or, in the case of Indefinite-Delivery contracts, begins work upon receipt of the first Work Order Delivery Request.

If, the negotiation with the first selected firm is unsuccessful, the project manager terminates negotiations and documents the reasons for termination. Negotiations are then initiated with the second most qualified firm on the selection list, as described above.

#### **4.2 Contracts**

Design firms may be contracted to provide: Studies, Programming, Pre-design, Design, and Construction Document services. These may be acquired in any one of five different contracts: Fixed-price, Indefinite Quantity, and Non-Appropriated Fund Contracts, Small Purchase contracts and Sole Source contracts. The first three are the contracts most used by the Corps and POD.

a. Firm Fixed-Price (Lump Sum) Contracts: This contract format establishes a fixed contract price, includes all items of work identified in the "Scope," and is not subject to adjustment. Overruns in the budget are the

responsibility of the A-E. Similarly, under-runs are to the architects benefit in that he reaps a profit equal to the cost under-run. The Corps prefers this type of contract because it places maximum risk on the A-E and minimizes risk to the Corps.<sup>3</sup>

b. Indefinite Quantity/ Delivery (Open- end)

Contracts: In this form of contract, the architect is "retained" to provide services on an "on-call" basis. These contracts contain negotiated labor, overhead, profit, and other rates which are used to negotiate individual modifications to the contract. It differs from conventional time and material contracts in that individual labor contracts carry no estimated man-hours and contract modifications are used to order work in lieu of Department of Defense Form 1155s.<sup>4</sup> They are one year in length and \$400,000 in maximum fee with no one project exceeding \$75,000.<sup>5</sup> The Corps may exercise the option to extend the contract an additional year, subject to the same fee restrictions as the first year (maximum of \$400,000, or \$75,000 per project).<sup>6</sup> Firms retained with this type of

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<sup>3</sup>U.S., Department of the Navy, Pacific Division, Naval Facilities Engineering Command, A-E Guide for Architects and Engineers Performing Services for the Department of the Navy Pacific Division, p.1-9.

<sup>4</sup>Ibid.

<sup>5</sup>U.S., Army Corps of Engineers, Architect- Engineer Contracts, Pamphlet 715-4-1, 1990, p. 4.

<sup>6</sup>Ibid., p. 4.



contract are only guaranteed a \$2,500 in fees whether or not they provide services. There is no guarantee that they will be awarded a project under this contract.

c. Small Purchase Contracts: This contract is used for acquisition of professional design services where the A-E fees are not in excess of \$2,500. Small purchase contracts are simple and easier for the Corps to award and do not have to be announced in the Commerce Business Daily.

d. Sole Source Contracts: Although this is one method of contracting, it is not preferred and every effort is made to avoid this method of contracting. This contract form is not in keeping with the objective of fair and equal consideration as stated in the Brooks Bill and the FAR. Approval for this form of contract rests with the Commander, Pacific Ocean Division, for those contracts under \$1,000,000 and with the U.S. Army Corps of Engineers (USACE) for those over \$1,000,000.

e. Non-Appropriated Fund (NAF) Contracts: This form of contract applies to specific projects including exchanges, commissaries, clubs, bowling alleys, golf courses, etc. Contracting for these projects is less restrictive since there is no requirement to comply with the Brooks Bill. Selection may be limited to those firms who have good performance records. The criterion for spreading the work among firms filing SF254s do not apply.

## CHAPTER 5

### SURVEY

#### 5.1 General

Many locally registered architectural firms in Hawaii have provided design services to the Pacific Ocean Division (POD). Several of these firms, in initial interviews, indicated that they were dissatisfied with some aspect of their working relationship with POD. This sentiment was prevalent and most firms hesitated when asked if they would pursue more Corps projects. The issues raised by each of these firms were different but spanned the entire contractual relationship from beginning to end. Identifying the significant problems that occurred in these contractual relationships required querying the architects and POD for their thoughts and opinions about these contracts.

As a means for gathering this information, several forms of inquiry were considered, including personal and telephonic interviews and surveys. After considering the number and types of questions to be asked, the written questionnaire and personal interview format was determined to be most appropriate. A questionnaire consisting of "evaluative interval scale" questions and short answer questions was developed. It consisted of 56 questions in 5 categories: General, Design, Quality, Compensation, and Miscellaneous.

This questionnaire was hand delivered to local architecture firms with the hope that an initial personal introduction, with the surveyor, would increase the number of responses. This approach also sought to assure respondents of the confidentiality of their responses. A cover letter explaining the purpose of the survey was attached and a stamped, self-addressed envelope was provided to further ease the task of returning the questionnaire. Firms were advised that placing their names on the questionnaire was completely voluntary. This was meant to reassure anonymity and encourage candid responses. They were further assured that the questionnaires were to be used only for compiling this thesis and responses would be analyzed and presented in aggregate.

The architect's concern about the confidentiality of their responses varied. Several firms willingly completed the questionnaire while others were cautious, desiring not to jeopardize their opportunities for future Corps projects. Although all firms seemed willing to participate in the survey, only 50%, completed and returned their questionnaires.

## **5.2 The Questionnaire**

As stated previously, the questionnaire for the architectural firms consisted of five categories; General, Design, Quality, Compensation, and Miscellaneous. The

questionnaire presented to the Corps' project managers was similar, but included a second part requiring short response answers to questions about selection, negotiation, and the review process.

The "General" category consisted of twelve questions oriented toward the firm, their knowledge of the Corps' selection process and their satisfaction with their working experience with the Corps. The responses to these questions were used to gauge how the firms viewed their working experience with the Corps.

The "Design" category consisted of twenty-three questions and sought to determine how well the architect and Corps worked together. It included questions about the Corps priorities, the users participation, and the interaction between the Corps and the architect during service delivery. This category of questions solicited the firm's opinion of the Corps' administration of the design contract. It also solicited comments about any problematic issues the firm experienced while providing services. Since design and construction documents are the bulk of the services provided to the Corps, it was expected that here is where most problems are likely to occur.

The "Quality" category consisted of four questions aimed at determining the architects opinion of the Corps' quality expectation. It also solicited the architect's opinion of the quality of the service they provided to the

Corps. Responses to these questions were expected to reflect how the firms rated the services and products they provided to the Corps.

The "Compensation" category was also brief, consisting of six questions aimed at determining if architects experienced problems or were unsatisfied with compensation for services they provided to the Corps. The architects were asked for their opinion on the 6% fee ceiling and how they thought compensation from Corps projects compared to their private work.

The "Miscellaneous" category consisted of eleven questions requiring more extensive responses from the architects. These questions solicited the architects' opinion about what they liked most and least about working with the Corps. Architects were also asked what they would like to see changed in the Corps' procedures that would motivate them pursue more Corps work.

The survey population consisted of locally registered architectural firms who had provided design and related services to POD from 1985 to 1990. There were a total of 38 firms who had provided services to the Corps during this period however, only 30 of these firms could be reached or were still operating. The survey was limited to this sampling because many firms who had provided services earlier were no longer in existence, or people who had interacted with the Corps were no longer with the firms.

These 30 firms were surveyed and 15 of them or 50% completed and returned the survey. Statistically, a 50% return on a blind survey is exceptional and the conclusions based on these responses can be considered reliable.

Responses to this survey varied in attitude and completeness. 50% of the architects and 80% of the Corps' project managers completed and returned their survey. Several architects were thorough in their response while others gave it only a cursory look. The project managers also varied in the amount of thought and effort they invested in their responses.

### **5.3 Questionnaire Responses**

When the completed questionnaires were returned, the responses were compiled and an average rating was calculated for questions requiring evaluative interval scale responses (APP E). Short answer responses were compiled and reviewed for redundancy but were left in the basic form as submitted by respondents. The standard deviation for each scaled response was calculated as a measure of the dispersion of the responses and as an indicator of agreement among the respondents. Statistically, it can be expected that 99% of architects who provide services to the Corps would have responded within one standard deviation in either direction from the average response. The smaller the standard deviation, the more reliable the response is as a

representative "collective" indicator of the population. The standard deviations for the architect's responses ranged from .98 to 2.29 with the average being 1.63; project managers ranged from .45 to 1.84 with an average of 1.14. Those values below the average can be considered strong indicators of the collective opinion of the respondent group.

Following is a compilation of the responses to the questionnaires returned by the Architects and POD Project Managers. The bracket symbols ([ ]) represent the design firms average responses and the plus symbol (+) represents the project managers average responses on evaluative scale questions.

#### Part I:

##### A. General:

1. Please enter the number of projects your firm has performed for the Corps in each of these categories:

|        |                                                          |
|--------|----------------------------------------------------------|
| [ 26 ] | Family housing                                           |
| [ 18 ] | Troop facilities(barracks, dining<br>halls)              |
| [ 26 ] | Support facilities (gyms, libraries, rec<br>centers etc) |
| [ 23 ] | Warehouse, Motorparks, etc.                              |
| [ 31 ] | Other (pls explain)_____                                 |

**Firm:** Responses indicate that firms returning their surveys had the largest number of design projects in family housing and support facilities (26 in each category). Following these were projects in the warehouse and motorparks category

(23), and troop facilities/ barracks with 18 each. Projects listed in the "other" category included architecture hardware folios, medical clinics, and miscellaneous repair and maintenance projects.

**Proj Mgr:** Question not asked.

**2. Rank the following reasons for your firm taking Corps contracts, in ascending numerical order (1= most important):**

| <b>A-E</b> | <b>PM</b> |                                              |
|------------|-----------|----------------------------------------------|
| [ 5 ]      | (5)       | Corps requirements and projects<br>were easy |
| [ 4 ]      | (4)       | Gain experience                              |
| [ 3 ]      | (3)       | Needed Money                                 |
| [ 2 ]      | (1)       | Needed work                                  |
| [ 1 ]      | (2)       | Lack of private work clients                 |
| [ 0 ]      |           | Other(pls explain) _____                     |

**Firm:** When asked to rank their reasons for taking Corps projects, the architects listed the lack of private clients as their most significant reason for taking Corps work. It can thus be interpreted that a decline in private sector commissions forces firms to turn to the Corps for work. The need for work and the need for money were rated second and third respectively. Gaining experience on Corps projects was rated fourth and the ease of Corps projects rated last.

**Proj Mgr:** The aggregate response from project managers () differed slightly from the firm's rankings. Project managers rated "Needed work" first and "lack of private clients" second.



**3. How was your firm selected for these Corps project(s)?**

**Firms:** Responses about how they were selected for projects varied from very descriptive to sketchy. However, all firms indicated that they understood the basic process starting with the project announcement in the Commerce Business Daily, and the submission of SF 254s and SF 255s, Pre-selection and Selection Board procedures and the final interview.

**Proj Mgr:** Question not asked.

**4. Your firm prefers Corps projects over private work.**

|                   |   |   |   |   |   |   |                      |
|-------------------|---|---|---|---|---|---|----------------------|
| strongly<br>agree |   |   |   |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4 | 5 | 6 | 7 |                      |
| []+               |   |   |   |   |   |   |                      |

**Firms:** In response to whether they preferred Corps projects to private work, the aggregate response was 4.4 with a standard deviation of 1.67, indicating that there are an equal number of firms who find working on Corps projects as satisfactory as working for private clients. Only one firm strongly agreed that they preferred Corps projects over private while three felt they strongly preferred private work. The remainder were more neutral in response.

**Proj Mgr:** Project Managers were asked about how they thought architects liked Corps work as compared to private clients. Their aggregate response was similar to the firms with their average being 4.43 and a standard deviation of 1.18. The project managers felt that low fees and

bureaucratic red tape were the primary reasons firms preferred private work. Overall, project managers were not as positive about the firms preference for Corps work over private work. This indicates that project managers know there are built in problems and expect firms to be dissatisfied with Corps projects.

**5. Corps projects overall, are more satisfying than private work.**

|                   |   |   |   |     |   |                      |
|-------------------|---|---|---|-----|---|----------------------|
| strongly<br>agree |   |   |   |     |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4 | 5   | 6 | 7                    |
|                   |   |   |   | +   |   |                      |
|                   |   |   |   | [ ] |   |                      |

**Firms:** When asked about their "overall satisfaction" with Corps projects as compared to their private clients, only two firms responded positively for the Corps, one strongly and the other more neutral. The largest group (6) responded neutrally, while the remaining seven indicated that Corps work overall was not satisfying. The average response was 4.73 with a standard deviation of 1.61.

**Proj Mgr:** The average response from project managers was 4.29 with a standard deviation of 1.29. This slightly negative response also indicates that project managers are aware that design firms are generally not satisfied with some aspect of their Corps projects.

**6. You preferred working with the Corps' military representatives more than its civilian representatives.**

strongly  
agree

1

2

3

4

5

strongly  
disagree

6

7

[ ]+

**Firms:** The firms were neutral in their response to this question. Seven respondents showed no bias for either, three indicated a preference for military and four preferred working with civilian representatives. The aggregate response was 4.0 with a standard deviation of 1.10. A common comment was that the Corps representatives both military and civilian were professional and competent. Several firms stated that the civilian representatives tend to be more knowledgeable of the project scope. The military representatives were usually more willing to try new ideas however their quick rotations often hindered the working relationships that developed. Firms, overall, do not indicate strong preference for one or the other. This response indicates that this issue is not significant and does not impact the architects' overall opinions about Corps projects.

**Proj Mgr:** The project managers felt architects prefer to work with the Corps civilian representatives instead of the Corps' military representatives also citing the quick rotation. The average response was 4.29 with a standard deviation of 0.70.

7. Do you agree that Corps representatives were professional and competent in their dealings with your firm? If you disagree please explain briefly on back.

|                   |   |   |   |   |   |                      |
|-------------------|---|---|---|---|---|----------------------|
| strongly<br>agree |   |   |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4 | 5 | 6 | 7                    |

[]

**Firms:** Regarding the Corps representatives professionalism and competence, the respondents agreed, almost unanimously, that the Corps representatives, mostly Project Managers and reviewers, were professional and competent. The average response was very positive, 2.73, with a standard deviation of 1.18. Only two firms disagreed, the first believed that the Corps' representatives did not know what it took to put together a project and had little knowledge of the practical side of construction. The second firm rated most of the Corps project managers they had worked with as average; however, on their last project they indicated that the project manager "was totally irresponsible, non-responsive and lacked professionalism."

**Proj. Mgr:** Question not asked.

8. How difficult was it to resolve problems regarding:

|                         |           |       |                |                |                        |
|-------------------------|-----------|-------|----------------|----------------|------------------------|
|                         | easy<br>1 | 2     | difficult<br>3 | difficult<br>4 | very<br>difficult<br>5 |
| Program changes/clarity | _____     | X     | P              | _____          | _____                  |
| Design changes/issues   | _____     | XP    | _____          | _____          | _____                  |
| Contract issues         | _____     | X     | P              | _____          | _____                  |
| Budget issues           | _____     | X     | P              | _____          | _____                  |
| Compensation            | _____     | _____ | XP             | _____          | _____                  |
| Other: _____            | _____     | _____ | _____          | _____          | _____                  |

X= Firm average.

P= Project manager average.

**Firms:** The majority of the firms felt that resolving problems in any of the areas listed ranged from easy to difficult. The area they felt it was easiest to resolve problems was in "program changes and clarity". The area rated as most difficult was "compensation".

**Proj Mgr:** Surprisingly, project managers rated these issues as more difficult to resolve than the firms. Their average response for each of these categories was rated as "difficult." The project managers did not rate any of these as "easy". Two responses did rate "budget and compensation" as "very difficult."

**9. What contributed most to this difficulty? (Pls rank in ascending order, 1= first):**

| <b>A-E</b> | <b>PM</b> |                                            |
|------------|-----------|--------------------------------------------|
| [1]        | (4)       | Corps structure                            |
| [5]        | (5)       | Personalities                              |
| [4]        | (2)       | Firm's unfamiliarity with the Corps system |
| [3]        | (1)       | Lengthy decision making                    |
| [2]        | (3)       | Corps inflexibility                        |
| [ ]        |           | Other(pls explain): _____                  |

**Firms:** When asked to rank what they perceived were the contributing causes of these difficulties, A-Es ranked the Corps' structure first, followed by the Corps' inflexibility and lengthy decision making. These top three factors, listed by the firms, refer to the Corps management structure.

**Proj Mgr:** Project managers rated the Corps "lengthy decision making" as the most significant contributor to these difficulties. The next most significant contributor they

indicate is the firms lack of understanding of the Corps system.

**10. What architectural services did your firm provide to the Corps? (Check all applicable phases)**

|                                |                              |
|--------------------------------|------------------------------|
| [ 5] Programming               | [14] Construction Documents  |
| [14] Schematic Design          | [ 1] Construction Management |
| [14] Design                    | [ 2] Post Construction       |
| [ 1] Other(pls explain): _____ |                              |

**Firm:** A query of the specific architectural services firms provided to the Corps indicated that the bulk of the services were related to pre-design, design, and construction documents. Five firms had also provided programming services, one was involved in construction management, and two provided post construction services.

**Proj Mgr:** Responses from the project managers also indicated that architectural services were provided in all these areas and the same ratios.

**11. Did the service(s) you provided differ from service you would provide a private client? Please explain.**

**Firms:** The respondents stated that the services they did provide to the Corps were not any different from what they provided to their private clients. Other than for the lack of contracts for construction administration there was no difference. The complexity and scope were generally equal.

**Proj Mgrs:** Question not asked.

12. In which phase of the Corps project(s) did you have the most significant disagreement? (Pls rank in ascending order, 1= most):

| A-E | PM                           | Reason |
|-----|------------------------------|--------|
| [1] | (1) Contract negotiation:    | _____  |
| [2] | (3) Contract administration: | _____  |
| [3] | (4) Pre- design:             | _____  |
| [4] | (2) Design:                  | _____  |
| [ ] | ( ) Other (pls explain):     | _____  |

**Firms:** Firms indicated they felt they had the most significant disagreements in contract negotiation. Since this negotiation phase is the initial encounter between the firm and the Corps in the course of a project, some firms stated they continue the project with some frustration and discontent resulting from what they view as a bad start.

**Proj Mgrs:** Project managers agreed that most of the disagreements occurred during the "contract negotiation phase." They rated the second area as the "design phase", third was "contract administration" and fourth was "pre-design."

#### B. Design

1. From your point of view, what were the Corps' priorities during the design process? (rank in ascending order, 1= most important).

| A-E      | PM  |                                                |
|----------|-----|------------------------------------------------|
| [ 1 ]    | (1) | User satisfaction                              |
| [ 2 ]    | (3) | Function                                       |
| [ 6 ]    | (6) | Aesthetics                                     |
| [ 7 ]    | (7) | Maintaining Architect firm- Corps relationship |
| [ 4 ]    | (2) | Satisfaction of Federal building requirements  |
| [ 5 ]    | (5) | Saving money on design cost                    |
| [ 3 ]    | (4) | Saving money on construction cost              |
| [ ____ ] |     | Other (please explain): _____                  |

**Firms:** Firm's perceived that the Corps first priority is to satisfy the needs of the user. They rate designing a functional facility as a close second, and saving money on construction cost as third. None of the firms believed that saving money on design cost or construction cost was the Corps most important priority while they were providing services.

**Proj Mgr:** Project managers indicated that their priorities, although slightly different from what the firms perceived, were very similar. Their first priority was the satisfaction of the users needs followed by the satisfaction of Federal building requirements. The last items listed as number six and seven were also similar, both indicating that aesthetics and maintaining architect- Corps relationship were the least of the Corps' concerns.

**2. The overall character of the installation on which the project was located, affected the design solution.**

|          |   |      |   |   |   |          |
|----------|---|------|---|---|---|----------|
| strongly |   |      |   |   |   | strongly |
| agree    |   |      |   |   |   | disagree |
| 1        | 2 | 3    | 4 | 5 | 6 | 7        |
|          |   | +[ ] |   |   |   |          |

**Firms:** Most firms responded positively, indicating that their designs impact on the installation character was considered. Only three firms indicated that the installation character was not considered in the development of their design solution. This response is dependent on the type of services firms were contracted to provide.



Firms with O&M contracts are mostly involved in a repair or upgrade project meaning their work had little affect on the installations appearance. The firms average response to this question is 3.0 with a standard deviation of 1.63.

**Proj Mgrs:** Project managers also responded positively with an aggregate rating of 2.86 and a standard deviation of 0.99. None of the responses were negative.

**3. Influence on the morale of those who use or live in the facility was considered in the design solution.**

|                   |   |   |   |   |   |                      |
|-------------------|---|---|---|---|---|----------------------|
| strongly<br>agree |   |   |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4 | 5 | 6 | 7                    |
| [ ]+              |   |   |   |   |   |                      |

**Firms:** Respondents unanimously agreed, though in variation, that the impact of the facility on the user's morale was considered as they were proceeding through design development. Only one firm responded negatively that user morale was not a consideration during design. Again this response is dependent on the type of project. The average response was 2.67 with a standard deviation of 1.14.

**Proj Mgrs:** Project managers also rated this highly with an average response of 2.71 and a standard deviation of .70.

**4. The facility affect on morale of the user was a Corps concern during the course of design.**

|                   |   |   |   |   |   |                      |
|-------------------|---|---|---|---|---|----------------------|
| strongly<br>agree |   |   |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4 | 5 | 6 | 7                    |
| +[ ]              |   |   |   |   |   |                      |

**Firms:** When asked if the Corps was concerned about the design's affect on the morale of the user, the respondents all agreed that this was a Corps priority during design. This is reflected in the aggregate response of 2.8 and standard deviation of 0.98. None of the responses were negative.

**Proj Mgrs:** Project managers also responded positively with an aggregate response of 2.71 and a standard deviation of 1.28. Only one project manager rated this question negatively. The others were grouped at neutral or better.

**5. Meetings with the user group were held periodically during the programming or design phase.**

|                   |   |       |   |   |   |   |                      |
|-------------------|---|-------|---|---|---|---|----------------------|
| strongly<br>agree |   |       |   |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3     | 4 | 5 | 6 | 7 |                      |
|                   |   | [ ] + |   |   |   |   |                      |

**Firms:** Most firms agreed that meetings with the User were held periodically during the programming and design phases. Only one firm indicated that these meetings were not occurring during the design phase of Corps projects. The average response of 2.33 with a standard deviation of 1.14 indicates that these meetings were typical on most projects.

**Proj Mgrs:** The PMs aggregate response to this question was 2.71 with a standard deviation of 1.28, indicating that the project managers agreed that meetings with the user and A-E were occurring during the course of a project.

**6. Meetings with the users contributed beneficially to the design outcome.**

|                   |     |   |   |   |   |   |                      |
|-------------------|-----|---|---|---|---|---|----------------------|
| strongly<br>agree |     |   |   |   |   |   | strongly<br>disagree |
| 1                 | 2   | 3 | 4 | 5 | 6 | 7 |                      |
|                   | [ ] | + |   |   |   |   |                      |

**Firms:** With the exception of two firms, all others rated the benefit of user contributions to the design outcome positively. The average response was 1.93 with a standard deviation of 1.12 indicating the majority of the responses were grouped close together. Only one firm rated this question negatively. The largest group of responses, 13, were between one and two.

**Proj Mgrs:** Project managers also rated this positively with an average of 2.43 and a standard deviation of 1.05. While most responses were between one and two, several project managers did respond neutrally. The difference between this average response and the A-E's response may indicate that A-Es value the users input more than managers. The difference is not significant enough to conclude that project managers do not value user input during the design phase of a project.

**7. Corps contract documents and requirements were so restrictive that it limited the quality of your design solution.**

|                   |   |   |     |   |   |   |                      |
|-------------------|---|---|-----|---|---|---|----------------------|
| strongly<br>agree |   |   |     |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4   | 5 | 6 | 7 |                      |
|                   |   |   | [ ] | + |   |   |                      |

**Firms:** The majority of the firms agreed that the Corps contract documents and requirements impacted the quality of the design services they provided. Twelve of the fifteen firms responding were neutral or in strong agreement. Only two firms felt that these documents and requirements did not affect their design. The average response among the firms was 3.53 with a standard deviation of 1.67.

**Proj Mgrs:** Project managers, although more neutral on this question, indicated that they did not believe these documents and requirements restricted the firms ability to provide good designs. Three responded positively, while four rated it negatively, resulting in an average response of 4.14 and a standard deviation of 1.36.

**8. During design, your firm was allowed to develop the best (most efficient and economical) design solutions.**

|                   |   |      |   |   |   |   |                      |
|-------------------|---|------|---|---|---|---|----------------------|
| strongly<br>agree |   |      |   |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3    | 4 | 5 | 6 | 7 |                      |
|                   |   | [ ]+ |   |   |   |   |                      |

**Firms:** Design firms agreed that they were allowed to develop the most efficient and economical design solutions on their Corps projects. The three firms who rated this comment negatively did not give any reasons for this rating. The average response to this question was 2.93 with a standard deviation of 1.73.

**Proj Mgrs:** The average response among project managers was 3.0 with a standard deviation of 1.07. The project managers, although not as positive in their response, were

grouped very closely indicating that they felt that firms were allowed to pursue the best design solutions.

**9. Were predesign and design review conferences held with Corps and user representatives? When and how often?**

|               |      |     |     |    |            |
|---------------|------|-----|-----|----|------------|
|               |      |     |     |    | How often? |
| Predesign     | [15] | Yes | [ ] | No | _____      |
| Design review | [15] | Yes | [ ] | No | _____      |
| User review   | [15] | Yes | [ ] | No | _____      |

**Firms:** Firms unanimously agreed that pre-design and design review conferences were held periodically with the Corps and user representatives. Responses indicated that these conferences were occurring at least twice and as needed during each phase of design with both the Corps and users.

**Proj Mgrs:** Project managers also agreed unanimously that review conferences were being held during each of these phases.

**10. Project requirements were clearly defined from the start.**

|          |   |   |     |   |   |   |          |
|----------|---|---|-----|---|---|---|----------|
| strongly |   |   |     |   |   |   | strongly |
| agree    |   |   |     |   |   |   | disagree |
| 1        | 2 | 3 | 4   | 5 | 6 | 7 |          |
|          |   |   | [ ] | + |   |   |          |

**Firms:** When asked if project requirements were clear from the start, responses were evenly split with the largest group of responses (4), being neutral. Six firms responded in agreement and five disagreed on this issue. The average response was 3.8 with a standard deviation of 1.76. This is only .2 of a point from neutral but, the relatively high standard deviation indicates that the responses were widely

spread therefore not very reliable. This indicates that there is some inconsistency in the preparation of project requirements or programs.

**Proj Mgrs:** Project managers responded more negatively to this question as indicated by an average response of 5.29 and a standard deviation of 1.03. The responses were grouped tightly indicating that project managers feel that project requirements are not well defined at the time firms are contracted for design services. The difference in the average responses of the A-E and project manager is significant enough to warrant more probing into this issue. It is more expected that the response values would have been reversed.

**11. The work you performed for the Corps is representative of your firm's best design capabilities.**

|                   |   |   |   |   |   |   |                      |
|-------------------|---|---|---|---|---|---|----------------------|
| strongly<br>agree |   |   |   |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4 | 5 | 6 | 7 |                      |
| [ ] +             |   |   |   |   |   |   |                      |

**Firms:** The firms feelings about whether or not the services they provided to the Corps were representative of their best design abilities, was evenly divided. A larger percentage of these firms felt that their services were their best, as indicated by the average response of 3.53. A standard deviation of 1.89 indicates that the responses were spread out and this response is not a good representation of the

population opinion. Among the respondents only three "strongly agreed" that they performed their best.

**Proj Mgrs:** Project managers believed that the services A-Es provided was their best effort. They were more consistent in their response, with an average of 3.86 and a standard deviation of .99, indicating that they agreed, as a group, that firms providing services to the Corps were doing their best.

**12. Corps' changes to your design solutions were valid and necessary.**

|                   |   |   |   |   |   |   |                      |
|-------------------|---|---|---|---|---|---|----------------------|
| strongly<br>agree |   |   |   |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4 | 5 | 6 | 7 |                      |
| +[]               |   |   |   |   |   |   |                      |

**Firms:** The aggregate response indicated that firms felt that design changes by the Corps were valid. The average response to this question was 3.53 with a standard deviation of 1.45. Although they did not strongly agree that the changes were necessary, eleven of the fifteen respondents were neutral or in agreement.

**Proj Mgrs:** Project managers gave this question similar ratings with an average of 3.43 and a standard deviation of 1.05. This indicates that project managers believed that the changes directed as part of their design review were necessary and well thought out.

13. What was the originating cause of these changes? (rank in ascending order, 1= most common)

|      |     |                                           |
|------|-----|-------------------------------------------|
| A-E  | PM  |                                           |
| [1 ] | (1) | User requirements/changes                 |
| [3 ] | (4) | Corps changes                             |
| [5 ] | (3) | Firm failure to meet program requirements |
| [4 ] | (5) | Federal requirements                      |
| [2 ] | (2) | Budget                                    |
| [ ]  |     | Other (please explain): _____             |

**Firms:** The firms indicated that these changes occurred primarily as a result of action by the Corps or user. User requirements, which were ranked first, may have been the result of unclear requirements or poor communication between Corps and user. Budget changes, ranked second, indicate that the facility was possibly under-budgeted or over-designed. All of the firms ranked the "firm's failure to meet requirements" as last.

**Proj Mgrs:** The project managers also rated "user and budget" first and second respectively. They indicated as their third cause, the failure of firms to meet the program requirements.

14. These changes significantly affected completion time.

|          |   |   |     |   |   |   |          |
|----------|---|---|-----|---|---|---|----------|
| strongly |   |   |     |   |   |   | strongly |
| agree    |   |   |     |   |   |   | disagree |
| 1        | 2 | 3 | 4   | 5 | 6 | 7 |          |
|          |   | + | [ ] |   |   |   |          |

**Firms:** When asked about the impact of these changes to their project schedule and completion time, the majority of the respondents felt that changes did affect their completion time. The average response was 3.80 with a



standard deviation of 1.33 which indicates that the responses were fairly consistent and is a good representation of the general population. Only one firm felt strongly that it did not affect its project completion time.

**Proj Mgrs:** Project managers gave this an average rating of 2.57 with a standard deviation of 0.90. Since the average number of projects managed by project managers surveyed was about 100, from experience they know that these changes do affect project completion time or schedule.

**15. These changes significantly affected project cost.**

|                   |   |   |    |   |   |   |                      |
|-------------------|---|---|----|---|---|---|----------------------|
| strongly<br>agree |   |   |    |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4  | 5 | 6 | 7 |                      |
|                   | + |   | [] |   |   |   |                      |

**Firms:** The firms average response was 3.67 with a standard deviation of 1.45. Except for two firms, there was agreement that the changes significantly affected the firms project cost. The largest grouping of responses (8) was neutral, indicating that most firms may have experienced an equal number of changes that affected project cost as well as changes that did not affect cost.

**Proj Mgrs:** Project managers were in more agreement with this statement as indicated by their average response of 2.29 and a standard deviation of 0.45, indicating that changes do impact project cost.

16. Your firm was fairly compensated for the additional time or cost.

|                   |   |   |   |    |   |   |                      |
|-------------------|---|---|---|----|---|---|----------------------|
| strongly<br>agree |   |   |   |    |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4 | 5  | 6 | 7 |                      |
|                   |   | + |   | [] |   |   |                      |

**Firms:** Only three firms agreed that they were fairly compensated for the additional time or cost involved in incorporating design changes. The largest concentration of responses (6), strongly disagreed that they were fairly compensated for the additional time and cost. The average A-E response was 5.07 with a standard deviation of 1.85.

**Proj Mgrs:** Project managers, on the other hand were of the opinion that the firms were fairly compensated for any additional cost and time resulting from changes. Their average response was 3.0 with a standard deviation of 1.20. This indicates that PMs and A-Es disagree on this issue.

17. Corps projects are more complex than work with private owners.

|                   |   |   |   |    |   |   |                      |
|-------------------|---|---|---|----|---|---|----------------------|
| strongly<br>agree |   |   |   |    |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4 | 5  | 6 | 7 |                      |
|                   |   | + |   | [] |   |   |                      |

**Firms:** In comparing the complexity of Corps projects to private work, firms responded that they did not find the Corps projects any more complex. The largest grouping of responses (6) were neutral and the next largest (4) indicated that they strongly disagreed. The average response was 4.6 with a standard deviation of 1.82,

indicating that firms do not see any significant difference in the difficulty of Corps projects over private projects.

**Proj Mgrs:** Project managers, however, felt differently about this question as indicated by their average response of 3.14 and a standard deviation of 1.36.

**18. The Corps is more demanding, in terms of achieving quality design than private clients are.**

|                   |   |   |   |     |   |   |                      |
|-------------------|---|---|---|-----|---|---|----------------------|
| strongly<br>agree |   |   |   |     |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4 | 5   | 6 | 7 |                      |
|                   |   | + |   | [ ] |   |   |                      |

**Firms:** Only two firms felt that the Corps is more demanding than private clients, six responded neutrally, and seven disagreed, four strongly. The average response was 4.93 with a standard deviation of 1.94.

**Proj Mgrs:** Project managers indicated that they believe that the Corps is more demanding. Their average response was 2.71 with a standard deviation of 1.03.

**19. Several conceptual design solutions were developed and discussed with Corps representatives and users before a final selection was made.**

|                   |   |     |   |   |   |   |                      |
|-------------------|---|-----|---|---|---|---|----------------------|
| strongly<br>agree |   |     |   |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3   | 4 | 5 | 6 | 7 |                      |
|                   |   | [ ] | + |   |   |   |                      |

**Firms:** In response to the statement about the number of conceptual designs developed and discussed with the Corps, the firms strongly agreed that several designs were discussed before a final design was selected for complete

development. Their average response was 2.53 with a standard deviation of 1.45.

**Proj Mgrs:** The project managers also agreed that more than one conceptual design was developed as indicated by their average response of 3.43 and standard deviation of 0.90.

**20. The Corps was billed for each separate design proposal.**

|                   |   |   |   |   |     |   |                      |
|-------------------|---|---|---|---|-----|---|----------------------|
| strongly<br>agree |   |   |   |   |     |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4 | 5 | 6   | 7 |                      |
|                   |   |   | + |   | [ ] |   |                      |

**Firms:** The firms disagreed with the statement that the Corps was billed for each separate design proposal for a project. Only two firms responded positively that the Corps was billed for each conceptual design while the largest grouping (8) responded in strong disagreement. The average A-E response was 5.47 with a high standard deviation of 2.09.

**Proj Mgrs:** Project managers on the other hand agreed with this statement. Their response was slightly positive with an average of 3.57 and a standard deviation of 1.59. This indicates, although not strongly, that they believe the design firms charged the Corps for each separate proposal.

**21. The Corps was willing to make changes or ease requirements to allow for more efficient design.**

|                   |   |   |      |   |   |                      |
|-------------------|---|---|------|---|---|----------------------|
| strongly<br>agree |   |   |      |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4    | 5 | 6 | 7                    |
|                   |   |   | [ ]+ |   |   |                      |

**Firms:** The responses to this question varied but were concentrated mostly in the center of the scale. The average response was 4.2 with a standard deviation of 1.56, indicating slightly that firms view the Corps as unwilling to make changes to increase design efficiency.

**Proj Mgrs:** Project managers, surprisingly, also gave this a slightly negative response with an average of 4.29 and a standard deviation of 1.03.

**22. What was the most compelling reason for Corps to make program or requirement changes?**

| A-E   | PM  |                           |
|-------|-----|---------------------------|
| [ 1 ] | (1) | User requirements         |
| [ 2 ] | (2) | Budget                    |
| [ ]   |     | Other(pls explain): _____ |

**Firms:** The firms responded that the Corps would make changes first to satisfy user requirements, and second, to fit the budget. One other response was that the Corps would make changes if the federal or Corps building criteria changed.

**Proj Mgrs:** Project managers also agreed with this ranking, indicating that they would make changes first, to satisfy the user requirements and then to satisfy budget concerns.

**23. What was the Corps most willing to change to improve design efficiency or quality (rank in ascending order, 1 = first)?**

| A-E   | PM  |                             |
|-------|-----|-----------------------------|
| [ 2 ] | (1) | Material                    |
| [ 1 ] | (2) | Facility/ User requirements |
| [ 3 ] | (3) | Budget                      |
| [ ]   |     | Other(pls explain): _____   |

**Firms:** When asked to rank which factors the Corps was more willing to change in order to improve design efficiency and quality, the A-Es responses[ ] indicated that they believe the Corps was willing to change the facility design and/or the user requirements first, the material second, and the budget last.

**Proj Mgrs:** The project managers responses( ) indicated that they would change material first, the facility or user requirement second and the budget last. They also indicated that they would consider adjusting the construction procedures to improve design efficiency.

### C. Quality

#### 1. The Corps required quality work beyond industry standards.

|                   |   |   |     |   |   |   |                      |
|-------------------|---|---|-----|---|---|---|----------------------|
| strongly<br>agree |   |   |     |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4   | 5 | 6 | 7 |                      |
|                   |   | + | [ ] |   |   |   |                      |

**Firms:** The firms response to whether the Corps required quality work beyond industry standards was neutral as indicated by their average of 4.00 and a standard deviation of 1.41. The distribution of responses indicated that six of the firms agreed with this statement while five responded negatively.

**Proj Mgrs:** The average response from project managers was 2.86, in agreement, with a standard deviation of 1.46. This

response raises the question of whether or not the Corps and architects perceive industry standards differently.

**2. Your Corps projects have been nominated for or have won design awards in the public or private sector.**

|                   |   |   |   |   |   |   |                      |
|-------------------|---|---|---|---|---|---|----------------------|
| strongly<br>agree |   |   |   |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4 | 5 | 6 | 7 |                      |
| +[]               |   |   |   |   |   |   |                      |

**Firms:** Only three of the firms agreed that their projects were considered for design awards, and two responded neutrally. The remainder disagreed with this statement. The average response from the firms was 4.60 with a standard deviation of 2.06. The high standard deviation indicates that the responses were widely spread and are not a good representation of the feeling of the general population. These responses do indicate that some firms are being recognized for their government projects.

**Proj Mgrs:** The average response for project managers was 4.46 with standard deviation of 1.84. This indicates although there are not many projects that get nominated for awards, there are some that are considered.

**3. Were you involved in any way during the construction phase of any of the projects in which you furnished documents? Please add comments if answer is yes.**

[ 8 ] Yes                      [ 7 ] No

**Firms:** The responses as to whether or not they were involved "in any way" during the design phase were equally

divided between yes and no. Those who said they were involved indicated that most of their involvement was for the need to clarify design issues that arose during the construction phase. Other activities included on-call field visits and production of post construction drawings.

**Proj Mgrs:** The majority of the project managers indicated that design firms were involved in the construction phase, but mostly for clarifying design issues.

**4. If your firm had been regularly involved in the construction phase, there would have been a significant improvement in the quality of the final product.**

|                   |   |     |   |   |   |   |                      |
|-------------------|---|-----|---|---|---|---|----------------------|
| strongly<br>agree |   |     |   |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3   | 4 | 5 | 6 | 7 |                      |
|                   |   | [ ] | + |   |   |   |                      |

**Firms:** The firms strongly agreed that the quality of the project after construction would have been significantly improved if they had been contracted for involvement during the construction phase. Their average response was 3.07 with a standard deviation of 1.69. Only three firms responded negatively and only one of them felt strongly about his response.

**Proj Mgrs:** Project managers also agreed that there would have been significant improvement with the quality of the final product if the design firms were more involved in the construction phase. Their average response was 3.86 with a standard deviation of 1.25.



#### D. Compensation

**1. Compensation for services provided to the Corps are greater than, equal to, or less than that which can be received for similar projects in the private sector.**

|              |   |   |       |   |           |
|--------------|---|---|-------|---|-----------|
| greater than |   |   | equal |   | less than |
| 1            | 2 | 3 | 4     | 5 | 6 7       |
|              |   |   | +     |   | []        |

**Firms:** Firms responded that compensation they received from the Corps is less than what they can receive for similar services and projects in the private sector. The average response was 5.80 with a standard deviation of 1.22, indicating that respondents were in agreement and this is a good representation of the architects' feelings.

**Proj Mgrs:** Project managers indicated that they thought the compensation was comparable to private projects. Their average response was 4.29 with a standard deviation of 1.39 indicates that they too feel slightly that compensation is somewhat less on Corps projects.

**2. What is your opinion of the Federal 6% ceiling for architectural fees?**

**Firms:** The firms opinions about the 6% fee ceiling established by statute were:

- "not realistic
- not enough- they should review the complexity of each project and not have a ceiling.
- very limiting especially for complex projects or projects that require intensive user interface.

- It has applicability to certain projects types and cost; inappropriately low.

- Antiquated, unfair, too low.

- Not meaningful or realistic when dealing with small work or renovation projects or when multiple engineering consultants are required (ie civil, kitchen, landscape etc.)

- Fair for design and construction document services only.

- Appropriate only when construction costs exceed \$15,000,000.

- I can understand why the ceiling exists, however, the Government representative should be aware that some project types are more complicated- (hospitals, renovations, labs, etc...)

- Standard should be revised based not only on design time but also on liability."

**Proj Mgrs:** Project managers responses were:

- "Adequate.

- I think it is too restrictive, especially for repair and maintenance projects.

- 6% is a fair ceiling.

- Varies with locale. Often hard to meet. Sometimes circumvented by classifying direct design as "non-design" costs.

- It is unreasonable to apply a fixed percentage on design work for all sizes of projects. A certain fixed

effort (\$) is required no matter how small a project is. A sliding scale(inverse) would have been more appropriate.

- Unfair for small projects."

**3. The Corps always paid your billings on time.**

|                   |   |   |     |   |   |   |                      |
|-------------------|---|---|-----|---|---|---|----------------------|
| strongly<br>agree |   |   |     |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4   | 5 | 6 | 7 |                      |
|                   |   | + | [ ] |   |   |   |                      |

**Firms:** Firms responded in overall agreement that they did get paid on time, however several responses ranged from neutral to strong disagreement. The average response was 3.20 with a standard deviation of 1.83.

**Proj Mgrs:** Project managers were more positive on this question as indicated by their average response of 2.86 with a standard deviation of 1.12.

**4. Getting paid for Corps projects was a difficult process.**

|                   |   |   |   |      |   |                      |
|-------------------|---|---|---|------|---|----------------------|
| strongly<br>agree |   |   |   |      |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4 | 5    | 6 | 7                    |
|                   |   |   |   | +[ ] |   |                      |

**Firms:** The response to this statement was that most firms did not feel that getting paid for their services to the Corps was a difficult process. Their average response was 5.00 with a standard deviation of 1.51. This procedure is well described in the contract clauses given to the firms and is very explicit as to the actions of the firm and the time lapse for payment.

**Proj Mgrs:** Project managers responded by indicating that paying firms was not a difficult process. Their average response was 4.86 with a standard deviation of 1.36. The fact that the responses were almost neutral indicates that there may have been some isolated problems.

**5. Corps projects are more profitable than private work.**

|                   |   |   |   |   |     |   |                      |
|-------------------|---|---|---|---|-----|---|----------------------|
| strongly<br>agree |   |   |   |   |     |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4 | 5 | 6   | 7 |                      |
|                   |   |   |   | + | [ ] |   |                      |

**Firms:** The average A-E response was 5.67 with a standard deviation of 1.40, indicating that firms do not find Corps projects profitable. Ten of the respondents indicated that Corps projects were less profitable than private work. Seven of these ten firms felt strongly that this was the case.

**Proj Mgrs:** Project managers were more neutral but also indicated that they felt Corps projects were not very profitable for design firms. The average of their responses was 4.29 with a standard deviation of 1.03, indicating that the project managers were in general agreement on this issue.

**6. What was the major billing difference between Corps work and your private client projects?**

**Firms:** In response to the major difference between Corps and private billings, responses were:

- "Corps always paid promptly.
- You will get paid for service to the Corps.
- Payment assured on schedule.
- Costs for additional services for private clients were easier to negotiate.
- Private work- more fee, less red tape.
- No real difficulty in billing. Difficulty lies in having to compile such a detailed breakdown of A-E fee proposal, especially since inevitably, several fee proposals have to be made during fee negotiation, before an agreement is achieved.

- When projects are managed well by project coordinator, billings and payment are very prompt.

- Quite dependent on project type.
- Profitability.
- Corps paid on time, however took 10% off the top until the end of the project.

- The private sector is usually less reliable."

**Proj Mgrs:** Project managers responses:

- "Corps allows monthly billings rather than end product billings.
- A percentage of the payment is withheld until the job is completed.
- Time it takes to process invoice.
- How progress payments are calculated. Flexibility on payment schedule.

- I don't know private billing procedure.
- Must go through different offices."

#### E. Miscellaneous

##### 1. The Corps took advantage of your full range of architectural services.

|                   |   |   |       |   |   |   |                      |
|-------------------|---|---|-------|---|---|---|----------------------|
| strongly<br>agree |   |   |       |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4     | 5 | 6 | 7 |                      |
|                   |   |   | + [ ] |   |   |   |                      |

**Firms:** The responses to the statement that the Corps took advantage of all the services offered by architects, was fairly equal. The average response was 4.00 with a standard deviation of 1.75, indicating that the responses were widely dispersed. The largest number of respondents (4) were slightly in disagreement rating this a 5, while the second largest group (3) were grouped at 3.

**Proj Mgrs:** The average response from the project managers was 3.57 with a standard deviation of 1.05, indicating that they too were relatively neutral on this issue. However, the low standard deviation indicates that they feel that the Corps does take advantage of the firms services.

##### 2. Your firm could have provided a better final product if the Corps was willing to contract for more of your services.

|                   |   |   |       |   |   |   |                      |
|-------------------|---|---|-------|---|---|---|----------------------|
| strongly<br>agree |   |   |       |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4     | 5 | 6 | 7 |                      |
|                   |   |   | [ ] + |   |   |   |                      |

**Firms:** The average response to this issue, 3.40, indicates that A-Es feel there would have been a better final product if the Corps was willing to contract for more of their professional services (ie construction administration, site visits etc.). The largest group of responses, two groups of 4 each, were in the neutral and strongly agree zones. The standard deviation for the responses was 1.99.

**Proj Mgrs:** Project managers were also in agreement that the Corps would have benefitted from a better final product. Their average response was 3.71 with a standard deviation of 1.16. This may indicate that the project managers believe that others services should be included as part of the A-E contract.

**3. Your contract with the Corps was problem free and satisfying.**

|                   |   |   |     |   |   |   |                      |
|-------------------|---|---|-----|---|---|---|----------------------|
| strongly<br>agree |   |   |     |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4   | 5 | 6 | 7 |                      |
|                   |   |   | [ ] | + |   |   |                      |

**Firms:** The aggregate A-E response was neutral with an average rating of 4.00 and a relatively high standard deviation of 2.03. This is a surprise after reviewing their previous responses on contract negotiation and compensation. Only four firms indicated a strong disagreement with this statement.

**Proj Mgrs:** Project managers were more negative in their response as indicated by an average of 5.00 and a standard

deviation of 1.41. Only one out of eight respondents thought that contracts were problem free.

**4. What did you like best about working with the Corps?**

**Firms:** When asked what they liked most about working with the Corps, the responses were:

- "Project managers are efficient and good to work with.

- Timely compensation.

- Travel, education, people.

- Different projects, sure pay.

- Variety of work, significant projects, public visibility.

- Open and straight forward.

- Technical review.

- Prompt payment.

- Few calls during construction.

- Professionalism."

**Proj Mgrs:** Project managers responses on what they thought A-Es liked best about working with the Corps were:

- "No risk for the A-E.

- Certainty of payment for work performed.

- Heavy review educates A-Es and reduces perceived liability. The government will pay its bills (dependable).

- Experience with military criteria to build their capabilities."



**5. What did you like least about working with the Corps?**

**Firms:** When asked what it was they liked least about working with the Corps the responses were:

- "Repair and maintenance projects which require extensive site visits and meetings.
- A lot of different review comments.
- Negotiating a contract.
- Cumbersome review process.
- Red tape, bureaucracy, low fees.
- A-E fees not commensurate with work expected by the Corps.
- Overkill, bulky specifications, excessively detailed estimates.
- Change in users, scope, project coordinators.
- Unreasonable reviews.
- Paperwork and run around for answers.
- No design flexibility.
- The process- too many "non-productive" people involved who provide review comments irrelevant to the particular stage of work."

**Proj Mgrs:** Project manager responses on what they believed A-Es liked least about working with the Corps:

- "Corps regulations, standards, short suspense, reviews.
- Changes in the scope of work by the using agencies during design.

- Heavy review causes rework for less than satisfactory design or coordination. This reduces profit. Perception that Corps over specifies things. Perception that Corps is not innovative and resists new technologies.

- For small projects, the 6% limit. The bureaucracy. Negotiating for fee.

- Following Corps design criteria.

- Review is very strict. Where differences occurred, A-Es had to "swallow" their pride and do as the review comment requested."

**6. Your firm wants more projects with the Corps.**

|                   |   |   |     |   |   |   |                      |
|-------------------|---|---|-----|---|---|---|----------------------|
| strongly<br>agree |   |   |     |   |   |   | strongly<br>disagree |
| 1                 | 2 | 3 | 4   | 5 | 6 | 7 |                      |
|                   |   | + | [ ] |   |   |   |                      |

**Firms:** Firms generally agreed that they want more Corps projects as indicated by an average response of 3.27, but with the highest standard deviation (2.29) of all questions. This indicates that responses were widely spread. The average was positive but this is not a good representation of A-E feelings as a whole.

**Proj Mgrs:** Project managers believe that A-Es want Corps projects as indicated by their average response of 2.57 with a standard deviation of 1.29.

**7. What factors would increase your desire for more Corps projects?**

**Firms:** Firms felt that the following factors would increase their desire for more Corps projects:

- "Worsening economy.
- Better compensation scale.
- Less renovation and maintenance projects.
- Better fee and normal participation during

construction.

- Selection for larger projects.
- More emphasis on design quality.
- More projects, more compensation.
- Better coordination between users and Corps. User

requirements changed during funding and implementation."

**Proj Mgrs:** Question not asked.

**8. What changes would you propose before your firm will compete for more Corps projects?**

**Firms:** When the firms were asked what changes they would propose before they would compete for more Corps projects, the responses were:

- "Ability to select or reject projects not suitable due to workload or inflexible schedule.

- Realistic fee, not 6%, and participation in construction administration.

- Fair fee compensation and less oppressive work environment.

- Fee increase.
- More projects.
- Quicken review time.
- Changes would not occur in our lifetime."

**Proj Mgrs: Responses:**

- "Longer design times, shorter contracting times.
- Improve definition of the scope of work for Corps projects and try to reduce the number of changes during design to the scope of work.
- Standardize reviews, establish review teams assigned for duration of the project. This is done here to extent possible but it is not established as a Corps policy.
- "Soften" the 6% limit for design fees on small projects.
- Allow more creativity.
- Select A-Es that have proven acceptable performance records. Mediocre A-Es should not be selected.
- Pay them well. Make it worth their time. Keep them wanting to work for the Corps.
- Respect the A-Es design decision."

**9. Size of firm:**    Total Personnel : \_\_\_\_\_  
                          Architects: \_\_\_\_\_    Drafters: \_\_\_\_\_  
                          Engineers : \_\_\_\_\_    Staff       : \_\_\_\_\_

**10. Please enter actual or estimated figures for each calendar year:**

[Responses to this section of the survey were very inconsistent, to the point that very few firms even took time to complete it. Some felt this was confidential and others thought it wasn't pertinent to the survey.]

**11. Please include any other issues you consider important.**

**Firms:** Other issues that firms consider important:

a. "The most difficult part of the process is the prefinal and final review process. The number of reviewers and reviews often result in conflicting comments which are difficult and time consuming to resolve."

b. "Until recently the Corps has been denying A-Es the inclusion of professional liability insurance in their overhead factor. It is a cost that most design professionals are responsible for and affords protection for both the design professional and the Corps. The cost has been running approximately 3-5% of gross. If it hasn't already, this cost should be permitted by the Corps."

**Proj Mgrs:** None of the project managers responded to this question.

**Part II. Questions for Project Managers only.**

**A. Selection and Negotiation**

**1. What role did you play in the selection process?**

Project managers responses about their experience in the selection process varied from "no experience" to selection of A-Es for contracting. Several Project managers

only provided comments to the boards while most served on pre-selection boards and several served on selection boards. On projects costing less than \$75,000, several of the project managers made the actual A-E selection from a list of firms retained on Indefinite-Delivery contracts with the Corps.

**2. How many steps are there to the selection process?**

This question may not have been very clear to the project managers. The most common response was that there were 2-3 steps in the selection process. These were identified as consisting of Announcement of the project, pre-selection, and selection.

**3. Does the Corps notify firms of non-selection?**

Project managers agreed that firms not selected for specific project were notified of their non-selection by POD. Firms not selected during the pre-selection phase were notified immediately; however, firms "shortlisted" are not notified of their non-selection until after successful negotiation with the selected firm.

**4. Does the Corps meet with firms to tell them why they weren't selected, at the firms request?**

Project managers agreed unanimously that the Corps will meet with non-selected firms, upon their request, but at the

Corps convenience. These meetings are usually held with the chairman of the board where the firm failed selection.

**5. What are considered basic services?**

Generally, project managers listed basic A-E services as consisting of design, preparation of construction drawings, specifications and cost estimate. Specifically, they listed Project Design Management, Preparation of Design Analysis (Basis of Design), site surveys, meetings and conferences, travel and per diem, field investigations and coordination, attend meetings, and correction of design documents.

**6. What are considered "additional or other" services?**

Services listed as additional to services normally provided by A-Es on Corps projects include: Non-destructive or destructive testing; topographic survey; hazardous material sampling/ testing; sub-surface investigation; studies; field investigations; testing and analysis, cost estimates, laboratory testing, field monitoring of loads.

**7. What was your role in contract negotiation?**

The project managers responded that their role during the contract negotiation varied with the different projects, but usually, they were the Corps principal negotiator and

representative during contract negotiations with the architects.

**8. Which of the following contracts was most difficult to negotiate? (1=most)**

| Ranking                      | No. of Responses |
|------------------------------|------------------|
| [ 1] Fixed- Price            | (4)              |
| [ 3] Indefinite- Delivery    | (1)              |
| [ 3] Non-Appropriated Fund   | (1)              |
| [ 2] Small Business Purchase | (2)              |
| _____ N/A                    |                  |

The project managers ranked negotiation of fixed price contracts as the most difficult. They stated that in essence all their contracts are fixed price contracts because they must negotiate a fee for every project with the A-E.

**9. What was particularly difficult with each type of contract?**

Fixed price:    - Large audit required.  
                  - Determining effort required for design.  
                  - Scope definition at beginning.  
                  - Defining the project scope sufficiently to negotiate.  
                  - Negotiating final-price.

Indef-Delivery:- Not difficult.  
                  - Determining effort required for design.  
                  - Differing conditions during construction.  
                  - 6% limit.  
                  - Negotiating final- price.

NAF:   - Normally users want to be involved.  
         - Determining effort required for design.  
         - Changes by user.  
         - Following NAF special clauses.



- Small Business:- Timeliness/ responsiveness of A-E.  
- Must allow contingencies for cost and time due to inexperience.

**10. Which contract was most difficult to administer? Why?**

Non-Appropriated Fund (NAF) projects were identified by the project managers as most difficult to administer. The reasons stated include the potential for change, and use of proprietary materials on NAF projects is higher. NAF projects must also be administered with special contract clauses.

**B. Review process:**

**1. What was your role in the review process?**

The project managers indicated that their role in the review process was primarily as a coordinator between the A-E and the reviewing agencies. These responsibilities involved:

- Insuring all review agencies received design documents for their review.
- Planning and controlling timing and number of review periods.
- Insuring that review comments were provided to the designer and keeping a record of disposition and responses of review comments.
- Only one project manager indicated that he did any reviewing of the A-Es work. Another stated that he was involved only with review comments A-E disagrees with.

**2. Is there an established review process? If there is please describe it.**

Project managers indicated that there is an established review process during design. Projects in excess of \$1M have 3 reviews at 35%, 90%, and a back check at 100%. A-E submittals received by the project manager are sent to POD's Technical and Constructability/ Operability reviewers at all stages, and to the using agency or users at 35% and 90%. The agency requesting the design, the Corps' technical engineering, cost engineering, specifications, construction operations and field offices review the design documents and provide comments back to the project manager. Once reviews are completed, the project manager will usually hold a meeting to discuss the comments before sending them to the A-E. The comments are passed on to the designers who are required to annotate all review comments with their intent to comply, or rebuttal for all non-compliance. Project managers usually provide 2-4 weeks for review.

**3. Who are the standard reviewers for design contracts?**

The standard reviewers are:

a. Corps- Technical Engineering Division, Cost Engineering Div, Design Div (specs branch), Construction Operations Directorate (Quality Assurance Div), and the Hawaii Resident Office.

b. Using agency- functional review.

c. Director of Facility Engineering- maintainability and Master plan review.

**4. How long do reviews normally take?**

Project managers indicated that they usually allow from 2-4 weeks for review. One respondent indicated that the review is scheduled for 4-6 weeks but can take up to 60 days, another said no less than 4 weeks, and one other said 3-5 days.

**5. What causes reviews to take longer?**

Project managers indicated that delays in the review process may be contributed to several factors including: reviewers who are too busy, poor designs received from the A-Es, other higher priority Corps projects taking precedence, time it takes to get documents to the appropriate reviewers, late response from installation users, complexity of projects especially on engineering projects, mathematical errors in the A-E proposal and government estimate, and inadequate justifications for use of proposed overhead rate by the architects. Only one response contributed the lengthy review time to complacency and lack of urgency on the part of the reviewer.

**6. How many reviews were done, on the average, per project?**

Project managers stated that on the average they conduct 2-3 reviews per project. The 100% back check is not counted as a review.

**7. What was the most difficult part of this process?**

Project managers listed several issues they thought were difficult with the review process. First, was the resolution of review comments which the A-E did not think were appropriate or within their scope of work. Second, was getting the reviewers to return their review comments to the project manager on time. Third, is the tight schedule on project and reviews that result because of the year-end award of design contracts. Last, was the need to adjust the project schedule based on comments made late in the design process which result in more redesign.

**C. Miscellaneous**

**1. Do you believe that private firms dedicate adequate time and resources to Corps projects? Pls explain.**

Project managers were split on whether or not the A-Es were dedicating adequate time and resources for Corps projects. The reason project managers feel the A-Es dedicate adequate time and resources to Corps projects, is that A-Es want more Corps work so, they are well intentioned

and usually do their best to meet schedules. They credit this to the Corps review process that requires architects to provide adequate resources.

Project managers who felt that the A-Es don't dedicate adequate resources, point out that architects will dedicate their resources on large projects but, the smaller Corps projects tend to get buried in the firms workload. Another reason is that they believe A-Es tend to rely on the Corps' review process to catch their errors or omissions. Project managers also feel that A-E firms tend to use inexperienced personnel on Corps projects because any errors will be caught during the Corps' extensive reviews. There is a perception, among project managers, that architects do not check their work carefully because they rely on the Corps reviews to catch oversights.

Project managers also responded that based on the size of the project and workload/ schedule of the A-E, Corps projects do not always get the proper attention and resources for an acceptable design effort. Short suspenses also result in poor designs which are not properly checked for omissions, etc.

**2. Do architecture firm's submit a construction cost estimate before a final fee is agreed upon?**

Generally, project managers do not feel this is the case. Occasionally, A-Es are asked to verify the Corps' estimated construction cost(ECC) for projects as his fee

will ultimately be compared against this cost. In most cases, the Corps provides the estimate of construction cost. On operations and maintenance (O&M) projects where the overall scope of work may not be clearly identified, the A-E will submit an estimated cost of construction.

**3. Have any of your projects had to be settled through arbitration or litigation? What was the reason for this action?**

None of the project managers surveyed had any experience with arbitration or litigation on any projects they had managed.

**4. Have any of the design firms you have worked with been terminated, suspended, or abandoned a project?**

Only one project manager had a design firm terminated, and that was because the user had canceled the project.

**5. What are reimbursable expenses and do these fall under basic services or other services?**

Allowable or reimbursable expenses are negotiated and covered in the contract. These are "non-design" costs that are not covered by the Brooks Bill. These services include-travel, per diem, reproduction, consultants, sampling, testing, equipment rental costs, state taxes, fees, and permit expenses for right of ways. These reimbursable expenses are usually treated as a claim.

**6. How often have you had to go back to A-Es during the Construction phase for design problems?**

Most of the project managers responded that they often called on the A-E during the construction phase. This occurs at least 2 to 3 times per project, and sometimes as many as 5 times. Only one project manager stated that he rarely called on the A-E firm during the construction phase of a project.

**7. What are these problems?**

Problems the A-Es are called to resolve usually involves design omissions, clarification, or correction. Some designs are not constructable because of discrepancies with current existing conditions on the site or facility as a result of inadequate field investigations. Sometimes, the inability of the contractor to find materials or equipment to meet specification and plan requirements result in the need to redesign.

**8. What are your thoughts on the transfer of projects to Project Engineers after the construction document phase? Does this affect the quality of the final product or cause other problems?**

The project managers were not completely negative in their comments about this transfer of responsibility. However, they did say that it "may" cause a decline in the quality of the building. Several respondents stated that project engineers are more suited to handle the construction

administration since they are more familiar with construction procedures. One respondent mentioned that since the transfer occurs after the construction documents are completed, there should be little impact. Another stated that it would be ideal for the project manager to remain for the life of the project. POD is trying to implement a life cycle project management system that allows a project manager to manage a project from "cradle to grave." Currently, there is discontinuity in the Corps' procedures.

**9. What services do you believe A-Es should provide?**

The project managers who responded to this question stated that A-Es should provide the right people to accomplish "complete" design documents (plans, specifications, design analysis, and cost estimates). The A-Es should also document all meetings, discussions, design directions given to them by the Corps. A-Es should provide adequate supervision and in-house checks for all their work prior to submitting design documents. Also, it is extremely important that the A-E does extensive field work to verify as-built drawings and current existing conditions especially on maintenance and repair projects. The A-Es should also provide suggestions for how to cut construction costs and consultation services during construction.



**10. How would you rate the professional design services received by the Corps?**

- [ 0] Excellent
- [ 2] Good
- [ 1] Average (Equal to Private project services)
- [ 0] Fair
- [ 0] Poor

Project managers responded that they believe the architectural services received are average.

**11. What did you find most difficult about working with architects?**

The responses to this question are:

- Architect's tend to "gold plate" their work. Because of budget constraints, sometimes the scope has to be reduced, or changes to the designs must be incorporated due to the architect's "gold plated" design.
- Quality not exceptional- just average.
- Negotiating the contract.
- On the average, they don't check their documents well to ensure a good product.
- Not understanding the Corps/ Federal regulations and how we do our business.
- Normally not a problem. If a problem occurs, it usually is a "personality" problem."

**12. What problems have you encountered in regards to compensation to A-Es for professional design services?**

- None or very few. Sometimes we have to depend on them to be honest and provide a fair fee proposal. Other

times, it seems most A-Es want to "pad" their proposal or "snow" the PM with the moon hoping we don't catch it.

- Laws and standard design percentages based on estimated construction costs limit the amount of funds (in a few cases) which can be paid to an A-E. In most instances, the limits on design costs do not impact a "fair and reasonable" compensation for the design.

- Being asked to pay for minor/ small items which cannot be readily identified, or "not worth the trouble to discuss during fee negotiations."

- In some cases, not allowing adequate man-hours to do the design work.

- Most difficult problem is determining what is "fair and just compensation."

## CHAPTER 6

### ANALYSIS

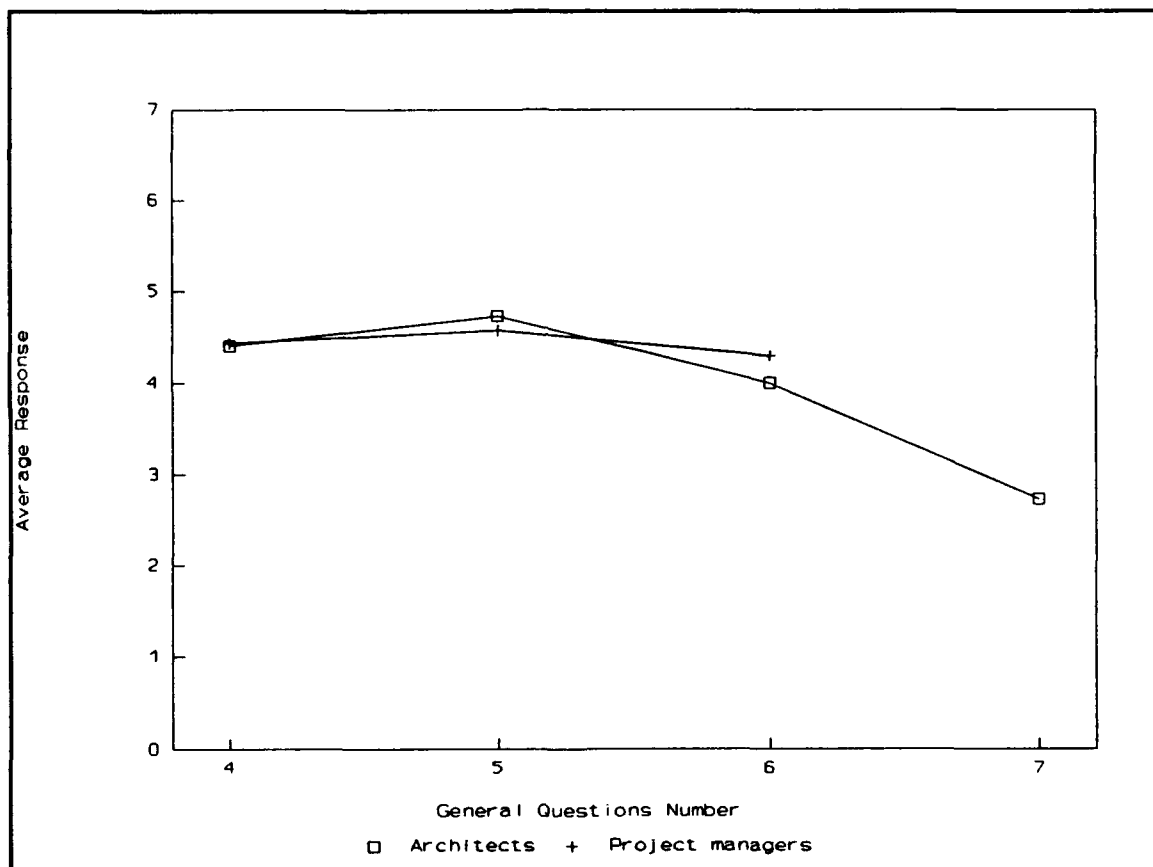
#### 6.1 General

This analysis focuses on specific responses in the surveys that indicate, by similarity or dissimilarity, that a systemic problem may exist and warrants further discussion. Questions receiving a relatively neutral average response from the architect and project manager, or with a high standard deviation were noted; however, they were not good indicators of systemic problems. The responses with high standard deviations indicate a wide dispersion of opinion and no consensus exists among the respondent group, architects or project managers, regarding that issue. Questions with a strong average response, positive or negative, from the architects or project managers, were more valuable in identifying issues affecting this working relationship.

Many responses received in the survey identified issues that were of concern to the architect and project managers. The short answer responses were especially valuable because they allowed the respondents to identify and clarify their concerns. Although most of these responses were redundant, several respondents raised some isolated and unique issues. These, however, were few and often unique to a firm's specific project with no indication of systemic problems in the working relationship.

## 6.2 General Section Analysis

In this category the architects and project managers provided excellent responses to both evaluative scale and short answer questions. Figure 2 graphs the average responses of all evaluative scale questions from the architects and project managers in this section. The similarity of the two graphs indicates that the architects and project managers are agreeable on these issues.



**Figure 2.** Graph of the average response for questions in the "General" category of the survey.

The graph shows the responses are fairly neutral meaning that neither the architects nor the project managers had any strong positive or negative opinions about these issues.

Several interesting disclosures were made regarding the architects pursuit of Corps projects from these responses . First, it was clear from the architect's and project manager's responses that most architects pursue Corps work primarily as a means of survival. They both ranked the "need for work" and "lack of private clients" as the top reasons for these firms to pursue Corps projects.

Responses from follow-up interviews with architects and project managers coincided with these ratings. The architects stated that they sought work from the Corps mainly to hold them over and to "keep their offices working" in the absence of private work. These firms saw the Corps as a good source of work during periods of economic decline. They felt that it made better buisness sense not to "keep all their eggs in their private client basket," but to also nourish a relationship with the Corps for public work. When work is plentiful and the private sector is fairly active, architects will not eagerly seek work from the Corps. Competent firms with established reputations and proven records will be sought after by private clients willing to pay well for their services. Since architects find private work less troublesome and more profitable, these firms will pursue these clients. When this happens, less experienced or less competent firms may be the only firms competing for the Corps' projects. The Corps then becomes what the project managers described as a "training school" for

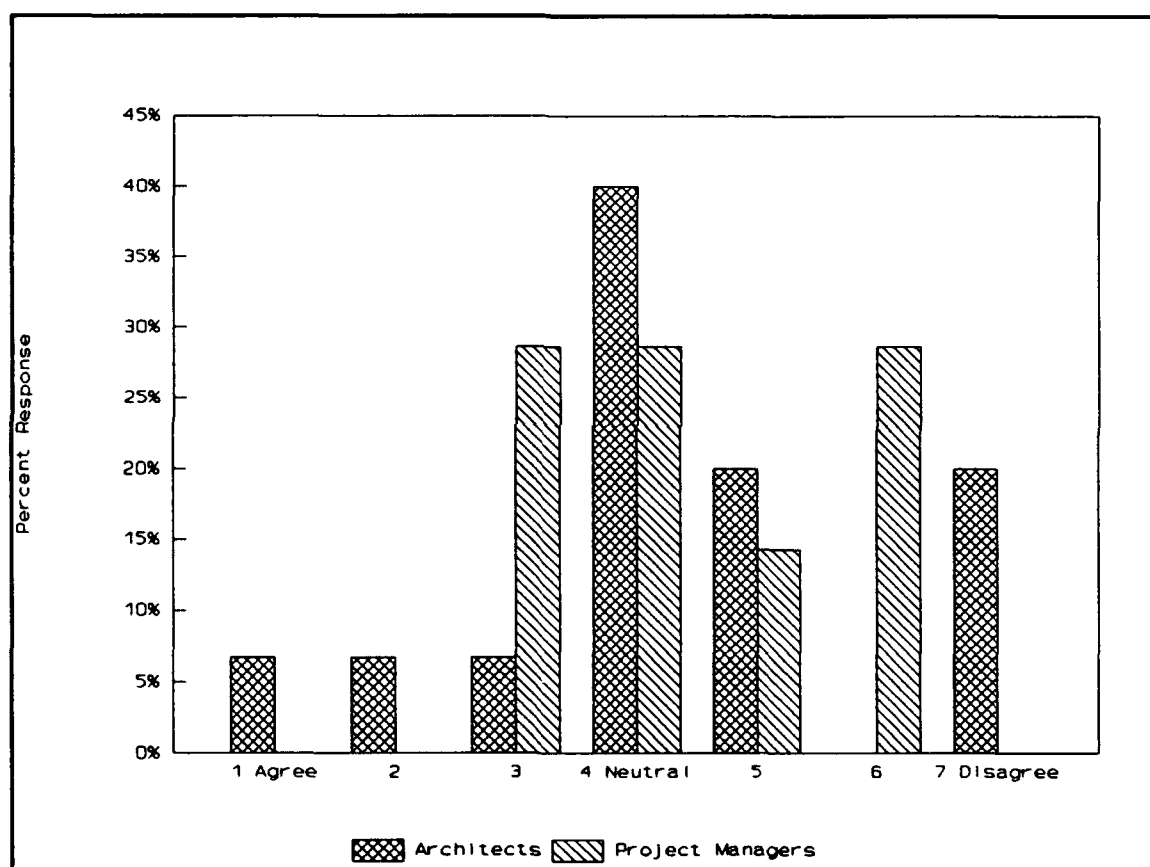
inexperienced architects or a niche for less competent firms.

Second, when asked if they preferred Corps work over private work, architects responded in favor of private projects. They cited several reasons for this preference, the most significant being project profitability. Architects are not pleased with the 6% fee limit and the frustrations they experienced during contract negotiations. They also dislike the cumbersome and "nit-picky" attitude of the Corps' reviews, which several felt was an affront to their professionalism and competence. The architects felt that their private clients respected their judgements and decisions as professionals, while the Corps treated them no different from laborers.

The Corps' project managers agreed with most of the architects responses. On follow-up interviews, project managers stated that the main reasons architects are not particularly fond of Corps projects relates to the Corps inflexibility, marginal profitability and numerous administrative requirements for submittals not normally encountered in the private sector. Interestingly, project managers were more definite in their belief that architects prefer private work. They did not agree that they treated the architects as laborers but, admitted that they extended no special treatment either. They stressed that their purpose was to protect the public interest by insuring the

Corps received the best services at the fairest prices.

Figure 3 illustrates architects and project managers responses to the question of the architects preference for Corps versus private work. Over 80% of the architects and 60% of the project managers indicated a neutral response or felt that architects preferred private work. Only 20% indicated a preference for Corps work.



**Figure 3.** Responses to whether architects preferred Corps projects to private work.

Third, when asked about "overall satisfaction" with Corps projects, in comparison to private work, the overwhelming response among architects and project managers is that architects do not find Corps projects satisfying.

The architects again cited limited profitability and design inflexibility as the main reasons for their dissatisfaction. Several firms cited examples where they were used primarily as a drafting service after the Corps' in-house architects had developed a design. These firms find this mundane and prefer to provide full design services. In addressing the Corps' inflexibility, architects focused on the Corps determination to stick with "tried and proven" methods of construction and materials. The architects felt that the Corps is rarely willing to try new methods or materials used in the private sector. Architects feel that they could have saved the Corps some money if the Corps had allowed them to use different materials or systems. This attitude restricts the architects design freedom and innovation which are essential ingredients of good design. Project managers agreed that the Corps' rules, requirements and concern for the public interest are usually the cause of these "limitations on design freedom."

Forth, architects and project managers also stated in their questionnaire and follow-up interviews that their most significant disagreements occurred during contract negotiations. They attributed this to several factors. First and most significant is the inability of the architect and project manager to agree on the estimate of "effort" required to satisfactorily complete the project and satisfy the contract. This effort, usually measured in number of



sheets required for the project, is based on documents provided by the Corps. Most architects believe that project managers will not be satisfied with the negotiations unless they can reduce the architect's estimate. The architects will protest but will try to accommodate the Corps lower estimate because they need the work. During interviews the architects stated that the Corps' estimate on their projects were always lower. Project managers believe that the architects inflate their estimate and come to the negotiations fully expecting to reduce their first proposal. This "gold plating," as the project managers call it, is done by the architects to increase their profit margin. Architects stated that they almost always find, upon completion of their project, that their original estimate of effort was accurate. Most architects denied inflating their estimates while several others mentioned that it only made good business sense to inflate and negotiate down.

Architects believe that part of the problem with the difference in the estimate is the poor preparation of the government form used to secure funding for the project, DD1391. This form is prepared by the Corps and presented to Congress so that money can be appropriated to fund a specific project. The DD1391, which states the scope of the project, is used by the architect to prepare an estimate of services. The architects believed that these DD1391s are inadequately prepared by someone inexperienced or

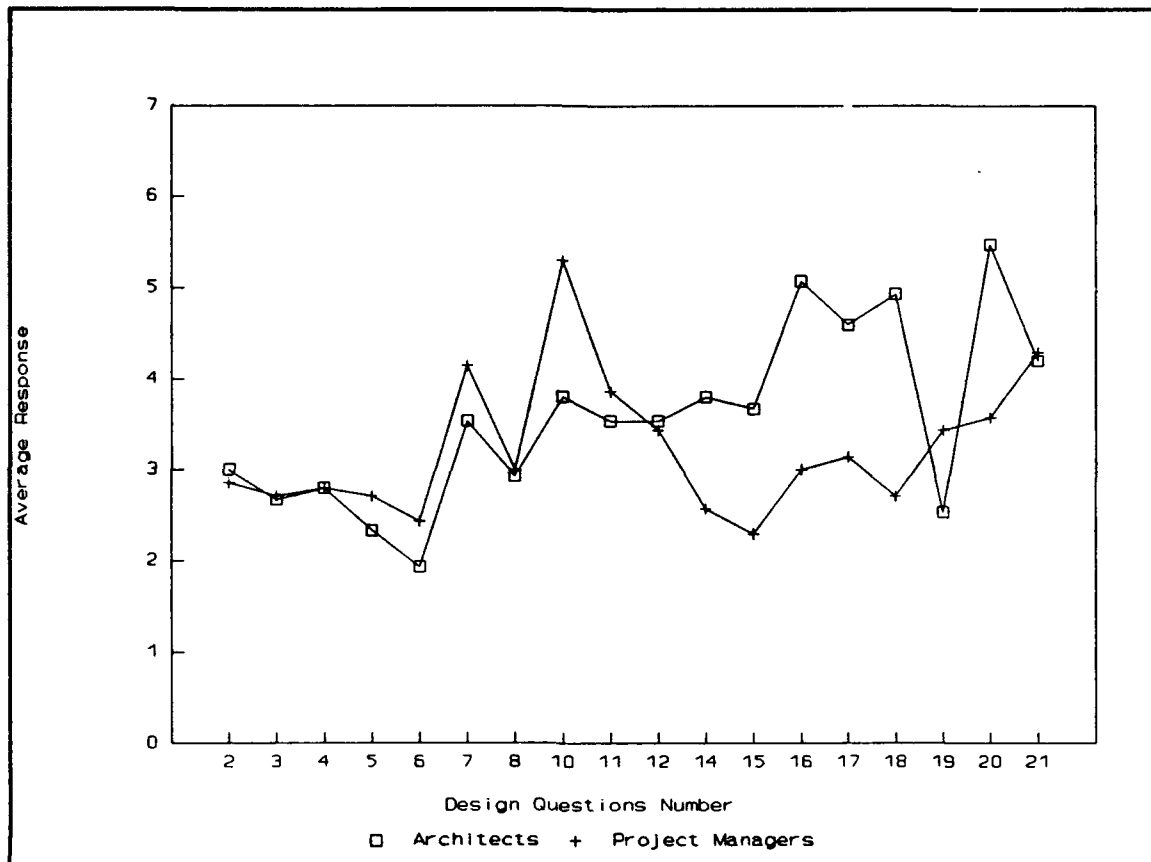
inadequately trained to produce construction estimates. They find that the quantity of funds requested is inadequate to construct the facility according to the scope. Architects believe that problems are already inherent because of this condition.

The last issue is the architectural firms unfamiliarity with Corps requirements and procedures. The Corps' actions are dictated by numerous statutory and operational restrictions not normally encountered in the private sector. Project managers stated that too many A-E firms do not take the time to read and understand the documents provided to them by the Corps. This results in many hours spent trying to resolve issues after the fact when they could have been avoided altogether. In contracts with international firms, the Corps is adamant that the architect reads and understands these documents. They go so far as to test the architect's knowledge of these documents before they issue a voucher for payment for services. This practice is not permitted in the U.S., so the Corps has no leverage to get the architects to read these documents. Architects providing services to the Corps who do not take time to familiarize themselves with these documents will experience frustration and will frustrate the project managers. Several architects stated that if firms invest time to read and understand these documents, working with the Corps will be much easier even for firms new to Corps projects.

### 6.3 Design Section Analysis

Some of the significant issues revealed in the survey responses included the architect's dissatisfaction with the Corps' project scope, unfair compensation for incorporating changes, and limited design freedom during the project. As expected, many of the divergent responses were in this category of the survey. A graph of the average responses for questions in this section (Figure 4) indicates that there are at least six questions on which the architects and project managers do not agree. These questions are identifiable by the difference in the average responses, where the responses are at least one scale unit different and on opposite sides of the neutral value of 4.

There were other issues in the responses that were not as divergent but, were also informative about the working relationships. A few of these are discussed briefly in this paragraph. First, architects and project managers agreed that the Corps' first priority during the design phase was satisfying the users requirements. This was followed closely by the Corps emphasis on functional design. Another interesting issue was the architects perception of the Corps' contract documents and requirements. Architects felt that these requirements are inflexible, restrictive, and limited their ability to develop a quality design solution. This opinion resulted because of the numerous statutory requirements and restrictive practices the architects must



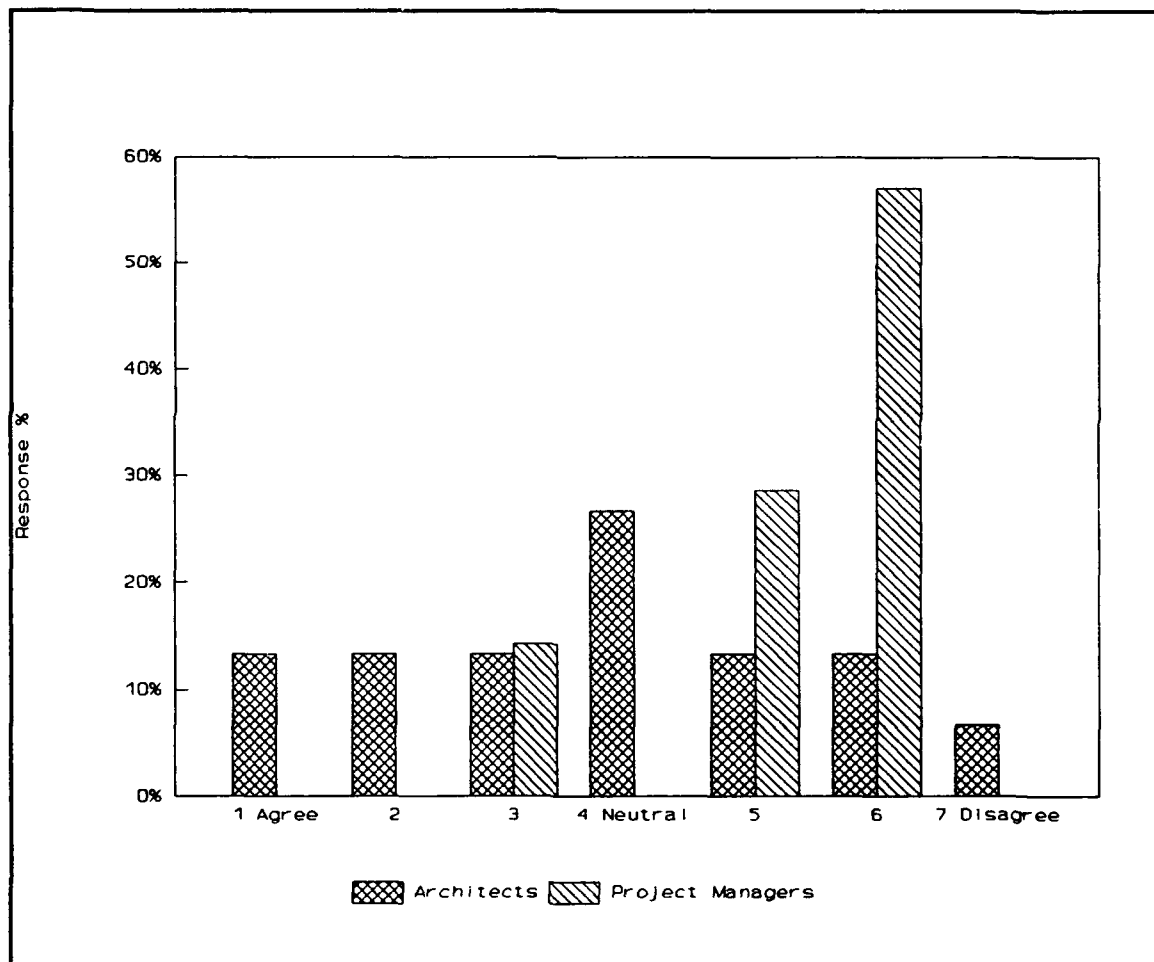
**Figure 4.** Graph of average responses in the "Design" category of the survey.

contend with on Corps projects. In the private sector architects deal with fewer restrictions and statutes (codes and Land Use Ordinance). The Corps is not likely to give the architect the same design freedom as a private client because of such considerations as the "installation character" and Federal building standards, but also because of their reluctance to try new ideas. The project managers were slightly more positive on this issue, feeling that the architects were given adequate design freedom to accomplish the project requirements as stated in the scope of work.

Architects and project managers disagreed when asked if the Corps' project scope and requirements were clearly defined on projects they had worked on. The architects average response (3.80) was more positive than the response of the project managers (5.29). The high standard deviation of the architects response (1.76) however, indicates that they were divided on this issue. Some firms felt strongly that the project scope and requirements were well defined, while others disagreed. Project managers were less positive in their response, indicating that they felt that the Corps' project scope tend not to be well defined at the start of their contract. This is significant because it is the initial scope and requirements on which the architects base their estimate. If project managers feel that these project scopes are unclear and ill-defined, clarifying them may solve the problems encountered during contract negotiations. Figure 5 illustrates the architects and project managers responses to this question. They were almost equally divided with 40% agreeing that the projects were well defined and 33% of the architects disagreeing. 26% of the architects, however, responded neutrally. Only 15% of the project managers felt the project scopes were clear.

Project managers, in follow-up interviews, expressed surprise at their aggregate response. Several attributed this response to the fact that the Corps' project scopes, as stated on the DD1391s, are prepared standard scopes

"tailored" to fit different projects. These generic scopes are not comprehensive and are not complete even after they had been tailored. The architects get a better idea of the project requirements when they meet with the user and project manager during the predesign conference.



**Figure 5.** Responses to the question of whether the Corps' project requirements were clearly defined at the start of the contractual relationships.

Several firms mentioned that during their first predesign meeting, the Corps expected them to assist in clarifying the scope of work, which to the architect amounted to "programming services." The architects felt that they were placed in a position where they "had" to assist in determining the specific requirements for the projects. These firms stated that they would gladly provide this service if the Corps would agree to pay them.

Architects realize that changes will always occur even on the best designed projects. When these changes are small and insignificant, the architects usually don't have much trouble incorporating them in the work. However, when changes are of considerable number or magnitude, or involve work outside the original scope of the project, and require a significant amount of time to incorporate, the architect expects additional compensation. In the design profession time is money, and changes take time and resources to incorporate. Architects admitted that changes during design of Corps projects impact both the cost and schedule of their work. They also stated that they were not compensated fairly by the Corps for the additional cost incurred as a result of these changes. These costs usually result from additional consultant and redesign fees that are unrecoverable by the firm. Project managers did not agree with the architect's response. They believed the architects were fairly compensated for significant changes on their

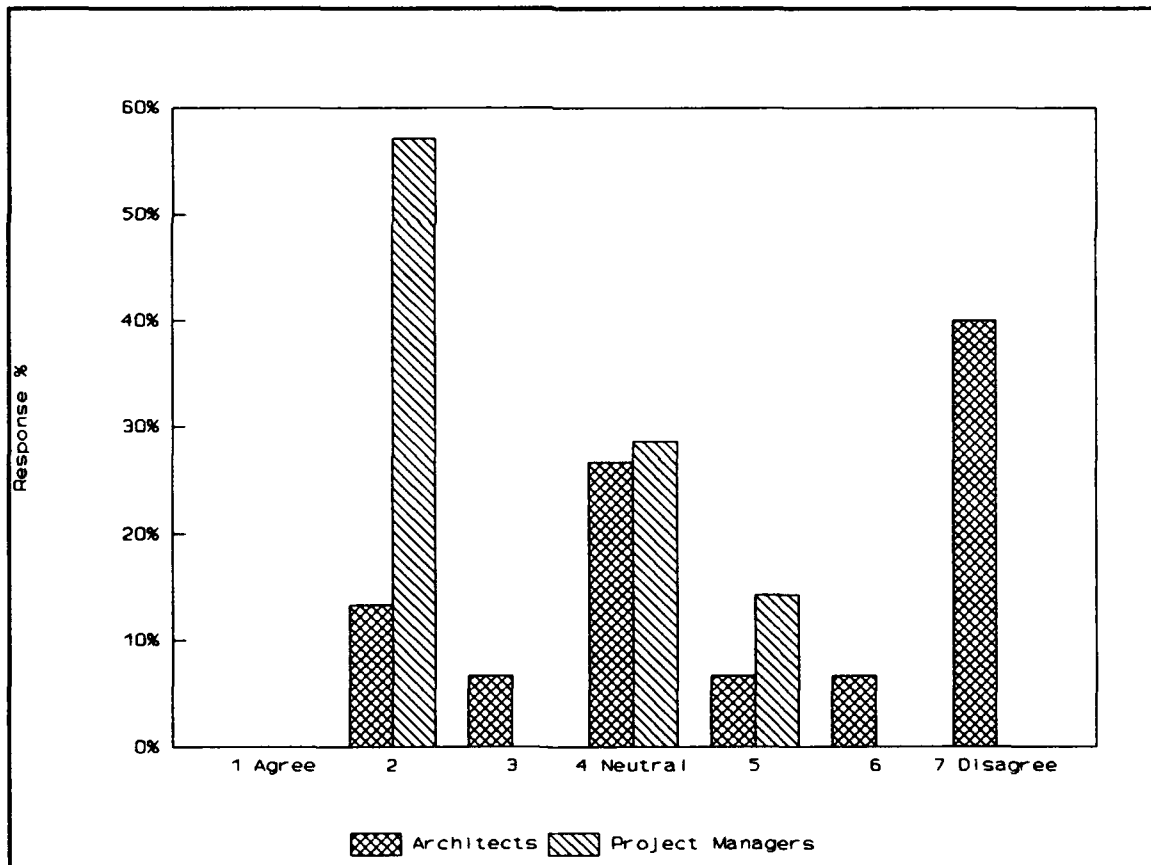
projects. This is interesting when compared to their response about the 6% fee ceiling. Project managers feel that this fee ceiling is not always fair, especially on smaller projects. They stated that the architect is fairly compensated for changes beyond the scope of work. Changes within the original scope of work result in additional design time but no additional money for the architect. The project managers also mentioned that occasionally the user asks for changes which are communicated to the architect in casual conversation or by telephone. The architect often agrees to incorporate these changes, which are usually small, without the mention of a fee increase. If these changes are numerous, the project managers will "sometimes" advise the architect to group them and negotiate a fee increase. Although the project manager may suggest this, the architect must initiate this action.

In follow-up interviews, the architects admitted that they often accommodate seemingly insignificant changes for two reasons. First, the process of negotiating to recoup the cost of incorporating a change is time consuming, cumbersome and often results in more negotiation cost for the firm. Sometimes the negotiation process takes too long and they must meet several times before they arrive at an agreement. Second, these firms want to maintain a good rapport with the Corps, wishing to avoid the stigma or reputation as a "difficult firm." Several firms stated that



when significant changes arose that were clearly beyond the scope of work, they did negotiate for additional fee.

Figure 6 shows how strongly the architects feel about "unfair compensation" for incorporating design changes, and the disparity in the architect's and project managers response. 40% of the architects felt strongly that they were not adequately compensated for the additional time or cost incurred as a result of incorporating these changes. 57% of the project managers felt the architects were fairly compensated for valid changes during the project.



**Figure 6.** Response to whether the architects were "fairly compensated" for time and cost resulting from changes on their projects.

Another issue architects and project managers did not agree on was whether the Corps' projects were more complicated than the architect's private work. Project managers believed that Corps projects were more complex, while architects did not feel this was the case. The Project managers explained that their response considered the Corps specific technical requirements and the unusual nature of some of their projects. Architects, in follow-up interviews, stated that they did not find the Corps projects any more complex. On unique or highly technical projects, some additional expertise may be needed, but by and large the procedures and requirements on typical projects are very similar. The architects mentioned that Operations and Maintenance (O&M) projects that they worked on were small, simple, unexciting and routine.

Another issue with a significant difference in the average responses of the architects and project managers is whether or not the Corps is more demanding in achieving quality design than the architect's private clients. Project managers felt the Corps was more demanding and cited the requirements of installation design standards and other rules architects must satisfy. The architects, however, did not agree with this perception. They stated that although the Corps had many requirements, these were similar to

services they may or may not perform on their private projects. The difference is that the Corps' requirements are mandatory.

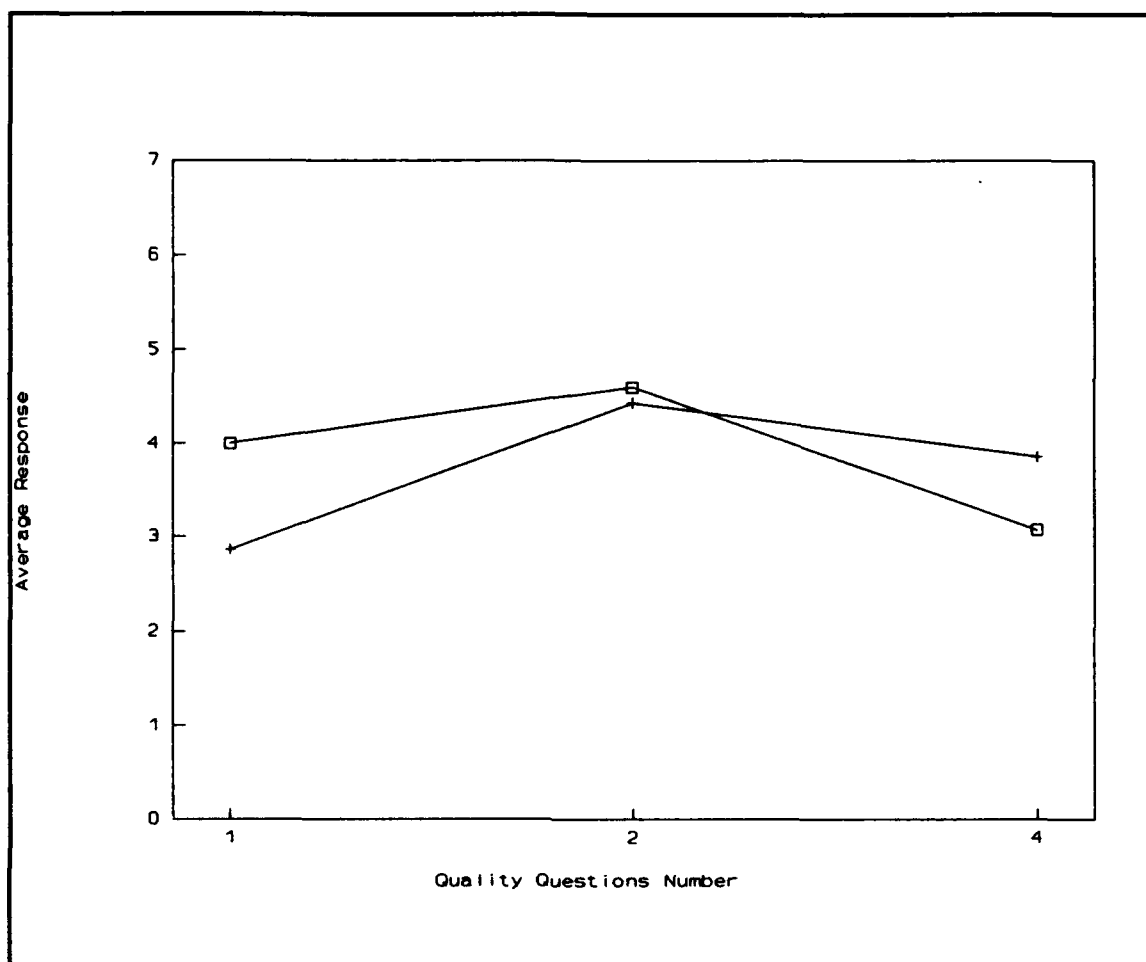
The last issue with a significant difference in the average response was whether or not the architects charged the Corps for "each separate design proposal." The discrepancy here occurred because of the obscurity of the question. Most of the architects understood the question to refer to the development of several conceptual design proposals prior to deciding on a final design. Based on this, they stated strongly that they did not charge the Corps for every conceptual design proposal. Project managers, on the other hand, believed the question referred to the development of the final design for each facility. One project manager stated that the architects are paid for all the services they provide, including the conceptual designs which should have been provided for in the contract.

#### **6.4 Quality Section Analysis**

The questions in this category of the survey were intended to determine how architects viewed the quality of the services they provided to the Corps. They also solicited the architects' and project managers' opinions of the quality of the project if the architect had been contracted to provide traditional construction administration services. Figure 7 graphs the average

responses for questions in this category. This graph shows that the responses, though not exact, are very similar. The current practice in the Corps is to pass responsibility for a project to a Project Engineer upon completion of design. The project engineer is responsible for administering the construction contract. None of the parties involved in the design of the facility, the architect or project manager, are involved during the construction phase except when design discrepancies arise. This breaks the chord of continuity, from design to occupancy, that can serve to resolve design misunderstandings and foresee construction problems. The importance of this is underscored by the architects who indicated that they were asked to clarify design issues several times during the construction phase of their projects.

In follow-up interviews, architects believed that the Corps could benefit from fewer problems during construction and a better quality facility if they would consider contracting architects for traditional construction administration services or periodic site visits during construction. Of course, the architects expect to be paid for this service but they feel that the benefits of resolving problems early, outweigh the cost of resolving these problems afterwards. Architects and project managers believed that contracting an architect for construction

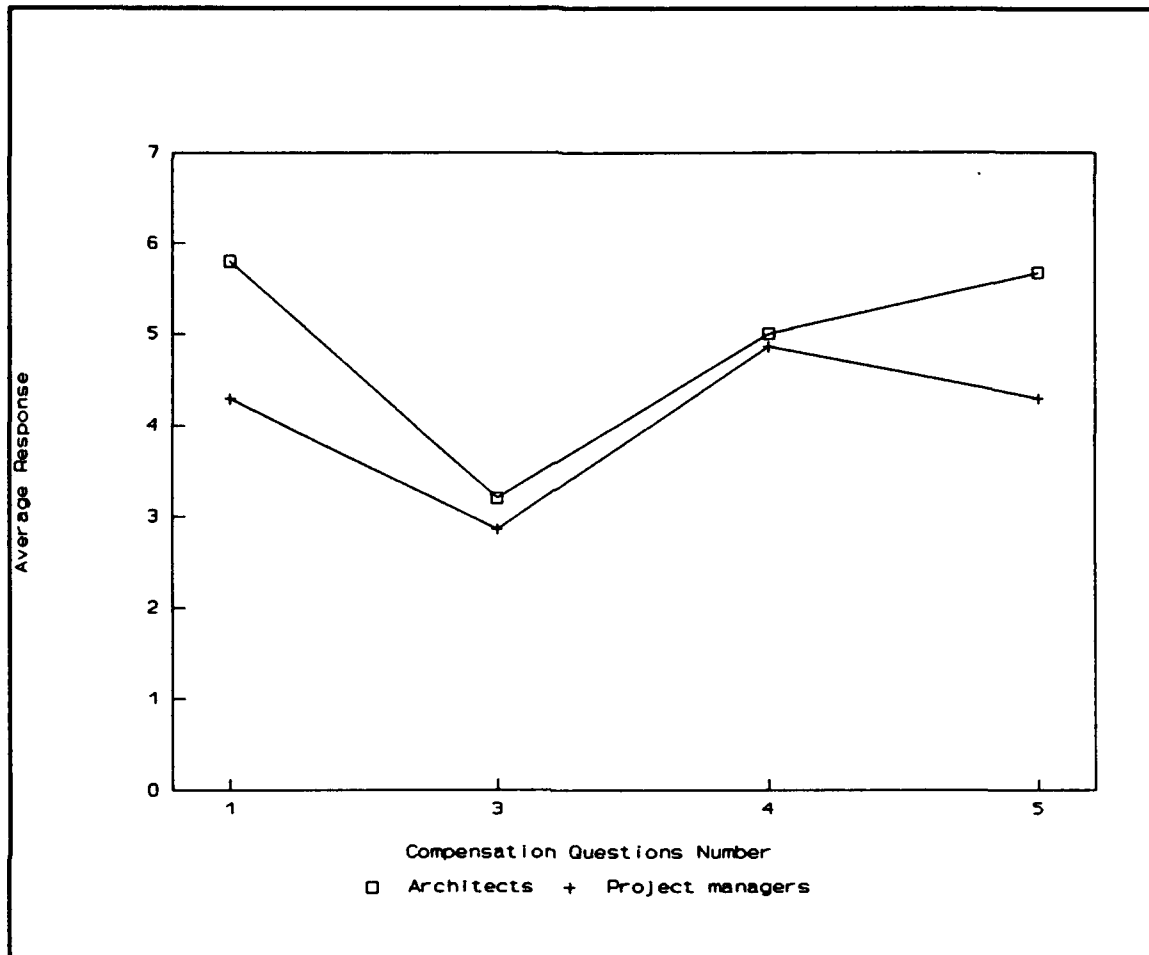


**Figure 7.** Graph of the average responses to questions in the "Quality" category of the questionnaire.

phase services would significantly improve the quality of a project. They both cited the benefits of "continuity" on the project and since the project manager is often too busy to perform this duty, the architect would be the next best alternative.

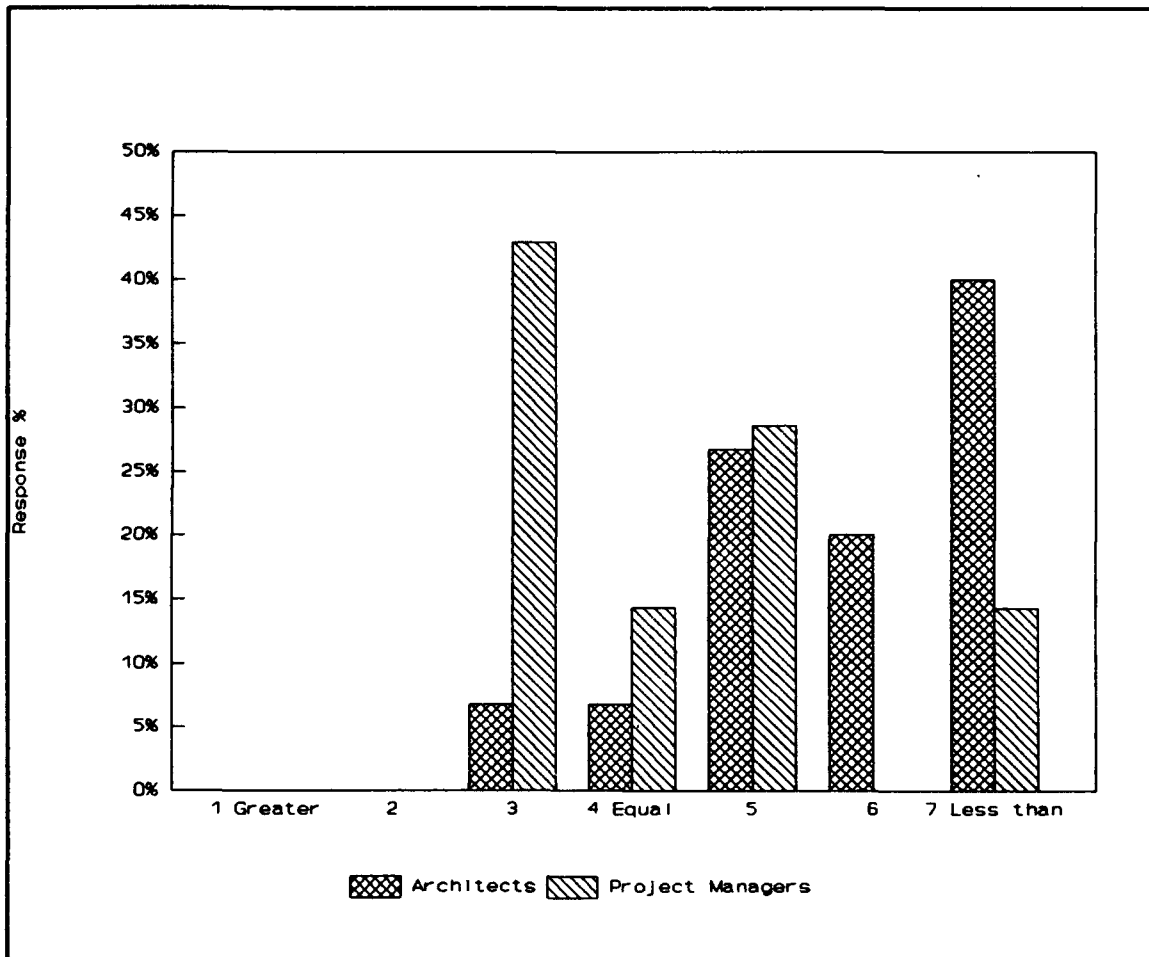
#### **6.5 Compensation Section Analysis**

This category focused on issues related to compensation received for design services the architects provided to the



**Figure 8.** Graph of average evaluative responses for questions in "Compensation" category.

Corps. Specifically, it intended to establish the architects satisfaction with compensation for their services and satisfaction with the compensation process. The survey asked if compensation was fair and timely and solicited opinions from both the architect and project manager on the 6% fee ceiling. Figure 8 plots the average responses to the four evaluative response questions in this section. This graph shows that the architect and project manager responses on questions 1 and 5 are not in agreement. These questions



**Figure 9.** Response to comparison of compensation on Corps projects to compensation on private projects.

relate to the issues of compensation provided for services and profitability of Corps projects for the architect.

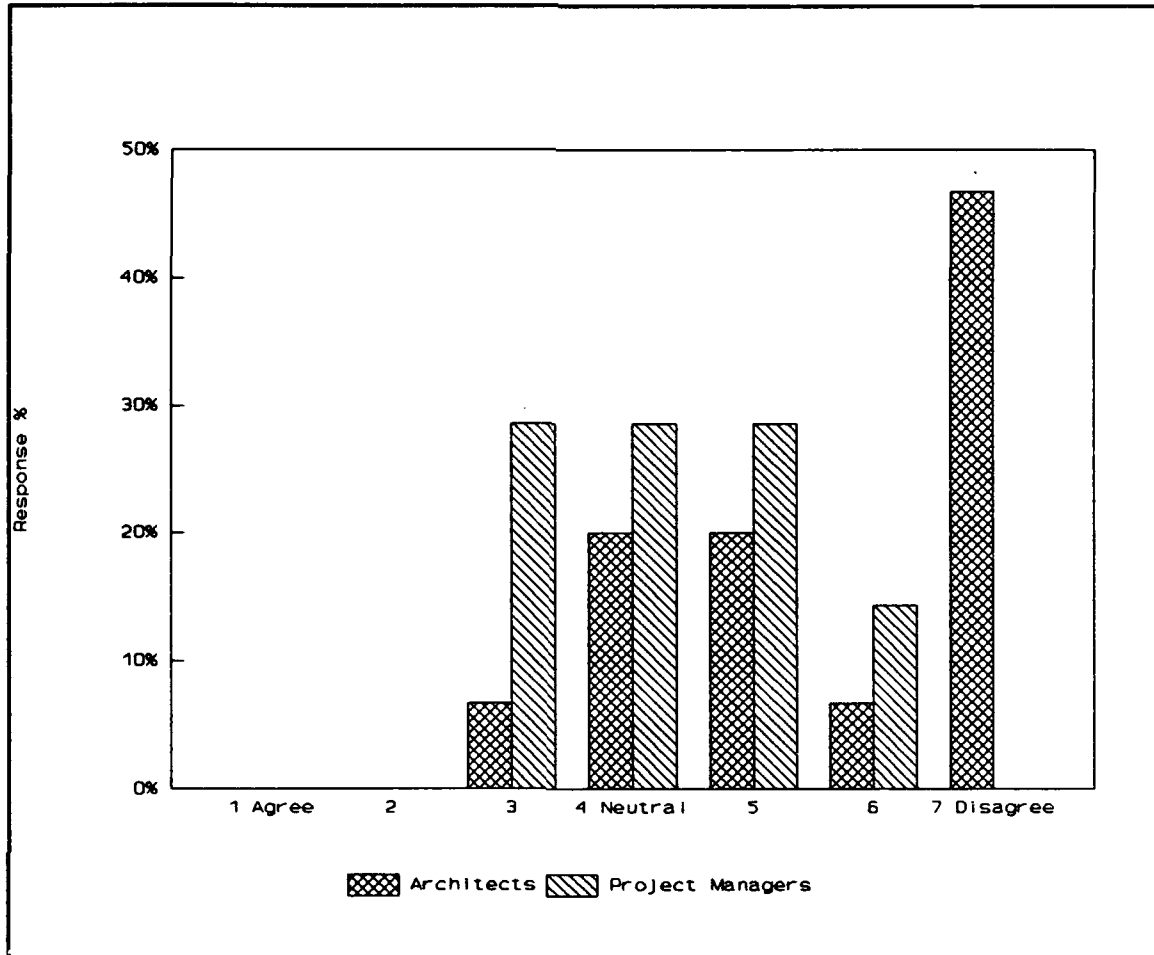
Design firms were unanimous in their response that design fees received on Corps projects were less than what they could receive on similar projects in the private sector. Project managers indicated that they thought the architects were receiving compensation comparable to what they could receive on the private sector. Figure 9 illustrates the response of the architects when asked to

compare the compensation on Corps projects to private work. 86% of the architects and 45% of the project managers felt that compensation was less on Corps projects. Only 6% of the architects thought the two were equal.

The majority of the architectural firms do not feel that the 6% fee ceiling is adequate. Many of them regarded the ceiling as too low, especially on "specialty" projects, which tend to be more complex than typical projects (ie. barracks, chapels etc.) and smaller projects. Many of the architects stated that higher the construction costs made the 6% ceiling more reasonable. The greatest discontent with this ceiling is on smaller projects. Several firms indicated that they suffered losses as a result of changes or unforeseen occurrences that quickly consumed their fee on the small projects. Some architects and project managers believe this ceiling was appropriate on large Corps projects. Several project managers, on the other hand, think the fee is adequate on all projects. Depending on the type of project and the services required, architects can be paid from 1-4% more over the design fees. Other project managers agreed with the architects that the 6% fee limit is unfair in certain cases, also citing fees on smaller projects specifically.

In response to questions about the profitability of Corps projects, as compared to private work, architects clearly stated that Corps projects are not profitable for





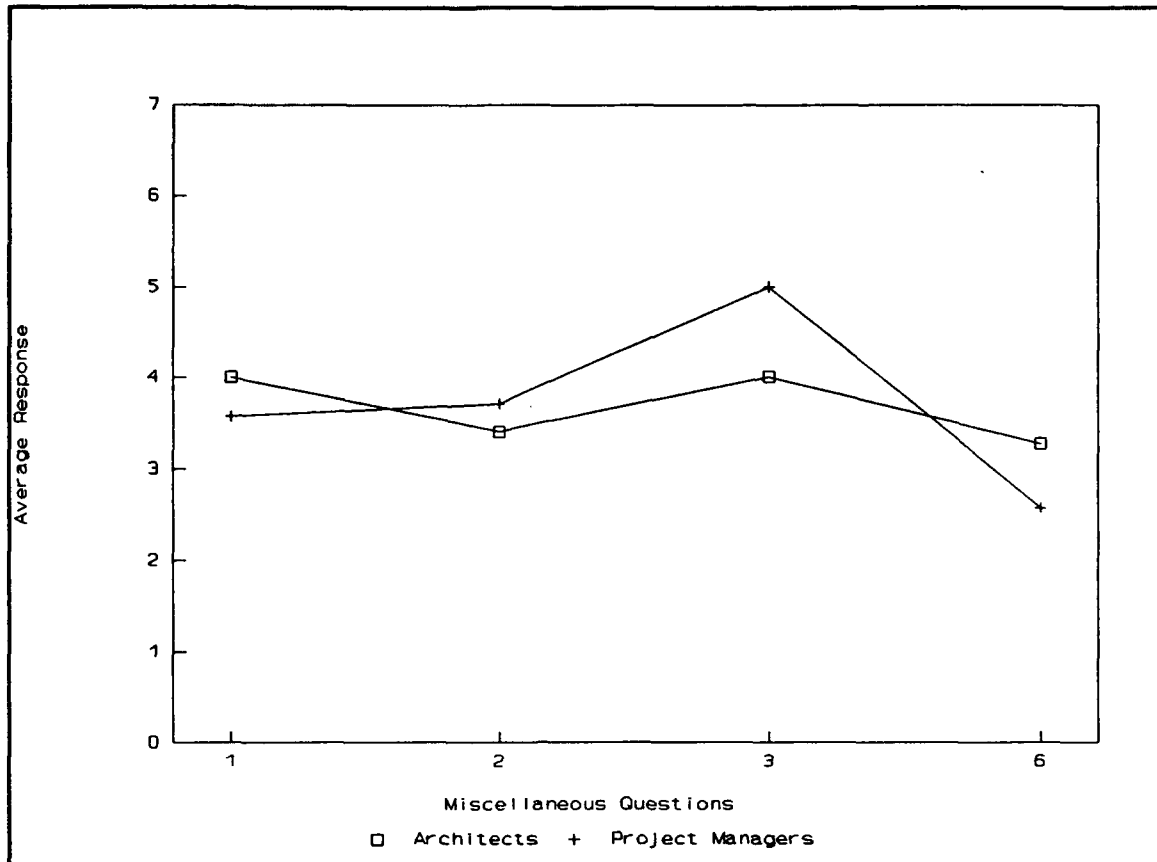
**Figure 10.** Responses to question on whether architects found the Corps' projects profitable.

design firms. These firms stated that they did not pursue Corps projects with the intent of making huge profits but rather as a means of generating cash flow. Project managers, though not as negative in their response, also believed that the Corps projects weren't profitable for architects. Figure 10 illustrates the architects and project managers responses and shows that 72% of the architects felt Corps work was not profitable. 42% of the architects were very definite in their response.

In response to the question about the difference in payment for services between the Corps and private clients, the single significant comment was the reliability of the Corps in paying its bills. Some architect's commented about profitability and less red tape with private work, but also agreed about the Corps' reliability. The project managers focused more on the procedure for paying architects for their services. Several project managers commented about the statutes requiring the Corps to pay A-Es promptly and the difference in the schedules of payment. The Corps does provide for monthly payments versus increment phases used in the private sector.

#### **6.6 Miscellaneous Section Analysis**

This category was intended to cover those questions and issues that did not easily fit into any of the other categories. There were no questions in this category where the architect and project managers differed significantly in their average response. They did, however, provide answers with excellent insight to the working relationship. Figure 11 illustrates that the architects and project managers agree on most of their responses in this section. The question with the largest divergence was on whether the architects felt that their Corps design contracts were problem-free and satisfying. The architects' average response was neutral (4.0) with a high standard deviation of



**Figure 11.** Graph of average evaluative scale responses for questions in the "Miscellaneous" category.

2.03. The project managers were less positive (5.0) with a fairly low standard deviation (1.41). This indicates that project managers believe their contracts for design services often had problems that caused dissatisfaction for the architects.

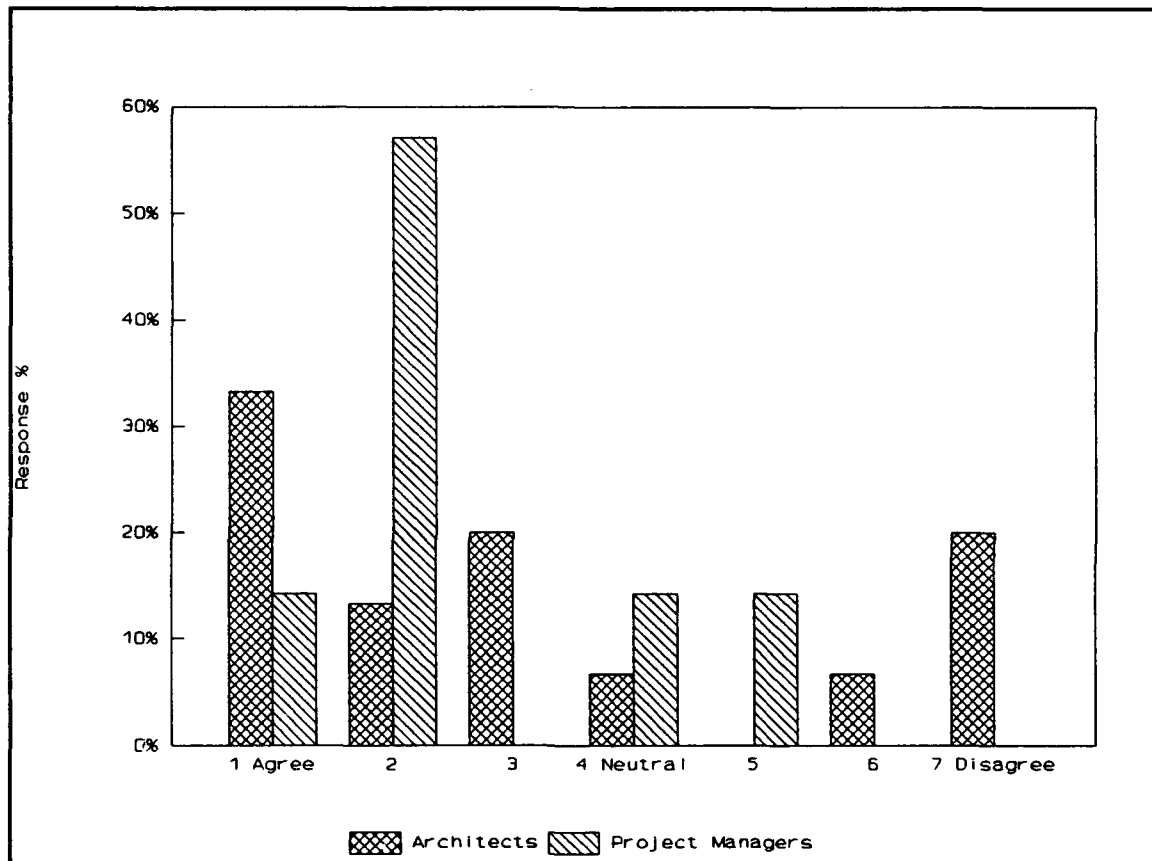
When architects were asked what they liked most about working on Corps projects, they responded with positive comments about the professionalism and competence of the project managers, guaranteed payment for services, and the wide variety of projects. Some project managers indicated that they believed architects also liked the reviews and

experience with government projects. Based on previous comments about the Corps review process this conclusion is inaccurate.

Architects indicated that the things they liked least about working with the Corps were, in priority, the review process and comments, the difficulty of getting timely decisions from the Corps' bureaucracy, low fees, and changes to programs and design. The project manager's responses were similar to the architects, and basically, in the same priority.

Having stated these preferences, architects still indicated that they want more Corps projects. Follow-up interviews with the architects revealed that they will continue to seek Corps work for several reasons. First, they want to develop and maintain a broader client base as a means of survival during periods of economic hardship. As the economy slows and private sector construction declines, firms must seek other sources for cash flow. Public projects are not as susceptible to the influences of the economy as private clients. Public agencies often initiate construction projects during recessions to help stimulate the economy. Second, architects want to develop experience and build a good reputation on Corps projects. This experience and reputation will improve their chances of securing future Corps projects. The architects' response to this question was positive; however, their standard

deviation was one of the highest of all questions indicating that these responses were widely dispersed. Project managers also agreed that design firms want more Corps projects. Their primary perception was also that the architects need the work in order to maintain their cash



**Figure 12.** Response to the question on whether architects want more Corps work.

flow as the economy fluctuates. Figure 12 graphically illustrates that 66% of the architects want more Corps projects. Although 20% of the architects indicated that they did not want anymore Corps projects, 33% stated strongly, that they will continue to pursue work with the

Corps. The architectural firms stated that they would be more willing to pursue Corps projects if there were improvements to the fee scale or ceiling, and if they were considered for interesting projects. On Indefinite-Delivery contracts architects are retained to provide services on small insignificant projects, and often feel they have no control over the projects they are given. Architects prefer projects where they can fully exercise their design capabilities. Some architects stated that they would only pursue more Corps projects if changes were made to improve or allow a better design climate, longer design time, more design freedom, respects for the architects design decision, improvement to the fee scale, improvement to the scope of work, fewer changes or better compensation, and standardized reviews.

## CHAPTER 7

### CONCLUSION

The survey and interviews were very appropriate for gathering the information for this thesis. Several significant issues that were of concern to the architects and project managers were identified from the information gathered. These issues are hindrances to a satisfying and trouble-free working relationship. Resolving them will at least improve the working relationship and possibly save the Corps money on its projects. The first step, identification, is the intent of this thesis.

The Corps is a typical public sector client; very bureaucratic, and governed by statutes and regulations covering everything from project announcement to type of materials permitted on specific buildings. POD has awarded millions of dollars worth of construction projects annually in Hawaii and has become a reliable source of work for local design firms. Because it spends so much money for services, a primary concern of people in the Corps, and POD in particular, is to safeguard the interest of the government. They do this by insuring that they, and everyone providing services to the Corps, abide by established rules and regulations.

Architectural researcher Weld Coxe categorized architectural firms into three major groups; strong-idea,

strong-delivery, and strong-service.<sup>1</sup> Strong-idea firms are organized to deliver singular expertise on innovative and unique projects and are suited to provide services to the client who wants to be involved in every step of the design process.<sup>2</sup> Strong-delivery firms, on the other hand, are firms organized to deliver experience and reliability on their projects.<sup>3</sup> Strong-service firms are organized to provide highly proficient service on routine projects.<sup>4</sup> Because the Corps must insure that it receives good products and services for a fair fee, it would be interested more in contracting with firms that are considered strong-delivery or strong-service type firms. These firms are more likely to have successful experiences on Corps projects than strong-idea firms. The Corps' requirements necessitate working with firms who are reliable and efficient, even on the most complex projects. They expect plans and specifications that satisfy all Federal requirements, are functional and satisfactory to the using agency, and can be constructed within the established budget. Award winning designs are not their priority and few of their facilities,

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<sup>1</sup>Robert Gutman, Architectural Practice: A Critical Review, Harrisonberg; R.R. Donnelly. 1988, pg. 55.

<sup>2</sup>Ibid.

<sup>3</sup>Ibid.

<sup>4</sup>Ibid.



even those designed by architects, have ever won government or professional association design awards.

The members of the Pacific Ocean Division who participated in this research emphasized that their intent is not to draw the architectural firms into a contractual relationship that would be a losing venture, but to secure a contract fair to the architect and Corps. They want to pay fair prices while insuring the Corps receives the best possible service. They believe that if the architect is placed in a position where conditions are not favorable for the firm, the Corps will receive substandard designs and poor services.

The architects who participated in this research also proved to be well intentioned. Although they, like everyone else in the private sector, are concerned about their profit margin, they are equally concerned about building a positive reputation with the Corps. They realize that Corps projects are not money-making propositions and any firm pursuing these projects in hope of making huge profits will be disappointed. Similarly, they do not expect to lose money on the projects they do take with the Corps. They pursue Corps projects and continue to do business with the Corps mainly to insure their survivability through broadening their client base.

There are significant issues identified by this research that are the result of conditions other than the

rules and regulations the Corps must follow. These issues are the cause of, or contribute to the dissatisfaction and frustration experienced by the architects and project managers during design phase of a project.

The first issue which project managers and architects agree was the most difficult to resolve is the difference of their estimates of effort required on a project. The Corps' estimate is always lower than the architects. The architects stated that their proposals were sincere and accurate. They cited examples of projects where, upon completion, the final sheet count was equal to, or greater than their original estimate. Architects believe that the Corps is using antiquated figures in their estimates. A suggestion to resolve this discrepancy was for the Corps to contract architects to provide estimating services and to prepare the Form DD1391 that is submitted to Congress. Several firms mentioned that they had provided this service on some of their projects. On these particular projects, they did not experience the problems with estimate proposals they had on others.

The next issue is fair compensation for changes incorporated during design. The users initiate the majority of changes on the project, mainly because of their failure to communicate their requirements or desires clearly to the project manager and the architect. These users, mostly military personnel with no real interests, investments, or

risk, often move every three years. This creates problems when a new user comes on board and is not satisfied with decisions made previously. Project managers stated that they try to protect the architects from these types of changes but are not always successful. Architects often try to accommodate these changes if the changes are small and do not significantly affect the project schedule or cost. They feel that trying to negotiate fees for these small changes often costs more time and money to negotiate so, they often elect to perform the work without seeking more compensation. They feel that going back to the negotiation table is not worth the time and frustration to increase their fee by a small amount. The architects think that haggling with the Corps for every "nickel and dime" will build them a reputation as "difficult or hard to work with," and may affect their selection for future work. The project managers stated that for small changes within the original scope of work, the Corps may allow the architect additional time needed to incorporate these changes. If the changes are significant and beyond the scope of the project, the Corps usually provides the architect with fair monetary compensation.

This condition is not completely the result of the Corps actions. The architects, by being too accommodating, also contribute to the situation where they start providing free services. Both the architect and project manager must

agree at the start of their working relationship on what change conditions will be compensated. They must then make every effort to insure that all changes are documented and evaluated so that the architect can be properly compensated.

Another significant issue, not resulting from the Corps rules and regulations, is the architects dissatisfaction with the Corps' review process. Architects must address every item listed in the review comments no matter how minor. Often these comments can be resolved easily. Architects, however, don't appreciate having to respond to an item in the review comments that is "inappropriate" for that stage of design, or when the answers to the comments are located elsewhere in the submittal documents. They have found many of these comments inappropriate and sometimes contradictory between reviewers. Responding to these "unnecessary " comments is painstaking and time consuming. This could easily be resolved if the reviewer and project manager discussed the comments in detail before they are sent to the architect. One firm mentioned that they had asked for an "on-line review" on one of their projects to insure the comments were appropriate and to save time. This is a review process where the architect, their consultants, and the reviewers meet to discuss necessary actions to resolve the review comments. It is quick, eliminates confusion, reduces paperwork, and is excellent when time is

a consideration. Coordination meetings are conducted to insure that everyone is aware of the actions being taken.

Another significant problem is the clarity of the project scope, which the architect and project manager feel is often unclear at the start of negotiations. The statement of scope used for Corps projects are vague, leave too much room for misinterpretation, and contribute to the difference in the estimate of work required during contract negotiations. They are brief standard generic paragraphs tailored to fit specific projects. The architects do not get a full appreciation of the project requirements until they meet with the user and project manager at the predesign conference. These unclear statement of scope contribute to the architects high estimate proposals since changes and unusual conditions must be considered. Several architects stated that, as a result of these unclear scopes, the Corps expected them to determine specific project requirements during the predesign conference. The architects consider this programming service and feel the Corps should pay them if it expects this service.

The last significant issue is the architect's unfamiliarity with the Corps rules and requirements. This is especially prevalent among new firms. Project managers stated that they spend too much time "spoon-feeding" firms whom are new to government work or who fail to read the documents provided to them. This frustrates the project

managers because it takes time away from their other duties and projects. If the firms read the documents, they would have fewer questions and misunderstandings. Only a fraction of the surveyed firms stated that they were completely familiar with all documents provided by the Corps. Several established architects, who were satisfied with their Corps projects, pointed out that the Corps requirements are clear and well defined. The architect has only to understand and satisfy the requirements. The problems occur when firms try to submit documents without satisfying the format, or technical requirements, clearly stated in documents provided by the Corps.

Finally, the architects made a few recommendations that are noteworthy. They believe that the Corps can improve the quality of its buildings and reduce construction problems if it did two things: First, contract with architects for post-design services; and second, make review of shop drawings standard to A-E service contracts. The construction phase services can be traditional construction administration, or they can be periodic site visits by the architect. These visits will keep the architect aware of the project development, allowing them to anticipate or respond quickly to problems. The visits will also allow continuity on the project since presently the Corps' project managers are not involved with the project upon completion of design. Architects believe that the extra set of eyes on

the project will help avoid costly construction problems. These suggestions are being practiced on a limited scale in the Corps and are under consideration for use by other military services.

A recommendation was made by several well-established architects that the Corps improve its communication with the professional design community. They believe the Corps does little to enhance its relationship or reputation with architects and engineers. One firm suggested that the Corps conduct semi-annual or quarterly symposiums to provide the professional design community with up-to-date information about regulations, requirements, and recent developments in the Corps. They can be sponsored by local professional organizations and would be an excellent venue for keeping communication going between the Corps and the architects.

The Pacific Ocean Division and the architects who provide professional design services on Corps projects both want a good and fair working relationship. Neither desire to "cheat" the other out of money or services; however, these issues are the primary cause of discontent in the working relationship. POD wants the best services at a fair price and the architects want to be fairly compensated for the effort they expend on these projects. The working relationship can be improved, which may result in better services and a desire by more firms to work on Corps projects if the issues addressed earlier are resolved.

**APPENDIX A**  
**SELECTION OF ARCHITECTURAL FIRMS**

The selection of architectural firms for Corps of Engineer projects is governed by the Brooks Act and clearly stated in the FAR. This process is well defined and is executed to maximize fairness during selection. This seven-step process takes 45 to 60 days and involves announcements, two selection boards, documentation, notification of firms not selected, and finally, negotiation with the most qualified firm culminating in an award or alternately, a second iteration of the selection process.

The first step in the selection process is preparation and release of the project announcement in the local procurement bulletin or the Commerce Business Daily (CBD)<sup>1</sup>. Only projects exceeding \$25,000 are listed in the Commerce Business Daily. Projects where fees are less than \$25,000 are announced only in local procurement bulletins. These announcements are a synopsis of the actual projects. They contain information and requirements important to both the announcer and the responder. This project synopsis may include its proposed scope, location, approximate construction cost, range of the estimated A-E fee, statutory cost limitations, type of contract, and any other selection criteria important to the Corps. These selection

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<sup>1</sup>U.S., Department of Commerce, Commerce Business Daily.



criteria will include, but are not limited to the firm's professional qualifications, capacity to accomplish the work, special experience and technical competence, past performances on contracts with government agencies, and location in relation to the project site.<sup>2</sup> Other considerations may include the firms size, discipline, specialty or experience requirements, availability of funds, Department of Defense awards to the firm (to establish equitability of awards), response time for receiving A/E data for review, estimated start date for the contract, and the approximate period of the contract.<sup>3</sup>

The second step to the A-E selection process is the establishment of two selection boards. The Corps uses a "Preselection" and "Selection" Board consisting of senior architects or engineers from the Engineering and Construction Divisions. Members of the Boards are highly professional employees of the Corps, other Federal agencies, or private practitioners. They may serve on one board or the other, but not on both boards for the same project. Members appointed to these boards normally reflect the expertise required for the project to insure a successful selection. Also, the Corps' policy is to invite a member of

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<sup>2</sup>U.S., Federal Acquisition Regulation, Construction and Architect-Engineer Contracts, Part 36.602-1.

<sup>3</sup>R.L. Phillips, "The A/E Selection Process," The Military Engineer, vol.77, July 1985, p. 276.

the using agency to participate as a member of either board. This representative is subject to the same restrictions of serving on one board or the other and is expected to be knowledgeable of the user and installation needs.

Step three is the Preselection Board meeting. Prior to this board meeting, the chairmen of the Preselection and Selection Boards meet with the project manager to discuss the selection criteria and project. The project manager briefs the board on the project, reads the published project announcement from the CBD, and reviews the selection criteria identified in the announcement. Once the brief is completed, the board begins its review of SF 255s submitted by interested firms. The Preselection Board then reviews all responses to the announcements as well as data on firms obtained from a search of the Corps data base (The Architect/ Engineer Contract Administration Support System, "ACASS") which is maintained in the U.S. Army Engineer North Pacific Division Headquarters. Each firm's submittal is reviewed against the defined criteria. Those failing to meet all the criteria are reviewed three times, twice by board members and once by the board chairman. Each member records his findings on each submission, noting exactly where it failed to meet the defined criteria. The chairman reviews these last and has the final authority on a firms qualifications.

The fourth step in the selection process is the documentation and approval of the Preselection list. This list contains the maximum "practicable" number of qualified firms, usually 6 to 8, to perform the project, that is, all firms who best satisfy the defined criteria. Reasons for non-selection of firms responding, but failing to meet all the criteria requirements, are carefully documented. The Preselection list is submitted for approval usually by the Chief of the Engineering Division. Approval is the "trigger" to notify firms failing to qualify. If the A-E contract value is less than \$25,000 a Preselection list will not be compiled<sup>4</sup>. Instead, those firms responding to the project announcement will be submitted directly to the Selection Board for consideration.

Step five is the Selection Board meeting. The approved Preselection list is screened and additional data, including the amount of awards, past project evaluations, and qualification data are gathered for firms on the list. The Selection Board receives the same project brief and criteria review as the Preselection Board from the project manager. They compare each firms SF 254 and SF 255 submittal, rating them according to how well they satisfy each criteria. Board members keep notes on their findings on each submittal and record of why they rated a firm a certain way. When all firms have been reviewed and scored, a recorder tallies the

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<sup>4</sup>Ibid.

ratings and the board studies and discusses the results collectively. The final tabulated results determine the best qualified firms, usually numbering from 3 to 6. This is referred to in the industry as being "shortlisted". Depending on the size, complexity, or specialty of a project, the Board determines if personal or telephonic interviews, stand up presentations or office visits will be used to gather more information from these firms. The general rule is that for projects with fees less than \$250,000, telephonic interviews will be used while for projects valued over \$250,000, stand- up presentations are usually required and for projects over \$500,000, stand up presentations are mandatory.<sup>5</sup> The interviews are conducted by selected members of the Board. The Brooks Act requires that at least 3 firms must be interviewed. Once the interviews are completed, the Board meets again to discuss the interview results and make a final vote on ranking the top firms as best qualified, second best qualified, and so on.

The sixth step in the process involves the documentation and approval of the Selection Board list. This is a precise process beginning with the documentation of the criteria and selection factors used by the board. It references the Preselection Board findings and defines the shortcomings of those firms not selected for interviews.

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<sup>5</sup>Ibid, p. 278.

The firms selected for interviews are documented by ranking, some general comments about the firm, and why it was ranked above the next ranked firm. The Selection Board reviews and signs the list prior to submission to the approving official. The approving official may be the Assistant Division Engineer, Deputy Division Engineer or the Division Engineer. The approving official cannot add firms to the list, however, he may determine that the listed firms are not qualified or that the Selection Board documentation is inadequate and return it for appropriate revision. Such actions rarely occur. Approval of the Selection list gives the Board the authority to negotiate with the top ranked firm, or the second ranked firm if an agreement cannot be reached. If the list is exhausted before an acceptable agreement can be reached, the selection process is repeated until a contract is agreed upon.

Step seven is the debriefing of the unsuccessful firms. This debriefing is not required by statute but is done by the Corps for professional courtesy. This is a process the Corps does not encourage, since it takes time to prepare and conduct however, the Corps is prepared to do so upon request. These debriefings are valuable tools to the A/E firms because they can help in preparing future submittals. They are usually conducted by the chairman of the board where the firm failed selection. The debriefings will only

address shortcomings of submittals for the project and possibly some general comments on the firms submission.

In addition to the selection process for firms as mentioned above, a selection process using design competition is sometimes used. This procedure is the exception and is justified in three situations:

- a. In unique situations involving prestige projects such as memorials and structures of national significance;
- b. When sufficient time is available for the production and evaluation of conceptual designs;
- c. And, when the design competition, with all its attendant costs, will substantially benefit the project.<sup>6</sup>

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<sup>6</sup>Ibid., Federal Acquisition Regulation, (Part 36.602-1).

**APPENDIX B**  
**SYNOPSIS OF REGULATORY REQUIREMENTS**

The Corps of Engineers, Pacific Ocean Division, issues a set of clauses that apply to all professional design firms contracted to provide services for Corps projects within their jurisdiction. These clauses are extracts of all applicable sections of the Federal Acquisition Regulation (FAR), Defense Federal Acquisition Regulation (DFAR) and Engineer Federal Acquisition Regulation (EFAR). In short, these packets contain actual excerpts from the applicable regulations firms must know and comply with when working for the Corps. They address everything from employment and compensation of employees for overtime work, to responsibility of the architect-engineer firms. The clauses address over 70 specific issues and A-E firms are best served by thoroughly understanding these so they know what to expect when working with the Corps. Understanding these clauses will help to eliminate some of the frustration involved when working with a bureaucratic organization as large as the Corps. Following is a list of the clauses found in the Corps' "boiler plates" and a summary of these clauses.

**Federal Acquisition Regulations (FAR)**

|          |                                      |
|----------|--------------------------------------|
| 52.202-1 | Definitions- Alternate I (Deviation) |
| 52.203-1 | Officials not to Benefit             |

|             |                                                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 52.203-3    | Gratuities                                                                                                                                                  |
| 52.203-5    | Covenant Against Contingent Fees                                                                                                                            |
| 52.203-7    | Anti-Kickback Procedures                                                                                                                                    |
| 52.203-12   | Limitations on Payments to Influence Certain Federal Transactions                                                                                           |
| 52.209-6    | Protecting the Governments Interest When Subcontracting with Contractors Debarred, Suspended or Proposed for Debarment                                      |
| 52.212-8    | Defense Priority and Allocation Requirements                                                                                                                |
| 52.212-12   | Suspension of Work                                                                                                                                          |
| 52.215-1    | Examination of Records by Comptroller General                                                                                                               |
| 52.215-2    | Audit-Negotiation                                                                                                                                           |
| 52.215-24   | Subcontractor Cost or Pricing Data                                                                                                                          |
| 52.219-8    | Utilization of Small Business Concerns and Small Disadvantaged Business Concerns                                                                            |
| 52.219-9    | Small Business and Small Disadvantaged Business Subcontracting Plan                                                                                         |
| 52.219-13   | Utilization of Women- Owned Small Businesses                                                                                                                |
| 52.219-16   | Liquidated Damages- Small Business Subcontracting Plan                                                                                                      |
| 52.219-7009 | Incentive Program for Subcontracting with Small and Small Disadvantaged Business Concerns, Historically Colleges and Universities and Minority Institutions |
| 52.220-3    | Utilization of Labor Area Surplus Concerns                                                                                                                  |
| 52.220-4    | Labor Surplus Area Subcontracting Concerns                                                                                                                  |
| 52.222-3    | Convict Labor                                                                                                                                               |
| 52.222-4    | Contract Work Hours and Safety Standards Act- Overtime Compensation                                                                                         |
| 52.222-26   | Equal Opportunity                                                                                                                                           |
| 52.222-35   | Affirmative Action for Special Disabled and Vietnam Era Veterans                                                                                            |
| 52.222-36   | Affirmative Action for Handicapped Workers                                                                                                                  |
| 52.222-37   | Employment Reports on Special Disabled Veterans of the Vietnam Era                                                                                          |
| 52.223-2    | Clean Air and Water                                                                                                                                         |
| 52.223-6    | Drug- Free Workplace                                                                                                                                        |
| 52.225-13   | Restrictions on Contracting with Sanctioned Persons                                                                                                         |
| 52.227-1    | Authorization and Consent                                                                                                                                   |
| 52.227-2    | Notice and Assistance Regarding Patent and Copyright Infringement                                                                                           |
| 52.228-5    | Insurance- Work on a Government Installation                                                                                                                |
| 52.229-3    | Federal, State and Local Taxes                                                                                                                              |
| 52.230-3    | Cost Accounting Standards                                                                                                                                   |
| 52.230-4    | Administration of Cost Accounting Standards                                                                                                                 |
| 52.232-10   | Payments Under Fixed Price Architect-Engineer Contracts                                                                                                     |
| 52.232-17   | Interest                                                                                                                                                    |
| 52.232-23   | Assignment of Claims                                                                                                                                        |
| 52.232-26   | Prompt Payment for Fixed Price Architect-Engineer Contracts                                                                                                 |



|           |                                                       |
|-----------|-------------------------------------------------------|
| 52.233-1  | Disputes                                              |
| 52.233-3  | Protest After Award                                   |
| 52.236-13 | Accident Prevention (Alternate I)                     |
| 52.236-22 | Design with Funding Limitations                       |
| 52.236-23 | Responsibility of the Architect-Engineer Contractor   |
| 52.236-24 | Work Oversight in Architect-Engineer Contracts        |
| 52.236-25 | Requirements for Registration of Designers            |
| 52.243-1  | Changes- Fixed Price- Alternate III                   |
| 52.244-4  | Subcontractors and Outside Associates and Consultants |
| 52.248-1  | Value Engineering- Alternate III                      |
| 52.249-7  | Termination (Fixed Price Architect-Engineer)          |
| 52.252-6  | Authorized Deviations in Clauses                      |

**Defense Federal Acquisition Regulation (DFAR):**

|              |                                                                                                                                 |
|--------------|---------------------------------------------------------------------------------------------------------------------------------|
| 52.219-7000  | Small Business and Small Disadvantaged Business Subcontracting Plan (DoD Contracts)                                             |
| 52.223-7500  | Drug Free Work Force                                                                                                            |
| 52.227-7022  | Government Rights Unlimited                                                                                                     |
| 52.227-7023  | Drawings and other Data to Become Property of the Government                                                                    |
| 52.227-7033  | Rights in Shop Drawings                                                                                                         |
| 52.233-7000  | Certification of Requests for Adjustment or Relief Exceeding \$100,000                                                          |
| 52.243-7001  | Pricing of Adjustments                                                                                                          |
| 252.203-7001 | Special Prohibition on Employment                                                                                               |
| 252.203-7002 | Statutory Compensation Prohibitions and Reporting Requirements Relating to Certain Former Department of Defense (DoD) Employees |
| 252.215-7000 | Aggregate Pricing Adjustment                                                                                                    |
| 252.231-7000 | Supplemental Cost Principles                                                                                                    |

**Engineer Federal Acquisition Regulations (EFAR):**

|                 |                                          |
|-----------------|------------------------------------------|
| 52.101(a)       | Definition                               |
| 52.105/90(a)    | Definition                               |
| 52.3-9004(b)(1) | Proposals for Individual Delivery Orders |
| 52.3-9004(b)(2) | Rights and Obligations                   |
| A205B2          | Prosecution of Work                      |

**Other Statutory Requirements:**

|                |                             |
|----------------|-----------------------------|
| ETL 1110-1-132 | Health and Safety Standards |
|----------------|-----------------------------|

These clauses are all important and it is paramount that firms desiring projects with the Corps or those working with the Corps know and understand them. Several of these clauses apply specifically to Architect- Engineer contracts while the remainder are applicable to all contractors performing work on government projects. Following is a summary of those clauses applicable specifically to Architect- Engineers.

DFARS 52.227-7023 Drawings and Data to Become Property of the Government.

This clause states that all designs, specifications, drawings, notes and other works developed on the performance of this contract becomes the property of the government and may be used on other projects without additional compensation to the firm. The contracted firms, for a period of three years, agree to submit all such work product material when asked for by the contracting officer. The firm also agrees not to assert any rights or file any claim under design patent or copyright laws. The firm may retain copies of the work and material.

This statute differs significantly from the way drawings are handled in the private sector where drawings are the exclusive property of the firm. Additionally, any further use of the design entitles the firm to compensation.

DFARS 52.227-7022 Government Rights (Unlimited)

The government has unlimited rights, in all drawings, designs, specifications, notes and other works developed in the performance of this contract, including the right to use them on any other Government construction project without additional compensation to the designer. The A-E firm essentially grants the government a license throughout the world to all such works to which it may assert or establish any claim under design patent or copyright laws.

FAR 52.236-22 Design within Funding Limitations

A-Es are required to accomplish the design services required under this contract so that the project may be contracted for construction using standard FAR procedures for the construction at a price that does not exceed the estimated construction contract price stated in the contract. In the event the construction bids or proposal exceed the estimated cost, the design firm is required to redesign the project as necessary to permit contract award within the funding limitation. If the design firm finds that it cannot design the project within the established funding limitations it must immediately notify the contracting officer. The contracting officer will review the firms revised estimate of construction. If the contracting officer finds that the initial construction estimate is too low, a change in scope or materials may be

authorized or the government may elect to adjust the estimated construction contract price.

FAR 52.232-10 Payments Under Fixed-Price Architect-Engineer Contracts.

This clause addresses payment for design services. In summary it states that a monthly payment will be made of the amount of value of the work and services that meet the standards of quality established under the contract. The firm is to prepare an estimate of payment along with supporting data.

Upon approval of the A-Es request for payment by the contracting officer, the A-E will be paid 90% of the approved amount, less all previous payments. In contracts where the requirements are unclear or incompletely stated, the payment will not exceed 80% of the billing. When the Contracting Officer determines that the work is substantially complete and that the amount retained is in excess of the amount adequate for the protection of the government, the contracting officer may release the excess amount to the designer.

The government can exercise an Option for Supervision and Inspection Services clause during the construction phase and authorize additional compensation to the design firm for these services. Upon full acceptance of the construction

work the designer will be paid any unpaid portion of money due under this contract.

Before final payment will be made under the conditions of the contract, the contractor/ designer must execute and deliver to the Contracting Officer a release of all claims against the government resulting from this contract other than any claims that are specifically excepted by the design firm.

FAR 52.232-26 Prompt Payment for Fixed- Price Architect-Engineer Contracts.

This clause states that payment for design services provided to the Corps will be made within 30 days after the Corps receives an invoice from the design firm or, within 30 days from the date the Corps accepts and approves the services provided, which ever is later. An invoice is the contractors bill or written request for payment under the contract for work or services performed under the contract.

A proper invoice must include:

- i. Name and address of the contractor.
- ii. Invoice date.
- iii. Contract number or other authorization for work or services performed.
- iv. Description of work or services performed.
- v. Delivery and payment terms.

vi. Name and address of contractor official to whom payment is to be sent.

vii. Name, title, phone number, and mailing address of person to be notified in the event of a defective invoice.

viii. Any other information or documentation required by the contract.

If payment is not made within 30 days of the date of approval and a proper invoice was submitted then the Corps will be responsible for interest payment on the amount due. Providing there is no disagreement over quantity, quality, contractor compliance with any aspect of the contract or requested payment amount, and the amount of the invoice was not subject to further contract settlement. The interest penalty will be at the rate established by the Secretary of the Treasury under section 12 of the Contract Disputes Act of 1978 (41 USC 611), that is in effect on the day after the due date, unless the interest penalty is prescribed by other governmental authority. The interest payment will accrue daily on the invoice payment amount approved by the government and be compounded in 30 day increments inclusive from the first day after the due date through the payment date. The interest accumulated after the first 30 days will be added to the invoice payment amount and is subject to interest penalties if not paid in the next 30 day period.

FAR 52.236-23 Responsibility of the Architect-Engineer Contractor.

The architect-engineer is responsible for the professional quality, technical accuracy, and the coordination of all designs, drawings, specifications, and other services furnished by the architect under this contract. The professional contractor is obligated to, without additional compensation, correct or revise any errors or deficiencies in its designs, drawings, specifications, and other services.

Neither the governments review, approval or acceptance of, nor payment for, the services required under this contract will be construed to operate as a waiver of any rights under the contract. The professional contractor will be liable to the government in accordance with applicable law for all damages to the government caused by the professional contractors negligent performance of any of the services furnished under the contract.

The rights and remedies of the government provided for under this contract are in addition to any other rights and remedies provided by law. If the professional contractor is comprised of more than one legal entity, each such entity is to be held jointly and severally liable under this contract.

FAR 52.236-24 Work Oversight in Architect-Engineer Contracts.

The extent and character of the work to be done by the professional contractor will be subject to the general oversight, supervision, direction, control, and approval of the contracting officer.

FAR 52.236-25 Requirements for Registration of Designers.

(This clause is not applicable if performance is outside the United States or within a state that does not have registration requirements.)

The design of architectural, structural, mechanical, electrical, civil, or other engineering features of the project will be accomplished, reviewed and approved by architects or engineers registered to practice in the particular professional field involved in a state, territory or possession of the United States, including Puerto Rico, and the District of Colombia.

FAR 52.244-4 Subcontractors and Outside Associates and Consultants.

Any subcontractors and outside associates or consultants required by the prime contractor in connection with the services covered by the contract will be limited to individuals or firms that were specifically identified and agreed to during negotiations. The contractor must obtain



the contracting officers written consent before making any substitution for these subcontractors, associates or consultants.

FAR 52.249-7 Termination (Fixed-Price Architect-Engineer)

The government has the right to terminate an A-E contract in whole or, time to time, in part, for the government's convenience or because of the failure of the A-E to fulfill the contract obligations. The contracting officer can implement termination by delivering a Notice of Termination specifying the nature of, extent, and effective date of the termination. Upon receipt of the notice, the A-E is to:

- Immediately discontinue all services affected (unless the notice directs otherwise).

- Deliver to the Contracting Officer all data, drawings, specifications, reports, estimates, summaries, and other materials accumulated in performing this contract, whether completed or in progress.

If the termination is for the convenience of the government, the Contracting Officer is to make an equitable adjustment in the contract price but allow no anticipated profit on unperformed services.

If the termination is for failure of the A-E to fulfill the contract obligations, the government may complete the

work by contract or otherwise, and the Contractor shall be liable for any additional costs incurred by the government.

If, after termination for failure to fulfill contract obligations, it is determined that the A-E had not failed, the rights and obligations of the parties then are to be the same as if the termination had been issued for the convenience of the government.

EFARS 52.3-9004(b)(1) Proposals for Individual Delivery Orders.

Whenever the government invites the Architect-Engineer to submit a quotation for the preparation of specified A-E service, the Contracting Officer is to furnish to the A-E preliminary criteria together with the desired period of time for completion of the work.

The A-E is required to submit to the Contracting Officer, within 10 days, a list of the personnel for performance of the work and an itemized list of the cost of materials and travel. At the same time the A-E is also to submit a quotation for the work, including the time for its completion.

The Contracting Officer is responsible for issuing a delivery order setting forth the completion date and a lump sum price for the work which are mutually agreeable.

EFARS A 205(b)(2) Prosecution of Work.

Upon the receipt of a delivery order, the A-E is to promptly commence the work specified and diligently prosecute the work to completion within the period of time agreed upon. In turn, the A-E is not to commence work until a delivery order has been issued.

Payment (Indefinite-Delivery).

In consideration of the performance of the A-E's services under this type of contract, and pursuant to delivery orders issued by the contracting officer, the A-E will be paid the consideration determined in each delivery order; which consideration constitutes a complete payment for all services to be performed under the contract and all expenditures which have been made and expenses incurred, except as are otherwise provided. Estimates are to be submitted monthly for the amount and value of the work accomplished and services performed by the A-E under this contract, as determined by the Contracting Officer.

Upon approval of the estimate by the Contracting Officer, payments are made to the A-E, as soon as practicable, up to 85% of the approved amount, less all previous payments; provided, that payment may be made in full during any month or months in which the Contracting Officer determines that performance has been satisfactory. Whenever the contracting officer determines that the amount

retained exceeds of the amount adequate for the protection of the government, the contracting officer may release the excess amount to the A-E. Upon satisfactory completion of the work by the A-E and acceptance by the Contracting Officer the A-E will be paid the balance of any money due for the work, including any retained percentages.

Before final payment under each delivery order issued under the contract, or before settlement upon termination of the contract, and as a condition precedent to such action, the A-E is to execute and deliver a release of all claims against the Government arising under or by virtue of delivery orders under the contract, other than any claims that are specifically expected by the A-E from the operation of the release in amounts stated in the release.

## APPENDIX C

### SURVEY

Following are the actual questions on the survey with a brief explanation of their intent.

#### A. GENERAL

1. Please enter the number of projects your firm has performed for the Corps in each of these categories:

- Family housing
- Troop facilities(barracks, dining halls)
- Support facilities (gyms, libraries, rec centers etc)
- Warehouse, Motorparks, etc.
- Other (pls explain)\_\_\_\_\_

[This question asks for the number and types of projects the surveyed firms had performed for the Corps. Its intent was to determine what types of projects A-E firms were working on for the Corps, and if there was a correlation between specific project types and problematic issues identified by the firms.]

2. Rank the following reasons for your firm taking Corps contracts, in ascending numerical order (1= most important):

- Corps requirements and projects were easy
- Gain experience
- Needed Money
- Needed work
- Lack of private work clients
- Other(pls explain)\_\_\_\_\_

[Firms take Corps projects for different reasons. Some may see Corps projects as a niche in the industry while others see them as a necessity for survival. Responses to this question could assist in determining if firms willingly sought Corps work or if other factors caused them to compete for these projects.]



group or another may be an indication of problems that should be probed further. Military representatives working at the district and division levels rotate at least every three years as compared to their civilian counterparts who are likely to work in these jobs throughout their careers. Military representatives tend to be less knowledgeable of the system and statutory requirements and may be more cavalier in their dealings with contractors and problems because of this transition. A response of "strongly agree" may indicate that firms find military representatives more understanding and responsive to their concerns.]

7. Do you agree that Corps representatives were professional and competent in their dealings with your firm? If you disagree please explain briefly on back.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[The impression of the Corps representatives competence to their private sector counterpart, is important. Since Corps Architects work only with the military system and are not involved in the traditional activities of architecture practice they can be viewed as "being out of touch." Also, there may be a tendency as the "purse holder" to take the attitude that contractors must do as told or risk a fall from grace in the eyes of the Corps. If private firms feel that they are dealing with other architects or engineers who aren't abreast of the most current professional practices or aren't being treated fairly, they may already have developed a negative attitude toward Corps projects without reason.]

8. How difficult was it to resolve problems regarding:

easy 2 difficult difficult very  
1 2 3 4 5

|                         |       |       |       |       |       |
|-------------------------|-------|-------|-------|-------|-------|
| Program changes/clarity | _____ | _____ | _____ | _____ | _____ |
| Design changes/issues   | _____ | _____ | _____ | _____ | _____ |
| Contract issues         | _____ | _____ | _____ | _____ | _____ |
| Budget issues           | _____ | _____ | _____ | _____ | _____ |
| Compensation            | _____ | _____ | _____ | _____ | _____ |
| Other: _____            | _____ | _____ | _____ | _____ | _____ |

[Firms are asked to rate the level of difficulty or ease they encountered in resolving problems in the general categories listed above. These are areas design firms indicated were areas of concern in initial interviews.]

9. What contributed most to this difficulty? (Pls rank in ascending order, 1= first):

- ☐ Corps structure
- ☐ Personalities
- ☐ Firm's unfamiliarity with the Corps system
- ☐ Lengthy decision making
- ☐ Corps inflexibility
- ☐ Other(pls explain): \_\_\_\_\_

[Firms are asked to rank, in their opinion, the cause of the difficulty they listed in question number 8. The intent is to get the firms to be more specific about their dissatisfaction. The choices listed include structure, process, and personality, as well as an "other" category for those concerns that don't fall into these areas but the firms feel strongly enough to mention.]

10. What architectural services did your firm provide to the Corps? (Check all applicable phases)

- |                                                    |                                                  |
|----------------------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Programming               | <input type="checkbox"/> Construction Documents  |
| <input type="checkbox"/> Schematic Design          | <input type="checkbox"/> Construction Management |
| <input type="checkbox"/> Design                    | <input type="checkbox"/> Post Construction       |
| <input type="checkbox"/> Other(pls explain): _____ |                                                  |

[This is a query to determine what services the design firms provided to the Corps. Firms can be contracted for all or part of the services listed above. A determination of where the majority of accomplished work was categorized individually and collectively is important to assist in identifying problematic areas.]

11. Did the service(s) you provided differ from service you would provide a private client? Please explain.

[This question is intended to establish the difference in design services they would provided to a private client as compared to the Corps. It is already known from a review of the FARS that Architects do not fulfill the traditional role of construction supervision and inspection in their services to the Corps. A major difference in this service could indicate that firms are just not accustomed to the Corps system and requirements.]



12. In which phase of the Corps project(s) did you have the most significant disagreement? (Pls rank in ascending order, 1=most):

|                              | Reason |
|------------------------------|--------|
| [ ] Contract negotiation:    | _____  |
| [ ] Contract administration: | _____  |
| [ ] Pre- design:             | _____  |
| [ ] Design:                  | _____  |
| [ ] Other (pls explain):     | _____  |

[Firms are asked to specify the phase of the working relationship they found most difficult. These are phases in the project design cycle where firms interacted with the Corps.]

## B. DESIGN

1. From your point of view, what were the Corps' priorities during the design process? (rank in ascending order, 1= most important).

|     |                                                |
|-----|------------------------------------------------|
| [ ] | User satisfaction                              |
| [ ] | Function                                       |
| [ ] | Aesthetics                                     |
| [ ] | Maintaining Architect firm- Corps relationship |
| [ ] | Satisfaction of Federal building requirements  |
| [ ] | Saving money on design cost                    |
| [ ] | Saving money on construction cost              |
| [ ] | Other (please explain): _____                  |

[The A-Es are asked to rank what they perceived were the Corps priorities during the project design phase. What they perceived as the priorities may differ from the actual priorities meaning possibly a breakdown in communication or unclear program requirements.]

2. The overall character of the installation on which the project was located, affected the design solution.

|                |                   |
|----------------|-------------------|
| strongly agree | strongly disagree |
|----------------|-------------------|

|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|

[Determining if firms considered the installation character on which they were designing may reflect the firm's commitment to good design or the Corps emphasis on maintaining the installation character. A "strongly agree" response could indicate some stringent design guidance from the Corps.]

3. Influence on the morale of those who use or live in the facility was considered in the design solution.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[Firms are asked to rate their consideration of their design impact on the morale of users of the facility they were designing. This question is another indicator of the design effort of the A-E and was oriented more toward their effort at developing a quality design solution.]

4. The facility affect on morale of the user was a Corps concern during the course of design.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[The firms opinion of the Corps' concern for how the design solution affected the morale of the user may have influenced the firms interaction with the user. If the Corps was viewed as placing a strong emphasis on how the design affected the soldiers and airmen who would be the users of these facilities, then the firms would place more emphasis on user input and satisfaction.]

5. Meetings with the user group were held periodically during the programming or design phase.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[Interaction between the user and the design firm is a requisite for good design. Determining if design firms held periodic meetings with the user will indicate whether the firm made a good effort at achieving quality design by including the user.]

6. Meetings with the users contributed beneficially to the design outcome.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[The firm's opinion of the meetings with the users and the impact of these meetings on the quality of the design, may

indicate whether or not there are problems with the user group. The firms response may indicate that the user was knowledgeable of their requirements or it may indicate that users did not know what it is they want. One response would greatly assist the A-E firm while another may indicate a source of aggravation.]

7. Corps contract documents and requirements were so restrictive that it limited the quality of your design solution.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[Too many restrictions on a designer can be a hinderance to developing a good design. If firms feel that Corps project requirements were too restrictive they will certainly see them as a hinderance to the development of a good design solution. This may be a cause of aggravation firms may have experienced while working with the Corps.]

8. During design, your firm was allowed to develop the best (most efficient and economical) design solutions.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[The firms satisfaction with its design is a good indicator of the working relationship with the Corps while providing services. This question ties in with question number 7 above, to determine the limitations the firms had to work under and how much leeway they had in designing. A "strongly agree" response may indicate that firms may have been hindered from producing the most efficient or economical design solution.]

9. Were predesign and design review conferences held with Corps and user representatives? When and how often?

How often?

|               |         |        |       |
|---------------|---------|--------|-------|
| Predesign     | [ ] Yes | [ ] No | _____ |
| Design review | [ ] Yes | [ ] No | _____ |
| User review   | [ ] Yes | [ ] No | _____ |

[Meetings with the clients and users can be beneficial to communicating concerns with the designer. Design review conferences with the Corps and user can help to reduce confusion and misinterpretation as requirements are expressed from user to Corps and then to design firm.]

10. Project requirements were clearly defined from the start.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[Clear and definite program requirements from the start of a project will eliminate questions and confusion once design starts. Determining if the program requirements were clear from the start could indicate that there were few or numerous changes in the course of the design. If firms had to continually request clarification on design matters or if they understood the program requirements as meaning one thing while the Corps meant another, this could have resulted in numerous changes and slow progress during the design phase.]

11. The work you performed for the Corps is representative of your firm's best design capabilities.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[Design firms are usually well intentioned and want to do a good job in hopes of securing future work. If they do not believe that the final design on their Corps project is representative of their best design effort, this may indicate some dissatisfaction either with themselves or with the Corps. It may also indicate that they did not have very much control over their design and the design was not of the quality they produce for their private clients.]

12. Corps' changes to your design solutions were valid and necessary.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[Design firms normally will not object to design changes if the changes are an improvement to the design. The firms opinion of the validity of the Corps changes to its design could indicate that firms believe the changes were an improvement to the design or that the Corp was not considering the impact of their changes. A strongly agree response would indicate that the firms feel that the corps is thoughtful and purposeful in making conscientious changes. A "strongly disagree" response may indicate that firms are not confident that the Corps knows what it wants

and makes changes indiscriminately. Additional cost incurred as a result of the changes, will have to be borne by the designer if the Corps believes the changes fall within the constraints of the contract.]

13. What was the originating cause of these changes? (rank in ascending order, 1= most common)

|     |                              |
|-----|------------------------------|
| [ ] | User requirements/changes    |
| [ ] | Corps changes                |
| [ ] | Firm                         |
| [ ] | Federal requirements         |
| [ ] | Budget                       |
| [ ] | Other (please explain):_____ |

[Determining the cause of these changes can help identify problem areas. Where does the firm see these changes coming from? Individually this data would not mean much but, collectively in could identify a problem area.]

14. These changes significantly affected completion time.

|                   |  |  |  |  |  |  |                      |
|-------------------|--|--|--|--|--|--|----------------------|
| strongly<br>agree |  |  |  |  |  |  | strongly<br>disagree |
|-------------------|--|--|--|--|--|--|----------------------|

|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|

[The magnitude of the changes may affect the project schedule possibly meaning additional cost to the firm. The Corps will allow an extension if the changes are not a result of the firms error or omission but of unforeseeable circumstances.]

15. These changes significantly affected project cost.

|                   |  |  |  |  |  |  |                      |
|-------------------|--|--|--|--|--|--|----------------------|
| strongly<br>agree |  |  |  |  |  |  | strongly<br>disagree |
|-------------------|--|--|--|--|--|--|----------------------|

|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|

[Additional costs resulting from changes are almost always a certainty. If A-Es indicate that the project costs were impacted by these changes, then we can expect an increase in fee or a loss to the firm.]

16. Your firm was fairly compensated for the additional time or cost.

|                   |  |  |  |  |  |  |                      |
|-------------------|--|--|--|--|--|--|----------------------|
| strongly<br>agree |  |  |  |  |  |  | strongly<br>disagree |
|-------------------|--|--|--|--|--|--|----------------------|

|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|

[If the firms feel they were appropriately compensated for the additional time and cost then the impact of the changes may have just been part of the cost of doing business. However, if they feel they were not appropriately compensated this would certainly be a source for hard feelings and would influence their desire for future Corps work.]

17. Corps projects are more complex than work with private owners.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[This is the A-Es opinion of the complexity of Corps projects when compared to their private work. If there is significant difference in the complexity of Corps work over private work, A-Es may feel that they should be better compensated for the services they provide.]

18. The Corps is more demanding, in terms of achieving quality design than private clients are.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[If A-Es are of the opinion that the Corps is more demanding than private clients, the A-Es may feel they should be better compensated for their services. A demand for services above what is expected in the industry is a good reason increase fee or this may be a good reason for the Corps to request an increase to the 6% design fee. Firms may also feel that the Corps requirements exceed typical services rendered by design firms.]

19. Several conceptual design solutions were developed and discussed with Corps representatives and users before a final selection was made.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[Typically architect's will develop several design concepts and present these to the client to solicit his thoughts on a design. This serves to help the client see some of the possibilities and also keeps the designer from spending time on a design the client does not like. The confirmation that design firms develop two or more design concepts for Corps'







3. Were you involved in any way during the construction phase of any of the projects in which you furnished documents? Please add comments if answer is yes.

[ ] Yes [ ] No

[Most A-E contracts for design services for the Corps are limited to pre-design, design, and construction documents. However, some firms may become involved with work during the construction phase although they aren't always paid for these services. The nature of the services they render during the construction phase could indicate whether the firms are doing an adequate job in the design and construction documents phase.]

4. If your firm had been regularly involved in the construction phase, there would have been a significant improvement in the quality of the final product.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[Normally A-E firm are involved with all phases of a project. This provides continuity that can affect the quality of the final product. With the Corps however, this is not the case. Although design firms are not involved in the construction phase of Corps projects, they keep track of the progress of the project and how well the design and construction objectives were achieved. Because design firms are normally contracted to manage construction for private firms, they can tell whether the final product would have been better achieved if they had managed construction for the Corps.]

#### D. COMPENSATION

1. Compensation for services provided to the Corps are greater than, equal to, or less than that which can be received for similar projects in the private sector.

greater than

equal

less than

1 2 3 4 5 6 7

[Compensation for the services provided for Corps project as compared to private work is one area that design firms can best address.]

2. What is your opinion of the Federal 6% ceiling for architectural fees?

[Firms are not all going to agree to the fee percentage however the 6% fee is mandated by Federal statute and they must all willing accept this fee if they want Corps or federal work. The firm's opinions of this fee could enlighten us to their concerns about this fee ceiling.]

3. The Corps always paid your billings on time.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[Getting paid on time for services rendered is important to everyone. Late pay can dampen the desire for providing the best services and can be a source of aggravation especially if the firms are depending on receiving that revenue at certain times. If firms feel they are unjustifiably being denied their pay for services rendered, then this could result in firms not willing to provide future services to the Corps.]

4. Getting paid for Corps projects was a difficult process.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[The Corps is one of the largest bureaucracies in the federal government therefore requests for payment must pass through several hands before money can be paid out. The A-Es opinion of the difficulty of getting paid for the services they had rendered could be another indicator of the aggravation firms may feel with the Corps.]

5. Corps projects are more profitable than private work.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[Design firms will seek work from a particular client because the client was easy to work for, the projects are excellent, or the projects are profitable for the firm. If firms make a sizeable profit on their Corps projects, they

may feel that Corps projects are still worth going after. If however, they feel that Corps work is largely unprofitable they may just as soon not compete for these projects.]

6. What was the major billing difference between Corps work and your private client projects?

[Firms are asked to identify the major differences in billing the Corps verses billing a private client.]

E. MISCELLANEOUS

1. The Corps took advantage of your full range of architectural services.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[Design firms offer a good number of services from programming to construction management. Not all firms contracted by the Corps were contracted for the same services. This question would reflect the A-Es opinion about the services the Corps contracted from them.]

2. Your firm could have provided a better final product if the Corps was willing to contract for more of your services.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[The limitations placed on the Corps on the types of A-E services they can contract for can hinder the quality of the design and ultimately the final product. The A-E's opinion on whether they could have provided a better facility if the Corps had contracted for more of their professional services would be another indicator of their satisfaction with working for the Corps.]

3. Your contract with the Corps was problem free and satisfying.

strongly  
agree

strongly  
disagree

1 2 3 4 5 6 7

[Generally, the firms are asked to rate their overall working relationship with the Corps on their project(s).]

4. What did you like best about working with the Corps?

[Firms are given the opportunity to state what they thought was the best part of working with the Corps.]

5. What did you like least about working with the Corps?

[Firms are asked to identify specifically what it was they disliked about working with the Corps.]

6. Your firm wants more projects with the Corps.

strongly  
agree

strongly  
disagree

1            2            3            4            5            6            7

[Based on all the issues mentioned throughout the survey, A-Es are asked to rate how strongly they still desire more Corps work.]

7. What factors would increase your desire for more Corps projects?

[Responses to this question may be the key to increasing competition for more Corps work.]

8. What changes would you propose before your firm will compete for more Corps projects?

[Ideas to improve the working relationship from the viewpoint of the professional can help resolve some of the problem areas.]

9. Size of firm: Total Personnel : \_\_\_\_\_

Architects: \_\_\_\_\_

Drafters: \_\_\_\_\_

Engineers : \_\_\_\_\_

Staff : \_\_\_\_\_

10. Please enter actual or estimated figures for each calendar year:

|      | Firm's<br>Gross Annual<br>Earnings: | Number of US<br>Army Corps<br>Contracts | Corps projects<br>as % of firm's<br>annual gross<br>earnings. |
|------|-------------------------------------|-----------------------------------------|---------------------------------------------------------------|
| 1985 | _____                               | _____                                   | _____                                                         |
| 1986 | _____                               | _____                                   | _____                                                         |
| 1987 | _____                               | _____                                   | _____                                                         |
| 1988 | _____                               | _____                                   | _____                                                         |
| 1989 | _____                               | _____                                   | _____                                                         |
| 1990 | _____                               | _____                                   | _____                                                         |

[Questions 9 and 10 were intended mainly to classify the firms in terms of size and quantity of work. Several of the firms elected not to answer this question feeling this was confidential information.]

11. Please include any other issues you consider important.

(write on back if more space is needed)

[Firms were given the opportunity to state any other issue they thought was important to smoothing out the working relationship between the Corps and design firms.]

**APPENDIX D**  
**SUBMITTAL REQUIREMENTS**

Submittal requirements for projects are specific and clear at each stage of the review process. Following is a summary of the general submittal requirements for a new facility at each phase. This list is from the Department of the Navy, Pacific Division A-E Guide which is also used by POD. These items are included and discussed more completely in Appendix A of the Corps contracts for architectural services (SF252).

a. "Conceptual designs- Showing various design concepts.

b. 10% Submittals- Include perspective sketches showing all sides of a facility and addressing form, color, and materials.

c. 35% Submittal-Actual submission will be dictated by the specific project but will include some or all of the following.

- Drawings
- Specifications
- Basis of Design
- Design Calculations
- Preliminary Cost Estimates
- Real Estate Requirements
- Soil Investigations
- Review comments and mark-up of conceptual design
- Original of the Activity Signature Sheet

d. 100% Submittals:

- Working Drawings
- Specifications- in final form.
- Basis of Design- after revisions.
- Design Calculations
- Cost Estimates
- List of Submittals required in Project
- Specifications
- Critical Items Summary

Recommendations of Field Consultations  
Construction Schedule (simple CPM or Bar Chart)  
Real Estate Map  
Soil Investigation Report  
Review Comments and marked review copies of the  
35% review

e. Final Submittal: Originals are submitted as  
applicable.

Working Drawings  
Specifications  
Cost Estimates  
Basis of Design  
Design Calculations  
Soil Investigations  
Field Notes - including surveying field books  
Topographic Worksheets  
Survey Computations  
Review Comments and marked copies from the 100%  
review  
Review Checklist (formal design quality checklist)  
All Borrowed Material"<sup>1</sup>

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<sup>1</sup>U.S., Department of the Navy, Pacific Division, Naval  
Engineering Facilities Command, A-E Guide for Architects and  
Engineers Performing Services for the Department of the Navy  
Pacific Division, p.3-1.

**APPENDIX E**

**QUESTIONNAIRE RESPONSE STATISTICS**

**Table 1. Architects Response**

| <b>Question<br/>Number</b> | <b>Ratings</b> |          |          |          |          |          |          | <b>Average<br/>Response</b> | <b>Standard<br/>Deviation</b> |
|----------------------------|----------------|----------|----------|----------|----------|----------|----------|-----------------------------|-------------------------------|
|                            | <b>1</b>       | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> |                             |                               |
| G4                         | 1              | 1        | 1        | 6        | 3        | 0        | 3        | 4.40                        | 1.67                          |
| G5                         | 1              | 0        | 1        | 6        | 2        | 2        | 3        | 4.73                        | 1.61                          |
| G6                         | 1              | 0        | 2        | 8        | 3        | 6        | 0        | 4.00                        | 1.10                          |
| G7                         | 1              | 7        | 4        | 2        | 0        | 1        | 0        | 2.73                        | 1.18                          |
| D2                         | 4              | 3        | 1        | 3        | 2        | 1        | 0        | 3.00                        | 1.63                          |
| D3                         | 2              | 6        | 3        | 3        | 1        | 0        | 0        | 2.67                        | 1.14                          |
| D4                         | 2              | 3        | 6        | 4        | 0        | 0        | 7        | 2.80                        | 0.98                          |
| D5                         | 4              | 5        | 4        | 1        | 1        | 0        | 0        | 2.33                        | 1.14                          |
| D6                         | 6              | 7        | 0        | 1        | 1        | 0        | 0        | 1.93                        | 1.12                          |
| D7                         | 2              | 2        | 4        | 3        | 2        | 1        | 1        | 3.53                        | 1.67                          |
| D8                         | 3              | 4        | 5        | 0        | 1        | 1        | 1        | 2.93                        | 1.73                          |
| D10                        | 2              | 2        | 2        | 4        | 2        | 2        | 1        | 3.80                        | 1.76                          |
| D11                        | 3              | 2        | 3        | 2        | 2        | 2        | 1        | 3.53                        | 1.89                          |
| D12                        | 2              | 2        | 2        | 5        | 3        | 1        | 0        | 3.53                        | 1.45                          |
| D14                        | 0              | 2        | 5        | 5        | 1        | 1        | 1        | 3.80                        | 1.33                          |
| D15                        | 1              | 2        | 3        | 7        | 0        | 1        | 1        | 3.67                        | 1.45                          |
| D16                        | 0              | 2        | 1        | 4        | 1        | 1        | 6        | 5.07                        | 1.84                          |
| D17                        | 1              | 1        | 1        | 6        | 1        | 1        | 4        | 4.60                        | 1.82                          |
| D18                        | 0              | 0        | 2        | 6        | 2        | 1        | 4        | 4.93                        | 1.44                          |
| D19                        | 4              | 6        | 1        | 1        | 3        | 0        | 0        | 2.53                        | 1.45                          |
| D20                        | 2              | 0        | 0        | 3        | 0        | 2        | 8        | 5.47                        | 2.09                          |
| D21                        | 1              | 0        | 5        | 2        | 2        | 3        | 1        | 4.20                        | 1.56                          |



| Question<br>Number | Ratings |   |   |   |   |   |   | Average<br>Response | Standard<br>Deviation |
|--------------------|---------|---|---|---|---|---|---|---------------------|-----------------------|
|                    | 1       | 2 | 3 | 4 | 5 | 6 | 7 |                     |                       |
| Q1                 | 0       | 2 | 4 | 5 | 1 | 2 | 1 | 4.00                | 1.41                  |
| Q2                 | 3       | 0 | 0 | 3 | 3 | 3 | 3 | 4.60                | 2.06                  |
| Q4                 | 3       | 4 | 2 | 3 | 2 | 0 | 1 | 3.07                | 1.69                  |
| C1                 | 0       | 0 | 1 | 1 | 4 | 3 | 6 | 5.80                | 1.22                  |
| C3                 | 3       | 4 | 2 | 2 | 2 | 1 | 1 | 3.20                | 1.83                  |
| C4                 | 0       | 1 | 1 | 4 | 1 | 4 | 3 | 5.00                | 1.51                  |
| C5                 | 0       | 0 | 1 | 3 | 3 | 1 | 7 | 5.67                | 1.40                  |
| M1                 | 2       | 1 | 3 | 2 | 4 | 2 | 1 | 4.00                | 1.75                  |
| M2                 | 4       | 1 | 3 | 4 | 0 | 1 | 2 | 3.40                | 1.99                  |
| M3                 | 1       | 4 | 2 | 3 | 0 | 2 | 3 | 4.00                | 2.03                  |
| M6                 | 5       | 2 | 3 | 1 | 0 | 1 | 3 | 3.27                | 2.29                  |

**Table 2. Project Manager Responses**

| Question<br>Number | Ratings |   |   |   |   |   |   | Average<br>Response | Standard<br>Deviation |
|--------------------|---------|---|---|---|---|---|---|---------------------|-----------------------|
|                    | 1       | 2 | 3 | 4 | 5 | 6 | 7 |                     |                       |
| G4                 | 0       | 0 | 2 | 2 | 1 | 2 | 0 | 4.43                | 1.18                  |
| G5                 | 0       | 0 | 2 | 1 | 3 | 0 | 1 | 4.57                | 1.29                  |
| G6                 | 0       | 0 | 1 | 3 | 3 | 0 | 0 | 4.29                | 0.70                  |
| D2                 | 0       | 4 | 0 | 3 | 0 | 0 | 0 | 2.86                | 0.99                  |
| D3                 | 0       | 3 | 3 | 1 | 0 | 0 | 0 | 2.71                | 0.70                  |
| D4                 | 1       | 3 | 1 | 4 | 1 | 0 | 0 | 2.71                | 1.28                  |
| D5                 | 1       | 4 | 0 | 2 | 0 | 0 | 0 | 2.43                | 1.05                  |
| D6                 | 0       | 1 | 1 | 0 | 3 | 1 | 0 | 4.14                | 1.36                  |
| D7                 | 0       | 3 | 2 | 1 | 1 | 0 | 0 | 3.00                | 1.07                  |
| D9                 | 0       | 0 | 1 | 0 | 2 | 4 | 0 | 5.29                | 1.03                  |
| D10                | 0       | 1 | 1 | 3 | 2 | 0 | 0 | 3.86                | 0.99                  |
| D11                | 0       | 2 | 1 | 3 | 1 | 0 | 0 | 3.43                | 1.05                  |
| D13                | 1       | 2 | 3 | 1 | 0 | 0 | 0 | 2.57                | 0.90                  |
| D14                | 0       | 5 | 2 | 0 | 0 | 0 | 0 | 2.29                | 0.45                  |
| D15                | 0       | 4 | 0 | 2 | 1 | 0 | 0 | 3.00                | 1.20                  |
| D16                | 0       | 3 | 2 | 1 | 0 | 0 | 0 | 3.14                | 1.36                  |
| D17                | 0       | 4 | 2 | 0 | 1 | 0 | 0 | 2.71                | 1.03                  |
| D18                | 0       | 1 | 3 | 2 | 1 | 0 | 0 | 3.43                | 0.90                  |
| D19                | 1       | 1 | 1 | 2 | 1 | 1 | 0 | 3.57                | 1.59                  |
| D20                | 0       | 0 | 2 | 2 | 2 | 1 | 0 | 4.29                | 1.03                  |
| Q1                 | 1       | 2 | 3 | 0 | 0 | 1 | 0 | 2.86                | 1.46                  |
| Q2                 | 0       | 1 | 2 | 1 | 1 | 0 | 2 | 4.43                | 1.84                  |
| Q4                 | 0       | 2 | 0 | 2 | 3 | 0 | 0 | 3.86                | 1.25                  |
| C1                 | 0       | 0 | 3 | 1 | 2 | 0 | 1 | 4.29                | 1.39                  |

| Question<br>Number | Ratings |   |   |   |   |   |   | Average<br>Response | Standard<br>Deviation |
|--------------------|---------|---|---|---|---|---|---|---------------------|-----------------------|
|                    | 1       | 2 | 3 | 4 | 5 | 6 | 7 |                     |                       |
| C3                 | 0       | 4 | 1 | 1 | 1 | 0 | 0 | 2.86                | 1.12                  |
| C4                 | 0       | 0 | 2 | 0 | 2 | 1 | 1 | 4.86                | 1.36                  |
| C5                 | 0       | 0 | 2 | 2 | 2 | 1 | 0 | 4.29                | 1.03                  |
| M1                 | 0       | 1 | 3 | 1 | 2 | 0 | 0 | 3.57                | 1.05                  |
| M2                 | 0       | 2 | 0 | 3 | 2 | 0 | 0 | 3.71                | 1.16                  |
| M3                 | 0       | 1 | 0 | 0 | 4 | 1 | 1 | 5.00                | 1.41                  |
| M6                 | 1       | 4 | 0 | 1 | 1 | 0 | 0 | 2.57                | 1.29                  |

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