



ACQUISITION AND
TECHNOLOGY

OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON
WASHINGTON DC 20301-3000



March 30, 1998

Honorable Ted Stevens
Chairman, Committee on Appropriations
United States Senate
Washington, DC 20510-6025

Dear Mr. Chairman:

In the Conference Report accompanying HR 2016 (Report 105-247) the Committee on Conference requested that the Department of Defense submit a report on unified design guidance to the Congressional defense committees. Specifically, the report should address areas where uniform procedures, systems, and/or criteria are already in place; other possible areas where it may be practical to create more uniformity; and the most cost effective system for implementing improvements. I am pleased to submit the enclosed report addressing these issues.

The report finds that 43 percent of DOD design criteria are already "unified," reflecting commonality among the Services, and four percent are being unified under current initiatives. There exists potential for unifying a majority of the remaining 53 percent of existing design criteria. The Department plans to increase its use of Tri Service groups to continue unifying its design criteria. These groups have proven to be the most cost effective method for this effort.

A similar letter is being sent to the Senate Committee on Armed Services, the House Committee on National Security and the House Committee on Appropriations.

Sincerely,

John B. Goodman
Deputy Under Secretary
(Industrial Affairs and Installations)

Enclosure

cc: Honorable Robert C. Byrd
Ranking Minority Member



Tri-Service Working Group

March 1998

Report to the Congressional Defense
Committees

UNIFIED DESIGN GUIDANCE

Executive Summary

The Conference Report (Report 105247) accompanying HR 2016, Military Construction Appropriation Act for Fiscal Year 1998, requests that DoD and the Services prepare a joint report by March 31, 1998 which identifies:

(1) Areas where uniform procedures, systems, and/or criteria are already in use

(2) Other possible areas where it may be practical to create more uniformity

(3) The most cost-effective system for implementing improvements

A Tri-Service Working Group evaluated the status of unified design guidance and analyzed options to implement further improvements. The Working Group's findings and recommendations are:

(1) Forty-three percent of the Services' existing design criteria documents are "unified", and current initiatives will unify another four percent. The Services' use a common guide specification system, many of the same design tools and databases, and are working together to develop standard designs for common types of facilities.

(2) There is potential for unifying more systems and the majority of the fifty-three percent of the Services' design criteria documents that are not already unified. There is also potential to expand the existing uniformity of the Services' guide specification system.

(3) Greater use of Tri-Service groups as a formal documented process is the most cost-effective system for implementing improvements in unifying design guidance based on the analysis performed by the Tri-Service Working Group.

TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY	2
1. BACKGROUND	4
2. APPROACH	4
3. QUESTION (1) - AREAS WHERE UNIFORM PROCEDURES, SYSTEMS AND CRITERIA ARE ALREADY IN USE	4
4. QUESTION (2) - AREAS WHERE IT MAY BE POSSIBLE TO CREATE MORE UNIFORMITY	5
5. QUESTION (3) - THE MOST COST-EFFECTIVE SYSTEM FOR IMPLEMENTING IMPROVEMENTS	7
6. SUMMARY	11
7. SUBMISSION	12
APPENDIX I - TRI-SERVICE WORKING GROUP MODEL FOR UNIFIED DESIGN GUIDANCE	13
APPENDIX II - SERVICE DESIGN GUIDANCE DOCUMENTS	19
APPENDIX III - AREAS WHERE UNIFORM PROCEDURES, SYSTEMS AND CRITERIA ARE ALREADY IN USE	20
APPENDIX IV - REPORT OF THE TRI-SERVICE WORKING GROUP SUBCOMMITTEE FOR UNIFIED CONSTRUCTION GUIDE SPECIFICATIONS	26

1. Background

Language on *Unified Design Guidance* in House Conference Report 105-247, dated 9 September 1997, accompanying Conference Committee on House Report (H.R.) 2016, Military Construction Appropriations Act, 1998, directs DoD and the Services to submit a joint report to the congressional defense committees by 31 March 1998 which identifies (1) areas where uniform procedures, systems, and/or criteria are already in use; (2) other possible areas where it may be practical to create more uniformity; and (3) the most cost-effective system for implementing improvements either through a greater use of Tri-Service groups; centralized development and management under one of the Services with design and construction authorities; or centralizing the development and management of design guidance under the Secretary of Defense.

2. Approach

The three Services, with OSD concurrence and support, established a Tri-Service Working Group (TWG) to address “unified design guidance”. The TWG surveyed existing procedures, systems, and criteria affecting design and construction for the three Services, evaluated the extent of existing uniformity of this guidance, identified areas where greater uniformity is practical, analyzed viable options for future management of uniform guidance, and prepared this report of the findings.

3. Question (1) - Areas Where Uniform Procedures, Systems and Criteria Are Already In Use

The Tri-Service Working Group surveyed all of the Services’ existing design guidance to determine where uniform procedures, systems and criteria are in use.

Forty-three percent of the Services’ existing design criteria documents are ‘unified’. This figure includes documents that are Tri-Service, Dual-Service for which the other Service has no need, Dual-Service which have some potential for use by all the Services,

and Single-Service unique for which the other Services have no need. An additional four percent of the Services criteria will be unified as a consequence of current initiatives, Appendix II summarizes the current status and baseline for achieving further standardization among the Services.



Design Criteria

Appendix III describes other areas where uniform procedures, systems and criteria are already in use. The key areas are:

- SPECSINTACT guide specification system
- CADD/GIS, computer-aided design and drafting/geographical information systems
- Cost engineering
- Value engineering
- Design tools
- Standard designs
- Criteria distribution
- Commercial consensus codes and standards

4. Question (2) - Areas Where It May Be Possible to Create More Uniformity

There is considerable uniformity among the Services. The Tri-Service Working Group strongly believes it is possible and realistic to create more uniformity. Those areas with the most potential are described below.

A. Design Criteria

While forty-three percent of the Services' design criteria are already unified, and an additional four percent are being unified, there is potential to unify most of the remaining Service criteria. Ongoing efforts of the Services functional and discipline working groups are directed to continue criteria unification to the maximum extent possible.

B. Construction Guide Specifications

The Tri-Service Working Group chartered a Subcommittee for Unified Construction Guide Specifications to evaluate the potential for developing a single guide specification system for all the Services. The Subcommittee reviewed current practices of the three Services, found a high degree of uniformity in the Services specification systems, and determined that there are opportunities for continuing efforts to maintain and promote that uniformity. The Subcommittee determined that the most cost-effective means for implementing improvements to the development of a unified construction guide specification system is through Tri-Service groups. This will encourage the shared use of resources under organizations already in place, eliminate the need for additional layers of authority or bureaucracy and maximize use of the combined corporate knowledge of the Services technical experts actually involved in day-to-day problem solving during the design and construction process. Ultimately, major expansion of this established Tri-Service relationship is the best approach to achieve a unified specification system and still retain the flexibility each Service needs to be responsive to its own missions and user requirements. The complete Subcommittee report is provided in Appendix IV.

C. Design Guidance to Implement Programs And Policy from Higher Authority

Developing design guidance to implement programs and policy from higher authority is an area where it is possible to create more uniformity. Emerging policy on issues such as energy conservation, global warming, sustainable design, "green buildings", and the environment can be implemented through unified design guidance developed by the collective talent of all the Services.

D. Additional Study

The Tri-Service Working Group is working with national private sector architect/engineering and construction groups to gain their perspectives on where and how unified design guidance can add value to the acquisition process for military facilities. Results, while not available at the time of this report, will be used to prioritize future development of unified design guidance. Furthermore, the T&Service Working Group Model for Unified Design Guidance (Appendix I) Implementation Plan of Action and Milestones provides a more detailed analysis of the Services processes for design guidance. Greater unification will be evaluated in areas such as lessons learned, shared technical training, and interagency assignments.

5. Question (3) - The Most Cost-Effective System For Implementing Improvements

The Tri-Service Working Group investigated three options for implementing improvements in the unified design guidance process: Option (1) - greater use of Tri-Service groups; option (2) - centralized development and management under one of the Services with design and construction authority; and option (3) - centralized development and management of design guidance under the Secretary of Defense.

A. Option (1) - Greater Use of Tri-Service Working Groups

The first option for implementing improvements is through expanded use of Tri-Service working groups. Tri-Service working groups composed of existing Services technical personnel have proven to be a cost-effective way to develop Air Force, Army, Navy and Marine Corps facilities design criteria. The working groups will further unify the main body of criteria documents (manuals, handbooks, publications, specifications, standard designs, etc.) through a structured process by all the Services. Criteria documents will be streamlined by using commercial and national non-government standards whenever possible. Design guidance will be current and effectively implement laws, regulations, executive orders and DoD policies, introduce new and innovative

technology, and define the level of quality required for facilities to support mission requirements throughout their life cycle.

The Services have achieved a high degree of uniformity by using the collective talent of all the Services in existing working groups. There are seventeen Tri-Service, two Dual-Service and nine Single-Service existing working groups that coordinate, develop, and implement unified design guidance as part of their charters. Two Dual-Service and nine Single-Service working groups have potential to include all three services. A list of these groups is included in Appendix III.

Many of the Tri-Service groups are already working to introduce new technology, solve field problems, share lessons learned, determine functional and mission requirements, and implement laws, executive orders and DoD policy. It is appropriate to continue and expand this process for development of unified design guidance.

8. Option (2) - Centralized Development And Management Under One of the Services

A second option for implementing improvements is for one of the Services with design and construction authority to develop and maintain all engineering and design guidance.

Each Service has developed specialized technical expertise based on its core mission. For example, the Army is the technical lead for airfield and roadway pavements, the Navy is the lead for piers, wharves and moorings, and the Air Force provides specialized expertise in aviation navigational aids. The architectural and engineering experts throughout each of the Services participate in the development of design guidance. Consolidating development of design guidance under one Service would result in a loss of available specialized expertise and would not be efficient or cost-effective. Furthermore, the guidance would in general not be as good as that prepared with the collective technical input of all of the Services.

Also, each Service must have the capability to rapidly respond to engineering and design-related questions, to implement new and innovative technology into facilities, and to modify design guidance when necessary to address mission readiness and health and

safety issues. This agility would be lost with the criteria function centralized under one Service.

The Services are accelerating the use of new methods of facilities acquisition and contracting. These methods require different types of technical criteria and in various formats, Centralizing criteria under one Service would not provide a mechanism to be responsive to the rapidly changing needs of each Service.

C. Option (3) - Centralized Development And Management Under The Secretary of Defense

The third option for implementing improvements is to centralize the development and management of design guidance under the Secretary of Defense. The Office of the Under Secretary of Defense (Industrial Affairs & Installations) would have primary responsibility for establishing and maintaining unified design and construction criteria for the Services. This method, however, has the same disadvantages noted above of using a single Service.

In fact, OUSD (IA&I) would have to rely on the technical expertise currently available in the private sector; existing technical expertise from the U.S. Army Corps of Engineers, the Naval Facilities Engineering Command, the Air Force Civil Engineer; and ultimately existing Tri-Service committees. This would result in increased costs to prepare and revise criteria. There are few advantages to having design guidance managed under the Secretary of Defense.

OSD's primary responsibility is development of national defense policy. Central criteria management of detailed technical criteria may be an inappropriate role, adds another layer of bureaucracy to the process, does not eliminate the need to issue Service-specific supplements to criteria, and will decrease responsiveness to the working level users in the Services.

D. Analysis of the Most Cost-Effective Option

The Tri-Service Working Group evaluated the three options based on a set of key objectives. The key objectives in priority order are:

- Technical Quality - design guidance is accurate, up-to-date, ensures safety and health of Service members and the public, and effectively implements laws, regulations and policy from higher authority.
- Facility Life-Cycle Cost - facilities are designed and constructed that have the lowest life cycle costs through technically superior design guidance that considers factors affecting first cost, operating costs, maintenance, sustainability, and disposal. User feedback at the Services level is an integral part of the process.
- Cost of Criteria Development - in-house staff and Services contractors prepare new criteria and update existing criteria to address mission, regulatory and level of quality requirements.
- Responsiveness to Services - guidance ensures facilities meet the operational requirements of the Services and enhances mission readiness and productivity.
- Value to the Services Architect/Engineering/Construction (A/E/C) Contractors - design guidance is uniform, easily applied, and consistent with standard industry practices.
- Service Technical Expertise - the Services maintain a core of technical expertise that allows them to implement design guidance, resolve issues, and continuously improve the criteria.
- Speed of Development - guidance is developed and updated quickly to meet changing requirements, and reflect new innovative technology and construction techniques.
- Publication and Distribution Cost -the Services use modern desktop computer publication software and electronic distribution of guidance on the Construction Criteria Base and the Internet.

The results of the Tri-Service Working Groups evaluation of the three options for implementing improvements in unified design guidance are summarized in the table below:

ANALYSIS OF KEY OBJECTIVES

Factor	Tri-Service	One-Service	DoD
Technical Quality	++	+	o
Facility Life-Cycle Cost	+	o	o
Cost of Criteria Development	o	o	-
Responsiveness to Services	++	+	-
Value to Services A/E/C Contractors	+	+	+
Service Technical Expertise	++	-	--
Speed of Development	-	+	++
Publication and Distribution Cost	o	o	o

LEGEND ++ Very Positive + Positive o Neutral - Negative -- Very Negative

E. Conclusion

Centralizing design guidance under one of the Services consolidates the criteria function but is not truly cost-effective. The analysis indicates this option degrades the quality and responsiveness of the criteria consulting service to the users. Consolidating the function under the Secretary of Defense has the same disadvantages as consolidating under one of the Services and will increase costs and adds another layer of bureaucracy to the process.

The analysis indicates that the most cost effective method overall for implementing further improvements is through greater use of T&Service technical working groups operating as a formal documented process. Little additional administrative work will be required to implement this option. A detailed model of this process and a plan of action with milestones are presented in Appendix I.

The Tri-Service Working Group recommends greater use of Tri-Service groups as the overall best method to accelerate uniformity while still maintaining specialized Service expertise, the ability to provide rapid responses to critical issues and to address changing business environments, evolving acquisition strategies and contracting procedures.

6. Summary

Forty-three percent of the Services existing design criteria documents are unified. An additional four percent will be unified as a consequence of current initiatives. Many existing procedures, systems and tools are uniform among the Services.


There is potential for unifying the majority of the fifty-three percent of the Services design criteria documents that are not presently unified. There is also potential to build on and expand the existing uniformity of the Services guide specification system.

Greater use of Tri-Service working groups is the most effective system for making improvements to design guidance. Overall, it results in unified guidance that is technically superior; lowers facility life-cycle cost; is responsive to the Services missions; is valuable to the Services A/E/C contractors; and effectively maintains Service technical expertise. The Services have benefited from the research and analysis required to prepare this report and are actively moving toward greater uniformity in design guidance.


The Tri-Service Engineering Senior Executive Board is charged within DoD to carry out the recommendations of this Report.

7. Submission

The Service Chiefs of Engineering, serving as the Steering Committee for development of a Unified Design Guidance Report to the Congressional Defense Committees, concur with the findings and recommendations of the Tri-Service Working Group and respectfully submit this report.



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TRI-SERVICE WORKING GROUP MODEL FOR UNIFIED DESIGN GUIDANCE

Objective

Develop Air Force, Army and Navy facilities design criteria using the coordinated, collective technical talent of all Services. Unify the main body of criteria documents (manuals, handbooks, publications, specifications, standard designs, etc.) for use by all Services. Streamline criteria and use commercial and national non-government standards whenever possible. Keep criteria current, and effectively implement laws, regulations, executive orders and DoD policies; introduce new and innovative technology; and define the level of quality required for facilities to support mission requirements throughout their life cycle.

Organization

1. Tri-Service Engineering Senior Executive Board
 - a. Roles and Responsibilities:
 - Establish unified design guidance policy
 - Provide oversight of unified design guidance process
 - Resolve issues impeding unified design guidance
 - Act as resource/budget proponent for unified design guidance
 - b. Members:
 - Air Force: Deputy Civil Engineer, DSC/Installations and Logistics, HQ U.S. Air Force
 - Army: Chief, Engineering and Construction Division, Directorate of Military Programs, U.S Army Corps of Engineers
 - Navy: Chief Engineer, Naval Facilities Engineering Command
 - c. Chairperson: the members shall rotate the role of chairperson biannually.
2. Tri-Service Design Guidance Coordinating Panel

- a. Roles and Responsibilities:
 - Establish process and procedures to implement unified design guidance policy
 - Formulate and recommend unified design guidance policy to the Tri-Service Engineering Senior Executive Board
 - Formulate and recommend short term and standing Tri-Service Working Group charters and membership to the Tri-Service Engineering Senior Executive Board
 - Prepare and maintain prioritized unified design guidance requirements list
 - Prepare annual and future year unified design guidance action plan
 - Provide coordination and oversight of Tri-Service Working Groups
 - Arbitrate Service technical and procedural differences impeding unified design guidance. Prepare position papers for unresolved differences for final resolution and direction by the Tri-Service Engineering Senior Executive Board
- b. Members
 - Air Force: HQ USAF/ILEC, DSC/Installations and Logistics
 - Army: Chief, Technical Branch, Engineering and Construction Division, Directorate of Military Programs, U.S Army Corps of Engineers
 - Navy: Director, NAVFAC Criteria Office, Naval Facilities Engineering Command
- c. Chairperson: the members shall rotate the role of chairperson biannually.

3. Tri-Service Working Groups:

- a. Structure Working Groups as small as possible, but ensure Service technical and operational requirements are represented. Conduct business in a simple, effective and efficient manner. Use teleconferences, video-teleconferences and the electronic exchange of information and documents in lieu of face to face meetings whenever possible. Coordinate meetings with related professional meetings when possible.

- b. Use existing Tri-Service Working Groups to the maximum extent possible to fulfill the unified design guidance roles and responsibilities of the groups listed below.
- c. Roles and Responsibilities:
 - Recommend unified design guidance to the Tri-Service Design Guidance Coordinating Panel
 - Develop scopes of work and resource requirements
 - Recommend Service Preparing Activity
 - Ensure technical adequacy of assigned unified design guidance
 - Coordinate with other Tri-Service Working Groups
 - Identify technology and research needs
- d. Discipline Tri-Service Working Groups
 - Architectural
 - Mechanical
 - Structural
 - Civil
 - Geotechnical
 - Electrical
 - Environmental
 - Fire Protection
 - Interior Design
 - Landscape Architecture
 - Planning
 - Security
 - Value Engineering
- e. Facility Category/Functional Tri-Service Working Groups
 - Aviation
 - Communication
 - Waterfront
 - Training
 - Research, Development, Testing and Evaluation
 - POL
 - Ordnance
 - Storage
 - Medical
 - Administrative
 - Troop Housing
 - Personnel Support
 - Utilities
 - Structures

- Family Housing
 - Energy
- f. T&Service Construction Guide Specification System Working Group
 - g. Members: Technical/subject matter experts from headquarters and field of each service, other federal agencies, and ad hoc industry representatives as appropriate.
 - h. Chairperson: members shall rotate the role of chairperson biannually.
4. Service Preparing Activities
- a. Use existing Service criteria organizational structure to prepare and maintain the unified design guidance
 - b. Roles and Responsibilities:
 - Act as the Tri-Service lead for assigned unified design guidance
 - Coordinate Tri-Service review and approval of documents

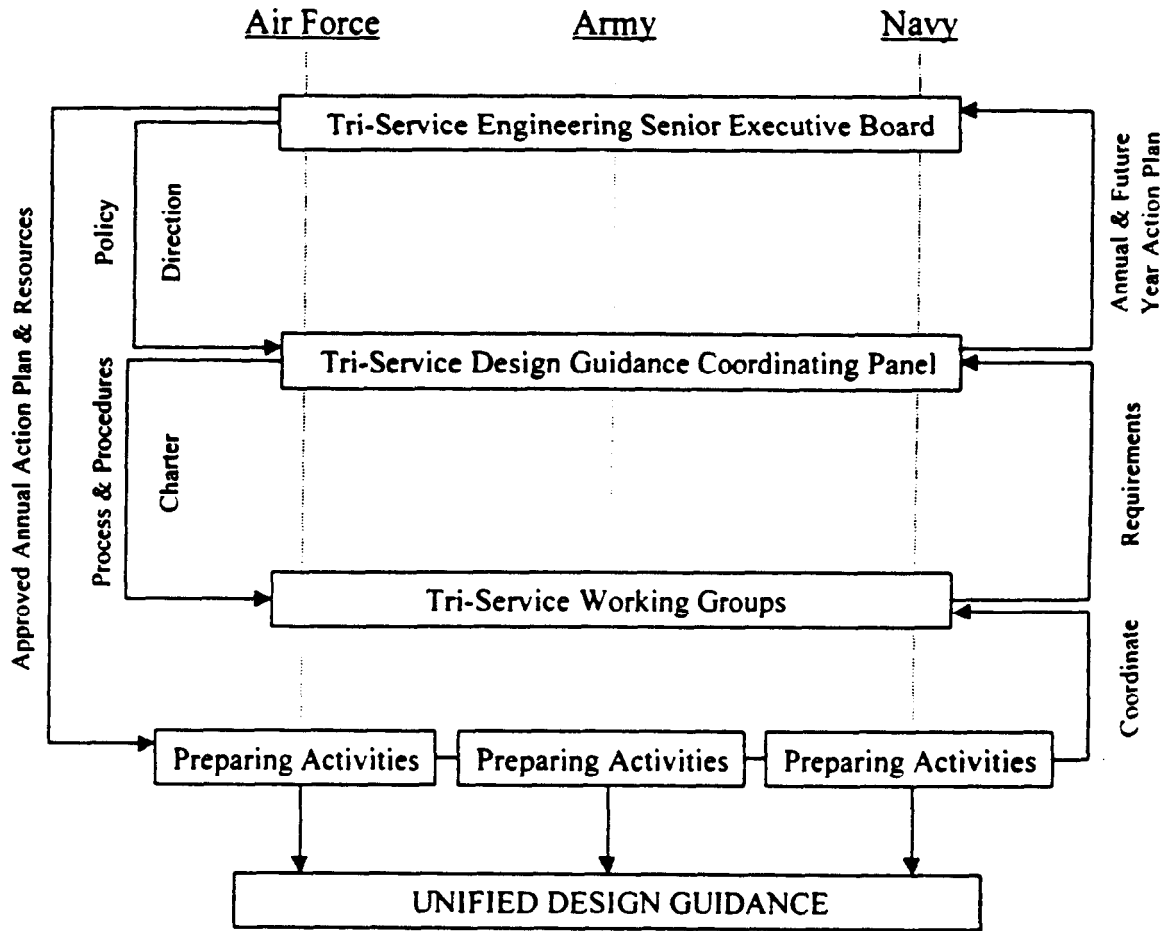
Implementation Plan of Action and Milestones

The following plan of action is expected to achieve unification of all appropriate systems, tools and the remaining fifty-three percent of criteria documents to the maximum extent possible by September 2000:

1. Charter Tri-Service Engineering Senior Executive Board (03/98)
2. Charter Tri-Service Design Guidance Coordinating Panel (04/98)
3. Tri-Service Design Guidance Coordinating Panel develops process and procedures for unified design guidance using Working Groups (09/98):
 - Analyze the existing Air Force, Army Corps of Engineers, and Naval Facilities Engineering Command processes by

- which technical guidance and criteria are planned and programmed, developed, reviewed and approved, applied, evaluated (feedback), maintained, updated, revised and either reissued or rescinded,
- Identify each Service difference (i.e. needs, responsibilities, technical requirements, business practices, document types and format, customers, publications and distribution) and examine various issues which must be overcome to effectively share criteria between the Services.
 - Develop Tri-Service criteria preparation, coordination and review procedures at the working level emphasizing technical cooperation, cost efficiency and timely execution.
4. Amend charters of existing Tri-Service working groups to include roles and responsibilities for unified design guidance (06/98)
 5. Charter new Tri-Service working groups necessary for unified design guidance (06/98)
 6. Coordinate FY99 Service criteria preparation to ensure unified design guidance is prepared for high priority projects (09/98)
 7. Tri-Service Working Groups provide recommended requirements list to Tri-Service Design Guidance Coordinating Panel (12/98)
 8. Tri-Service Design Guidance Coordinating Panel prepare FY 2000 Annual Action Plan and initial Future Year Action Plan for Tri-Service Engineering Senior Executive Board (03/99)
 9. Tri-Service Engineering Senior Executive Board approves and assign unified design guidance projects to Service Preparing Activities (06/99).
 10. Preparing Activities begin work on FY2000 Unified Design Guidance Action Plan (10/99)

UNIFIED DESIGN GUIDANCE MODEL



**SERVICE DESIGN
GUIDANCE DOCUMENTS**

Description	Unified Design Guidance				Total Unified	4,5 Not Unified	Total
	Tri	1Dual	2Dual	3Single			
Aviation Operational Facilities	1	3	9	3	16	19	35
Communication Ops Facilities	1				1	1	2
Waterfront Operational Facilities	1			11	12	7	19
Other Operational Facilities			9	1	10	9	19
Training Facilities	1			3	4	6	10
Aviation Maintenance/Production						4	4
Other Maintenance/Production						9	9
POL Supply/Storage	1			2	3	10	13
Ammo Supply/Storage				12	12	1	13
Other Supply/Storage				2	2	2	4
Medical	1				1	2	3
Administrative			1		1	3	4
Troop Housing/Messing				1	1	11	12
Other Personnel Support/Service	3		2		5	14	19
Utilities	5	1	10	3	19	15	34
Real Estate & Ground Structures	1		6		7	1	8
Family Housing						2	2
Energy			1		1	1	2
Environmental						6	6
Discipline Criteria	7	2	17	4	30	26	56
Miscellaneous	9	6	9	5	29	58	87
TOTAL	31	12	64	47	154	207	361
% OF ALL DOCUMENTS (361)	9%	3%	18%	13%	43%	57%	100%

- 1 Used by two Services with no need by other Service
- 2 Used by two Services with possible use by other Service
- 3 Unique to one Service with no need by other Services
- 4 Includes fifteen documents (4.2% of total) that are in the process of being unified.
- 5 Nearly all of the remaining documents **have** potential to be unified.

Areas Where Uniform Procedures, Systems and Criteria Are Already In Use

1. Design Criteria

Forty-three percent of the existing Service design criteria documents are “unified”. This figure includes documents that are Tri-Service, Dual-Service for which the other Service has no need, Dual-Service which have some potential for use by all the Services, and Single-Service unique for which the other Services have no need. An additional four percent of the Services criteria will be unified as a consequence of current initiatives. Appendix II summarizes the current status and baseline for achieving further standardization among the Services.

2. SPECSINTACT Guide Specifications System

SPECSINTACT is a state-of-the-art, automated specification processing system promulgated by the National Aeronautics and Space Administration (NASA) and is designed as a cost-effective means for producing construction project specifications from master guide specifications. The system incorporates various quality assurance (QA) features to reduce man-hours spent on verifying the accuracy of technical, testing, submittal, and execution requirements contained in specifications. USACE, NAVFAC, and NASA adopt it as the official means for producing and maintaining their guide specifications. This cooperative effort promotes uniformity and interchangeability of guide specifications among system users. SPECSINTACT is distributed on CCB and the Internet.

3. CADD/GIS

The Tri-Service CADD/GIS Technology Center (the Center) has been operational since 1993. The Center is an interservice vehicle to set standards, coordinate CADD/GIS related activities within the Services, promote system integration, provide evaluation of

commercial off the shelf (COTS) technology, accomplish centralized procurement and provide information on the installation, training, operation and maintenance of CADD and GIS systems. The Services ensure efficient utilization of CADD/GIS throughout the life cycle of all projects - from original planning and programming through design, construction, operation and maintenance.

Three groups are responsible for the oversight and management of the Center: 1) Tri-Service Executive Steering Group (flag officer or SES-level), 2) Executive Working Group (senior management), and 3) Field Technical Advisory Group FTAG (senior level field personnel).

Significant accomplishments of the Center include the development of a CADD Generic Details Library and three Draft Standards for A-E Deliverables, A/E/C CADD and GIS Spatial Data. Development of standards includes coordination with recognized industry professional and standards organizations. The Center is working with the National CADD Council in developing a National CADD Standard. The Center also works with the Federal Geographic Data Committee in developing guidelines and standards for geospatial information. Additional information is available on the Center Web Site at URL: tsc.wes.army.mil.

4. Cost Engineering

In October 1989, the Directors of Military Programs from the three DOD agencies (U.S. Army Corps of Engineers, Naval Facilities Engineering Command and U.S. Air Force Director of Engineering and Services) signed a Memorandum of Understanding (MOU), subject "Tri-Service Automated Cost Engineering System". The intent of the MOU was to develop a single automated cost engineering platform for use by all DOD and contractor cost engineers for the preparation of all construction cost estimates.

The software developed is titled the Tri-Service Automated Cost Engineering System (TRACES). It consists of a core of software products (modules) and databases that program, develop, control, collect and maintain cost data of construction projects from inception through construction. These modules and databases include:

- Parametric Estimating System
- Micro-Computer Aided Cost Estimating System
- Life Cycle Cost System

- Historical Analysis Generator System
- Area Cost Factor index
- DOD Military Facilities Unit Cost Guide
- Military Construction Cost Index
- Construction Unit Price Book
- Maintenance and Repair Database
- Historical Database

The Tri-Service Cost Engineering Steering Committee is responsible for the management of TRACES. All Services share equally in the development, review, implementation, and maintenance of these common software modules and databases.

5. Value Engineering

The DoD/Tri-Service Executive Steering Group for Value Engineering implements OMB Circular No. A-131 and value engineering related aspects of The Office of Federal Procurement Policy Act (41 U.S.C. 401 et seq.) and the National Defense Authorization Act for Fiscal Year 1996. It establishes and maintains cost-effective value engineering procedures and processes. It provides unified guidance for Service or contractor personnel to improve performance, reliability, quality, safety, and life cycle cost of facilities during planning, design and construction.

6. Design Tools

The Services use many of the same design tools and executable computer programs. Like other design guidance, they are available to the services and DoD contractors on the CCB. The tools and databases are used by the Services and their contractors to achieve lowest life-cycle costs; evaluate alternative building materials, systems and components; reduce energy consumption; review historical data; and develop accurate program cost estimates.

Some examples are:

- MotorMaster, Electric Motor Selection Software
- LTSM, Lighting Technology Screening Matrix & Lighting System Screening Tool
- PC-ECONPACK, Economic Analysis Program
- HAG, Historical Cost Analysis Generator
- SUCCESS, Estimating and Cost Management System

- TPES, Tri-Services Parametric Estimating System
- VEDIS, Value Engineering Database Information System

7. Standard Designs

The Services use various forms of standard designs as a means of design guidance for certain types of facilities. Standard facility designs may be full standard designs that include drawings and specifications sufficient in detail to serve as construction documents after modifications are made for site-specific requirements. They can also be definitive designs with drawings and information that delineate space allocations, functional layouts, and the basic configuration of a facility, and serve as guides in developing specific design and construction drawings. Design guides normally contain a combination of written and graphic material for a specific facility type, accompanied by several example designs. For example, the Services have adopted a standard design for new, reconfigurable, or expedient ranges developed under the Army/Marine Corps Range and Training Land Program. Other standard designs with Tri-Service applicability include petroleum fueling facilities, underground and above ground bulk fuel storage facilities, ammunition and explosives storage facilities and aviation lighting systems.

8. Criteria Distribution

The three Services use the Construction Criteria Base (CCB) to distribute criteria. CCB is a construction library on a set of compact discs published quarterly by the non-profit National Institute of Building Sciences. It is also accessible from an Internet site. It contains complete, unabridged, current electronic versions of the Services' criteria documents and executable programs. All completely indexed and easy to search, copy, print or read on-screen. CCB is available by subscription and already goes to over 4,000 offices around the world and is available to all DoD contractors. The Services also utilize Internet web pages to quickly and economically distribute design guidance, gather feedback and exchange information. Printed design guidance documents are available through the Department of Defense Single Stockpoint, the Defense Automated Printing Service.

9. Commercial Consensus Codes and Standards

All of the Services use commercial building products, materials, assemblies, systems and construction practices. They therefore also use commercial consensus codes and standards as the basis for design guidance and contract requirements, drawings and specifications. Unnecessary government unique requirements documents such as ML-Specs and FED-Specs have, with few exceptions, been eliminated. ASTM, ASME, ANSI, ASHRAE, API, IEEE and many other non-government standards are used. With the development of true national codes by the major code bodies in the United States, further use of single building, mechanical, plumbing, fire, energy and electrical codes will be possible.

Service design guidance builds upon commercial codes and standards to provide for efficient facilities design and construction; provide expert guidance, create Service consistency in engineering and architectural applications, define military-unique requirements, set the level of quality required to improve functionality of the facility and lower life cycle costs; incorporate state-of-the-market technology and transition research and development; respond to rapidly changing requirements; and incorporate lessons learned and feedback. Technical experts from the Services participate with codes and standards organizations to ensure the needs of the Services are addressed as encouraged by the National Technology Transfer and Advancement Act of 1995.

10. Existing Service Working Groups

Working Group	Tri Service	Dual Service	Single Service
Airfield Lighting Systems Working Group	X		
Airfield Pavement Design Criteria Working Group	X		
Barrier Free Accessibility Working Group	X		
CADD/GIS Technology Center	X		
Cost Engineering Committee	X		
Engineering Weather Data Working Group	X		
Executive Steering Group for Value Engineering	X		
Facility Planning, Design, and Construction Working Group	X		
Federal Construction Metrication Council	X		
Federal Paint and Coatings Committee	X		
Fire Protection Engineering Working Group	X		
Fuel Facilities Engineering Panel	X		
Hardened Structures for Conventional Weapons Working Group	X		
Life Cycle Cost Working Group	X		
Physical Security Working Group	X		
Transportation Engineering Tech Leadership Working Group	X		
Underground Heat Distribution Systems Committee	X		
Specifications Systems Working Group		X	
Telecommunications Standards Working Group		X	
Energy Technology Leadership Working Group			X
Family Housing Working Group			X
Historic Preservation Working Group			X
Interior Design Working Group			X
Roofing Design and Construction Working Group			X
Standard Facilities Requirements Working Group			X
Sustainable Design Working Group			X
Vertical Structures Technology Leadership Working Group			X
Waterfront User's Working Group			X
TOTAL	17	2	9

**Report of the Tri-Service Working
Group Subcommittee For Unified
Construction Guide Specifications**

**UNIFIED CONSTRUCTION GUIDE SPECIFICATIONS REPORT
TO THE TRI-SERVICE WORKING GROUP ON UNIFIED DESIGN GUIDANCE**

6 January 1998

1. EXECUTIVE SUMMARY. In response to Congressional direction requiring DoD and the Services to report on the status, possibilities, and most cost-effective means for obtaining unified design guidance for military facilities, a Tri-Service subcommittee was established to provide information regarding construction guide specifications which are part of the design guidance system. The subcommittee found a high degree of uniformity in the guide specifications used by the Services and determined that there are opportunities for continuing efforts to maintain and promote that uniformity. The subcommittee determined that the most cost-effective means for implementing improvements to the development of unified construction guide specifications is through greater use of Tri-Service groups.

2. INTRODUCTION. This report is provided by the Tri-Service Working Group (TWG) Subcommittee for Unified Construction Guide Specifications in accordance with direction provided by the TWG. The Subcommittee task was to provide input on guide specifications that could be used in preparation of a response to House Conference Report 105-247, dated 9 September 1997, on Unified Design Guidance. In formulating this report, the Subcommittee reviewed a 1995 report on joint-agency construction guide specifications which identified many similarities in specification practices and recommended areas where additional uniformity could be accomplished. Since 1995, many of these recommendations have been implemented or simply ceased to be issues. In addition, the Subcommittee also reviewed current practices of the three Services and evaluated possible methods for further promotion of unified construction guide specifications.

3. ISSUES. The three issues raised in the House Conference Report are identified below, followed by guide specification-related information pertaining to each issue.

a. Areas where uniform procedures, systems, and/or criteria are already in use.

(1) The nationally-recognized formats and recommendations for construction specifications established by the Construction Specifications Institute (CSI) have proven beneficial to the construction industry as a whole and are generally used by the Services in

establishing uniformity and common practices and methods within construction specifications.

(2) SPECSINTACT, a standardized software program for producing construction specifications, is jointly used by USACE, NAVFAC, USAF, and NASA and requires a high degree of uniformity of specification databases used within the system. SPECSINTACT is also used within the A-E community for non-government work, as well as for other Federal, state, and local work.

(3) Many industry standards, codes, test methods, and other publications developed by various segments of the construction industry-e.g., the American Society for Testing and Materials (ASTM), American National Standards Institute (ANSI), American Society of Mechanical Engineers (ASME)-are used in the guide specifications to cite requirements for products, systems, procedures, and standard tests for various construction elements. These reference publications are used by the Services and, in many cases, are virtually the only documents available for specifying construction contract requirements.

(4) The Single Master Reference List (SMRL) provides source, title, date, and other information regarding publications referenced in USACE, NAVFAC, and NASA guide specifications. The SMRL serves as a SPECSINTACT tool to ensure uniformity of references in guide specifications that are prepared for use in SPECSINTACT.

(5) The Services (and many other government and private organizations) have adopted the Construction Criteria Base (CCB) Information System as a unified means for distributing guide specifications and other criteria documents to users. The system is maintained by the National Institute of Building Sciences (NIBS) under the direction of the CCB Coordinating Committee. The Services have representatives on this committee to establish common policy for the CCB System.

(6) The Internet is also used by the Services to publish their guide specifications, and interagency links have been established to ensure all agency guide specifications are essentially available in one location. This permits guide specification users to pick and choose the most appropriate guides for their projects from one source.

(7) A joint-agency working group on submittals has been established to develop common policy, terminology, and formatting for the submittals that are required of the construction contractor. Agreements reached within this group will be reflected in the guide specifications of the Services and NASA.

(8) A charter for a Joint-Service working group on mechanical and electrical specifications has been drafted, and when fully operational, this group will work toward improved uniformity in mechanical and electrical systems requirements and the methods in which they are specified:

b. Other possible areas where it may be practical to create more uniformity.

(1) The use of Tri-Service technical coordination groups holds the most potential to reduce costs, assure that criteria are current, and provide updated guide specifications that meet the needs of customers in a timely manner. To ensure maximum efficiencies and reduced implementation costs for this process, such coordination groups should make maximum use of facsimile, telephone, and e-mail communications for conducting business.

(2) Tri-Service groups would have the most immediate impact in unifying guide specification technical requirements for products. Industry and Service-specific requirements for most products are currently very similar and, therefore, are good candidates for short-term unification.

(3) While other similarities exist in Service guide specifications for requirements such as contractor submittals, quality control, delivery, storage, and handling of materials, warranties, and construction execution, these requirements typically reflect Service-unique business practices and lessons learned and will require more of a long-term effort to unify. However, some unification of these items could be obtained by sharing lessons learned during design and construction and through the efforts of the existing joint-agency working group on submittals.

(4) A mechanism to share user feedback among the Services could be established to help unify the differences cited above and to resolve common problems that may exist. Each Service receives feedback on its guide specifications, and this information could be posted on the Internet for use during specification maintenance and updating. USACE currently publishes its feedback in a periodical publication which is uploaded to a dedicated web site.

(5) To further facilitate unification of guide specifications requirements and improve operational performance and database management in SPECSINTACT, a Joint-Service Guidance Document could be developed and implemented by the TWG. This document could contain instructions for preparing guide specifications to ensure uniformity of the guide specification databases.

(6) Where practical, a single coordination of requirements with industry could be used instead of independent coordinations by each Service. This would conserve resources and provide a unified interface with industry.

(7) Finally, NAVFAC has fielded a DOD-promoted, automated standard procurement system for construction contracts called Procurement Desktop Defense (PD2). This system is expected to be fielded in USACE by mid-1998 and may eventually be linked to SPECSINTACT.

c. The most cost-effective system for implementing improvements either through a greater use of Tri-Service groups, centralized development and management under one of the Services with design and construction authorities, or centralizing the development and management of design guidance under the Secretary of Defense.

(1) The most cost-effective system for implementing improvements would be greater use of Tri-Service groups. This would permit operation under organizations now in place, would permit the sharing of resources, would permit rapid dissemination of criteria, would eliminate the need for additional layers of authority or bureaucracy, would draw upon the combined corporate knowledge of the three Services, and would maximize the use of technical experts actually involved in day-to-day problem solving during design and construction.

(2) The three Services are currently a powerful force in bringing the design practices of the services closer together and in working toward a unified construction guide specification system. Ultimately, major expansion of this established relationship is the best approach to arrive at unified guidance and still allow the flexibility each Service needs to be responsive to its own missions and customer requirements.

4. SUBMISSION. The members of the Unified Construction Guide Specifications Subcommittee to the TWG respectfully submit this report of our findings. We are pleased to have been able to support the TWG in the preparation of its report to Congress. We see the many current and future cooperative efforts toward unified construction guide specifications as a good and logical course of action and look forward to continued participation in this regard.

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