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PHS FACILITIES MANUAL
Volume I
FACILITIES PLANNING, DESIGN, AND CONSTRUCTION

Chapter

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PHS:
1-1-00 PURPOSE

This chapter sets forth pertinent information regarding the organization and distribution of the PHS Facilities Manual, as well as the responsibility for its maintenance.

1-1-10 ORGANIZATION

A. The PHS Facilities Manual will consist of a series of separately issued chapters and circulars, each of which shall set forth PHS policies and procedures with respect to certain facilities-related subjects. As needed, appendices may be added to the manual.

B. Within the manual, related chapters and circulars will be grouped into subject categories as follows:

Volume	Category	Part
I	Manual Administration, Glossary, and Progress Report	1
I	Program of Requirements and Facility Budget Proposals	2
I	Special Facilities Studies	3
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C. The numbering system for manual chapters and circulars shall be as follows:

Example of Chapter:

Chapter..... 1-1
Section..... 1-1-10
Paragraph..... 1-1-10A
Subparagraph..... 1-1-10A.1

Example of Circular:

Circular.....1-1.1

(This means that the circular relates to Chapter 1-1 of Part 1.)

or

Circular.....1.1
(This means the circular relates to Part 1, since there is no corresponding chapter in Part 1.)

Capital letters will be used to identify main paragraphs in circulars, followed by subparagraphs as appropriate.

D. Exhibits to chapters and circulars of this manual will be numbered by placing an "X" before the chapter number and placing the exhibit letter immediately after the chapter number. As examples, Exhibit B to Chapter 1-10 would be numbered Exhibit X1-10-B, and Exhibit A to circular 2.2 would be numbered Exhibit X2.2-A.

1-1-20 DEVELOPMENT AND MAINTENANCE

A. The Director, Office of Management (OM), PHS has assigned the responsibility for the development and maintenance of this manual to the Director, Office of Resource Management (ORM), OM/PHS.

B. Chapters and circulars to the PHS Facilities Manual will be issued by the Director, ORM/OM/PHS, after approval by the Director, OM/PHS.

C. Chapters and circulars will be issued by using PHS Transmittal Notices numbered sequentially within each calendar year. For example, the first transmittal notice issued in 1987 will be number 87.1 and the third will be number 87.3.

D. The chapter number, title of manual, and PHS transmittal number and date will be shown on the upper left corner of all pages; and the page numbers will be shown on the upper right corner of all pages. Example:

Chapter 0-00
PHS Facilities Manual (Volume __)
PHS Transmittal 00.0 (0/00/00)

E. A "PHS Checklist of Transmittal Notices" will be provided with the first issuance and thereafter as necessary. The checklist should be filed in the back of the manual and used to record receipt of transmittal notices. Since the transmittal notices will be numbered sequentially, any gaps in the numbers of notices received will indicate missing issuances. Missing issuances can be obtained by writing the Division of Health Facilities Planning, ORM/OM/PHS, or the distribution center cited in paragraph 1-1-30B below.

1-1-30 DISTRIBUTION

A. The PHS Facilities Manual will be distributed to all PHS staff responsible for the planning design, construction and management of PHS Facilities. Design and Construction Compliance with the PHS guidelines and requirements outlined within the manual is the responsibility of each PHS agency. Appropriate internal distribution within each agency and to appropriate Architectural/Engineering Contractors performing work that must comply with PHS standards shall be assured at the agency level.

B. The manual will be distributed within PHS on the basis of a mailing list maintained by the Administrative Services Center, OM/PHS. It is the responsibility of PHS Agency staff

needing the manual to request that they be placed on the mailing list. Such requests must be forwarded through the employee's distribution control officer to the following address, (changes in addresses will be forwarded in the same manner):

Chief, Printing and Reprographic Management Section
Division of Technical Support
Administrative Services Center
Office of Management, OASH/PHS
Room 3B-26
5600 Fishers Lane
Rockville, Maryland 20857

1-1-40 EFFECTIVE DATE

The date of the PHS Transmittal Notice shown at the top of each page of each chapter and circular shall be the effective date of the chapter or circular unless otherwise stated in the text of the chapter or circular.

SUBJECT: GLOSSARY OF TECHNICAL TERMS

PHS:
1-2-00 PURPOSE

This chapter establishes definitions of technical terms used in this manual and the PHS facilities construction program. This chapter will assist the users of the manual in understanding and properly applying the various requirements to the facilities development process.

PHS:
1-2-10 GLOSSARY

The following terms are used in this manual and are defined as they relate to the PHS facilities construction program.

1. Agency - Differing Agency Definitions:

    a. Executive Agency - Any executive department or independent establishment in the executive branch of the Government, including any wholly owned Government corporation.

    b. Federal Agency - Any executive agency or any establishment in the legislative or judicial branch of the Government (except the Senate, the House of Representatives, and the Architect of the Capitol and any activities under his direction).

    c. Department Operating Agency - Any of the agencies under the Department of Health and Human Services which is responsible for the conception, planning, programming, budget and fiscal, and/or executing of a program(s) and any associated operating functions.

2. Agency Facilities Manager - The person in each PHS agency, generally the head of the agency facilities office, responsible for managing the agency's facilities program.

3. Agency Program Narrative (APN) - The Agency Program Narrative (APN) document is prepared for each new construction and major improvement line item in an Agency's Annual Facility Plan. The APN shall be used in

conjunction with the Program of Requirements (POR) document or Program Justification Document (PJD) in determining those projects to be included in the PHS annual budget request.

4. Alterations - (See Improvements)

5. Approved Equal - Material, equipment or method acceptable as an equivalent in essential attributes to the material, equipment or method specified in the Contract Documents. Where recycled materials are required, acceptably equivalent materials must also meet applicable requirements for the use of recycled materials.

6. Architect/Engineer Firm (A/E) - An individual or firm offering professional services as both architect and engineer for the design of a facility and related services.

7. As-Built Drawings - Construction drawings revised to show changes made during the construction process, based on marked-up prints, drawings and other data furnished by the Contractor to the Government.

8. Beneficial Occupancy - Government occupancy of space involved in construction; also initiates the warranty period and the environmental mitigation identified in the environmental documents. (The use of a project or portion thereof for the purpose intended)

   Beneficial occupancy takes place on the date when part or all of the work is substantially complete and the Government takes possession of the designated space or spaces to use for the purpose intended.

9. Beneficial Occupancy Date (BOD) - Date of beneficial occupancy of space by the Government.

10. Bid - A complete and properly signed proposal to do a project or designated portion thereof for the amounts and time frame stipulated therein; submitted in accordance with the request for proposal documents.

11. Bid Bond - Form of bid security executed by the bidder as Principal and by a Surety to guarantee that the bidder will not withdraw a bid within the period specified for acceptance and will execute a written contract and furnish required bonds, including any necessary coinsurance or reinsurance agreements, within the time specified in the bid.

12. Bidding Period - The calendar period beginning at the time of issuance of Bidding or Contract Documents and ending at the prescribed bid date and time.

13. Building and Structures - Any betterment or improvement, i.e., a facility, which may be added to real property. Buildings and structures will be classified as:

    a. Permanent facility - A building or structure
       (1) Intended for long-time occupancy or use, or

       (2) Designated as the long-time location of an office or activity, of

       (3) Built on a tract of ground and of materials intended for a long life, more than 25 year usage.

    b. Semi-permanent facility - Intended for long-time occupancy but built on a tract of ground and of materials which limit the life expectancy of the structure to less than 25 years.

    c. Temporary Facilities - Operating funds may be used for temporary buildings as defined in Chapter 2-1, item 2-1-10.E to support urgent, short-term needs. Such facilities must be of a clearly temporary nature to meet a temporary need. Written approval from the Office of Management/OASH should be obtained before using operating funds for temporary construction.

14. Change Order - Change within the scope of the original contract required by:
    (a) design/specification errors, deficiencies, or omissions,
    (b) program change or addition,
    (c) differing site conditions, or
    (d) other.

15. Codes - Regulations, ordinances or statutory requirements of a governmental unit relating to building construction and occupancy, adopted and administered for the protection of the public health, safety and welfare, and the environment.

16. Concept Drawing (Sketches) - Design sketches, not necessarily to scale, depicting layouts, arrangements or functions to enable communication of what is intended or planned, including preliminary identification of potential environmental issues.

17. Concept Design - Concept drawings and documentation including definition of major system' options appropriate to the project including structural, mechanical, electrical, and energy systems. A cost-benefit analysis of each of the options available for selection by the government with the architect's recommendation.

18. Consultant - A person or entity who provides professional advice or services.

19. Construction Engineer - Field Engineer.

20. Contract Award - The official notification from the Contracting Officer that the Government has accepted a contractor's bid.

21. Contract Documents - The package of written technical and administrative objectives and requirements that form the contract (i.e., contract drawings and specifications and environmental requirements).

22. Contract Modification - Amendment to an existing contract which alters the specifications, drawings, contract period, price, quantity, or other contract provisions. The modification, which may contain several unrelated change orders, becomes part of the contract when signed by the contracting officer and the contractor.

23. Contracting Officer (CO) - The individual with authority to execute contracts on behalf of the Government. This individual is the sole authorized agent in dealing with the contractor. The Contracting Officer has authority to negotiate and execute contracts on behalf of the Government and to make changes, amendments, approve payments, terminate contracts, and close out contracts upon satisfactory completion.

24. Contracting Officer's Representative - The Project Officer, or other designated authorized representative of the Contracting Office.

25. Contractor - The person, firm, or corporation with whom the Government has executed a contract, that is responsible for performing the work.

26. Delegation of Authority - The specific, formal deputation, assignment, or commitment of a legal power or right to take certain actions and to make certain decisions having legal significance. Such delegations should be stated in writing by the official authorized to delegate the authority.

27. Default - Failure of a contractor to perform, as required by contract. Termination of the right of a contractor to proceed with the work required by

a contract because of: failure or refusal to prosecute the work with the diligence that will ensure its completion within the time specified; or failure to complete the work within the time frame.

28. Discrepancies and Omissions - List of incomplete or unacceptable items that the construction contractor is obligated to complete (e.g., punch list) resulting from preliminary and final inspections.

29. Errors and Omissions Insurance - Professional liability insurance protecting architects or engineers from claims for damages which may result from alleged professional negligence.

30. Equipment

    a. Fixed Equipment (Group I) - Fixed, built-in, attached, and installed equipment normally included as part of the construction contract.

    b. Moveable Equipment (Group II) - This category, also referred to as major moveable equipment, consists of items having a useful life of 5 years or more. Moveable equipment does not require attachment to the building or utility service, other than that provided by an electrical plug or quick disconnect fitting. Examples include chairs, beds, bassinets, desks, typewriters, microscopes, centrifuges, portable whirlpool units, exercise bars, refrigerators, and linen carts.

    c. Moveable Equipment (Group III) - This category, also referred to as minor moveable equipment, consists of items having a useful life of less than 5 years. These items are of relatively small cost and size and lend themselves to on-site storage for replacement of lost or worn out equipment. Examples include linens, blankets, gowns, wash basins, bed pans, pipettes, surgical instruments, silverware, and chinaware.

    d. Special-Purpose Equipment - Special purpose equipment is technical, medical, or scientific equipment that is needed to operate a laboratory, a hospital, a clinic, a clinical research patient care unit, an animal care facility, or is specific to a single purpose and not generally suitable for other purposes. Examples of such equipment include incubators, electric ovens, sterilizers, vacuum and pressure pumps, centrifuges, water baths, casework, sinks, shelves, patient headboards, workbenches for microscopes, and moveable apparatus for laboratory animals. Special-purpose equipment may be classified as either fixed or moveable equipment.

31. Equipment Funding - As normal procedure, costs for all fixed equipment (Group I) are included in the construction phase component of the facility project budget and funded from the B&F appropriation. It is noted that some equipment may qualify under the definitions for Group I equipment as well as special-purpose equipment. If this equipment is included as part of the original construction process it is to be considered Group I equipment and funded from the B&F account. If this equipment is added to an existing facility it is to be considered special-purpose equipment and funded from operating funds. Groups II and III equipment is also to be funded from the B&F appropriation if specifically authorized by the appropriation. Otherwise, purchases of Groups II and III equipment are funded from operating funds.

32. Facility - A building or group of buildings, a structure, utility system, the site and/or environs associated with the above.

33. Feasibility Study - A detailed investigation and analysis conducted to determine the financial, economic, technical, environmental and other advisability of a proposed project.

34. Final Inspection - Final review of the project by the Government to determine completion, prior to issuance of the final payment.

35. Final Submission - One hundred percent complete construction drawings, specifications, calculations, and estimates approved by the Government after corrections are incorporated into the pre-final submittal.

36. Finding of No Significant Impact - (FONSI) - For the purposes of the National Environmental Policy Act (NEPA), a FONSI documents an agency judgment that a proposed construction action not categorically excluded from NEPA requirements will not significantly affect the quality of the human environment. A FONSI should meet the criteria described in the General Administration Manual, Chapter 30-30, "General Review Procedures for All Environmental Acts," item 30-30-3-.B.2.

37. General Contractor - The prime contractor who is responsible for all of the work at the construction site defined within the contract, including that performed by all subcontractors.

38. General Conditions - (of the Contract for Construction): That part of the Contract Documents which sets forth many of the rights, responsibilities and relationships of the parties involved, particularly those provisions which are common to many construction projects.

39. Gross Area - Includes the total floor area of a building with minor adjustments for special construction features. See Chapter 4-1, "Net and Gross Area Computations."

40. Improvements (Renovation/Alteration) - Any betterment or change to an existing property to allow its continued or more efficient use within its designated purpose (Renovation), or for use for a different purpose or function (Alteration). Building improvements also include improvements to or upgrading of primary mechanical, electrical or other building systems. Improvements do not include the addition of wings, floors, or other increases to useable program area or cubage; such projects constitute new construction. The only added areas or cubage which may be construed as a building improvement rather than new construction involves new stairwells, elevator towers, pipe chases, etc., not providing useable program space. If, however, an increase in useable program space occurs incidental to the overall improvement project, the Office of Management/OASH may waive the classification of the project as new construction on a case-by-case basis.

    Improvements to properties which may be eligible for listing on the National Register of Historic Properties are subject to the requirements of the Secretary of the Interior's Guidelines for the Rehabilitation of Historic Properties.

41. Installation - A separately located and defined area of real property in which PHS exercises a real property interest. The term also applies to portions of installations, facilities, or buildings not owned by PHS but which have been acquired for exclusive use through lease, permit, or other written agreement.

42. Intermediate Submittal - Progress review working drawings developed by an A/E and submitted to the Government (normally 60-70% working drawings). This review serves to assess progress and solutions under development. Calculations are to be submitted with intermediate submittals.

43. Land Purchases - Specifically designated funding in the PHS budget for new construction projects also applies to purchases of land. Generally, such purchases should be specifically identified in the PHS budget process documents, a congressional reprogramming action, or actual line item appropriation.

44. Latent Defect - A defect in materials, equipment or completed work which reasonably careful observation could not have discovered after the warranty

period; distinguished from a patent defect, which may be discovered by reasonable observation.

45. Limited Improvements - Operating funds may be used for improvements that are directly related to the installation of special-purpose equipment, as well as related design and inspection services. These improvements may include converting existing space to a different special purpose or function, extending utility services, including the provision of suitable safety and environmental conditions for proper operations, and making structural alterations provided such improvements are necessary for the installation, operation and use of special purpose equipment. Structural alteration could include the removal of interior walls and partitions and their replacement or rearrangement.

    Operating funds may be used for certain minor office alterations including rearrangement of portable partitions, light fixtures, electrical receptacles, and air supply exhaust registers; the application of floor materials and surface painting.

46. Liquidated Damages - Monetary damages that the contractor pays or forfeits for not completing work on schedule.

47. Lowest Responsive Bid - The lowest bid which is responsive to and complies with the requirements of the Bidding or Contract Documents.

48. Maintenance - Work to keep a real property facility in a usable state or condition, which may include replacement of constituent parts, materials or equipment, inspection, adjustment, cleaning, resurfacing or making incidental minor repairs. Maintenance includes routine recurring work which is incidental to everyday operations as well as preventive work which is programmed at scheduled intervals.

49. Master Plan. The master plan is a set of physical development plans for a site containing more than one building. Master plans analyze and document overall multiple building designs, their interrelationships and site requirements, including but not limited to:

    1. Land use;

    2. Site development;

    3. Future expansion;
    4. Landscaping;

5. Grading and drainage;

6. Pedestrian and vehicular cirulation and parking;

7. Support services;

8. Off-site improvements; and

9. Environmental impacts.

50. Negligence - Failure to exercise due care under the circumstances. Legal liability for the consequences of an act or omission frequently depends upon whether or not there has been negligence.

51. Negotiated Contract - This term refers to the making of purchases and contracts without competitive bidding. Under negotiated contracts, the lowest offeror does not necessarily receive the award. Award is made on the basis of the proposal that offers the greatest advantage to the Government, price and other factors considered.

52. Net Area - Net Area of Net Space refer to those portions of the facility available for use for program operations and for supply storage, building maintenance/operation, and other necessary support functions. Net Areas are measured from the inside of the permanent exterior wall to the near side of permanent walls separating the area from stairwells, elevators, mechanical rooms, permanent corridors, or other portions of the building not categorized as net space in the program of requirements document.

53. New Construction - The erection of a building, structure or facility; including the installation of equipment, site preparation, landscaping, and associated roads, parking, environmental mitigation, and utilities, which provides area or cubage not heretofore available. It includes free standing structures, additional wings or floors, enclosed courtyards or entryway, and any other means to provide useable program space that did not previously exist (excluding temporary facilities). It also includes the complete replacement of an existing facility.

54. Notice-to-Proceed - Written order by a Government official to a contractor to commence performance of a contract.

55. Partial Occupancy - Occupancy by the owner of a portion of a project prior to final completion.

56. Partial Payments - Pay request by contractor usually on a periodic basis for work completed or materials delivered.

57. Payment Bond - (Labor and Material Payment Bond) A contractor's bond in which a surety guarantees to the owner that the contractor will pay for labor and materials used in the performance of the contract. The claimants under the bond are defined as those having direct contracts with the contractor or any subcontractor.

58. Performance Bond - A bond of the Contractor in which a surety guarantees to the owner that the work will be performed in accordance with the Contract Documents. Except where prohibited by statute, the Performance Bond is frequently combined with the Labor and Material Payment Bond.

59. Program Justification Document (PJD) - The Program Justification Document (PJD) is developed for obtaining approval for the project and its scope, for identifying potential environmental impacts, and for developing a cost estimate for inclusion in the PHS budget. Generally the PJD includes an Introduction, General Overview, Space and Occupancy Summary, Staffing Summary, and an Executive Summary. To form a Program of Requirements (POR), technical requirements are attached to the PJD.

60. Portable Construction - Construction to provide a building, structure, or facility needed for a limited period of time to meet an urgent agency need. Such facilities must be of a clearly temporary nature to meet a temporary need. This would be limited to structures designed with undercarriages, or of a modular nature manufactured to be readily transported. Generally structures in this category should not exceed 2,400 net square feet and would have a lower first cost, higher annual maintenance and utility cost and a shorter usable life than non-portable structures. Exterior refinements such as wall veneers or other efforts to make the structure architecturally compatible with non-portable structures or provide the appearance of permanence are not to be included in portable construction.

61. POST-OCCUPANCY EVALUATION (POE) SURVEY - The process of surveying and analyzing recently completed and occupied facilities. The purposes of, or reasons for, making such an evaluation include:

    a. Avoiding repetitious design or construction deficiencies.

    b. Documenting noteworthy construction features or practices for inclusion in future projects.

c. Evaluating the entire plan - design - construction - operation process. After the evaluation, feedback will be provided to those offices which were responsible for the planning, designing, constructing and operating processes.

d. Saving future construction and operating costs by contributing to an efficient facilities design and construction program.

e. Evaluating staffing patterns and their adequacy, the operating program being primarily responsible for this aspect of the evaluation.

f. Ensuring that functional requirements of the program are met, and that they are met at reasonable costs. The operating program and technical survey team jointly evaluate this item.

62. Pre-Bid Conference - A meeting for bidders and Government to exchange information regarding the solicitation.

63. Preconstruction Conference - A meeting between the Government and the contractor to establish ground rules, submittals, schedule for start of construction, etc. All personnel and offices which may affect the contract are invited to participate.

64. Program of Requirements (POR). The POR is the basic document that describes the proposed facility. It includes estimates of design and construction costs, space requirements, environmental requirements, and other program information. Although normally developed by the program agency, resource availability and time constraints may dictate that the POR be developed by a private A/E. Detailed requirements for the POR are found in Volume I, Chapter 2-4.

65. Progress Payment - Partial payment made during progress of the work because of work completed and/or materials suitably stored.

66. Project Manager - Government Representative for a specific project who is responsible for providing technical management and direction of all aspects of design and construction services exclusive of contractual matters. The Project Manager also provides technical support to the contracting officer and serves as the government representative authorized to provide technical direction, assistance, and problem resolution and guidance to all contractors.

67. Project Officer - The individual legally designated as the authorized technical representative for administering A/E and/or construction contracts

on behalf of the CO. This responsibility includes ensuring that environmental mitigation are implemented. (See Project Manager)

68. PHS Applicable Sites - All sites owned and/or occupied by PHS employees that contain at least two independent buildings (see Master Planning).

69. Punch List - (Inspection List) A list of items of work to be completed or corrected by the contractor.

70. Real Property - Any interest in land (together with the improvements, structures, and fixtures located thereon) under control of any Federal agency, except the public domain, or lands reserved or dedicated for national forest or national park purposes.

71. Renovation - (see Improvements)

72. Repair - The restoration of a failed or failing real property facility component(s) (a roof would be considered as a building component, or, a building system such as a HVAC system could be considered as well) to such a condition that it may be used effectively for its designated purpose. A failed or failing real property facility component(s) is caused by action of the elements, fire, explosion, storm and/or other disasters, and by use near to or beyond its expected useful life. Because of its nature or extent, this deterioration or damage cannot be corrected through normal maintenance. Like maintenance, repairs may require environmental documentation.

73. Repair and Improvement Lump Sum Fund (R&I Lump Sum) - The Public Health Service requires that the lump sum Repair and Improvement (R&I) appropriations be used for the maintenance and repair of PHS facilities, generally for projects costing less than $100,000. The R&I Lump Sum Fund is based upon a percentage of a facility's replacement costs. The following percentages are to be used unless higher percentages can be justified: 3 percent for all space except hospital and research labs, which requires a higher percentage of 4 percent.

74. Scope of Work - Section of the Statement of Work that provides an overall, non-technical description of the work to be performed by the contractor.

75. Section Eight (a) - Program for minority disadvantaged contractors, where contractors are certified and contracted with the Small Business Administration (SBA). PHS in turn contracts with SBA for services. The reference involves section 8(a) of the Small Business Act.

76. Shop Drawings - Documents used as the basis for fabrication and installation of equipment and systems as designed. These drawings depict the equipment, structural assemblies, etc., which the contractor intends to provide in order to meet contract requirements. There should be enough detail to show intent as well as other features required in the contract specifications.

77. Special Conditions - Specification division describing unique conditions of the contract usually preceding the technical divisions of the specifications.

78. Special-Purpose Equipment - Technical, medical, scientific, and environmental articles of a durable nature which have unique uses and are not generally suitable for other purposes. Also includes general use items which have been modified to perform unique functions. Special-purpose equipment may be classified as either attached/ installed or moveable equipment.

79. Specifications - A Statement of Work may be a design specification, performance specification, or a combination of both. A design specification describes the specific materials, parameters, and methods a contractor is to use in delivering a project or service to the Government. Whereas, a performance specification does not limit a contractor to providing a specific product or service, but rather describes what the contractor must do, what form this effort must take, and the constraints placed on the effort. Performance work statements tell the contractor the objectives to be accomplished, the end goal, or the desired achievement.

80. Staging Area - An area or space for the construction contractor to store or prefabricate materials for the project.

81. Statement of Work - The Statement of Work is probably the single most critical document in the acquisition process. It describes the work to be performed or the services to be rendered, defines the respective responsibilities of the Government and the contractor, and provides an objective measure so that both government and the contractor will know when the work is complete and payment is justified. Common elements of the Statement of Work are Background, Project Objectives, Scope of Work, Detailed Technical Requirements, Reporting Schedule, Special Considerations, and References.

82. Substantial Completion - The time when the contract work is complete to the point that the Government may take over the facility and receive beneficial occupancy for the purpose intended.

83. Subcontractor - A person or entity who has a direct contract with the Contractor to perform any of the work at the site.

84. Supervision - Direction of the construction work by a Contractor's personnel. Supervision is neither a duty nor a responsibility of the construction engineer.

85. Supplies - Disposable or short-life items such as paper goods, test tubes, etc., that are routinely purchased with annual operating funds. Certain supplies (e.g., paper, car tires and batteries) are subject to environmental regulations which require the use of recycled materials.

86. Temporary Construction - Construction to provide a building, structure, or facility needed for a limited period of time to meet an urgent agency need. Such facilities must be of a clearly temporary nature to meet a temporary need. This would be limited to structures of a modular nature manufactured to be transported. Generally, structures in this category should not exceed 3,200 square feet and would have a lower initial cost, higher annual maintenance and utility cost and a shorter usable life than non-temporary structures of the same approximate size. Exterior enhancements solely to provide the appearance of permanence other than the standard factory architectural finishes are not to be included in temporary construction (see Portable Construction).

87. Termination - The unilateral cancellation of a contract by the Government for either: (a) convenience (in the best interest of the Government) or (b) default (failure of a contractor to perform as required).

88. Time Extension - Time, by date, added to a construction contract by modification for justifiable reason, such as strike, weather, long-term delivery of equipment, change order, unavailability of space, etc.

89. Warranties - Legally enforceable assurance of quality or performance of a product or work, or of the duration of satisfactory performance. Warranty, guarantee, and guaranty are substantially identical in meaning; nevertheless, confusion frequently arises from supposed distinctions attributed to guarantee (or guaranty) being exclusively indicative of duration of satisfactory performance or of a legally enforceable assurance furnished by a manufacturer or other third party. The Uniform Commercial Code provisions on sales (effective in all states except Louisiana) use warranty but recognize the continuation of the use of guarantee and guaranty.

SUBJECT: DIRECT FEDERAL CONSTRUCTION PROGRESS REPORT

PHS:
1-3-00 PURPOSE AND SCOPE

A. Purpose. To provide guidance to the PHS agencies and centers for maintaining timely and accurate quarterly progress reporting of direct Federal construction.

B. Scope. The quarterly progress reporting requirement applies to all direct PHS construction, with a total project cost in excess of $1,000,000.

PHS:
1-3-10 BACKGROUND

In 1983 the Office of the Inspector General (OIG) recommended that quarterly progress reporting of direct PHS construction be maintained for control purposes. Since that time, the report (Exhibit X1-3-A, "Progress Report: U.S. Public Health Service Direct Construction Report") has been expanded and utilized for that purpose.

PHS:
1-3-20 PREPARATION OF REPORT

A. General Instruction

1. Initiation. A copy of the most recent quarterly report (Exhibit 1-3-A) will be sent to each PHS agency. Pen and/or ink changes should be made to the copy to reflect the data for the current quarter. This marked-up copy may be submitted to the Division of Health Facilities Planning (DHFP) as the official quarterly report. All reports are due in the DHFP
15 days after the close of the quarter.

   Agencies may elect to transmit data through the use of computer files. To use the computer tracking system, agencies must have adequate hardware and the Paradox software. Assistance can be obtained from DHFP in setting up this program. See Exhibit 1-3-B for use of the computer program.

2. Projects Included. Only those projects costing in excess of $1,000,000 (e.g., design, construction, and fixed equipment) need to be reported. However, if bids received for a project not previously reported increase total project costs over $1,000,000 the project must be submitted on the next quarterly report. This limit applies regardless of the funding source and is to be based on the total of all sources of funding. It is important that projects be added to the report as soon as funds are appropriated. In some instances, project design may have been initiated using funds not specifically identified in the Buildings and Facilities (B&F) appropriation as individual projects. Projects shall be listed as soon as any solicitation or synopsis for Architectural/Engineering (A/E) firm services is prepared regardless of the source of

funding. Where a requirement type (open-ended) A/E contract is used for design services, individual projects shall be entered when the combined design/construction costs exceed $1,000,000.

3. Lifting of Reporting Requirement. Once a project is listed on a quarterly report, it must be listed on subsequent quarterly reports through and including the report for the quarter after the given project is completed or canceled. After that report, it is no longer required that the project be listed on subsequent quarterly reports.

B. Project Title and Location

State the project name, and list the city and state where the project is located.

C. Appropriation

1. FY and Source

List the Fiscal Year in which the funds were appropriated and the source of the funds, using the following codes and symbols:

B&F 95 (Building and Facilities, Fiscal Year 95)
R&I 95 (Repair and Improvements, Fiscal Year 95)
RPR 95 (Reprogrammed, Fiscal Year 95)
M&M 95 (Medicare/Medicaid, Fiscal Year 95)
M&R 95 (Maintenance and Repairs, Fiscal Year 95)

Under certain circumstances, it is permissible to use operating funds for design and construction related activities, (See Chapter 2-1). Where this is the case, the following code and symbol shall be used to designate the appropriate fiscal year:

OB 95 (Operating Budget FY 95)

If a project is funded from more than one budget, each budget category and the related funding shall be shown.

2. Amount and Project Phase

Indicate the amount appropriated. If the appropriation is for the total design and construction, indicate the total for design "D" and for construction "C"; e.g., $2,000,000(D&C). If the appropriation is solely for design or construction, then indicate a "D" or "C"; e.g., $750,000(D).

D. Design

1. Program of Requirements, Date Completed

Indicate the date the final Program of Requirements (POR) was submitted to the Office of the Assistant Secretary for Health with an "S." e.g., 12-12-94(S). The

actual date for completion of the POR is the date the Deputy Assistant Secretary for Health Operations signs the POR.

2. A/E Firm, Contract Date, Contract Amount

Indicate the Architect/Engineer name, the date the contract was awarded (signed) and the contract amount. The contract amount will not be changed in this column.

3. Design Phase Completion

(a) Date

Indicate the projected date for completion of design with a "P"; e.g., 6-18-95(P). When the project is complete and accepted by the Government, indicate the date; e.g., 6-19-95.

(b) Percent Completed

Indicate the percent of the design phase that is completed.

4. Actual Cost

The first amount to be indicated is the contract amount for the design phase. Any change in the contract amount shall be listed by contract modification (MOD) number, e.g., MOD #1 $50,000 (also indicate add or deduct). All contract modifications shall be listed and shall remain on the report until the project is dropped from the reporting process.

E. Environmental Determination.

1. Exclusion.

If the project belongs to a category of actions which is excluded from environmental review, provide the basis for that determination. State whether any exceptional circumstances exist which would remove the project from that category.

2. Finding of No Significant Impact (FONSI)

If the project is not categorically excluded, prepare an environmental assessment (EA). If the EA resulted in a Finding of No Significant Impact (FONSI), include the FONSI. If the EA has not been prepared, then describe plans for its preparation.

3. Environmental Impact Statement (EIS)

If the project is not categorically excluded and if an EA did not result in a FONSI, prepare an EIS. Provide a draft or final Notice of Intent (NOI) to prepare an EIS.

E. Construction

1. Bid Date

Indicate the date of the projected bid date with a "P"; e.g., 4-25-95(P). The actual date of bid opening should be entered
as soon as the project is advertised for proposals, e.g., 5-25-95.

2. Contractor, Contract Date, Contract Amount

Indicate the Contractor's name, the date the contract was awarded (signed) and the original contract amount.

3. Completion

(a) Date

Indicate the projected date for completion of the construction with a "P"; e.g., 6-29-96(P). This date should be entered at the same time the contract is awarded. Project completion and acceptance should be indicated by recording the date on which the Government accepts the project, e.g., 6-18-96.

(b) Percent Completed

Indicate actual percent of work completed.

4. Actual Cost

The first amount to be indicated is the contract amount for the construction phase. Any change in the contract amount shall be listed by contract modification number, e.g., MOD #1 $40,000 (+ or -). All contract modifications shall be listed and shall remain on the report until the project is dropped from the reporting process.

F. Remarks

Any remarks or pertinent information relating to a project should be entered directly after the project data and before the next project is entered. Upon completion of the design stage, include the gross square footage under remarks. If the gross square footage should change during the construction phase it should be noted at the time the change is made.

Revised September 1983
DHHP/OPM/OM/PHS

_____Quarter, FY_
Date:_ _____

PROGRESS REPORT

U.S. PUBLIC HEALTH SERVICE DIRECT CONSTRUCTION REPORT

Page of

PROJECT TITLE AND LOCATION	APPROPRIATION		DESIGN					CONSTRUCTION				
	FY & SOURCE	AMOUNT ADM AGENCY	POR DATE COMPL	A/E FIRM CONTRACT DATE CONTRACT AMOUNT	COMPLETION DATE	COMPLETION %				COMPLETION DATE	COMPLETION % COMPL	ACTUAL COST

PHS FACILITIES
PROJECT REPORTING SYSTEM USING COMPUTERS

This system is composed of a series of tables and mini-programs that utilize the PARADOX computer program. This syllabus was written from the premise that a user has a computer, preferably a 386 with expanded RAM, and the PARADOX software program. If you need help please call the Division of Health Facilities Planning Office (301) 443-6620.

INSTALLATION

Create the following directives on any drive, preferably on the same drive with the PARADOX program (except for LAN users):

\CONSTRCT
\REPORTS (Su-Directory)
\HISTORY

Then copy files to the \CONSTRCT and \REPORT directories. Before you run the application for the first time you <u>must</u> enter PARADOX, make \CONSTRCT your working directory and run the script called <u>libmaker</u>. This will create proglib.lib (the proc library).

GETTING STARTED

Information is placed in several tables, with no one table having all. To update records, play the script STARTER. The script STARTER was written to query the PROJECT, FUNDING, DESIGN, and CONSTRUCTION tables, and update them.

COMPUTER RECORDS

<u>Nomenclature</u>

1. New records are entered in the PROJECT, FUNDING, DESIGN, and CONST(RUCTION) tables. The DHFP number is the common denominator between tables. The DHFP number is determined by AGENCY (C-CDC, F-FDA, I-IHS, N-NIH), STATE (AK-ALASKA, DC-D.C., MD-MARYLAND), and NUMBER.

Example: NMD10 (Agency-NIH, State-Maryland, and Number-10), for the 10th NIH project in the state of Maryland record.

2. Below is a listing of the FACCODE and PROCODE tables for other symbols, used mainly in the PROJECT table.

Faccode	FACDESC
AF	Animal Fac.
AIDS	Lab (AIDS)
CL	Clinic
HO	Hospital
INF	Infrastruc.
LAB	Laboratory
LP	Lease Prchs
MA	Maint.
MP	Master Plan

O&P	Off. & Pkg.
OFF	Office
POR	POR
QU	Quarters
RP	Repair
SUP	Support Fac
TO	Task Order
WH	Waste Hand.

Procode	PRODESC
AGPL	Agency Pl.
CON	Constr.
DE	Design
INSP	Inspection
LP	Lease/Pur.
MA	Maint.
MP	Master Plan
NC	New Constr.
REN	Renovation
RP	Repair
ST	Study
TO	Task Order

Method to Update Records / Add New Records

1. Select script STARTER, and KWICKUPDATE (yes I know, but, the form has the correct spelling).

PARADOX Menu: View Ask Report Create Modify Image Forms Tools Scripts Help Exit

Play BeginRecord QuerySave ShowPlay RepeatPlay Editor

(press enter for a selection of scripts) ENTER

(use Left or Right arrow keys to select)...Starter....
(press enter) ENTER

STARTER Menu: KwickUpdate Update Reports Backup Quit

About This Form

This form has two pages. The information on the front page is mainly for the PROJECT table. Use the Page Down and Page Up keys to move from one page to another, and between records.

Front Page

Information that must be filled in: DHFP #, NAME, AGENCY, STATE, PROJECT TYPE, FACILITY TYPE, & PHASE SORT.
A. DHFP #. This can be filled in automatically by using the F3 key. You must enter the AGENCY and STATE information first, then press F3, and the script will insert the next available number.

B. PHASE SORT (AGPL, DE, or CON) determines where the project will be placed on the reports. Either the Agency Planning Report, Design Report, or Construction Report. Leaving this blank, or deleting at a later date, will place the project in the HISTORY table and HISTORY report). Please, do not delete a record.

C. FUNDING NEEDED. This is automatically calculated by subtracting the APPROPRIATED TOTAL (page 2) from the POR APPROVED $ (page 1). This automatic calculation is blocked if you place a check mark (F6) in the upper right hand corner of the second page. We suggest leaving this operation to the DHFP office.

Second Page

This page actually shows three (3) different tables, FUNDING, DESIGN, and CONSTR. To toggle between the tables use the F4 key. Once you are in a table, use the Page Up and Page Down keys to move between records in that particular table. It could be that you would have more than one funding source. Therefore, you will need more than one record in the FUNDING table. The same is true for DESIGN or CONSTR, you could have more than one contractor.

A. You must enter the FUNDING #, FUNDING TYPE, FY, and APPROPRIATION in the FUNDING table.

B. You must enter the CONTRACT #, FIRM, START date, OBLIGATION, and STATUS in the appropriate DESIGN or CONSTRUCTION table.

C. Calculations will be done when you press the F8 key, calculating totals and filling in the OBLIGATION column in the FUNDING table. This also fills in the zeros. We suggest saving this procedure until last and doing once for all records.

Menu
F3: New DHFP number. See A (front page).
F4: Toggle. Used to toggle between tables.
F5: Find. Follow the instructions after pressing this key. You do not have to type the entire name of the item you are searching for (add .. after what you have typed).
F9: Edit. Use this key to edit tables. Press F2 when finished.
Del: Del. Will delete a record if the cursor is on the DHFP# field, or the item the cursor is on if in another field. To delete all information in a field (other than the DHFP#) use Ctrl-Backspace.
Alt+F9: Field View. Allows movement in a field with Left and Right arrow keys.
F6: Protect. See C (front page).

2. Press the Esc key to return to the STARTER Menu. Select REPORTS, and make selections as requested for a printout of the Planning, Design, or Construction Report.

Printing Reports

Three reports can be produced. One for Agency Planning, one for projects in the Design stage, and one for projects in the Construction stage.

From the Paradox menu select Scripts, then Play. Press Enter for a selection of scripts, and select Starter. Select Reports from the Starter menu.

PARADOX Menu: View Ask Report Create Modify Image Forms Tools Scripts Help Exit

Play BeginRecord QuerySave ShowPlay RepeatPlay Editor

(press enter for a selection of scripts) ENTER

(use Left or Right arrow keys to select)...Starter....
(press enter) ENTER

STARTER Menu: KwickUpdate Update Reports Backup Quit

Make a selection from the menu. Normally you will select Plan, Design, or Const(ruction) from the first menu, and AGENCY from the second menu. Do this for each report you desire, selecting from the Plan, Design, Const.....menu each time.

Alternate Method

If you want to update information or add new projects, you need to enter the PROJECT, FUNDING, DESIGN, and CONSTR tables. We have found it is easier to select VIEW, the specific table, and then EDIT (F9). If you want a PRINTOUT only, select the script PROJMENU. This script will give you several options depending on whether you want a printout of projects in the PLANNING, DESIGN, or CONSTRUCTION stages.

SUBJECT: FUNDING SOURCES AND DEFINITIONS

PHS:
2-1-00 PURPOSE

The purpose of this chapter is to provide uniform definitions for the major facilities engineering program activities and construction categories in order to identify the appropriate funding source to carry out these activities. Any exceptions to the provisions of this chapter must be approved in writing by the Office of Management (OM)/OASH.

PHS:
2-1-10 DEFINITION OF MAJOR FACILITY ENGINEERING PROGRAM ACTIVITIES

The PHS facilities engineering program generally includes all activities necessary to provide land, structures, and equipment required by an agency to carry out its mission. The facilities engineering program includes new construction, improvements, repair, maintenance, and temporary construction, for which definitions follow.

A. New Construction - The erection of a building, structure or facility, including the concurrent installation of equipment, site preparation, landscaping, associated roads, parking, and utilities, which provides area or cubage not heretofore available. It includes freestanding structures, additional wings or floors, enclosed courtyards or entryways, and any other means to provide usable program space that did not previously exist. It also includes the complete replacement of an existing facility.

B. Improvements (Renovations/Alterations) - Any change to an existing property to allow its more efficient use within its designated purpose (Renovation), or for use for a different purpose or function (Alteration). Building improvements also include improvements to or upgrading of primary mechanical, electrical, or other building systems. Improvements do not include the addition of wings, floors, or other increases to usable program area or cubage; such projects constitute new construction. The only added area or cubage which may be construed as a building improvement rather than new construction involves new stairwells, elevator towers, pipe chases, etc., not providing usable program space. If, however, an increase in usable program space occurs incidental to the overall improvement project, the Office of Management/OASH may waive the classification of the project as new construction on a case-by-case basis.

C. Repair - The restoration of a failed or failing real property facility component(s) (a roof would be considered as a building component, or, a building system such as a HVAC system could be considered as well) to such a condition that it may be used effectively for its designated purpose. A failed or failing real property facility component(s) is caused by action of the elements, fire, explosion, storm and/or other disasters, and by use near to or beyond its expected useful life. Because of its nature or extent, this deterioration or damage cannot be corrected through normal maintenance.

D. Maintenance - Work to keep a real property facility in a usable state or condition, which may include replacement of constituent parts, materials or equipment, inspection,

adjustment, cleaning, resurfacing or making incidental minor repairs. Maintenance includes routine recurring work which is incidental to everyday operations as well as preventive work which is programmed at scheduled intervals.

E. Temporary Construction - Construction to provide a building, structure, or facility needed for a limited period of time to meet an urgent agency need. Such facilities must be of a clearly temporary nature to meet a temporary need. This would be limited to structures of a modular nature manufactured to be transported. Generally, structures in this category should not exceed 3,200 square feet and would have a lower initial cost, higher annual maintenance and utility cost and a shorter usable life than non-temporary structures of the same approximate size. Exterior enhancements solely to provide the appearance of permanence other than the standard factory architectural finishes are not to be included in temporary construction.

PHS:

2-1-20 FUNDING CATEGORIES

A. Buildings and Facilities Funding - There are three identifiable categories in the PHS budget request for the Buildings and Facilities (B&F) appropriation: (1) New Construction - B&F Line Item Projects for all new construction (this includes new additions); (2) Improvements (Renovations/Alterations)- Line Item Projects for Renovations or Alterations; (3) Repair and Improvements - R&I (Lump Sum); or R&I Line Items (large projects that cannot be funded by the lump sum account).

1. New Construction - B&F, Line Item Projects - The Public Health Service requires that new construction projects be designed and constructed with funds specifically identified by project name for that purpose in the PHS budget process documents, a congressional reprogramming action, or actual line item appropriation. If an agency is provided undesignated B&F funds for new construction, the agency must notify OM of the proposed projects for which these funds will be used. This requirement pertains to building additions and replacement facilities as well as wholly new facilities.

   Land Purchases - Undeveloped land acquisitions are for new construction projects. Therefore, such purchases should be specifically identified in the PHS budget, a congressional reprogramming action, or actual line item appropriation.

   See the Real Property Section of this manual for developed land acquisitions.

2. Improvements - Line Item Projects (Renovations, or Alterations) - The Public Health Service requires that improvement projects costing in excess of $l,000,000 be designed and constructed with funds specifically identified, by project name, for that purpose in the PHS budget process documents, a congressional reprogramming action, or actual line item appropriation.

3. R&I (Lump Sum and Line Item Projects)

   Lump Sum - The Public Health Service requires that the lump sum Repair and Improvement (R&I) appropriations be used for the maintenance and repair of PHS facilities, generally for projects costing less than $100,000. Available R&I (Lump Sum) funds can be used for improvement projects costing in excess of $l,000,000

with prior written approval from the Office of Management/OASH, when justified on the basis of urgent, unanticipated needs and utilizing proper reprogramming procedures. An agency can exceed $1,000,000 if the project has been included in an approved Facility Plan. In some cases, the Public Health Service or the agencies may prefer to request funding for large projects on a line item basis.

Line Item Projects - The Public Health Service requires that repair work as defined by paragraph 2-1-l0C be accomplished with R&I (Lump Sum) funds or R&I line item funding if so designated for that specific project in the PHS budget process documents, congressional reprogramming action, or actual line item appropriation. See paragraph 2-1-20C for limited specific funding sources.

Although funds are generally appropriated for all PHS Buildings and Facilities projects as one lump sum, the actual obligation of these funds must be consistent with the President's budget request, as amended by Congressional appropriation reports, if any, (PHS budget process documents) or the funds must be reprogrammed in accordance with Departmental policy. Funds specifically appropriated for designated projects, i.e., line item appropriations, must be obligated in accordance with the terms of the appropriation language.

Design and Construction Inspection Services Using B&F Funds - The Public Health Service requires that contract design and construction inspection services for new construction projects be funded from the B&F line item funding for that project. The same type of improvement funds, i.e., either line item or lump sum, must be used for contract design and construction inspection services as are used for the actual repair and improvement projects. Agency annual operating funds are not to be used for the design and inspection of any project funded from the B&F appropriations.

B. Agency Annual Operating Appropriations - In addition to salaries, supplies, and other repetitive annual agency operating expenses, these appropriations are to be used for certain facilities related work as listed below.

1. Maintenance Budgets - The PHS operating budget request consists in part of operating funds specifically allocated for maintenance and associated minor repairs of facilities as defined in paragraph 2-1-10D above (for salaries, service contracts, equipment parts, and stock items). Agencies are to perform maintenance and minor repair of existing facilities, including related design and inspection services, with annual operating funds. "Base" operating budgets include funds which should be sufficient to perform maintenance and associated minor repairs.

   Minor maintenance and repair projects are to be funded by operating budgets or the B&F R&I lump sum budget.

2. Limited Improvements - Operating funds may be used for improvements that are directly related to the installation of special-purpose equipment, as well as related design and inspection services. These improvements may include converting existing space to a different special purpose or function, extending utility services, including the provision of suitable safety and environmental conditions for proper operations, and making structural alterations provided such improvements are necessary for the installation, operation and use of special purpose equipment. Structural alteration could include the removal of interior walls and partitions and their replacement or rearrangement.

Operating funds may be used for certain minor office alterations including rearrangement of portable partitions, light fixtures, electrical receptacles, and air supply exhaust registers; the application of floor materials and surface painting.

3. Programs of Requirements or Program Justification Document and Pre-Design Studies - Operating funds are used to develop Programs of Requirements or Program Justification Document, and to prepare other studies necessary to establish the project scope and building and facilities funding requirements except where B&F funds have been specifically identified for these purposes in the PHS budget process documents, congressional reprogramming action, or actual line item appropriation.

4. Temporary Facilities - Operating funds may be used for temporary buildings as defined in paragraph 2-1-10E to support urgent, short-term needs. Such facilities must be of a clearly temporary nature to meet a temporary need. Written approval from the Office of Management/OASH should be obtained before using operating funds for temporary construction.

5. Equipment - Operating funds are used for the purchase of Groups II, III, and special purpose equipment except where B&F funds have been specifically identified for the purchase of that equipment in the PHS budget process documents, congressional reprogramming action, or actual line item appropriation.

C. Other Sources of Funds

1. Quarters Rental Return Funds - In accordance with P.L. 98-473, quarters rental return funds (i.e., funds collected as rent) are to be used for the operation and maintenance of quarters. These funds should be used prior to using appropriated funds.

2. Medicare/Medicaid Reimbursements - Appropriation language normally permits the Indian Health Service to utilize medicare/medicaid reimbursements to perform repairs and improvements to meet accreditation requirements of the Joint Commission on Accreditation of Hospitals, exclusive of planning, design, and construction of new facilities or major renovation projects. The use of Medicare/Medicaid reimbursement for planning, design and construction of temporary buildings requires congressional authorization.

PHS:
2-1-30 FACILITY PROJECT BUDGETS

A. General - Unless described otherwise in the justification for the PHS Budget request, a facility project budget is assumed to include all component costs necessary to design, construct, inspect and equip new or improved space. On a project with an estimated cost in excess of $l,000,000, sub-amounts for design, construction, and (as applicable) moveable equipment should be provided in that justification or proposed as separate budget requests. This is a routine requirement because the length of the design phase generally equals or exceeds one year and construction funds for major new research and health care facilities would typically be proposed one or more years after the request for design funds. Conversely, on projects with an estimated cost under $l,000,000, the design and construction may both commence in the same year, and there is no need for sub-amounts or separate budget requests.

B. Design Phase Component - The design phase component includes the estimated cost of the design contract plus any necessary site survey, soil boring, or other associated costs.

C. Construction Phase Component - The construction phase component includes the estimated cost of the construction contract (see Chapter 4-7 for inclusion of inflation escalation), fixed equipment (Group I, see D. below), construction management and inspection fees, and an appropriate construction contingency allowance. PHS policy stipulates that full funding of the entire construction phase component must be requested in the agency budget submission. Partial funding, which could result in an incomplete facility should additional funds not be appropriated, is not permitted unless funds for phased construction are identified in the PHS budget process documents, a congressional reprogramming action, or actual line item appropriation.

D. Equipment Funding - As normal procedure, costs for all fixed equipment (Group I) are included in the construction phase component of the facility project budget and funded from the B&F appropriation. It is noted that some equipment may qualify under the definitions for Group I equipment as well as special-purpose equipment. If this equipment is included as part of the original construction process it is to be considered Group I equipment and funded from the B&F account. If this equipment is added to an existing facility it is to be considered special-purpose equipment and funded from operating funds. Groups II and III equipment is also to be funded from the B&F appropriation if specifically authorized by the appropriation. Otherwise, purchases of Groups II and III equipment are funded from operating funds. Definitions of the equipment categories are listed below:

1. Fixed Equipment (Group I)

   Fixed, built-in, attached, and installed equipment normally included as part of the construction contract.

   a. Building Equipment - Building equipment is a permanently fixed, built-in part of a building or structure, the removal of which would generally require repairs or improvements to place the area in which it was located in a usable condition. Building equipment includes building service items, such as elevators; utility systems, such as heating, electrical and other utilities; walk-in refrigerators; vaults; built-in autoclaves; etc.

   b. Attached or Installed Equipment - Attached or installed equipment is a semi-permanent part of a building or structure, the removal of which terminates a utility or equipment service without affecting or damaging the integrity of a building, structure or utility system. Machine tools, x-ray units, drinking fountains, laboratory casework and sinks, etc., are examples of installed or attached items.

2. Moveable Equipment (Group II) - This category, also referred to as major moveable equipment, consists of items having a useful life of 5 years or more. Moveable equipment does not require attachment to the building or utility service, other than that provided by an electrical plug or quick disconnect fitting. Examples include chairs, beds, bassinets, desks, typewriters, microscopes, centrifuges, portable whirlpool units, exercise bars, refrigerators, and linen carts.

3. Moveable Equipment (Group III) - This category, also referred to as minor moveable equipment, consists of items having a useful life of less than 5 years. These items are of relatively small cost and size and lend themselves to on-site storage for

replacement of lost or worn out equipment. Examples include linens, blankets, gowns, wash basins, bed pans, pipettes, surgical instruments, silverware, and chinaware.

4. Special-Purpose Equipment - Special purpose equipment is technical, medical, or scientific equipment that is needed to operate a laboratory, a hospital, a clinic, a clinical research patient care unit, an animal care facility, or is specific to a single purpose and not generally suitable for other purposes. Examples of such equipment include incubators, electric ovens, sterilizers, vacuum and pressure pumps, centrifuges, water baths, casework, sinks, shelves, patient headboards, workbenches for microscopes, and moveable apparatus for laboratory animals. Special-purpose equipment may be classified as either fixed or moveable equipment.

   A special purpose laboratory in some cases may be considered as special purpose equipment.

E. R&I Lump Sum - The budget for R&I lump sum, is to be based upon a percentage of the replacement costs. Replacement costs can be determined by using the square foot costs, obtained from publications like the Means "Square Foot Cost" book, and the PHS real property inventories. The following percentages are to be used unless higher percentages can be justified: 3 percent for all space except hospital and research labs, which requires a higher percentage of 4 percent.

SUBJECT: ANNUAL FACILITIES PLAN

PHS:
2-2-00 PURPOSE

This chapter describes Public Health Service (PHS) policies and procedures to be followed by PHS agencies in preparing the fiscal year Annual Facility Plan, as well as the projected facilities plan for the next five budget cycle years (DHHS and PHS Budget requirement). The Annual Facilities Plan will be used as an aid in determining facilities funding needs and in developing PHS-wide budget priorities on an annual basis.

PHS:
2-2-10 RESPONSIBILITIES

A. The Director, Office of Management (OM)/PHS has overall responsibility for establishing and implementing the procedures and criteria to be followed regarding the PHS Agency Annual Facilities Plan. The Division of Health Facilities Planning (DHFP), Office of Resource Management (ORM), OM/PHS is designated as the coordinating point for PHS Agency Annual Facilities Plan activities.

B. The head of each PHS agency is responsible for the development of the Agency Annual Facilities Plan. Each Plan should be developed jointly by the agency's program planning, budget, environmental, and facilities staffs and should include all facilities projects that will be requested in the forthcoming annual budget process.

PHS:
2-2-20 CONTENTS OF THE PLAN

A. All Annual Facilities Plans involving new construction and major improvement projects for which funds are proposed shall include (1) an Agency Program Narrative (APN), (2) an environmental summary, and (3) a draft Program of Requirements (POR) document or a draft Program Justification Document (PJD), except where the Director, OM has previously approved a POR/PJD or granted an exemption. However, if an agency has numerous new projects in its plan, draft PORs/PJD's should be developed for the highest priority projects initially, with other draft PORs/PJD's submitted as soon as available but no later than 30 days prior to departmental budget submissions. Requirements for the APN, and the POR/PJD are delineated in Chapters 2-3, and Chapter 2-4 respectively.

B. The Annual Facilities Plan should reflect the agency's priority ranking for new construction, and repair and improvement projects proposed for the upcoming budget cycle (see Exhibit X2-2-A). The next two Exhibits shall provide a summary of new construction, an estimate of the total project cost, the project description for proposed new construction projects, and

a justification for direct federal construction (see Exhibit X2-2-B) and for proposed repair and improvement on existing facilities (see Exhibit X2-2-C). The fourth exhibit shall summarize the estimated costs for facilities in the ensuing five years (see Exhibit X2-2-D).

PHS:
2-2-30 SUBMISSION OF THE PLAN

The Annual Facilities Plan shall be submitted to the Director, OM by each PHS agency by no later than April 1 (March 1 for IHS and NIH) (17 to 18 months before the fiscal year commences), e.g., by April 1, 1991 for the Fiscal Year 1993 Annual Facilities Plan.

Agencies are encouraged to submit Annual Facilities Plans that show all requirements, regardless of anticipation of funding.

The Annual Facilities Plan should show prior year requests if appropriations were not received, and rank all according to current year requirements. Totals are to be shown for all (current and prior years), current year, and 5-year projection requirements.

SUMMARY OF LISTINGS OF PROJECTS

(Agency)

A. NEW CONSTRUCTIONS

Projects are listed in their descending order of priority, as follows:

1. (Project Title) ..... ($ Estimate)
2. (Project Title) ..... ($ Estimate)

3. (Project Title)..... ($ Estimate)

SUBTOTAL ($)

B. REPAIR AND IMPROVEMENT OF EXISTING FACILITIES

1. (Project Title)..... ($ Estimate)
2. (Project Title)..... ($ Estimate)

3. (Project Title)..... ($ Estimate)

SUBTOTAL ($)

TOTAL BUILDINGS AND FACILITIES APPROPRIATION REQUESTED (including prior years)..... (Grand Total)

TOTAL BUILDINGS AND FACILITIES APPROPRIATION REQUESTED (current year only)..... (Grand Total)

SUMMARY OF NEW CONSTRUCTION

(Agency)

(Project Title)

FY XX APPROPRIATION ESTIMATE .....($ Estimate)

Provide realistic design and construction cost estimates, and, where applicable, estimates for moveable equipment and/or special site development costs. Indicate the source of the estimates (e.g., agency engineering staff, an architectural/engineering firm) and, if not previously justified to PHS, describe the basis for them.

Provide explanation where prior congressional approval in the form of partial funding exists for the project (e.g., funds for design, for one phase of incremental construction, etc.)

PROJECT DESCRIPTION

Provide a brief description of the proposed project, including location, net and gross square footage figures and, for hospitals, the number of patient beds. As noted above, PHS should either have approved a POR/PJD document or received a proposed one for all new construction projects and major improvement projects included in the Annual Facilities Plan.

JUSTIFICATION FOR DIRECT FEDERAL CONSTRUCTION

Summarize the consideration the agency has given to acquiring/
altering existing Federal structures, and/or the leasing of existing or specially constructed buildings, and explain why direct Federal construction is preferred. Except for needs where leasing is clearly not a viable possibility, such as a new laboratory facility on the NIH or CDC campus, justifications for new laboratory facilities will normally require analyses of leasing vs. construction costs.

REPAIR AND IMPROVEMENT OF EXISTING FACILITIES

(Agency)

1. (Project Title) .....($ Estimate)

   Provide concise, individual descriptions of renovation, alteration, maintenance, or repair projects estimated to cost $1,000,000 or more, with an explanation of why each is needed. In the case of a project which affects another agency, such as a proposed project on the NIH campus by another agency, explain what coordination has been carried out.

2. (Project Title) .....($ Estimate)

   _____

   _____

3. (Project Title) .....($ Estimate)

   _____

   _____

4. Other Repairs and Improvements.....($ Estimate)

   Include a lump sum estimate of all projects estimated at less than $1,000,000 each.

   Describe the nature of these projects.

   With respect to repairs, include only those larger projects that must be done on a cyclical basis, e.g., replacement of roofs, elevators, etc. Normal day-to-day maintenance and minor repairs handled from operating funds should not be included in this Building and Facilities estimate.

   PHS may be requested to show amounts for life safety work, pollution control, energy conservation, and the elimination of barriers to the physically handicapped separate from other repair and improvement needs. Therefore, any such projects, or portions of projects which are not obvious should be footnoted.

AGENCY FACILITIES SUMMARY

A. 19XX

1. New Construction Project Title .....($ Estimate)

2. New Construction Project Title .....($ Estimate)

3. Major Improvement Project Title .....($ Estimate)

4. Lump Sum for Repairs and Improvements .....($ Estimate)

B. 19XX

C. 19XX

Cost estimates for the out-years should be developed based on estimated current year dollars. Appropriate notation will be made that actual funding needs in out-years may exceed these amounts, due to construction cost escalation.

SUBJECT: AGENCY PROGRAM NARRATIVE DOCUMENT

PHS:
2-3-00 PURPOSE

This chapter describes Public Health Service (PHS) policies and procedures to be followed by PHS agencies in preparing the Agency Program Narrative (APN) for each new construction or major building improvement project in the Annual Facility Plan. The APN shall be used in conjunction with the Agency's Annual Facilities Plan, Environmental Summary, and the Program of Requirements (POR) document or the Program Justification Document (PJD) in determining those projects to be included in the PHS annual budget request.

The nomenclature for this document was changed from the "Program Description and Justification (PDJ)" title to the Agency Program Narrative (APN) due to name similarities with the "Program Justification Document (PJD)". This similarity was confusing and disruptive to the budget process.

PHS:
2-3-10 GENERAL

A. This chapter shall be used in conjunction with Chapter 2-2 of this manual, which describes how agency facility budget requests are submitted to the Director, Office of Management (OM) in the form of an Annual Facilities Plan. Proposed new construction and major improvement projects are evaluated through a APN which provides programmatic justification for the project, a proposed Environmental summary which describes expected environmental impacts and mitigation, and a proposed POR or PJD document which contains more detailed programmatic information. Agencies proposing design funds for projects in their Annual Facilities Plan, prior to POR/PJD approval by Director, OM are required to submit a draft POR or PJD, Environmental Summary, and a APN to OM with that Plan. In cases where an agency has numerous new projects in its plan, the draft PORs/PJD's should be developed for the highest priority projects initially with other draft PORs/PJD's submitted as soon as available but no later than 30 days prior to the departmental budget submission.

B. Agencies are encouraged to submit the APN in advance of the April 1 due date for Annual Facilities Plans. A reminder of this requirement is usually sent to agency executive officers in advance of the annual budget formulation process. Projects proposed in the out years (2+ years hence) of the facilities plan may be accompanied by a APN only for initial consideration. OMB Circular A-106 requires that environmentally sensitive actions be projected five years beyond the budget year.

PHS:
2-3-20 RESPONSIBILITIES

A. The Director, OM/PHS has overall responsibility for establishing and implementing the procedures and criteria to be followed regarding the PHS Agency Annual Facilities Plan. The Division of Health Facilities Planning, Office of Resource Management, OM is designated as the coordinating point for PHS APN activities within OM.

B. The head of each PHS agency is responsible for the development of the APN document in accordance with procedures established in this chapter.

C. The APN shall be developed jointly by the agency's program planning, budget, environmental, and facilities staffs, and shall be consistent with its Annual Facilities Plan.

PHS:
2-3-30 SUBMISSION

A. The APN shall be submitted by each PHS agency to OM as prescribed in section 2-3-10 above.

B. Guidance on the specific types of information required and acceptable formats are attached for research facilities
(Exhibit X2-3-A, "Agency Program Narrative Format for Research Facilities") and medical facilities (Exhibit X2-3-B, "Agency Program Narrative Format for Medical Facilities"). The precise formats are flexible as long as the necessary information is furnished in an understandable manner.

FY XX Agency Program Narrative
Format for Research Facilities (e.g., For Laboratories, Animal Facilities and Related Special-Purpose Structures)

(Agency)

Project Title

I. Description of Program Activities

The bulk of information contained in this section shall focus on the program functions to be located in the proposed facility. Include under this heading statements whether the proposal represents an expansion of an existing program, a replacement facility without expansion, the consolidation of scattered program elements in a single location, or a new program.

The basis for the proposal will influence the content of the program justification presented in Section II below. When an entirely new program is involved, the information shall contain a citation of the authorizing Public Law or appropriate part of the PHS Act.

II. Justification for Program

This is the most important section in the submittal. OM/OASH must review and be convinced of the need for the proposed program before it will consider the Program of Requirements (POR), or Program Justification Document (PJD), justifying the physical structure.

The narrative must explain clearly why the program is necessary, state its goals (short-term and long-term), and the expected benefits of providing the facilities for it. Because of the diversity among PHS activities conducted in special purpose facilities, it is not possible to list in definitive terms all the justification data required. However, it is important to justify the program fully in a clear and concise manner.

III. Consideration of Alternatives

Establish why the program is a proper function of the Federal Government and not a State, local, or private sector responsibility. This section must show that the possibility of accomplishing the same results through the grant or contract mechanisms was fully considered and that a direct Federal program is the best approach.

This section should also provide evidence that consideration was given to utilizing and/or redirecting present resources to the proposed program and such action is not possible or would result in elimination of or unacceptable reductions in other needed functions.

In the case of a proposed replacement facility, provide an explanation about why an addition to or modernization of the present facility would not satisfy program needs.

IV. Staffing and Operating Costs Implication

This section should indicate the number of staff positions and the operating budgets required for the proposed facility during its first full year of operation. The information should also specifically identify existing and new staff positions, as well as additions to operating budgets. The information should be presented in a format so that the reviewing offices can readily determine the added costs and number of staff positions associated with proceeding with the program and facility.

V. Facilities Summary Data

Because the POR contains much detailed technical data that is primarily directed to the Architect/Engineer developing the design, some overall information should be summarized in this section to provide the reviewing office with a sufficient understanding of the proposed project.

At a minimum, indicate whether the site has been acquired and, if so, its size and location. Include the net and gross areas of the structure(s), its possible configuration, and any unique or special features or equipment. Also include cost estimate breakdowns for major categories, e.g., site development, design, construction, initial portable equipment, etc. Finally, provide a projected design and construction schedule based on the assumption that design funds will be appropriated in the coming fiscal year. When a facility is to be replaced, ultimate use and costs associated with the existing building should be identified.

VI. Other Pertinent Information

Agencies should feel free to submit any other supporting information or data that they believe are relevant and were not presented in the above sections of the format.

FY XX Agency Program Narrative
Format for Medical Facilities (e.g., Hospitals, Outpatient Clinics, and Related Medical Care Facilities)

(Agency)

Agency Title

I. Description of Program Activities

The information contained in this section must describe the various medical care services to be located in the proposed facility. Indicate under this heading whether the proposal represents a new facility, a replacement facility with or without expansion services, or modernization/addition to an existing structure; also include special notation of any new health care services not previously provided, e.g., skilled nursing care.

The type of proposal will influence the thrust of the program justification in Section II below. When new health services are proposed, the citation of the authorizing Public Law or appropriate part of the PHS Act must be included.

II. Justification for Program

This is the most important section in the submittal. OM/OASH must review and be convinced of the need for the proposed program of medical services before it will consider the Program of Requirements (POR), or Program Justification Document (PJD), justifying the physical structure.

The narrative must explain the necessity of providing the services, the short-term and long-term goals, and the expected results of providing the facility. Include in this section (1) the geographical area to be served, (2) the actual or estimated population, (3) the average daily patient loads (ADPL) and/or annual number of outpatient visits (OPV) experienced in the last several years, and (4) an explanation of other factors impacting on the size and scope of the project (e.g., estimated rate of growth of population and changes in use rate or average lengths of stay) that resulted in the number of inpatient beds and.or size of medical facilities should address the applicable criteria or rationale used for determining project size and scope.

Special justification will be needed in the situations where the provision of certain services would not usually be expected in the facility proposed; where the size and staffing of a function is beyond that expected with the projected patient load; or where the service is new and has not been generally provided to date at other comparable health care facilities.

It is not possible to list all of the justification data required, but is important to justify the program fully in a clear and concise manner.

III. Consideration of Alternatives

Establish why the provision of services is a function of the Federal Government and not a State, local, or private sector responsibility. This section must show that the possibility of accomplishing the same results through the contract mechanism with private sector hospitals and clinics was fully considered and that a direct Federal program is the best solution. Also for health facilities, consider other health care facilities in the area that are within the acceptable travel time for inpatient and outpatient care and indicate whether any of these existing operations have the capacity to accommodate part of the project patient load at the proposed facility.

This section should also provide evidence that utilization and/or redirection of present health resources to the proposed facility would not adversely affect services at other medical care facilities.

In the case of a proposed replacement facility, explain why an addition to or modernization of the present facility would not satisfy health care needs.

IV. Staffing and Operating Cost Implications

This section should indicate the number of staff positions and operating budgets required for the proposed facility during its first full year of operation. The information should also clearly delineate between the number of existing and new staff positions, and between the present and increased operating budgets; special notation should be made of any "redirected" positions. The information must be presented in a format so that the reviewing office can readily determine the additional costs and staff positions associated with the proposed program and facility..

V. Facilities Summary Data

Because the POR contains detailed technical data that is primarily directed to the Architect/Engineer developing the design, some overall information should be summarized in this section to provide the Facilities Review Board with and understanding of the proposed project.

At a minimum, indicate whether the site had been acquired and, if so, its size and location. Also include the net and gross areas of the structure and provide similar data by major functional activities. Note the possible configuration of the facility and any unique or special features or equipment. Furnish cost estimates which include breakdowns for major categories, e.g., site development, design, construction, Groups II and III equipment, etc. Finally, provide a projected design and construction schedule based on the assumption that design funds will be appropriated in the coming fiscal year.

VI. Quarters for Staff

The provision of quarters may be justified (1) when the presence of personnel at the facility is necessary on a 24-hour basis to assure

that essential services are provided or that Government property is protected, or (2) where a sufficient supply of adequate private housing at remote installations is not available within one hour's travel time (one way).

When either or both conditions described above exist, the following data must be furnished:

1. An analysis of the number and condition of existing quarters, if any, at the location;

2. Information on the availability of adequate private housing in the area;

3. The number of full-time permanent staff projected to operate the new, replacement, or expanded facility;

4. The estimated proportion of new hires or transferred employees who will be newcomers to the area;

5. The number of newcomers to the area who will require Government furnished quarters;

6. The number, if any, of local hires who will be on 24-hour call and will require quarters at the facility;

7. The total number of new quarters required with the probable mix of bachelor and 1-, 2-, and 3-bedroom family quarters; and

8. A lump sum estimate for providing the quarters (cost of design, site development, construction, major appliances, etc.)

VII. Other Pertinent Information

Agencies should feel free to submit other supporting information or data they believe are relevant and were not presented in the above sections of the format.

SUBJECT: PREPARATION AND APPROVAL OF PROGRAM OF REQUIREMENTS DOCUMENT OR PROGRAM JUSTIFICATION DOCUMENT

PHS:
2-4-00 PURPOSE

This Chapter describes Public Health Service (PHS) policies and procedures to be followed by PHS agencies in determining the requirements for and the development, submission, and approval of the Program of Requirements (POR) or the Program Justification Document (PJD) for new construction projects, for major improvement projects and for the acquisition of special purpose facilities under lease agreements.

The Assistant Secretary for Health has waived the requirement for approval of POR's for some agencies. Approval, disapproval, waiver responsibilities for these agencies lies with their director. Agencies that do not submit POR's to the Office of the Assistant Secretary for Health are to submit PJD's for new construction and major improvement projects.

PHS:
2-4-10 GENERAL POLICY

A. The POR should be developed to meet two distinct purposes. Initially, the document will serve as a mechanism for obtaining approval for the project and its scope, for identifying potential environmental impacts, and for developing a cost estimate for inclusion in the PHS budget. Secondly, it defines program needs to enable an Architectural/Engineering (A/E) firm to estimate design fees and contract for the design, and serves as a deterrent to unnecessary modifications or increases in the scope of approved projects.

The PJD should be developed to meet similar purposes, but, is not the document intended to be given to the A/E. The PJD combined with technical requirements forms a POR, which is intended to provide adequate information to the A/E.

B. The Office of the Assistant Secretary for Health (OASH) and the Office of the Secretary require that a POR/PJD be approved by OASH before supporting new construction and major improvement projects in the budget process. When a PHS agency plans to request design funds in a given fiscal year, it should ensure that a draft POR/PJD is provided to OASH in advance of or in conjunction with its Annual Facilities Plan submission for that year (see Chapter 2-2).

C. A POR must be approved by OASH or approval waived before design services are solicited for all new construction projects, and for those major improvement projects to existing facilities involving changes in program functions, operations or facilities uses. Environmental reviews are not waivable. When a question exists on the need for an approved POR for improvement projects, the question should be referred to PHS for final

decision. As a general rule-of-thumb, improvement projects estimated to cost $1,000,000 or more will require a POR/PJD. Some smaller improvement projects will also require PORs based on related changes in program functions or new facilities use. All projects require environmental review.

The Assistant Secretary for Health has authorized some agencies to begin the A/E acquisition process concurrent with the POR development; however, the agency shall not award a contract until the POR is approved.

D. A POR must also be approved when an agency proposes to obtain space by leasing a facility designed and constructed to its requirements, i.e., build-lease or lease-purchase or the leasing of a structure requiring major alterations. Such projects also require environmental review.

PHS:
2-4-20 RESPONSIBILITIES

A. The Director, Office of Management (OM), OASH, PHS has overall responsibility for establishing and implementing the POR procedures and criteria. The Division of Health Facilities Planning (DHFP), Office of Resource Management (ORM), is designated as the coordinating point for these activities within OM, PHS.

B. The head of each PHS agency is responsible for the development of POR/PJDs for those facilities under his/her agency jurisdiction, and for ensuring that the procedures and requirements established in this Chapter are followed. Agency heads are encouraged to designate an agency facilities management coordinator to ensure this compliance. Agency heads may also redelegate authority for compliance with environmental requirements.

PHS:
2-4-30 AVAILABILITY OF ASSISTANCE

If any PHS agency does not have the capability, or desires assistance in developing POR/PJDs, the agency may request assistance from DHFP. However, it will remain the primary responsibility of the agency to prepare POR/PJDs, and fulfill all requirements associated with them as outlined herein.

PHS:
2-4-40 SUBMISSION AND APPROVAL

A. Agencies are encouraged to submit a draft POR/PJDs to the DHFP for review and comment. DHFP will coordinate reviews by any other applicable PHS components, and furnish a consolidated set of comments to the agency. This procedure surfaces issues which may be resolvable before a proposed final POR/PJD is submitted to the DASHO.

B. At a minimum, POR/PJDs for which funding is being proposed in the current budget planning cycle must be submitted to OASH no later than April 1 to coincide with the submittal of the Annual Facilities Plan (see Chapter 2-2).

C. Proposed final POR/PJDs may be submitted to DHFP or DASHO. Agencies should submit the original document and a good reproducible copy. PJD's become final when approved by the Assistant Secretary for Health.

D. The proposed final POR shall include a signature page containing at least four lines for signature approvals (see Exhibit X2-4-A, "Program of Requirements Signature Page"). The first line is for the signature of the PHS agency representative who was responsible for development of the POR. The second line is for the signature of the agency head or his/her facilities management coordinator who by signing, indicates that all agency policies and procedures have been met and all internal clearances required have been secured. In addition, his/her signature indicates that the project POR programmatic and facilities requirements included in budget requests will be those contained in the POR, and that the project will be designed in accordance with the POR. The third line is for the signature of the Director, DHFP. The signature on this line indicates that the scope of the project is within the funding ceiling, and is consistent with the long-range planning of PHS and the agency. The fourth line is for signature by the DASHO indicating that the project has been approved and may proceed into the design stage pending availability of funds. Each signature denotes that, in the approving official's judgment, the POR is environmentally acceptable. Additional lines may be added for agency use.

PJD's require the same signature page with a fifth line for the Assistant Secretary for Health (see Exhibit X2-4-B, "Program Justification Signature Page").

E. Any proposed changes in the size or scope of the project following POR/PJD approval must be submitted to PHS and approved as a POR/PJD amendment, in the same general manner as the original POR/PJD. This would also apply if the construction estimate for the project is exceeded during design. Proposed changes may remove a project from a previously established categorical exclusion from environmental review requirements. If a project was the subject of an Environmental Assessment or Environmental Impact Statement, then a proposed change requires a supplemental environmental document.

PHS:
2-4-50 CONTENTS OF PROGRAM OF REQUIREMENTS

A. The POR/PJD shall contain, at a minimum, the following types of information, plus any special requirements or features needed for the particular project involved:

POR	PJD		
X	X	1.	Introduction
X	X	2.	General Overview (background and historical data, including information on the program mission, existing facility, site, potential environmental impacts, and need for the proposed project).
X	X	3.	Space and Occupancy Summary
X		4.	Space Schedule and Functional Relationships
X	X	5.	Staffing Summary
X		6.	Architectural Design Requirements
X		7.	Structural Requirements
X		8.	Electrical Requirements
X		9.	Mechanical Requirements
X		10.	Safety and Security Requirements
X		11.	Environmental Mitigation Requirements

X		12. Miscellaneous Factors
X	X	13. Executive Summary

These categories are explained in C. below.

B. In addition to the above requirements, agencies are free to provide any other background information and data that further explain the project and assist the A/E in the development of the design.

C. The following is a brief explanation of the information which should be furnished in the POR/PJD. It should be noted that the precise organization of the POR/PJD and its information is flexible, as long as the necessary types of information are provided.

1. Introduction - Provides summary information on the facility, location, and function. It may also be appropriate to include a statement on how requirements for the POR were developed.

2. General Overview - Provides background and historical data, including (as relevant) information on:

   a. The agency mission and functions to be performed in the facility (include organization chart as appropriate).

   b. The existing facility and its utilization and relationship to other facilities of the agency within the same general area.

   c. Need for the proposed facility project, including programmatic justification.

   d. Proposed construction site (include map as appropriate).

   e. Community or region (cultural, transportation, or other factors which should be considered in planning the site or facility).

   f. Climatic conditions.

   g. Potential environmental impacts.

3. Space and Occupancy Summary - This summary should include:

   a. A table showing the net area for each major function that will occupy the facility. For example, the table should indicate the following for administration:

      - Program (organizational units and type space)

      - Support (housekeeping, maintenance, storage, etc.)

      - Other (public facilities, employee facilities, etc.)

   b. A gross area allowance for the facility. The gross should exceed the net area by a factor which provides adequate circulation and adequate mechanical and electrical space and access to equipment without encouraging an inefficient design. The net-to-gross ratio should reflect

the net and gross area definitions included in Chapter 4-1 of this Manual ("Net and Gross Area Computations").

Criteria and guidance included in this section and in the "Space Schedule" section (below) will not apply to the POR/PJDs for staff quarters; space allowances for staff quarters are normally expressed on a gross area basis only.

4. Space Schedule and Functional Relationships - The Space Schedule should delineate the features and space requirements of the agency.

   This schedule should contain typical space definitions and criteria. If a facility contains more than one type of laboratory, the criteria for each type should be specified, including architectural features, (e.g., floors, walls and ceiling materials) illumination, electrical power, and mechanical (e.g., heating, ventilation and air conditioning criteria, plumbing services) requirements.

   At a minimum, the space schedule should define the architectural, environmental, and utility needs of each different type of space. Ideally, it should contain a chart indicating by room or other definitive nomenclature the net area, the occupying organizational unit and staff, and specific architectural, environmental, and utility needs.

   The functional relationships of all spaces should be indicated schematically showing priority relationships of all departments and spaces.

5. Staffing Summary - The Staffing Summary should be presented in the form of a chart. List each full-time permanent position required for the function. The next item or column should indicate what the current staff is for each position and finally the total number of staff for the new or renovated facilities. These columns should indicate total number of staff on board, additional positions required and the total number required to operate the facility.

6. Architectural Design Requirements - All available architectural design requirements for the facility should be identified. Generally, this would be presented as applicable to the entire facility or major segments of it, rather than by room, although special needs may need to be identified by room. The following should be included where applicable:

   a. Design Standards
   b. Design Considerations
   c. Aesthetics
   d. Interior Clearance Requirements
   e. Finishes and Materials
   f. Door Criteria
   g. Food Service
   h. Fixed Furniture
   i. Acoustic Control
   j. Facilities for Handicapped
   k. Fire Safety
   l. Elevators
   m. Parking Requirements
   n. Landscaping

7. Structural Requirements - The following structural requirements should be included, where applicable:

   a. Design Standards
   b. Occupancy Classification
   c. Seismic Standards
   d. Live Loads
   e. Allowable Stresses
   f. Foundations
   g. Miscellaneous Design Considerations
   h. Equipment Loads

8. Electrical Requirements - This should include the following where applicable:

   a. Design Standards
   b. Utility Company Service
   c. Telephone Service
   d. Telephone Distribution System
   e. Emergency Power System
   f. Lighting System
   g. Power Distribution System
   h. Computer Based Monitoring/Control System
   i. Specialty systems (security, paging, nurse call, etc.)
   j. Lightning protection (depending on area)

9. Mechanical Requirements - The following mechanical requirements should be included, where applicable:

   a. Design Standards
   b. Design Criteria: Heating, Ventilation and Air Conditioning Criteria
   c. Design Criteria: Plumbing
   d. Design Criteria: Fire Protection
   e. Energy Conservation

10. Safety and Security Requirements - Give all safety and security requirements.

11. Environmental Mitigation Requirements - Demonstrate compliance with environmental protection, pollution control, and historic preservation requirements.

12. Miscellaneous Factors - Show any feature not included in any of the above.

13. Executive Summary (items may not be appropriate for PJD's)

    A set of charts or paragraphs should summarize:

    a. Project Net and Gross Areas.

    b. Project Design and Construction Schedule. This schedule should include such milestones as awarding of the A/E contract, awarding of the construction contract, and completion of construction. This schedule may be expressed as either the actual, or estimated dates for each milestone or as the number of months required for each phase.

c. The source(s) or proposed source(s) of funding should be indicated, (e.g. year and/or appropriation number of each source).

d. Design Costs. Included in these costs should be the estimated A/E fees for pre-design services. Also to be included is site survey work, soil investigation and any other design related costs. IHS should include additional 93-638 costs as a line item, if applicable.

e. Construction Costs. This should include the construction cost projected to the mid-point of construction, fixed equipment costs (Group I), construction inspection fees, shop drawing review and approval and appropriate contingency allowances. IHS should include additional P.L. 93-638 costs as a line item, if applicable.

f. Initial Equipment Costs. To include costs of all moveable equipment (Group II and III).

g. Total cost of quarters where required. Included in these costs as separate items should be the A/E costs, site work, construction cost of quarters and when required the cost of roads and utilities.

h. Staffing increases associated with the project; and staffing summary by classification of existing staff and proposed additional staff requirements by classification necessary for operation of the facility.

i. Estimated increase in annual year operating costs due to the opening of the facility. This should include salaries and expenses, repair and improvement and maintenance and utilities costs. Include any costs that may be particular or special for the facility.

j. Estimated environmental costs of constructing and operating the facility. This should include the costs of pollution control facilities, equipment, and programs, including contract costs but <u>not</u> direct personnel costs. It also includes the costs of using, maintaining, rehabilitating, repairing, improving, protecting, and preserving properties which may be eligible for listing in the National Register of Historic Places. These costs are normally estimated in the agency's annual budget request, as required by OMB Circulars A-11 and A-106.

The Executive Summary should be the first pages of the POR/PJD. These pages will normally be removed from the POR copies furnished to the A/E firm.

D. These general requirements may be adjusted or changed to meet the requirements of the projected facility. Statutory requirements (e.g., environmental reviews) may not be omitted.

E. Because numerous, basically similar hospitals and ambulatory care facilities have been constructed for Indian Health Service (IHS) in recent years, a relatively specific set of justification requirements has evolved for these facilities within the framework of standard POR requirements. PORs for these IHS facilities should include the following information and analyses:

1. An estimate of the present service population and a projected estimate for eight years hence. Also, a description of how the latter was projected.

2. Outpatient workload data for three previous years, the projected workloads eight years hence, and a description of how the projection was made.

3. In the case of hospital facilities, calculations supporting the proposed number of inpatient beds based on the bed planning methodology adopted by the Department in 1980-1981.

4. A "Service Unit Master Plan" consisting of an enumeration of existing IHS health care facilities in the service unit and their current outpatient workloads plus a discussion of any plans to expand or close any of these facilities or to construct any new ones. The impact of any such plans should be reflected in the projected outpatient workload for the subject facility.

5. For each hospital department, statements of the assumptions used with the Space Planning Criteria and Resource Allocation Criteria to determine space and staffing requirements. This should include such items as the projected service population, annual number of outpatient visits, annual number of radiology examinations, etc.

6. For each facility, a description of required environmental mitigation must be included. Particular attention should be directed at the management of medical wastes.

F. Because numerous, basically similar hospitals and ambulatory care facilities have been constructed for IHS in recent years without the preparation of a comprehensive or programmatic environmental review document, each such proposal is subject to the environmental review requirements which are made of any other PHS facility.

SUBJECT: Waiver of Need for Program of Requirements for Selected Parking Lots and Helicopter Landing Pads

A. Purpose - This Circular waives the requirement of the PHS Facilities Manual, Volume I, Chapter 2-4, "Preparation and Approval of Program of Requirements Documents," for OASH approval of a Program of Requirements (POR) for new construction projects consisting solely of new parking lots and helicopter landing pads located outside of Standard Metropolitan Statistical Areas (SMSA). Chapter 2-4-10C provides for the granting of such waivers.

B. Background - Executive Order 12191, dated February 1, 1980 and 41 CFR, dated July 1, 1987, Subpart 101-6.3, "Ridesharing," requires agencies to implement parking incentives which promote ridesharing and the efficient use of federally controlled parking areas. The construction of helicopter landing pads must take into account air traffic restrictions, safety, noise impact and other considerations. OASH oversight is needed to help assure that agencies give adequate consideration to these requirements in planning the subject facilities.

C. Policy

1 It has been determined that under the provision of PHS Chapter 2-4-1C it is reasonable to grant a blanket waiver from the requirement that OASH approve a POR for new construction projects consisting solely of new parking lots and helicopter landing pads located outside of SMSAs. The need for and opportunity to effect ridesharing programs and utilization of public transportation is greater in metropolitan areas than in rural areas. Potential adverse impacts of helicopter landing pads are also greater in metropolitan areas than in rural areas. This does not relieve agencies from the need to comply with 41 CFR and to observe applicable regulations and the impact of the construction of helicopter landing pads. Agency heads or their delegatees must approve each specific new parking lot and helicopter landing pad project.

Distribution: OASH, ADAMHA, CDC, FDA, HRSA, IHS, NIH, ATSDR, Addressees

Filing Instructions: File this circular after Chapter 2-4 (Volume I)
Cancellation Date: January 1, 1993
Material Superseded: None

2. Most parking lots and helicopter landing pads are constructed as a part of a larger project which requires a POR. In these cases, justification and description of the parking lot and/or helicopter landing pad should be included as a part of the POR.

3. In the case of parking lots and helicopter landing pads located in SMSAs and not part of a larger project, agencies may request a waiver from the POR requirement on a case-by-case basis. The waiver request should justify the need for the facility and indicate the manner in which 41 CFR and applicable safety and environmental concerns have been considered.

John C. West, Director
Office of Resource Management/OM/PHS

Subject: Program of Requirements Signature Page

PROGRAM OF REQUIREMENTS
FOR
(PROJECT NAME)
(LOCATION)

Approved: _____
Agency Date

_____
Agency Date

_____
DHFP Date

_____
PHS Date

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
U.S. PUBLIC HEALTH SERVICE
(AGENCY)

Subject: Program Justification Document Signature Page

PROGRAM JUSTIFICATION DOCUMENT
FOR
(PROJECT NAME)
(LOCATION)

Approved: _____
Agency Date

_____
Agency Date

_____
DHFP Date

_____
PHS Date

_____
DHHS Date

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
U.S. PUBLIC HEALTH SERVICE
(AGENCY)

SUBJECT: FACILITY MASTER PLANNING

PHS:
3-1-00 PURPOSE

The purpose of this chapter is to assist PHS agencies and centers in the utilization and long-range planning of various sites and facilities necessary for the proper execution of their programs. Proper master planning of the various PHS owned facility sites will be beneficial to long range program goals by establishing efficient and economical site utilization plans which are environmentally sound and which provide a rational basis for budget requests. Master Plans, to remain useful, should be updated approximately every five years.

A. Applicability of Master Planning. Master planning procedures are normally appropriate for all PHS direct Federal or lease/purchase construction projects or site acquisitions that will eventually lead to more than one principal building, structure or activity on one site. This includes sites shared with other government agencies or with private firms, but does not include direct leasing facilities.

B. Existing Sites. Master plans should be developed for existing PHS sites that contain more than one building. Such studies should reflect both the special needs of the site and the impact on the surrounding community and the environment when revised for factors such as changes in facility utilization, mission changes, etc.

PHS:
3-1-10 LAWS AND REGULATIONS

Laws and regulations applicable to the master planning process as it applies to the PHS facilities planning program are listed below. Other regulatory requirements that may be applicable to master planning are listed in Chapters 2-2, 3-2, 3-3 and 4-5 of the PHS Facilities Manual.

NOTE: The Clean Air Act and the Superfund law impose other, facilities-specific requirements.

A. National Environmental Policy Act of 1969 (42 U.S.C. 4321)." This law prescribes the consideration that must be given to the facility's impact on the human environment. See PHS Manual Chapter 3-2.

B. National Historic Preservation Act of 1966 (16 USC 470) and Implementation Procedures Contained in Federal Register Vo. 35, No. 23, February 3, 1970, Department of the Interior, National Park Service "National Register of Historic Places." This document requires evaluation of the effect the proposed facility may have on historic properties listed or which may be eligible for listing in the National Register of Historic Places, and requires that the Advisory Council on Historic Preservation be notified and given reasonable opportunity to comment with regard to the undertaking. See PHS Manual Chapter 3-3.

C. Executive Order 12372, "Intergovernmental Review of Federal Programs," Revised April 8, 1983. This Executive Order requires Federal agencies to undertake coordinated planning on an intergovernmental basis with local, regional, and State agencies for Federal actions involving construction and acquisition use and disposal of Federal real property.

D. Uniform Relocation Assistance and Land Acquisition Policies Act of 1970 (42 U.S.C. 4601 et seq.). This law sets forth the policy for fair and equitable treatment of persons displaced as a result of Federal and Federally assisted programs.

E. Housing and Urban Development Act of 1970 (42 U.S.C. 1410 et seq.). This law reflects national policies on urban growth.

F. National Capital Planning Commission (NCPC) - "Master Planning Regulations." All PHS sites in the Washington D.C. metropolitan area are subject to the NCPC master planning regulations.

PHS:
3-1-20 ORGANIZATIONAL RESPONSIBILITIES

A. PHS Agency. Develops program of requirements (POR) document (see PHS Chapter 2-4), conducts employee consultation meetings as required by Federal statute, and designates operating agency representatives as members of the master plan review and evaluation team. Develops long-range program plans used as a master plan guide. Integrates environmental considerations in the executive decision making process, incorporating environmental documents in the master plan document.

B. Division of Health Facilities Planning (DHFP)/ORM/OM/OASH. Provides technical support to the PHS operating agencies. Reviews and coordinates actions/recommendations within the PHS, HHS and with other Federal Departments and Agencies. Assists the agencies in selecting consultants for the development of master plans, see PHS Chapter 4-2. Provides guidance to agencies in the development of environmental documents.

PHS:
3-1-30 DEFINITIONS

A. Master Plan. The master plan is a set of physical development plans for a site containing more than one building. Master plans analyze and document overall multiple building designs, their interrelationships and site requirements, including but not limited to:

1. Land Use;

2. Site development including the general location and use of all existing buildings to remain and proposed buildings, the order of magnitude of building scale and orientation, and other site improvements.

3. Future expansion potential and the staging sequence of development over the twenty years, in five year increments;

4. Landscaping;

5. Grading and drainage patterns;

6. Pedestrian and vehicular circulation and parking;

7. Support services and utility requirements;

8. Off-site improvements to support development;

9. Environmental impacts.

B. PHS Applicable Sites. All sites owned and/or occupied by PHS employees that contain at least two independent buildings.

PHS:
3-1-40 CONTENTS OF MASTER PLANS

A. General - The Master Plan should reflect thorough planning, the establishment of a comprehensive and coordinated approach to physical development at the site, ensure regulated growth and land use, permit flexibility of use and provide for future expansion to meet long-range program goals without disrupting the efficiency of the plan or adversely impacting the environment.

B. Master Plan Requirements - Master plans should address each of the following areas and provide viable solutions for any deficiencies or conflicts which may be identified:

1. Program Requirements - Establish planning premises and the Master Plan goals and objectives. Define the specific concepts and standards for future development.

2. Region and Location - Describe the regional setting in terms of existing and future land use patterns, transportation systems, utility services, population, economy, and cultural assets. Also indicate current land use and zoning of adjacent areas.

3. Boundary and Topographic Data - Include existing and proposed surveys as appropriate.

4. Proposed Site Utilization - Show the areas allocated to each function and proposed general use.

5. Improvements - Show existing and proposed structures and other improvements such as roads, parking areas, heliports, refuse handling areas, etc.

6. Circulation - Indicate internal road network, access points, parking facilities, pedestrian and bicycle movement systems, public transportation, and service access flow. Evaluate traffic impacts of proposed development and propose transportation management strategies to minimize impacts. Material flow should also be delineated (e.g. deliveries and trash disposition) as appropriate.

7. Landscaping - Indicate general concepts for open space and green areas, and the location and extent of existing and proposed landscaping.

8. Fire, Life Safety, and Accessibility - Proposed building site location should consider fire protection and safety. Factors for consideration include but are not limited to combustibility, occupancy and attendant hazards, proximity of fire fighting resources, ease of access, climate and topography. Special consideration should be given to the safety and accessibility of facilities for occupants as well as visitors.

9. Utilities - Show all utilities including solid and hazardous waste handling and disposal plans. Indicate proposed utility upgrades and new utilities necessary to support proposed development. It is preferable that utilities be located underground where practicable. Also, where possible, utility distribution systems should be located to facilitate ease of access and future land use. Utility capacity in excess of five years should be evaluated on a life cycle cost basis.

10. Environmental Impacts - Analyze the potential impacts of all of the above on the environment, including natural resources, historic properties, waste management, etc.

11. Existing Resources - Determine the major natural and man-made elements which affect potential development, such as the physical features of the site, climate, environmental features, utilities, historic/archaeological features, natural amenities and visual quality, constraints and opportunities.

12. Development Plan - Illustrate the proposed development of the site over the next twenty years, including the disposition of existing buildings, the infrastructure, new construction and other improvements.

13. Energy Conservation - Establish energy conservation strategies and policies as they relate to siting and design of buildings, transportation practices and renewable energy resources.

14. Site Development Standards - Present specific site element recommendations such as building density, bulk guidelines, and set-backs.

15. Implementation - Illustrate phasing strategies for the implementation of the Master Plan over the next twenty years.

16. Interrelationship - Describe the relationship of the Master Plan to applicable local, regional, state, and federal development plans and policies.

PHS:
3-1-50 MASTER PLAN SUBMITTALS

Normally, master plans are developed under contract and involve three stages, as described below.

1. Preliminary: This is the initial stage and generally contains single line sketches and several alternatives. Also include preliminary environmental documentation. The approval of this stage by the Government review office entails selection of the preferred alternative and, therefore, requires sufficient documentation to support selection.

2. Intermediate: Generally submitted at the midpoint of planning development to the Government review office and includes work on all disciplines included in the final master plan.

3. Final Master Plan Reports: A final master plan report shall be prepared upon completion of all component plans. The report can be submitted under separate

cover or combined with other data (estimates, charts, etc.) under one cover. Also include the agency's environmental determination, consisting of a determination of categorical exclusion, or a Finding of No Significant Impact resulting from an Environmental Assessment, or the executive summary of an Environmental Impact Statement. Master plans normally require, at minimum, the preparation of an Environmental Assessment.

PHS:
3-1-60 MASTER PLAN APPROVAL

Because of the future programmatic and funding implications, master plans should be approved by the agency head. On a case-by-case basis, the Director, Office of Management, OASH/OM may also ask to review and approve such plans.

SUBJECT: ENVIRONMENTAL IMPACT PROCEDURES

PHS:
3-2-00 PURPOSE

The purpose of this chapter is to assist PHS agencies in the preparation of Environmental Documentation for the PHS facilities design and construction program. Environmental concerns that are addressed by the agency early in the planning and budgeting stages usually do not result in costly time or financial penalties later in the construction process.

PHS:
3-2-10 BACKGROUND

The National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321), as amended, establishes policy and requirements governing all Federal Departments and agencies with respect to protecting the environment. Also, HHS General Administration Manual (GAM), Part 30, "Environmental Protection," supplements specific requirements established by NEPA and by the associated implementing regulations promulgated by the Council on Environmental Quality (CEQ) (40 CFR 1500-1508). NEPA requires all Federal Departments and agencies to take into account all potential environmental consequences of their activities prior to initiation of these activities. Specifically, Section 102(2)(c) of NEPA requires all agencies of the Federal Government to include an environmental impact statement "in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment."

PHS:
3-2-20 APPLICABILITY

Unless a categorical exclusion applies, PHS agencies are responsible for reviewing all proposed construction actions for environmental effects. CEQ regulations require each Department to establish criteria for determining categorical exclusions. This work has been completed and each PHS agency has determined those actions which are classified as categorical exclusions. All construction is included in the environmental review process except for small maintenance projects. The agency categorical exclusion regulations should be followed for the environmental review of construction actions. Generally, the agencies should prepare an environmental assessment, Exhibit X3-2-A, for each proposed action not categorically excluded and, as a result, prepare a Finding of No Significant Impact (FONSI) or an Environmental Impact Statement (EIS).

PHS:
3-2-30 ENVIRONMENTAL LAWS AND EXECUTIVE ORDERS

Listed below are the major environmental laws that deal with potential environmental effects from the PHS facilities construction program. A complete list of applicable laws and executive orders is contained in HHS, GAM Chapter 30-00-30.

A. The National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321). (1) establishes a comprehensive policy for protection and enhancement of the environment by the Federal government, (2) creates the CEQ, and (3) directs Federal agencies to carry out the policies and procedures of the Act.

B. The Safe Drinking Water Act (42 U.S.C. 300f et seq.), authorizes Environmental Protection Agency (EPA) to determine if an action which will have an environmental effect on a sole or principal drinking water source would also constitute a significant hazard to a human population and, if so, to prohibit such an action.

C. The Clean Air Act (42 U.S.C. 1857 h-7), requires EPA to review and comment on a Federal agency action which would create a significant environmental impact.

The Clean Air Act Amendment (Latest Revision),

D. The Endangered Species Act (16 U.S.C. 1536), directs Federal agencies to conserve endangered and threatened species and their critical habitats.

E. The National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq.), directs heads of Federal agencies to preserve cultural heritage, particularly with respect to sites on/or eligible for listing on the National Register of Historic Places.

F. The Archeological and Historic Preservation Act (16 U.S.C. 469 a-1 et seq.), directs Federal agencies to preserve significant scientific, prehistorical, historical and archeological data.

G. The Coastal Zone Management Act (16 U.S.C. 1456 et seq.), directs Federal agencies to conduct activities consistent with an approved State coastal zone management program.

H. The Wild and Scenic Rivers Act (16 U.S.C. 1278), directs Federal agencies to consider and preserve the values of wild and scenic areas in the use and development of water and land resources.

I. Toxic Substance Control Act (15 U.S.C. 2601), requires agencies to develop plans to insure ultimate safe disposal of toxic substances.

J. Solid Waste Disposal Act (42 U.S.C. 4901, et seq.), sets responsibilities with the originator for proper handling and disposal of solid wastes.

K. Executive Order 11990, May 24, 1977, directs heads of Federal agencies to avoid (1) the long- and short-term adverse impacts associated with the destruction or modification of wetlands and (2) direct or indirect support of new construction in wetlands whenever there is a practical alternative.

L. Executive Order 11988, May 24, 1977, directs Federal agencies to take action to avoid the occupancy or modification of floodplains and to avoid direct or indirect support of development in floodplain areas whenever there is a practical alternative.

M. Executive Order 12088, October 13, 1978, directs Federal agencies to comply with local state and Federal pollution control standards for facilities operation. This means that PHS facilities and sites are subject to numerous State and other environmental laws.

PHS:
3-2-40 ENVIRONMENTAL DOCUMENTATION

A. General. In order to identify the required documentation, an environmental assessment, Exhibit X3-2-A, must be prepared. This assessment will eventually be used to prepare either a FONSI or EIS. In preparing the assessment, it is necessary to clearly identify the environmental effects and the changes that would occur if the action were taken.

B. Criteria. In determining whether a proposed construction action will or will not "significantly affect the quality of the human environment," the agency should evaluate the expected environmental consequences of a proposed action by means of the steps contained in GAM Section 30-60-20 which are outlined as follows:

Step One - Identify the environmental effects that will occur as a result of the construction program.

Step Two - In considering the effects, focus on the human environments interfacing with the construction program.

Step Three - Identify the kinds of changes these effects will have on the human environment.

Step Four - Identify the extent of the changes and whether they are significant.

Generally, in developing the environmental assessment, the above steps may be combined for clarity and ease of documentation, especially where there is no indication of significant changes associated with the action.

C. Finding of No Significant Impact - (FONSI) - For the purposes of NEPA, a FONSI documents an agency judgment that a proposed construction action not categorically excluded from NEPA requirements will not significantly affect the quality of the human environment. A FONSI should meet the criteria described in GAM Section 30-30-30B2 and, in addition:

1. Include a list of agencies and persons to whom distributed;

2. Briefly present why the proposed action will not significantly affect the human environment, including the environmental assessment or a summary thereof; and

3. Be made available to the public and other interested parties including, when appropriate, publication in the Federal Register of a notice announcing its availability, consistent with 40 CFR 1506.6(b) and 1501.4 (3) (2).

Construction actions on occasion may require different approaches for developing environmental information. It is not unusual to have a construction action underway, e.g., in the early budgeting and planning stages, and not have site selection finalized. Therefore, on construction projects the environmental assessment may be prepared at different stages by sources such as a Planning Consultant, Architect/Engineer or nongovernment agency.

D. Environmental Impact Statement - (EIS)

1. General. The agency head or his/her designee responsible for carrying out a specific action is responsible for preparation of the EIS associated with the construction action.

2. Public Interface Requirements. The PHS agency should be aware of the extensive Public Notice and other requirements associated with EIS preparation. See GAM Section 30-60-60 for detailed procedures and requirements.

3. EIS Format/Contents. An EIS consists of three sections: a forward with summary, main text, and appendices. If a proposed action will also affect a cultural or natural asset (as defined in the related acts), the statement shall incorporate the material required by the applicable related acts. Specific details and related information for the prescribed format and contents of an EIS is contained in GAM Section 30-60-50, and applicable Agency Environmental Regulations.

E. Record of Decision. Subsequent to preparing an EIS, and prior to undertaking project construction, the PHS agency head shall prepare a public record of decision including a synopsis of the following:

1. The decision;

2. Alternatives considered;

3. A discussion of salient factors which were involved in the decision;

4. A discussion of measures or safeguards to be adopted to minimize potential environmental harm; and

5. A public record of decision pursuant to 40 CFR 1502.2.

ENVIRONMENTAL ASSESSMENT CHECKLIST

A. INTRODUCTION. This document should be used in the initial compilation of environmental data and as a checklist to determine areas where additional information is needed. Pertinent technical data (plans, site maps, studies and reports) may be attached or included with the Environmental Assessment.

B. BACKGROUND DATA[1].

1. Agency
2. Facility Size and Cost Estimate
3. Purpose and Occupancy
4. Site Size and Location

C. ENVIRONMENT. Describe the environments (terrestrial, subterranean, aquatic, aerial) affected by the proposed action. Define boundaries (natural or imposed), zoning or other restrictions.

D. POPULATIONS. Describe the populations (human, plant, animal) affected, and any changes to the populations which can be expected to occur. Consider the impact to both permanent and temporary or transient populations.

E. SERVICES. List the types of services which may/will be required, the availability of such services, and the ability of current systems to provide them.

F. POLLUTION. Address any pollution (air, noise, water, etc.) sources which may be introduced or aggravated. Discuss the traffic (motor vehicle or other) that will be introduced into the area on a short-term and long-term basis. Where appropriate, explain how the pollution impact will be mitigated through planned measures or safeguards. Also, particular attention should be focused on equipment or systems of the proposed facility which may require a permit or license to operate (e.g., incinerators).

G. HISTORIC/ARCHEOLOGICAL DATA PRESERVATION. Considering the site characteristics and facility location, will the proposed construction:

1. Affect a site listed on or eligible for the National Register of Historic Places, the National Landmarks Registry, or any State or local list;

2. Affect any known or potential archeological sites;

3. Alter sites which are known to contain or are suspected of containing valued archeological, prehistoric, or scientific data; and
4. Bring about the destruction of any structure which is more than 50 years old?

If there are effects on any of the above items, refer to Chapter 3-3 of the PHS Facilities Manual for additional guidance.

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[1] Provide Facilities Program of Requirements (or Program Justification Document), PHS Chapter 2-4, if available in lieu of this paragraph.

H. NATURAL ASSETS REVIEW. Will the proposed construction be located within or affect the following regions or areas:

1. Coastal zones (as identified by state Coastal Zone Management (CZM) plans);

2. Floodplains (Federal development should avoid 100 year floodplains);

3. Wild and scenic rivers (as identified by Department of Interior);

4. Wetlands;

5. Sole source aquifers (as identified by the Environmental Protection Agency); and

6. Marine sanctuaries (as identified by the Department of Commerce).

If the construction has the potential to affect any of the above, elaborate on what the effects may be, and what safeguards or measures must be taken to prevent or mitigate the impacts.

I. ENDANGERED SPECIES. Discuss the effects of the construction action if the site in known or suspected to contain any species on the Endangered Species List (threatened).

J. BIBLIOGRAPHY. Provide a bibliography for the information sources contained in the assessment. Include names, titles, agencies/firms, addresses, and telephone numbers for each source. Also, include the name, title, and address of the preparer.

SUBJECT: HISTORIC AND ARCHEOLOGICAL DATA PRESERVATION

PHS:
3-3-00 PURPOSE

The purpose of this chapter is to provide general guidance for the application of Federal procedures related to historic and archeological data preservation associated with the various PHS construction programs. Timing of clearances as they relate to the construction process are discussed. The Federal actions considered in this chapter include acquisition of sites and buildings, and the planning, design and construction of PHS facilities.

PHS:
3-3-10 LEGISLATIVE BACKGROUND

Section 106 of the National Historic Preservation Act states that the Advisory Council for Historic Preservation (ACHP) will have an opportunity to comment on any proposed Federal undertaking which will affect a historic property which is listed on or is eligible for listing in the National Register of Historic Places. The Archeological and Historic Data Preservation Act states that the Secretary of the Interior shall have an opportunity to recover significant historical or scientific data before it is irrevocably lost through a Federal undertaking.

PHS:
3-3-20 APPLICABILITY

A. Historic Preservation. Each proposed PHS construction action must be reviewed in order to determine whether it will affect a property which is on or may be eligible for the National Register of Historic Places. This determination must be made by the PHS Agency Head or designee. It is recommended that such determinations be made early in the planning and budgeting process.

B. Archeological Data Preservation. Since heavy construction equipment used for site escavation, etc., may destroy the soil stratigraphy, which archeologists need in order to date and understand the context of artifacts, as well as affecting the artifacts themselves, an archeological survey of the site should be undertaken early in the planning process. In any event, it is the responsibility of the PHS agency involved to include proper construction specifications for identification and contextual analysis recovery of artifacts. Potential for time delays and extra costs associated with artifact recovery should also be recognized in the process.

PHS:
3-3-30 HISTORIC PROPERTIES

Each Federal agency has a responsibility for identifying potential properties for the National Register of Historic Places. It must nominate to the National Register of Historic Places, eligible properties which it owns or otherwise controls.

A. Eligible Properties.

1. For purposes of PHS construction activities, properties are defined as "districts," "sites," "buildings," and "structures." (See National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq.))

2. Properties may be eligible because of their association with significant historical events, or the lives of persons significant in our past; because of distinctive artistic or technological characteristics; or because they are likely to yield important historical information.

B. Eligibility Determinations. PHS agencies, in consultation with the State Historic Preservation Officer (SHPO), shall apply the National Register Criteria for Eligibility to each property to determine which may be affected by a proposed action. If either party concludes that the property may be eligible, the agency shall submit a letter to the Department of the Interior requesting the Keeper of the National Register to make a decision concerning eligibility. The action cannot be taken until the Keeper responds or until 45 days have passed, whichever occurs first. Consultation with the Advisory Council can be conducted simultaneously. If the Keeper finds the property ineligible, the cultural identification process is complete.

PHS:
3-3-40 HISTORIC REVIEWS

A historic review is an examination and analysis of changes in property which may occur as a result of the proposed PHS construction action. (See 36 CFR 800.3(a).) A historic property is affected whenever one or more of the following changes occur:

A. altering physical characteristics such as regrading of site and/or demolition of buildings or features;

B. altering the physical setting such as extensive changes to adjacent sites or buildings;

C. moving the facility;

D. altering the use of the facility;

E. altering level of activity occurring at the facility.

The findings of the review will be documented in a written statement described in the following paragraph.

PHS:
3-3-50 REQUIRED STATEMENTS

A. Limited Statement. If a proposed action will affect a property which is on or determined to be eligible for the National Register by the Secretary of the Interior, PHS Agency Heads shall develop a draft limited statement and submit it to the appropriate SHPO. Following the receipt of comments from the SHPO (or after a period of 30 calendar days) the statement is then sent to the Advisory Council for comment. A cover letter shall state whether the program considers the effects to be adverse within the context of the historic value of the property (36 CRF 800.3(b)). If the Advisory Council fails to respond within 30 days, the review is complete. If the Council concurs that the proposed action will not

adversely affect the property, the review is complete. The Chairman of the Council may choose to develop a Memorandum of Agreement for actions which will affect a property adversely in order to mitigate the effect. Such memoranda will specify the various mitigation measures (e.g., record data prior to destruction) that the various involved parties agree to follow.

B. Full Statement. The Advisory Council may request the agency head to prepare a full statement (known as a draft case report) prior to discussing a Memorandum of Agreement. HHS or the Council may develop a Memorandum of Agreement after discussing the statement. Among the alternatives in a full statement which must be included are alternative uses of a historic property other than for the underlying purpose of the proposed action.

PHS:
3-3-60 ARCHEOLOGICAL DATA

A. Construction Contract Specifications. PHS construction contracts involving excavation should include appropriate specifications to avoid excess claims in the event notification and recovery procedures associated with archeological data are required.

B. Notification. If continuing with the planned construction will bring about the irretrievable loss of significant scientific, archeological, historic or prehistoric data, the PHS agency shall inform the Secretary of the Interior. If the Secretary does not respond within 60 days, the review is complete. If the Secretary offers to pay for the recovery of the data, he/she shall have at least six months to effect recovery.

C. Recovery. If a proposed action involves a Federal construction project or a Federally-licensed project, and the action will result in the irretrievable loss of scientific, archeological, or historic data, up to one percent of the project construction costs may be used to recover the data.

PHS: 3-4-00 PURPOSE

The purpose of this chapter is to provide guidance on evaluating and selecting sites for planned new facilities which will not be part of an existing facility complex.

PHS: 3-4-10 APPLICABILITY

This chapter is applicable to all proposed new PHS construction projects, including proposed lease-purchase facilities. IHS has developed facilities site selection and evaluation procedures that are tailored to the special problems and needs of their construction program and which are used in place of this chapter.

PHS: 3-4-20 ORGANIZATIONAL RESPONSIBILITIES

In general, new construction projects not involving an existing facility complex should be preceded by a careful site evaluation/selection and environmental review process. Basic responsibilities in performing these studies and related tasks are as follows:

A. PHS Agencies. Develop Program of Requirements (POR) document, conduct employee consultation meetings when required by Federal statute, designate agency representatives of the site evaluation team, perform initial environmental analyses, and provide general directions to the site evaluation/selection process.

B. Division of Health Facilities Planning/ORM/OM/OASH. Provides technical support to the PHS operating agencies. Provides staff support to the Assistant Secretary for Health on site questions and decisions. Reviews and coordinates actions/recommendations within the PHS, and with other Federal agencies.

C. Office of Management/OASH/PHS. On a case-by-case basis, the Director, Office of Management may ask to review/approve the proposed construction site and/or have members of the Division of Health Facilities Planning/ORM/OM participate in the site evaluation process.

PHS: 3-4-30 LAWS AND REGULATIONS

The following laws and regulations are applicable to the site evaluation/selection process.

A. Executive Order 12072 - "Federal Space Management of Federal Space," Dated August 16, 1978. Proposed sites and facilities selected and developed for Federal agencies should consider the effective support of program missions as well as economies associated with efficient facilities management and administration. In the case of proposed development located in urban areas, the Federal agency is also required to coordinate the proposed development with any local, state, and regional plans directed at providing economic and social benefits within the urban metropolitan region.

B. Executive Order 12372, "Intergovernmental Review of Federal Programs," Revised April 8, 1983. This Executive Order requires Federal agencies to undertake coordinated planning on an intergovernmental basis with local, regional, and State agencies for Federal actions involving construction and acquisition use and disposal of Federal real property.

C. National Environmental Policy Act of 1969. (42 U.S.C. 4321). The document sets forth the policy and mandatory considerations, including reports, on the planned facility's impact on the human environment. See PHS Chapter 3-2, Environmental Impact Procedures.

D. National Historic Preservation Act of 1966 (16 USC 470) and Implementation Procedures Contained in Federal Register Vol. 35, No. 23, February 3, 1970, Department of the Interior, National Park Service "National Register of Historic Places." - This document requires evaluation of the effect the proposed facility may have on properties which may be eligible for listing in the National Register of Historic Places, and requires that the Advisory Council on Historic Preservation be notified and given reasonable opportunity to comment with regard to the undertaking. See PHS Chapter 3-3, Archeological and Historic Preservation.

F. Uniform Relocation Assistance and Land Acquisition Policies Act of 1970. (42 U.S.C. 4601 et seq.) This law sets forth the policy for fair and equitable treatment of persons displaced as a result of Federal and Federally assisted programs.

PHS:
3-4-40 ADDITIONAL SITE EVALUATION CONSIDERATIONS

In addition to ensuring that legal requirements are met, a careful site selection process is useful in ensuring that the recommended site will physically accommodate the planned facility, parking, and other necessary site features. To the extent practicable, it should also be directed at ensuring that the general location possesses housing, shopping facilities, and other amenities needed to attract and retain staff. Another basic purpose involves identifying any special site costs which need to be considered in developing a project cost estimate.

PHS:
3-4-50 SITE EVALUATION REPORTS

A. General - Normally, the site evaluation process will be conducted by a study team which includes architectural/engineering expertise plus program or generalist staff, and environmental staff. The evaluation process will result in a detailed report with recommendations. The site study should be conducted prior to completion of the POR document for the planned facility, and a description of the site should be included in the POR (see PHS Chapter 2-4).

Basic pieces of information germane to site reports for all PHS agencies and programs are discussed below. A specific site evaluation/selection process was developed in 1982 for new health care facilities of the Indian Health Service. This process may contain useful

ideas for other PHS components faced with site questions and decisions. Updated copies of the process are available from the Indian Health Service.

B. Physical Site Data. Potential sites should be described and documented with the following physical data. This data is used for preliminary suitability screening and subsequent analyses. The data may be gathered in numerous ways (direct investigation, consultants, etc.) and should be verified by the site selection team.

1. The general topographic survey information, roadways, structures, utility lines and property boundaries should be identified and certified by a registered land surveyor. Other physical features such as forested areas, flood plains, escarpments, historic or archeological sites, etc., should be indicated as appropriate.
2. Subsurface soil conditions should be determined by a soil testing firm, using a number of borings appropriate to the site size, soil profile, and proposed foundation requirements. More extensive geologic investigations should be conducted for sites in geographical areas of known natural hazards; i.e., seismic risk areas. Such reports should include recommendations as to the geological appropriateness of the site.

3. The site should be considered for suitability and expense of excavations, site preparation, building foundations, and utility lines and connections.

4. An investigation should be conducted to determine the availability of utilities necessary to support the proposed project. These utilities include:

   a. Water - Size and location of existing lines, existing pressure, and source of supply.

   b. Sewer - Type of existing system; i.e., combined (storm and sanitary) or separate; size and location of existing lines; type of sewage treatment (primary or secondary).

   c. Fuel - Type of fuel available; size, location, and pressure of existing lines; and availability of low sulfur fuel.

   d. Electricity - Availability and reliability of electrical power.

   e. Telephone Service - Availability and reliability.

   f. Solid Waste Disposal - Availability and proximity of disposal sites, including hazardous wastes, if applicable.

5. Environmental baseline data should be obtained and evaluated, including air quality, water quality, transportation systems, historic properties, etc. In the acquisition of real property (whether by purchase, lease, permit, right-of-way, etc.), a thorough investigation should be conducted to determine whether any previous use, storage, or disposal of hazardous materials may have occurred on the property. The potential of the property's exposure to contamination from adjacent or nearby properties should be evaluated.

C. Comparative Site Evaluations - Based on past experience, the following features would normally be appropriate for portions of the site study report addressing merits of the respective potential sites.

1. Executive Summary - An executive summary of one to three pages summarizing the sites evaluated, the overall selection process, a description of the recommended site, the environmental determination, and the reasons for this recommendation.

2. Sites Investigated - A base map identifying the location of all sites investigated, and specific designation of the three sites rated highest, in order of preference. Include a written statement identifying all sites investigated by location, name of owner, acreage or square footage, and estimated acquisition price. Also note any zoning, building code, or other factors significantly affecting one or more of the potential sites. Summarize potential environmental impacts and mitigation associated with each site.

3. Recommended Site - A written statement for the first-choice site, describing specific site utilization and engineering requirements set forth in Chapter 4-5. State whether the recommended site is the environmentally preferable site. It may be necessary to develop this data for additional sites in the event that the recommended site is not ultimately selected.

4. Program Compatibility - A written statement and accompanying documentation justifying the compatibility of the top-rated potential sites with specific programmatic requirements contained in the agency's draft POR document, including conformance with the intent, purposes, and procedures of the National Environmental Policy Act.

5. Housing - A detailed analysis and documentation of the availability, on a nondiscriminatory basis, of appropriately-priced housing for staff of the new facility.

6. Community Services - A detailed analysis and documentation of the availability of other community services, (e.g., transportation, shopping facilities, educational facilities, etc.).

7. Relocation - Where applicable, a detailed analysis and plan for relocating families and businesses displaced as a result of the construction project. The plan should identify suitable replacement housing, allowable costs associated with relocation, and provide for relocation of families and businesses prior to the acquisition of any sites.

8. Compliance with Federal Statutes - Provide written statements and/or correspondence related to the following:

   a. Intergovernmental Review, E.O. 12372
   b. National Environmental Policy Act
   c. National Historic Preservation Act
   d. Statement addressing availability of surplus Government-owned property in the area.

If other reports are necessary to comply with the Federal statutes, they should be referenced in or appended to the Site Evaluation Report.

9. Employee Meetings - As relevant, a written summary of employee consultation meetings should be included in the Site Evaluation Report.

10. Summary Exhibits:

a. Some or all of the following exhibits may be appropriate to support/depict statements in items 1 through 9 above.

(1) Base maps indicating existing and proposed public transportation routes and facilities and approximate travel time from employee residential areas to employment site, with recommended sites identified.

(2) Appropriate zoning maps with recommended sites identified.

(3) In appropriate detail, data and maps from the latest census of housing and population indicating housing distribution and value, population trends, and other socio-economic indicators, with recommended sites identified.

(4) General land use maps of the city and region indicating existing land use and proposed future use, with recommended sites identified.

(5) Environmental summary map, showing the locations of environmental hazards and/or historic properties which may impact and/or be impacted by the proposed facility.

(6) Any other base maps that contributed significantly to the site evaluation team's recommendations or assist in understanding the recommendations.

(7) A summary matrix of all site evaluation requirements and sites investigated indicating scores for the sites, and the three sites with top totals identified.

SUBJECT: FEASIBILITY AND OTHER FACILITIES STUDIES

PHS:
3-5-00 PURPOSE AND SCOPE

A. The purpose of this chapter is twofold:

1. To provide general information on requirements for facility studies to agency staff responsible for preparing or managing such studies.

2. To provide specific requirements for such studies. In particular, it should be noted that the Director, Office of Management (OM), must approve the scope of work for feasibility studies which have potential substantial budget implications (section 3-5-20B). Such approval requires the submission of an adequate environmental determination.

B. This chapter includes guidance and requirements on all technical facility studies normally performed within PHS. Generally, the studies described in this chapter are contracted with private architectural/engineering (A/E) or other technical consulting firms. Alternatively, they may be performed by the PHS agency or other Federal personnel. When a PHS component does not conduct a study in-house, and turns to another Federal component for the service, an interagency agreement is executed. The PHS component remains responsible for the adequacy of all environmental documents.

PHS
3-5-10 GENERAL GUIDANCE FOR FACILITY STUDIES

The following general format is provided for guidance purposes where a format for preparing a work plan is not specified. At a minimum, facility studies address program, budget, and environmental requirements. This applies to all types of feasibility and special studies, and is oriented to studies conducted by consultants.

A. Background. The background and reasons for the study should be developed in sufficient detail to justify its need.

B. Scope of Work. The work to be performed by the consultant should be described in detail. Specify the composition of the team in terms of disciplines, specialists, and support staff. The type of report and presentation form should also be discussed.

C. Format. The format of the study report (e.g., drawings, text, maps, graphs, charts, photos, etc.) and other deliverables should be described in detail.

D. Submittals. Contract studies require the following stages as a minimum.

1. Preliminary. Composed of free hand or line sketches and draft or outline text. Alternatives should be reviewed and preferred scheme approved prior to proceeding with other stages. A draft Environmental Assessment should be prepared, or a claim for categorical exclusion should be substantiated. If historic properties may be affected, the relevant State Historic Preservation Officer's determination of effect should be included.

2. Intermediate Report. At this stage the study is approximately 50 percent complete and the text and other material contained in the report are presented in the final format. If the project is not categorically excluded, a final Environmental Assessment should be included, together with either a recommended Finding of No Significant Impact or a draft Notice of Intent to prepare an Environmental Impact Statement. If historic properties may be adversely affected, a draft Historic Preservation Plan should be included.

3. Completed Stage. Usually submitted at the 95 percent plus development stage and contains all of the material (text, drawings, photo, charts) in the format to be presented in the final report. Either a Finding of No Significant Impact or a Draft Environmental Impact Statement should be included. An approved Historic Preservation Plan should be included, if applicable.

4. Final Report. The final report should be prepared and signed by a registered professional in the discipline or specialty of the study. Final environmental and historic preservation documents should be signed by the person having final approval authority for the project (i.e., the person who can irrevocably commit the government's resources).

PHS:
3-5-20 FEASIBILITY STUDIES

The feasibility study is the most fundamental of facilities studies, and addresses program, engineering, architectural, environmental, and budget issues. It is most frequently undertaken as part of a decision process on modernizing and/or expanding an existing facility versus constructing a replacement facility, or on the appropriate size and scope of a planned new facility. Such feasibility studies are frequently made in conjunction with preparation of a Program of Requirements (POR) document (see Volume I, Chapter 2-4, "Preparation and Approval of Program of Requirements Documents").

A. The workscope and parameters for a feasibility study must be stated in objective terms so that the A/E or consultant firm can produce an unbiased report.

B. In cases where results of the feasibility study have substantial budget implications (e.g., $1 million or more) and may be used as the basis for a budget request, the scope of work must be submitted to and approved by the Director, OM before consultant services are solicited.

C. If the issues are basically technical, requiring A/E disciplines, the A/E selection process described in Volume I, Chapter 4-2, "Architect/Engineer Selection Process and Approvals," must be followed after the workscope is approved.

D. If the project belongs to a category of actions which is excluded from the requirement to prepare an Environmental Impact Statement (EIS), then the exclusion must be described. Otherwise, either a Finding of No Significant Impact must be made as the result of an Environmental Assessment, or an EIS must be prepared.

PHS:
3-5-30 PRE-DESIGN STUDIES

Pre-design studies are undertaken when insufficient information is available to proceed with the design.

A. Master Plans. This planning is undertaken where two or more primary buildings will be constructed on one site. (See Volume I, Chapter 3-1, "Facility Master Planning," for details.)

B. Environmental Impact Statements. In general, PHS construction activities require an environmental review, but not the more detailed Environmental Impact Statement (EIS). When the size or controversial nature of a project indicates the possible need for an EIS, this decision must be made and the potential environmental effects established prior to initiation of design. (See Volume I, Chapter 3-2, "Environmental Impact Procedures," for EIS preparation and procedures.)

C. Historic and Archaeological Studies. Sites and structures proposed for PHS facilities may require studies based on historical or archaeological values. (See Volume I, Chapter 3-3, "Historic and Archeological Data Preservation," for details.)

D. Program of Requirements (POR). The POR is the basic document that describes the proposed facility. It includes estimates of design and construction costs, space requirements, environmental mitigation, and other program information. Although normally developed by the program agency, resource availability and time constraints may dictate that the POR be developed by a private A/E. Detailed requirements for the POR are found in Volume I, Chapter 2-4.

E. Utility Studies. Adequate utility support is essential. Such needs are particularly complex for hospitals and research facilities. Such studies require detailed information on utility availability, capacity, reliability, projected life, etc. Studies may be devised to cover all relevant utilities or specified ones; e.g., steam or water supply only. Studies should address the special needs related to the management of medical and/or hazardous waste.

F. Physical Plant Audits. Transfer of buildings and campuses to other agencies and/or jurisdictions may require a complete inventory of the physical plant with all deficiencies identified with a general plan of correction and estimated construction cost. This will allow proper resource identification during the transfer process. All transfers of real property must disclose hazardous materials activities.

PHS:
3-5-40 SITE STUDIES

Many of the studies listed below may be part of the site selection studies (Volume I, Chapter 3-4) or the master plan (Volume I,
Chapter 3-1). The complexity or individual nature of the site may require a special study or studies.

A. Soil Investigation and Structural Report. Certain sites may contain unusual soil materials or formations that require special consideration (e.g. expandable clays, water table problems or unstable organic fill). The report should be prepared by a soils testing laboratory and reviewed by a licensed structural or geo-technical engineer registered in the state or territory of the site.

B. Seismic/Geologic Study. These studies are required for all sites in high risk seismic areas (see Volume I, Chapter 4-9, "Civil/Structural Requirements"). Other sites may logically require special geologic studies; e.g. where rock or ledge is visible within or near the area to be developed.

C. Transportation Studies. Special studies may be necessary to integrate the PHS facility into a community transportation plan. Also, on-site flow of vehicles and materials may be of a complex nature requiring in-depth analysis of alternatives.

D. Housing Studies. In certain cases, relocation of a facility within a metropolitan area may require housing availability studies (see Volume I, Chapter 3-4, "Site Selection").

E. Environmental Studies. These studies are needed to ensure compliance with relevant environmental requirements.

F. Other Site Studies

1. Landscape/Planting
2. Land Use
3. Waste Storage and Disposal
4. Pedestrian Circulation
5. Parking

PHS:
3-5-50 BUILDING SYSTEMS STUDIES

Complexity in building systems often requires that individual systems be isolated and analyzed in order to develop the most effective and efficient application.

A. Food Service. Food service functions of inpatient care complexes frequently warrant basic review when the cooking and serving equipment needs replacement. A study may identify more efficient methods of receiving, storing, preparing, and serving food.

B. Laundry. Hospital requirements for laundry are demanding, complex and expensive. Studies are performed to develop more efficient laundry facilities and to determine cost effectiveness of private contracting for hospital linens, etc.

C. Energy Conservation. The high energy usage in hospitals and laboratories has prompted these studies. Mechanical and electrical systems are the prime focus. For instance, lighting may be reduced at certain hours and electric motors may be interlocked to reduce demand.

D. Pollution Prevention. This includes both physical systems and management programs to prevent or minimize pollution, including recycling programs.

E. Other Building Systems. Many other building systems may benefit from special studies. Some common subjects are as follows:

1. HVAC system and Controls
2. Handicapped Accessibility
3. Vertical Transportation Elevators and Escalators
4. Security
5. Maintenance of Building Equipment
6. Fire Safety System

PHS:
3-5-60 OTHER STUDIES

PHS health care and/or research facilities may require specific studies as listed but not limited to those below.

A. Research Animal Holding Studies. Research animals require sophisticated environments that differ significantly from typical human environments. Also, use of hazardous chemicals in animal research requires careful monitoring, from delivery to final disposal of wastes and carcasses. Facilities for animal studies must consider the animal species, population, research protocol, material handling, cage washing and disposal methods. A special study may be appropriate to answer facility questions in one or several of these animal research areas (e.g., Does the facility meet American Association for Accreditation of Laboratory Animal Care (AAALAC) standards?)

B. Hospital Department Studies. As a result of disease incidence or population changes, certain departments may require space adjustments after a hospital has been in operation for several years. Efficient use of space may be improved by departmental studies. Such studies should address environmental issues, such as the management of hazardous or medical wastes.

C. Technology Improvements. New equipment and technology may permit facilities to be operated more efficiently, or in a more environmentally benign manner (e.g., an improved medical waste incinerator). Specific studies are frequently necessary to plan such advancements.

SUBJECT: POST-OCCUPANCY EVALUATION SURVEY

PHS:
3-6-00 PURPOSE AND SCOPE

A. Purpose - The process of surveying and analyzing recently completed and occupied facilities is entitled "Post-Occupancy Evaluation" (POE). The purposes of making such an evaluation include:

1. To avoid repetitious design or construction deficiencies.

2. To document noteworthy construction features or practices for inclusion in future projects.

3. To evaluate the entire planning, design, construction, and operation process.

4. To identify cost increases during design and construction by reviewing contract documents, change orders, and as-built drawings.

5. To evaluate staffing patterns and their adequacy.

6. To ensure that functional requirements of the program are met at reasonable costs. The facility director and survey team will jointly evaluate this item.

7. To evaluate the needs of the facility occupants (medical and administrative staffs, patients, and visitors) and the facility performance in response to these needs. The facility director and survey team will jointly evaluate this item.

8. To stay current with changes in technology, medical equipment, model codes, and federal/state/local requirements.

9. To provide evaluation and feedback to all agency offices responsible for the planning, designing, constructing and operating facilities.

B. Scope. POE's are specifically directed at research and health care facilities, but can include all PHS construction. If a Program of Requirements is required for a project, then the facility constructed will require a POE.

PHS:0
3-6-10 BACKGROUND

Initially POE surveys were undertaken by the Division of Health Facilities Planning (this division replaced the Office of Facilities Engineering, OASMB), Office of Engineering Services (OES), Indian Health Service (IHS) Headquarters, and the IHS Area Offices. The POE process was

primarily set up for the IHS health care facilities construction program. Current responsibilities for "a variety of types of PHS Facility Surveys" are vested in the Division of Health Facilities Planning (DHFP), Office of Resource Management (ORM), Office of Management (OM), PHS. POE's entail a detailed, and structured assessment of a facility in use, that is, after its occupancy, and occupants have had sufficient time to establish operations and evaluate conditions.

PHS:
3-6-20 PROJECT SURVEYS

A. General - DHFP will plan and schedule the POE's for major research and health care facilities. Agencies are encouraged to undertake POE's of other facilities and request participation assistance from DHFP, if needed. Authorship and distribution of POE's should be developed by the survey team. Schedules to perform agency initiated POE's and copies of completed survey reports should be furnished to DHFP.

Agencies are encouraged to seek participation by other PHS agencies in the POE process.

B. A facility should be in operation for at least a year before a POE is conducted. The POE considers the functions of the facility which are of importance to the PHS, the facility occupants, and the survey team.

C. The survey team consists of professional staff from DHFP, the Agency Headquarters, Agency Facility Offices, and from each design discipline including architectural, civil/structural, mechanical, and electrical. There should also be support from the specific agency that administered the design construction process. The design Architect/Engineer (A/E), Medical Program staff, and Agency customer representative for the project may also be invited to participate in the site visit to provide background information on the facility design.

D. Prior to a site visit, the survey team should review the project Program of Requirements (POR) and the construction documents. This will enable the survey team to determine whether or not program requirements have been met. It will also save time at the site since the survey team will be familiar with the facility before arriving.

E. The survey team shall visit the facility and inspect all exterior and interior elements of the facility and site. It shall check project files for change orders, training and operating manuals, as-built drawings, and other documents that will help evaluate the construction process. The survey team shall note conformance of the facility to the construction documents.

During the visit, survey team members shall interview the facility managers and the facility occupants to determine their reactions to the building. Persons interviewed should include the facility director, administrative officer, department heads, facility engineering and maintenance staff.

In conducting the survey, the survey team shall not be limited to design or construction deficiencies. It shall note facility features; efficient operation, maintenance, and design elements pleasing to the occupants and to visitors.

F. Photographs should be taken during the site visit. These will document the general appearance of the facility and site as well as specific design and construction features, and deficiencies.

PHS:
3-6-30 SURVEY GUIDELINES

Before visiting the site, each survey team should formulate a plan and/or a checklist, for their technical discipline, to be used as a guideline during the survey. This guideline will permit the efficient use of time at the facility and ensure that major areas are not overlooked. The following guidelines are recommended:

A. Design Review - Note design excesses or deficiencies, omissions or poor design features. Address potential design features contributing to the facility condition.

B. Supervision - Determine whether the A/E, the contractor, and the involved agency complied with the requirements of the plans and specifications.

C. Design Features

1. Each technical discipline involved in the review process should evaluate the major systems (for example, Electrical Engineer for emergency power) and its effective performance for the facility.

2. Discuss the use of alternate materials and/or systems.

3. Comment on the cost effectiveness of the installed systems.

D. Systems Reliability

1. Health care and research facilities require a reliable power source and the maintenance of interior environmental conditions. Therefore, essential systems and equipment must be provided with alternate and/or standby power and components. The electrical and the mechanical disciplines should evaluate the reliability of the electric power, heating, air conditioning and other major systems.

2. Review other systems, their reliability and backup potential performance .

E. Staff and Maintenance Personnel

1. Interview the facility staff regarding design and construction features.

2. Interview maintenance staff regarding design and construction features, as-built drawings, training and maintenance manuals, and "contractor-furnished" training manual on major equipment items.

F. Equipment and Utility Space - Determine the adequacy of equipment space for easy access and housekeeping purposes. Equipment not readily accessible will not be properly maintained. Verify that corridor space, door openings, and knockout panels are adequate for large equipment replacement.

G. Codes/Standards - Note National Fire Protection Association, Life Safety Code and other national code violations.

PHS:
3-6-40 DOCUMENTATION AND APPLICATION

A. Place the data gathered during the project survey in a "Post-Occupancy Evaluation Report", with a separate section for each technical discipline. Describe the facility briefly and document deficiencies or notably good design and construction features, using photographs for descriptive purposes. Lists of suggestions for improved solutions should also be included to correct noted deficiencies.

   The development of a matrix analysis is encouraged to show differences between the POR, design documents, actual construction, and current agency design requirements.

B. Furnish copies of the report to the PHS agency involved, and the facility director. This survey report is for information and use in planning and constructing future health care and research facilities. Make copies of the report available to all PHS agencies, and any office or committee engaged in updating design criteria for use in HHS health care and research facilities construction programs.

SUBJECT: NET AND GROSS AREA COMPUTATIONS

PHS:

PHS:
4-1-00 PURPOSE

The purpose of this chapter is to provide uniform and realistic methods for computing net and gross areas of PHS facilities. Program Justification Documents (PJD) and/or Program of Requirements (POR) documents for new facilities contain maximum net and gross area limits. This chapter shall be used in determining if proposed design concepts conform to those limits.

PHS:
4-1-10 BACKGROUND AND DEFINITIONS

A. This chapter reflects the Department of Health and Human Services (DHHS) technical guideline developed for an agency health care facilities program. The instructions on computing gross areas are also closely consistent with those used by the American Institute of Architects (AIA). Primary differences from the AIA definitions involve "crawl" space and other areas less than 1 980 mm in height. The AIA counts space 1 830 mm high and higher on a 100 percent basis and space under 1 830 mm on a 50 percent basis. In contrast, the PHS definitions below count space 1 980 mm high and higher on a 100 percent basis, space from 1 220 mm to 1 980 mm in height on a 50 percent basis, and wholly excludes space under 1 220 mm in height or interstitial space (an exclusion due to floor type not height) from the gross area computations.

This chapter also reflects considerations for climate-related building enclosures as defined in the PHS Circular 4-1.1.

B. Because such space as stairwells, elevator shafts and lobbies, mechanical equipment rooms, and permanent corridors are counted as gross but not net square meters, the gross areas of new PHS laboratory and health care facilities commonly range from one and one-half to two times as high as their net areas. The disparity between gross and net space is much smaller for staff quarters and, with certain exceptions for apartment buildings, space limits for quarters units are normally expressed in gross square meter.

C. This chapter only addresses net and gross space, the standard categories used in PJD/POR documents and related budget justifications. However, it should be noted that additional potential categories also may be used in facilities documents; some PHS agencies include "net assignable" or "departmental gross" space categories in PJD/POR documents, and space utilization information is developed for the General Services Administration on an "occupiable" space basis.

PHS:

4-1-20 GROSS AREA

A. Gross areas of floors, "crawl" space, and equipment penthouses are counted at the following rates:

1. All areas 1 980 mm high or higher are counted on a 100 percent basis.

2. All areas between 1 220 mm and 1 980 mm in height are counted on a 50 percent basis.

3. All areas that are less than 1 220 mm in height or interstitial space are excluded from the gross area computations.

B. Covered walkways, canopied areas, covered building entrances, trellis-type entrances, and other covered but unenclosed areas are counted on a 50 percent basis.

C. Normal building overhangs, unroofed courtyards or plazas, bay windows extending outside the building line, catwalks providing access to equipment, mezzanines in the maintenance or central supply department which utilize open metal grating are used for storage purposes only, cooling towers, other unroofed equipment, and unfinished attics in quarters units are not counted as gross area.

D. Measurements used in the computations shall be taken from the outside face of the exterior walls, disregarding such architectural projections as cornices, buttresses, and roof overhangs. Stated differently, the normal thickness of the exterior wall is included in the gross area.

E. In determining whether the gross area of a floor is computed on a 100 percent or 50 percent basis, the height is taken as the average distance from the surface of the floor to the underside of the structural beams or girders supporting the floor or roof above.

F. The height of crawl space is taken as the average distance between the surface of the earth or finished floor and the bottom of the predominate framing members (normally, the joists or trusses). It is expected that girders, pipes, or ducts may occasionally protrude below this height.

G. When areas are represented as crawl space for gross area computation purposes, either in the 1 220 mm to 1 980 mm high (50 percent) category or the less than 1 220 mm high (excluded) category, it is expected that the depth of footings, lack of finishing, etc., will support the position that the areas will be used for access purposes only.

H. Interstitial space, which is an expansion of the space between the ceiling and the floor above for utility purposes (i.e., ducts, electrical lines, and plumbing), shall not to be included in the gross area computations.

I. The PJD/POR for new construction in locations where severe environmental exposure is anticipated, shall not include the following climate-related building appurtenances in the total gross area. However, this area shall be included in the accountable real property space inventory together with the four following areas:

1. Mechanical penthouses (equipment protection only), utility chases/pipe tunnels, and other special equipment enclosures (i.e., emergency sewage holding tanks, air intake plenums, cooling towers, etc.).

2. Covered or enclosed walkways, if the enclosed walkway is for life threatening measures. Covered or enclosed walkways shall be computed on a 50 percent basis if they are not for life threatening measures.

3. Loading docks and emergency entrances.

4. Space associated with energy efficient envelope designs, seismic details, and/or innovative construction techniques (i.e., extra thickness in arctic walls/floors/roofs, seismic bracing, and double walls required by modular construction when two unit modules are attached together).

PHS:
4-1-30 NET AREA

A. The terms net space or net area refer to those portions of the facility available for use for program operations and for supply storage, building maintenance/operation (i.e., boiler rooms, electrical powerplant rooms, or shops), and other necessary support functions. These areas are specifically delineated in the POR; e.g., areas include a 12 net square meter office, a 10 net square meter outpatient examination room but do not include space such as plumbing chases or electrical closets.

B. The sizes of net areas represented on design drawings or actually constructed are computed by measuring from the inside of the permanent exterior wall to the near side of permanent walls separating the area from stairwells, elevators, mechanical rooms, permanent corridors, or other portions of the building not categorized as net space in the program of requirements document. No deductions shall be made for: space occupied by structural columns; interior partitions; radiators; heating, ventilation and air-conditioning (HVAC) convector units; or for baseboard heating units within the area. However, deductions shall be made for large duct and elevator shafts passing through it.

SUBJECT: ARCHITECT/ENGINEER SELECTION PROCESS

PHS:
4-2-00 PURPOSE

The Federal Acquisition Regulations (FAR) pertaining to Architect/Engineer (A/E) services were adopted to carry out the requirements of the "Brooks Act" (40 U.S.C. 541 et seq.). This Act mandates the selection of the most highly qualified A/E firm on the basis of demonstrated competence at a fair and reasonable price. The regulations setting forth the procedures for choosing such a firm may be found in FAR subpart 36.6, "Architect Engineer Services." These procedures apply to the selection of all architectural and engineering services, including studies, surveys and analyses. The purpose of this chapter is to supplement the FAR subparts mentioned throughout the chapter and it should be read in conjunction with them. See Exhibit X4-2-A of this chapter for a checklist of the sequence of events leading to the award of A/E contracts.

PHS:
4-2-10 QUALIFICATIONS AND APPOINTMENTS OF THE AD HOC A/E EVALUATION BOARDS

A. The Evaluation Board for architect-engineer services shall be established according to FAR 36.602-2. While this does not require registered professionals, PHS does recommend agencies appoint architects or engineers with registration. The agency Facilities Manager (e.g. Director, Division of Engineering Services, NIH) will establish the Ad Hoc Evaluation Boards.

B. Members from outside the Government. No member of an outside firm or organization shall participate as a member of an evaluation board without the prior written approval of the Director, Division of Health Facilities Planning (DHFP), Office of Resource Management, Office of Management. Any member so approved will be a non-voting member.

C. Duties of the Chairperson. The Chairperson of the A/E Evaluation Board for all contracts will assist the agency Facilities Manager or designee in appointing the members of the board. In addition, the Chairperson calls and presides over as many meetings as he/she deems necessary to complete the selection process. The Chairperson will also recommend the assistance of other technical personnel who may make a substantial contribution to the evaluation process. The Chairperson will also develop the final selection report for approval and inclusion in the contract file (see paragraph 4-2-50D of this chapter).

PHS:
4-2-20 ACTIONS REQUIRED PRIOR TO ADVERTISING

A. Availability and Certification of Design Funds

1. The first step in starting the A/E selection process is to ascertain that funds have been appropriated and apportioned. Care must be taken to assure that the funds are sufficient to cover the design services and are from an appropriate funding source, as defined in Chapter 2-1, Volume I of this Manual. Designs for new facilities, replacement facilities, and building additions must be accomplished with funds appropriated for the specified project. Designs for building improvement projects must normally be accomplished with such specifically designated funds or with lump sum amounts appropriated for repairs and improvements to the PHS agency's facilities. Guidance should be requested from the DHFP, in the event of questions on the appropriateness of proposed design funding sources.

2. In unusual cases where time is critical and the appropriation/ apportionment appears to be imminent, it may be appropriate to advertise for design services before the funds are actually received. In such cases, the contracting officer should obtain a written statement from the agency's financial management officer to the effect that appropriation and apportionment of proper funds is expected within 60 days. Wording should also be included in the Commerce Business Daily (CBD) announcement to the effect that the Department expects to receive design funds in the near future, and that the award of the A/E contract is subject to the receipt of these funds.

B. Program of Requirements Document. The Program of Requirements (POR) document defines a large portion of the scope of work, and is essential to the A/E selection process. Therefore, it should be approved prior to advertising in the CBD (See Chapter 2-4, Volume I of this Manual and Public Health Service Acquisition Regulations 336.6, Architect-Engineer Services).

C. Preparation of the A/E Statement of Work. The A/E Statement of Work and Scope of Services is the key document in the selection process and the actual performance of the work. It is prepared by the office responsible for the evaluation and selection action. A well prepared statement of work avoids price negotiation problems, eliminates ambiguities, and assures that the design will satisfy program needs.

Sometimes a POR can be incorporated into the Statement of Work. The distinguishing aspect of the Statement of Work, however, is in its detailed presentation of the work to be performed by the selected A/E firm. The Statement of Work should be tailored to the specific design requirements of each project. As shown in Exhibit X4-2-B, typical areas covered by the Statement of Work are: predesign planning, concepts/schematic preliminary design development, contract document development, construction

supervision, and any special requirements. Within each of these areas factors such as scheduling, cost control, value engineering and life cycle costs analysis are considered.

D. Evaluation Criteria. Before making the public announcement, the Evaluation Board establishes the criteria to be used in evaluating the A/E firms. The criteria should conform to the Federal evaluation criteria set forth in FAR 36.602.1.

The evaluation criteria thus established are then weighted by the Board according to the importance which it attaches to each factor. These weighting factors are used by the members of the Board to rank the A/E firms on the score sheet.

The evaluation criteria will be listed in the CBD announcement, in descending order of importance.

E. Government Prepared Estimate of A/E Costs. The rules governing preparation of the independent government estimate of the cost of the required A/E services are set forth in FAR 36.605. This section provides that "consideration shall be given to the estimated value of the services to be rendered, the scope, complexity, and the nature of the project." The estimate should be prepared by the office responsible for the evaluation and selection action prior to writing the CBD announcement, but may be revised later during negotiations if the scope of work to be performed by the A/E firm changes. The estimate serves two main purposes:

1. It determines the sufficiency of funds to cover the project as outlined in the Statement of Work. If the estimate indicates that the allocated funds will not cover the proposed project, the procuring agency may modify the statement of work.

2. It serves as a guideline to measure the reasonableness of the A/E firm's fee proposal. The government estimate for A/E fees must be prepared in advance of the CBD announcement. (Examples and formats are included in Exhibits X4-2-C and X4-2-D.) During negotiations, if there are major differences between the government estimate and the A/E cost proposal, or the total scope of services to be furnished, these differences should be investigated thoroughly. Any changes that are made in the government estimate must be agreed upon by both the Contracting Officer (CO) and the technical staff and recorded in the contracting office's file.

The persons preparing the government estimates must have previous experience in this type of work. They should be knowledgeable of the manner in which A/E firms conduct business and be familiar with current industry salary costs, profit margins, etc. The Government estimate should clearly identify the anticipated costs for various services required within the scope of work.

The estimated wage rates should reflect the current prevailing rates for each required discipline. The overhead rate should reflect typical overheads encountered within the location where the work will be performed. The profit factor should be a calculated figure based on the degree of risk associated with the job, relative difficulty of the work, size of job, period of performance, contractors investment assistance by the government, and percentage of subcontracting (See Exhibit X4-2-C).

The fee estimate for the basic design services shall not exceed six percent (6%) of the estimated cost of construction, a statutory limitation established in the Brooks Act. Other required services, not related to the actual production of contract specifications and working drawings must be included in the estimate but not included in the 6% calculation.

The 6% fee limitation on architect or engineer services set forth in section 304(b) of the Federal Property and Administrative Services Act of 1949, as amended, and referred to in FAR 15.903(d) (1) (ii), applies to those services generally required in preparing contract drawings and specifications which form the basis for bidding and for the award of construction contracts. The fixed fee limitation does not apply to the following architect or engineer services:

a. Investigative services including but not limited to:

(1) Determination of program requirements including schematic or preliminary plans and estimates.

(2) Determination of feasibility of proposed project.

(3) Preparation of measured drawings of existing facility.

(4) Subsurface investigation.

(5) Structural, electrical, and mechanical investigation of existing facility.

(6) Surveys: Topographic, boundary, utilities, etc.

b. Special consultant services not normally available in organizations of architects or engineers, and not specifically applied to the actual preparation of contract drawings or specifications of the project for which the services are required.

c. The cost of reproducing drawings and specifications for bidding, and for distribution to prospective bidders and plan file rooms.

d. Other:

(1) Reproduction of approved designs through models, color renderings, photographs, or other presentation media.

(2) Travel and per diem allowances other than those required for the development and review of contract drawings and specifications.

(3) Supervision or inspection of construction, review of shop drawings or samples and other services performed during the construction phase.

(4) All other services that are not integrally a part of the production and delivery of plans, design, and specifications.

The total cost of the architect or engineer services contracted for may not exceed 6% of the estimated cost of the construction project plus the estimated cost of related services and activities such as those shown in paragraph (a) of this section.

F. Government Management Plan. At the same time that the government estimate is being prepared, the Project Officer should develop a Government Management Plan for the project. This plan describes the project team and individual responsibilities, relationships and interfaces. To facilitate the Government in overseeing the flow of activity, the Project Officer should indicate on a bar or PERT type chart the major actions to be

performed, and those responsible for the actions. By providing insight into the overall planning for the project, the Government Management Plan will also help the Board during interviews to evaluate the A/E plan for management of the project.

PHS:
4-2-30 PUBLIC ANNOUNCEMENTS

A. Policy. The CO shall make a public announcement of any planned A/E selection. The CO will provide a copy of the announcement to the Evaluation Board for the file. The particular Federal requirements for such announcements are set forth in FAR 5.205(c), "Synopses of Proposed Contracts." Announcements for design contracts expected to exceed $25,000 must be published in the CBD. The announcement shall appear in the CBD at least thirty days prior to the A/E selection. All scheduling should take this requirement into consideration. For contracts expected to be $25,000 or less, the CO shall publicize the announcement in the vicinity of the project, by displaying the notice at the procuring office, and publishing it in the local daily newspaper. Affected professional societies in the area may be notified of the project consideration as well.

See FAR 36.602-5 for contracts utilizing the short selection process, not to exceed the small purchase limitation.

B. Content of the CBD Announcement. The announcement in the CBD should contain a brief but clear statement consistent with the requirements of FAR 5.207. It should include the project location, scope of service required, the relative importance of the significant evaluation factors presented in descending order, range of construction cost (FAR 36.204), type of contract proposed, estimated start and completion dates, and date by which responses must be received. Any other specialized requirements (energy conservation, phased design/construction, etc.) or limitations on eligibility (small business or Buy Indian set-aside) should also be indicated. The amount of funding available for the project should never be announced.

In the announcement, the procuring agency should request both Standard Form 254 (SF 254) "Architect-Engineer and Related Services Questionnaire" and Standard Form 255 (SF 255) "Architect-Engineer and Related Services Questionnaire for Specific Project", if the A/E firm does not have a current SF 254 on file with the agency. The agency may also request any additional information, such as brochures, but should stress that only information pertinent to the specific project will be considered. The file for SFs 254 and 255 will be maintained by the agency contracting office.

PHS:
4-2-40 ACTION BY THE BOARD PRIOR TO SELECTION

A. Creation and Maintenance of A/E Firm Files. The PHS agencies shall collect and maintain current data files on A/E firms, consisting of the SF 254 and any other pertinent information from other sources (such as clients, other members of the profession, managers or occupants of facilities previously designed, and previous assessments by the procuring agencies). Each procuring agency should keep the SF 254 on file for one year. These A/E firm files should be kept in good order, so that firms will not have to resubmit a SF 254 with each response to an announcement.

B. Review of Files. When the procurement of A/E services is proposed, the Evaluation Board shall review the current data files on eligible firms, including the SFs 254 and 255 submitted in response to the public announcement. If the Evaluation Board feels that

additional information from the A/E firms will be needed in order to evaluate the firms adequately, a request shall be sent to each of the responding firms. Response to the request for additional material will be mandatory; failure of the firm to respond within the given time will preclude further evaluation.

PHS:
4-2-50 SELECTION PROCEDURES OF THE EVALUATION BOARD

A. Individual Ratings. Each member reviews the SF 254 and SF 255 and all additional information submitted by each A/E firm and rates the firms individually on the A/E Evaluation Sheet (Exhibit X4-2-E). The numbers assigned to each board member shall appear on the evaluation sheets in lieu of the members name. After initial evaluation, each member then ranks the candidates in order, with the most qualified firm ranked first. There should be no discussion of the firms' qualifications among members until all the firms have been independently rated. Rationale for very high and very low scores should be provided in the comments section of the A/E Evaluation Sheet (Exhibit X4-2-E) to document scoring in case questions arise at a later date.

B. Summarization of Individual Scores. After all individual ratings are complete, the Chairperson of the Board collects the individual scores and transfers them to the A/E Selection Summation Sheet (Exhibit X4-2-F). Summarization is done with all Board members present, and each individual member checks their scoring sheet to verify that there are no errors in the summary.

C. Discussions and Tabulations. After the scores are summarized, the Board members should compare the rankings of the firms. If extreme variances exist, between the scores assigned to a firm by different Board members, the members should discuss the differences to see if some qualifications of the firms in question were overlooked, or if some firms were attributed qualifications they do not have.

When the members have finalized their rankings of the firms, the scores and ranking are tabulated on the A/E Selection Summation Sheet (Exhibit X4-2-F). From this sheet, the firms obtaining the highest number of rank points are selected for interviews. The numerical scores shall not be averaged to determine the most highly qualified firms. At least three of the top firms thus selected shall be notified and scheduled for interviews.

D. Interviews. After the firms have been selected to be interviewed, each firm will be given a copy of the Statement of Work, and the POR. At the interview, the firm's senior official should be asked to present the firm's project management team members and consultants, professional or specialized technical background of key personnel, and the firm's management plan. Firms should be allowed sufficient time to prepare for interviews, two or three weeks depending on the complexity of the project. It is necessary to have the firm's management plan at the interview for comparison with the Government Management Plan.

Prior to conducting the interview, the Board members should meet to discuss the topics of the interview. The topics must stay within the parameters established in the announced evaluation criteria in the CBD. Each board member should participate in the interview, asking probing but not antagonistic questions. The Chairperson of the Board or designee conducts the interview and should set a time limit for the firm's presentation. The time allotted for each firm should be the same. The recording secretary should be present to take notes, and record the material covered. The secretary also records whether the A/E firm brought all the required information to the interview. At the end of the interviews, the board members should rank the interviewed firms again, using the previously established

ranking criteria. With the approval of the agency Facility Manager, telephone interviews may be conducted with A/E Firms for small projects but only with those firms which have had previous contracts with the agency.

Letters to unsuccessful interviewers should be issued by the contracting officer.

E. Selection Report. The selection report is prepared by the Chairperson of the board, and signed by the Chairperson and each member of the Board. It shall include a list of the most highly qualified firms (not less than three) ranked in terms of relative qualifications. This report shall document the extent of the evaluation and the considerations upon which the recommendations were based. It shall also include the following:

1. The A/E Selection Summation sheet (Exhibit X4-2-F) with the initial individual member scores and ranking and final interview scores and ranking.

2. A list of the firms interviewed, with addresses.

3. Standard Forms 254 and 255 plus any essential brochures for each A/E firm interviewed.

4. Government estimate of total A/E fee.

5. A copy of the CBD announcement.

When completed and signed, the report is sent to the agency Facilities Manager or designee for approval. If the Facilities Manager does not agree with the firm listed as the most qualified by the Evaluation Board, the ranking of the firms may be changed, provided that a full written explanation of the reason for this change is documented for the contract file. The Facilities Manager or designee, however, may not add a firm to the selection report because, all firms on the final selection list are considered "selected firms" .

F. A/E Consultants. There should be no change in the A/E consultants during the selection and negotiation process. If there are extraordinary circumstances that necessitate such a change it should be subject to approval by the agency Facilities Manager and CO on an individual case basis.

G. PHS Oversight Review. The Director, DHFP, may occasionally request to review the A/E selection process. Except in unusual circumstances, this review is limited to projects where the Government's estimate of the A/E contract exceeds $50,000. The review should be focused on PHS policy only, and differences found in the review must be cited in a report to the agency.

PHS:
4-2-60 NEGOTIATION PROCEDURES

A. Prior to Negotiations. Upon receipt by the agency's CO of the approved, ranked list of qualified firms from the agency Facilities Manager, the CO shall invite the first-ranked A/E firm, in writing, to submit a fee proposal. The letter requesting the fee proposal should set forth (1) the manner in which the proposal is to be prepared; (2) the type of contract that has been proposed (e.g., fixed-price); (3) the date and time for submission of the proposal; and (4) the name, address and telephone number of the person to contact, in case the A/E has any questions. The following items should be enclosed with the letter: (1) a copy of the A/E Fee Proposal Summary (Exhibit X4-2-D), (2) a sample draft copy of a contract, and (3) sample copies of applicable joint venture agreements.

In the event that the proposal is estimated to exceed $100,000, a pre-award audit may be required prior to negotiations. (See FAR 15.804-4, "Certificate of Current Cost and Pricing Data.")

B. Negotiations. In preparing for and in conducting the negotiations, the CO, or the Contracting Officer's Representative (COR), should use the services of technical, legal, auditing, pricing, and other specialists in the agency when appropriate. Negotiations should be directed toward:

1. Making certain that the A/E firm has a clear understanding of the essential requirements;

2. Determining that the A/E firm will make available the necessary personnel and facilities to accomplish the work within the required time;

3. Ensuring that the A/E firm can provide a design which can be constructed within the Government's construction/renovation cost estimate (not including construction inspection services, contingency allowances, etc.).

4. Reaching mutual agreement on the provisions of the contract, including a fair and reasonable price, method of payment and delivery schedule.

Negotiations shall be conducted with the A/E firm given first preference under the procedures outlined in 4-2-50 above. If a mutually satisfactory contract cannot be negotiated with that firm, the CO shall obtain a best and final offer, in writing, from the prospective A/E firm, terminate the negotiations, and so advise the firm. Negotiations shall then be initiated with the next listed firm in the order of preference, and this procedure shall continue until a mutually satisfactory contract has been negotiated. If negotiations fail with all the listed firms, the selection process should reconvene.

C. Record of Negotiation. Promptly at the conclusion of any negotiations, a memorandum setting forth the principal elements of the negotiations shall be prepared for use by the reviewing authorities (see 4-2-70B. below) and for inclusion in the contract file.

PHS:
4-2-70 CONTRACT AWARD

A. After the conclusion of negotiations and the selection of the A/E firm, the CO or the COR shall take the necessary steps to prepare the contract documents. The contract documents and the Statement of Work shall reflect any changes that were agreed upon during negotiations. The contract shall set forth the period of performance (i.e., the start and completion dates) and a schedule of submissions and method of payment. The contract should reflect the A/E firm's assurance that it will provide a design which can be constructed within the Government's construction/renovation cost estimate.

B. Prior to award, the proposed contract shall be reviewed by the appropriate offices required by 48 CFR Chapter 3 and agency policy. Upon award, proper distribution of the signed contract should be made to these offices.

C. Notification of award should be made to the participants and requests for debriefing answered by the contracting officer.

D. After award of the contract, there may be changes to the contract which had not been contemplated. If so, the A/E firm will be requested, in writing, by the Project Officer to submit its fee proposal for the additional work. Any required reviews or approvals by agency personnel for the additional work must be obtained before requesting such fee proposals. After review and approval of the requested fee proposal, the subject contract will be modified by the CO to reflect the proposed changes.

PHS:
4-2-80 APPLICATION OF SMALL BUSINESS AND BUY INDIAN ACTS

A. Small Business Set-Asides. Procurement set-asides for small business firms will be made in accordance with FAR 19.5 and Health and Human Services Acquisition Regulations subpart 319.5.

B. Buy Indian Set-Asides. The Buy Indian Act (25 USC 47) permits procurement for the Indian Health Service to be reserved for Indian firms "so far as may be practicable." If the CO concludes that sufficient competition exists among qualified Indian A/E firms , the project may be advertised in the CBD as a set-aside for the exclusive participation of Indian firms, under the negotiation authority of the Buy Indian Act. The evaluation of SFs 254 and 255 will be conducted as it would be in the case of open competition (see section 4-2-50). The short list will be comprised of the highly qualified Indian firms. If, after evaluation of SFs 254 and 255, no Indian firm is found to be qualified, the CO shall document the procurement file; by providing written notification of unacceptability to those firms that responded, by canceling the requirement, by writing a synopsis for the CBD for open competition (FAR 5.205(c)), and using standard procedures to solicit sources and select a firm. The evaluation report shall set forth the deficiencies of each Indian firm which submitted SFs 254 and 255.

SUBJECT: CHECKLIST OF SEQUENCE OF EVENTS LEADING TO AWARD OF ARCHITECT/ENGINEER (A/E) DESIGN CONTRACT

1. PRIOR TO ADVERTISEMENT

a. Certify availability of funds HHS 393. _____

b. Complete program of requirement (design criteria). _____

c. Develop A/E statement of work includingtime schedule. _____

d. Develop estimate of facility construction costs. _____

e. Develop estimate of A/E fee or costs. _____

f. Develop management plan. _____

2. A/E EVALUATION BOARD

a. Clear delegation of appointing authority. _____

b. Appoint proper persons and numbers to serve as board members. _____

c. Appoint the board chairman, an agency representative and a recorder. _____

d. Establish evaluation criteria. _____

e. Establish numerical weighting factors. _____

3. ADVERTISEMENT

a. Announce in Commerce Business Daily. _____

b. Include clear statement of project. _____

c. Do not include cost estimate. _____

d. Include selection evaluation criteria in descending order of importance _____

e. Emphasize special requirements. _____

4. PROCEDURES OF THE A/E EVALUATION BOARD

a. Establish pre-screening criteria and pre-screen A/E firms fairly. _____

b. All members shall evaluate all A/E firms. _____

c. Minimize discussions on A/E firm qualifications. _____

d. Post all A/E firm scores. _____

e. Rank according to number of 1st, 2nd, 3rd, 4th and 5th place votes, not by numerical values. _____

f. Determine list of finalists (minimum of three). _____

g. Conduct equal time A/E firm interviews. _____

h. Provide necessary information to the approving authority and obtain approval. _____

i. Document all actions. _____

5. NEGOTIATIONS

Make certain the following items have been satisfied prior to negotiation meetings.

a. Approval of A/E Selection by the approving authority. _____

b. Funds are available. _____

c. Government Project Manager assigned. _____

d. Program of requirement furnished to A/E firm. _____

e. A/E statement of work furnished to A/E firm. _____

f. A/E fee or costs estimated by Government. Make sure A/E uses same format for his/her estimate. _____

g. Facility construction cost estimate completed. _____

6. A/E CONTRACT AWARD

Upon successful negotiations, the following items must be satisfied:

a. For projects where fees exceed $100,000, conduct audit to confirm basis of figures used in negotiation. _____

b. Document agreement of all parties on contract content including payment and time schedule. _____

c. File one copy of contract with original signatures, and give two copies to the paying authority. _____

SUBJECT: OUTLINE FOR TYPICAL ARCHITECT/ENGINEER STATEMENT OF WORK OR SCOPE OF SERVICE

A. DESIGN PHASE

1. SUBMITTAL I - PREDESIGN STUDIES (Work is approximately 0-5% complete.)

   a. Develop management plan and establish channels of communication.

   b. Prepare report on Program of Requirements.

   c. Visit site, review and comment on findings.

   d. Provide boundary and topographic survey and soil borings.

   e. Conduct preliminary seismic investigations.

   f. Verify or propose adjustments to the management plan and time schedule.

   g. Provide Feasibility Studies comparing alternate proposals.

   h. Assist the Government in the preparation of the Environmental Assessment or Impact Statement, in compliance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321).

2. SUBMITTAL II - PRELIMINARY SUBMISSION; CONCEPT DESIGN (Work is approximately 5-10% complete.)

   a. Provide conceptual design solutions.

   b. Conduct work sessions with the users.

   c. Conduct preliminary energy conservation studies.

   d. Provide an Order of Magnitude estimate in square meters.

3. SUBMITTAL III - PRELIMINARY SUBMISSION; SCHEMATIC DESIGN: (Work is approximately 10-25% complete.)

   a. Upon approval of concept design, prepare schematic design development documents.

   b. Provide a Square Meter Cost Estimate for construction cost.

   c. Prepare outline specifications.

   d. Provide Value Engineering (VE) and Life Cycle Cost (LCC) studies where required by the Statement of Work (SOW).

   e. Complete seismic investigations.

f. Complete energy conservation studies.

g. Select compatible subsystems.

4. SUBMITTAL IV - PRELIMINARY DESIGN; DESIGN DEVELOPMENT (Work is approximately 35% complete.)

a. Upon approval of the preliminary schematic design, develop design development documents .

b. Update preliminary (Square Meter) cost estimate.

c. Provide complete mechanical/electrical/structural design calculations.

5. SUBMITTAL V - CONTRACT DOCUMENTS INITIAL SUBMISSION (Work is approximately 60% complete.)

a. Prepare initial development of contract documents .

b. Coordinate the various drawings (Architectural, Structural, Mechanical and Electrical) as complex systems are outlined within the bid documents.

c. Provide quantitative take-off cost estimate.

d. Prepare preliminary exterior and interior perspective sketches.

e. Provide preliminary color and sample boards.

f. Provide preliminary specifications.

g. Provide preliminary bid item schedule. (Note: Government is responsible for final bid item schedule that appears in the solicitation.)

6. SUBMITTAL VI - CONTRACT DOCUMENTS INTERMEDIATE SUBMISSION (Work is no less than 80% complete.)

a. Continue development of working drawings.

b. Complete draft intermediate specifications.

c. Provide quantitative take-off cost estimate.

d. Provide updated draft of bid item schedule.

7. SUBMITTAL VII - CONTRACT DOCUMENTS FINAL SUBMISSION (Contract documents are 100% complete.)

a. Provide drawings and specifications 100% complete.

b. Prepare final renderings, color boards, and slides.

c. Provide final draft of bid item schedule.

8. SUBMITTAL VIII - CONTRACT DOCUMENTS BACKCHECK SUBMISSION

a. Make final corrections to contract documents.

b. Provide professional stamps on all required documents.

B. CONSTRUCTION PHASE

1. Provide full-time (part-time when appropriate) observation.

2. Provide clarification drawings and information.

3. Review operation and maintenance manuals.

4. Prepare change orders.

5. Review and recommend approval or disapproval for all shop drawings and materiel submittals.

6. Prepare fire and disaster plan for the facility.

7. Review red lined "as-built" drawings submitted by the contractor for accuracy.

8. Produce, and deliver to the government, as-built documents from original contract documents.

C. OTHER PERTINENT REQUIREMENTS

1. Identify the number of copies required for each submittal.

2. Specify time schedule required to accomplish each phase of design development.

3. Specify payment schedule for each phase of design development.

(THIS FORM IS A SUGGESTED FORMAT ONLY)

A/E FEE PROPOSAL BREAKDOWN

PHASE _____ _____ (All Effort in Man-Days)

PARTICIPANTS / TASKS	DESIGN & PLANNING	ARCH.	STRUCT.	MECH.	CIVIL	ELECT.	SPEC.	COST ANALYSIS	PROJECT MGT.	DRAFTSMEN	

(THIS FORM IS A SUGGESTED FORMAT ONLY)

A/E FEE PROPOSAL SUMMARY

DIRECT LABOR (List required professional & support disciplines)	PERSON HOURS	HOURLY RATE	TOTAL
_____	_____	$ _____	$ _____
_____	_____	$ _____	$ _____
_____	_____	$ _____	$ _____
_____	_____	$ _____	$ _____
TOTAL DIRECT LABOR	_____		$ _____
Overhead _____ %			$ _____
Profit _____ %			$ _____
TRAVEL & PER DIEM (No of trips, etc.)			$ _____
PRINTING			$ _____
SHIPPING			$ _____
* OTHER (Surveys, Soil Borings, etc.)			$ _____
CONSULTANTS- number of days			$ _____
SUBCONTRACTS or DIRECT COSTS (Identify)			$ _____
_____			$ _____
_____			$ _____
_____			$ _____
TOTAL			$ _____
GRAND TOTAL			$ _____

SUMMARY OF BASIC AND EXTRA FEE SERVICES ABOVE

BASIC FEE SERVICES	$ _____
*EXTRA FEE SERVICES	$ _____

(THIS FORM IS A SUGGESTED FORMAT ONLY)

A/E EVALUATION of SF 254 and 255

Project: _____ Location: _____

Firm: _____ Ref. No. _____

Location: _____

Board Member: _____ Date: _____

Evaluation Item	Comments	Weighting Factor	Rating 1—10	Score
			TOTAL SCORE	

(THIS FORM IS A SUGGESTED FORMAT ONLY)

A/E SELECTION SUMMATION SHEET

Project _____

Date _____

A/E FIRM NAME	BOARD MEMBER RATINGS						*RANK					Rank Points	Placement Rank
		2	3	4	5	6	1	2	3	4	5		

*1st thru 5th place assigned 7, 5, 3, 2, and 1 point respectively.

SUBJECT: INDEFINITE DELIVERY CONTRACTS FOR ARCHITECT/ENGINEER SERVICES

PHS:
4-3-00 PURPOSE

The purpose of this Chapter is to provide guidelines for obtaining Architect/Engineer (A/E) services when it is determined that an Indefinite Delivery Contract (IDC), as described in the Federal Acquisition Regulation (FAR) Subpart 16-5, is the appropriate contracting mechanism. Also, this chapter is intended to help facilities staff evaluate the potential merits of an IDC and assist Contracting Officers in awarding and utilizing such contracts for A/E work.

PHS:
4-3-10 POLICY

Public Health Service (PHS) agencies are encouraged to the maximum extent practicable to open for competition individual A/E projects. However, situations may arise which necessitate use of quick-response mechanisms to meet relatively small A/E requirements, and the Contracting Officer (CO) may select some form of IDC as the most appropriate mechanism.

PHS:
4-3-20 GENERAL

A. An IDC may be used to provide for recurring A/E requirements that arise during the specified period of time. The contract must conform to requirements in the FAR and contain such information as:

1. A description, as specific as practicable, of the services to be performed under the contract.

2. An estimate of the dollar value of work to be awarded under the contract during the specified contract period.

3. The minimum and maximum dollar value of each order.

The basic procedures described in FAR Subpart 16.5 and Volume I, Chapter 4-2, "Architect/Engineer Selection Process and Approvals," shall be followed in establishing the IDC and issuing orders thereafter.

B. IDCs may be the appropriate method for obtaining A/E services when the projects are relatively small (e.g., construction estimate less than $1 million not requiring a formal Program of Requirements (POR)) and a short response time for A/E services is required. IDCs may be used to obtain A/E services for (1) projects funded under lump sum appropriations for Repairs and Improvements (R&I) in the Buildings and Facilities account and (2) Maintenance and Repair work funded from operating accounts. Also, IDCs may be used on large projects prior to the selection of the design A/E for pre-design work such as site selection, feasibility studies, site survey, etc.

PHS:
4-3-30 INDEFINITE DELIVERY CONTRACTS

A. IDCs shall be executed following the A/E selection process described in FAR Subpart 36 and Volume I, Chapter 4-2, sections 4-2-10 through 4-2-50. However, a POR is not required since the specific projects to be performed under the IDC are unknown when the IDC is awarded. Instead, the scope of work shall be described in general terms and may often be limited to relatively few categories of work requiring only one professional discipline or special expertise.

B. Since the specific projects are unknown, evaluation criteria must be largely based on the firm's background and experience for providing the required type of service.

C. IDCs shall be executed for an initial period of one year, and may include an option for four (4) one year extensions.

D. The total value of all orders issued under an IDC shall not exceed $1,000,000/year. A higher annual value of all orders requires approval from the Director, Office of Management, Office of the Assistant Secretary for Health. The size of the contract should reflect a realistic assessment of the amount of A/E work to be awarded during the contract period.

E. As a general rule, for use in estimating, the amount of A/E work to be awarded should not exceed 10 percent of funds expected to be available for R&I projects suitable for design under the IDC. This factor provides for the six percent allowance for design (as prescribed in the Brooks Act 40 U.S.C., 541 et seq) plus additional payments for preliminary work and construction inspection services. For example, if an agency's R&I budget is $5 million per year, and it is estimated that 50 percent of these funds will be used for projects to be designed under the single IDC, the maximum amount of the IDC would be $250,000.

F. When an agency plans to award two or more IDCs for the same time period, the maximum amount of each contract should be based on a reasonable estimate of the value of the portion of design work to be awarded to each particular A/E firm.

G. Except in the most urgent situations, individual orders under IDCs shall not exceed $300,000; individual orders greater than $300,000 require the approval of the Director, Office of Resource Management.

H. The estimated dollar value range of individual orders and the overall value of the contract shall be stated by the CO in the synopsis and solicitation.

PHS:
4-3-40 AWARD OF INDIVIDUAL ORDERS

A. Individual orders shall be negotiated and awarded by the CO, with assistance from the Project Officer, following procedures described in FAR 16.5 and Volume I, Chapter 4-2, sections 4-2-60 and 4-2-70. The CO shall prepare a set of requirements (scope of work) and an independent cost estimate based on those requirements before commencing negotiations. After negotiations have been completed, the CO will prepare a Summary of the Negotiations for the contract file.

B. Where two or more IDCs have been executed for a similar type of work, negotiations for individual orders must be undertaken with the firm which received the highest ranking in the IDC evaluation. If the award of the individual order cannot be successfully negotiated with the most qualified firm, then negotiations should proceed with the other firms in the order of their rankings.

C. All IDC orders shall be awarded on a fixed-price basis. However, in some cases, it may be appropriate to allow the A/E firm to commence work based on an hourly and materials used basis until the scope can be developed and a fixed price can be negotiated (e.g., renovation work in older buildings may involve extensive work behind walls and existing drawings may not correctly show existing conditions.)

SUBJECT: ACCESSIBILITY REQUIREMENTS FOR THE PHYSICALLY DISABLED

PHS:
4-4-00 PURPOSE

This chapter sets forth policy and procedures for complying with the Architectural Barriers Act of 1968, 42 U.S.C. 4151-4157, also commonly referred to as Public Law 90-480. In general the act requires that all buildings constructed, altered, leased, or financed since 1968 with Government funds be accessible to and usable by persons with physical disabilities. This chapter also outlines procedures for requesting and obtaining exceptions to and waivers of the established standards, and for responding to complaints against PHS facilities.

PHS:
4-4-10 REGULATORY BACKGROUND

A. Section 2 of the Architectural Barriers Act authorizes the Administrator of the General Services Administration (GSA), in consultation with the Secretary of the Department of Health and Human Services (HHS), to prescribe standards for the design, construction and alteration of all buildings (other than residential structures and Department of Defense (DOD) facilities) to ensure accessibility by the physically disabled. The Secretaries of Housing and Urban Development (HUD) and DOD are given similar authority for setting standards for residential and military buildings, respectively. In 1970, the law was amended to add the Postmaster General as the standard-setting authority for postal facilities, and to include all leased facilities within the scope of the Act.

B. When new construction or alterations may have an adverse effect on a historic property, it is necessary to balance the accessibility requirements with the requirements of the National Historic Preservation Act in consultation with the State Historic Preservation Officer and the Advisory Council on Historic Preservation (reference UFAS 4.1.7).

C. Implementing Regulations:

1. On September 2, 1969, GSA issued Federal Property Management Regulations (FPMR) 41 CFR, Part 101-19.6, which adopted the American National Standards Institute (ANSI) A117.1-1961 Standard as the governing standard for all facilities under its authority.

2. On October 6, 1980, GSA issued FPMR - Temporary Regulation D-66, which adopted the "GSA Accessibility Standard" to supersede the ANSI A117.l Standard. This was issued as an interim standard effective October 14, 1980, to be used until the permanent uniform standard, then being developed, could be completed.

3. On August 7, 1984, GSA issued FPMR 101-19.6 to adopt the new Uniform Federal Accessibility Standards (UFAS), effective July 31, 1984. The UFAS, also published on August 7, 1984 in the Federal Register (Volume 49, Number 153, Pages 31527-31625), were produced jointly by GSA, HUD, DOD and the United States Postal Service in consultation with HHS, and now govern all new direct Federal and federally assisted construction programs.

PHS:
4-4-20 ASSESSING COMPLIANCE

A. All projects shall be reviewed for compliance with the applicable standard during the review of contract drawings and specifications (for all design phases), and again at the time of the final on-site inspection of the completed facility.

B. The review of contract drawings and specifications and/or inspections during construction at intermediate stages serve the following purposes:

1. It provides assurance that project plans are being reviewed closely for adherence to prescribed requirements at appropriate design stages;

2. It provides documentation in the project file that the facility meets mandatory requirements, or that the contract drawings reflect certain omissions or deviations from the standards as noted on the checklist; and

3. It serves as a guide to take corrective action by the project architect in instances where the contract drawings do not conform completely to the standards.

4. Where historic properties may be adversely affected, early consultation with the State Historic Preservation Officer and the Advisory Council on Historic Preservation is advisable, to avoid delays in the design process.

C. It is recommended that the applicable portions of the standard be used as a checklist. A completed copy of the checklist should be placed in the project file when the design documents are completed, and a second completed checklist when construction is completed. A notation in the left margin of "Y" (yes), "N" (no) or "NA" (not applicable) opposite each item in the checklist is sufficient.

D. Applicable Standards

Projects designed and advertised for bids on or after July 31, 1984 shall be governed by the UFAS. A copy of these standards may be obtained upon request from the Division of Health Facilities Planning (DHFP).

E. Facilities not constructed with Federal funds, but which house federally funded activities are covered by Section 504 of the Rehabilitation Act of 1973 (29 USC 794) which is administered by the Office for Civil Rights (OCR). OCR may request technical assistance from PHS agency facilities offices in determining the degree of compliance of certain buildings. The HHS OCR uses the UFAS as its guide in determining compliance.

F. The Americans with Disabilities Act (ADA) of 1990 (42 USC 12101), establishes accessibility requirements for employment, public services, public accommodations and telecommunications. The act does not directly cover Federal or federally funded

facilities, which remain under the Architectural Barriers Act (ABA). (However, a given facility may be covered by both the ABA and the ADA.) Title II of the ADA gives the Justice Department (DOJ) jurisdiction over state and local facilities. Effective January 1992, DOJ will refer all complaints involving state and local health facilities to the HHS OCR, which may in turn direct them to PHS agencies for investigation. Similarly, DOJ will refer complaints against state and local educational facilities to the Education Department, which may also refer them to PHS agencies for investigation under PHS: 4-4-60 E. Therefore, PHS agencies may become involved in cases requiring the use of the ADA Accessibility Guidelines in these situations.

PHS:
4-4-30 Certification of Compliance

A. In order to comply with the record keeping requirements of FPMR 101-19.6, a certificate of compliance with accessibility standards shall be completed and signed by the responsible agency official (e.g., the agency director of facilities services). After final inspection of each project, the facility must be certified in compliance with the minimum requirements of the applicable standard, (See Exhibit 4-4-A for a suggested format). The certificate shall describe any exceptions or waivers granted for the project, and may also include additional statements relating to the application of the standards to the project.

B. The certificate shall be retained in the agency project file.

PHS:
4-4-40 EXCEPTIONS

A. In accordance with FPMR 101-19.6, the accessibility standards shall not apply to PHS facilities under the conditions listed below. Questions regarding the interpretation of these categories of exceptions may be directed to DHFP.

1. The design, construction, alteration or lease of any portion of a building which need not, because of its intended use, be made accessible to, or usable by, the public or by physically handicapped persons;

2. The alteration of an existing building if the alteration does not involve the installation of, or work on, existing stairs, doors, elevators, toilets, entrances, drinking fountains, floors, telephone locations, curbs, parking areas, or any other facilities subject to the installation or improvements to accommodate the physically disabled;

3. The alteration of an existing building, or of portions thereof, to which application of the standards is not structurally possible;

4. The leasing of space when it is found after receipt of bids or offers otherwise legally acceptable that a proposal meets most of the requirements of the UFAS. If no offeror or bidder meets all the requirements, then preference must be given to the offeror or bidder who most nearly meets the standards. If the award is proposed for a firm other than the one that most nearly meets the UFAS and whose bid or offer is reasonable in price and is otherwise legally acceptable, a waiver or modification of the standards must be obtained.

5. The construction or alteration of a building which will have an adverse effect on an historic property, as determined through consultation with the State Historic Preservation Officer and the Advisory Council on Historic Preservation (reference UFAS 4.1.7).

B. Requests for exceptions under sections 1, 3, 4, and 5 shall be submitted by the facilities office of the PHS agency involved, approved by the responsible agency official, and sent to the Director DHFP for review and concurrence. All requests shall include complete documentation of facility and/or program conditions which justify the exception. All requests for exceptions, supporting documentation, and notification of final action on requests shall be placed in the project file.

PHS:
4-4-50 WAIVERS

This section applies to PHS facilities only; requirements of the ADA cannot be waived. Any modification of or deviation from the applicable standards which is not covered by the exceptions listed in 4-4-40 may be waived in accordance with the following procedures:

1. Requests for waivers under FPMR 101-19.605 shall be submitted to the Division of Health Facilities Planning, Office of Resource Management, which in turn will be submitted to the Administrator, GSA. All requests must be fully documented, and will be considered only on a case-by-case basis (i.e., no requests for "blanket waivers" will be entertained).

2. All requests for waivers, supporting documentation, and notification of final action on requests shall be placed in the project file.

Examples of waivers obtained by PHS include non-standard door clearances for clinic examination and treatment rooms, and the modification of fire alarm systems in acute care nursing units. In each case the basis of the waiver request was that the facility in question provided equivalent facilitation for individuals with disabilities.

PHS facilities that are required to be accredited by the Joint Commission on Accreditation of Healthcare Organizations cannot be waived.

PHS:
4-4-60 COMPLAINT HANDLING

A. Complaints of inaccessible conditions received by PHS agencies from employees or facility users should be resolved at the agency level, when possible. Otherwise, they may be forwarded to DHFP for review and resolution.

B. Complaints received from the Architectural and Transportation Barriers Compliance Board (ATBCB) shall be forwarded to the appropriate agency facilities office for review and necessary action.

C. Complaints received by DHFP which require site investigation to determine validity or means of resolution will be forwarded to the appropriate agency facilities office for investigation and action. An interim reply will be prepared and sent by DHFP to the party submitting the complaint (i.e., the ATBCB or the complainant). A copy of final resolution should be furnished to DHFP.

D. Upon completion of its investigation, the agency facilities office will notify the ATBCB or complainant, as appropriate, of the results. A copy of final resolution should be furnished to DHFP. In cases where remedial action is required, the facilities office will notify the PHS agency official responsible for operating or funding the facility of any standards violation, and any necessary remedial action.

E. In accordance with an inter-agency agreement between the Health Resources and Services Administration (HRSA) and the Department of Education (ED), complaints against ED owned or funded facilities will be forwarded by ED directly to the appropriate Office of Engineering Services (OES) for investigation and reply. OES will respond directly to ATBCB or the complainant, as appropriate, with a copy to ED.

[This is a suggested format]

CERTIFICATE OF COMPLIANCE WITH ACCESSIBILITY STANDARDS

Project Number_____ Date_____

Name of Facility_____

Agency/Institution_____

City_____ State_____ Region_____

Check One

___ I certify that this facility at final inspection complied with the requirements of the Uniform Federal Accessibility Standards.

___ This project was designed and advertised for bids prior to July 31, 1984. I certify that this facility at final inspection complied with the requirements of the "GSA Accessibility Standards."

___ This project was designed and advertised for bids prior to October 14, 1980. I certify that this facility at final inspection complied with the minimum requirements of the American National Standards Institute A117.1-1961 (R1971) Standard.

Description of Approved Exceptions:

_____
_____
_____

Description of Approved Waivers:

_____
_____
_____

Explanatory Notes:

_____
_____
_____

Signed:_____

Title: _____

SUBJECT: SITE UTILIZATION AND PLANNING

PHS:
4-5-00 PURPOSE

A. The purpose of this manual chapter is to set forth the Public Health Service (PHS) policy and procedures to be followed by PHS agencies in determining the specific requirements for the site utilization phase of the design documents.

B. The material contained in this chapter is not intended to restrict the design firm to a single concept for site development. Alternate solutions for meeting design criteria contained in the Program of Requirements are encouraged.

PHS:
4-5-10 SITE UTILIZATION CONSIDERATIONS

A. General - The intent of this section is to set forth general objectives, considerations, and procedures of site utilization planning that pertain to the design of PHS projects. These site utilization considerations must be fully coordinated with the site selection requirements, if applicable. (See Chapter 3-4).

B. Physical Relationships - A proper relationship of all project elements to one another (e.g., structures, special use areas, roads, parking areas, walks, terraces, ramps, emergency entrances, etc.) should be determined for aesthetic considerations, safety, functional and operational efficiency, construction economy, and to avoid adverse effects on the surroundings of nearby historic properties.

C. Site Potentialities. Full advantage should be taken of site potentialities, thereby avoiding wasted expenditures for such items as clearing, grading, removal of excess fill, foundations, drainage, roads, ramps, walls, erosion-control measures, water pollution prevention, intensive ground maintenance, and the disturbance of archeological resources. Site utilization should preserve the original character of the site and its natural features (e.g., trees, ground forms, water, etc.) to the greatest extent feasible.

D. Physical Character of the Site. To achieve the above objectives of good site utilization planning, the A/E must analyze the physical character of the site. Some aspects to be considered include topography, natural features, soil and foundation conditions, existing storm water flow and floodplain, historic resources, and environmental contamination and hazards.

1. Topography. The topography should form a strong influence on the planning and layout of the project site. On large project sites of an open or campus-like development, consideration should be given to existing contours and storm water management. For projects within an urban area, where site areas are very limited, consideration of topography within and surrounding the project site is even more important. The adjacent street gradients, proposed ramps, access points of buildings without steps, gravity flow of sewers, retaining walls, etc., are but a few of the critical factors to be considered.

2. Natural Features. Natural features such as trees, ground forms, and streams should be preserved and utilized in the design.

3. Soil and Foundation Conditions. The site must be investigated for suitability of excavation, site preparation, building foundations, and utility lines and connections.

4. Stormwater and Floodplain. Many construction projects require the preparation of stormwater management plans. Sites which are or will be associated with the use or management of hazardous materials and/or wastes should be evaluated in terms of the 100-year, or even 500-year, floodplain, depending on the level of risk.

5. Historic Resources. The site and its surroundings must be investigated for potential adverse effect on historic resources, including historic properties and their surroundings, and potentially significant archeological sites.

6. Environmental Contamination. Sites should be investigated for potential environmental contamination, either from prior use or from proximity to potential sources of contamination. Given the nature of subsurface (groundwater) transport, potential sources within one kilometer of the site's boundary should be identified and evaluated.

7. Hazards and Nuisances. Hazard and nuisance effects, both on and off site, such as excessive noise, odors, smoke, and dust, should be considered in the development of the site plan. Remedial action to lessen the adverse effect of such conditions should be made by proper orientation of the structures, grading, provision of planting screens, fencing, and protective buffer strips.

E. Grading and Drainage. Grading design should reflect the following considerations in the early planning stage of the project:

1. Develop a suitable and economical site.

2. Make most beneficial use and disposal of storm water to allow maximum penetration without erosion; comply with local stormwater management requirements.

3. Preserve character of natural terrain by minimum disturbance of existing ground forms that are to be retained.

4. Achieve an approximate balance of cut and fill if feasible, using soil types properly (e.g., top soil for planting).

5. Avoid wavy profiles in streets and walks, except where adhering to existing topography, or where undulation of an area is necessary to meet minimum slopes for surface drainage.

6. Avoid steps in walks.

7. Meet ground levels of existing trees to be saved, or plan for tree wells or retaining walls as a part of the overall site diagram concept.

8. Show existing and proposed contours at a maximum of 600 mm intervals. Indicate spot elevations to supplement the contours, and indicate complete drainage away from the buildings, adjustment in gradient, etc.

9. Plan turfed areas to be sloped with a minimum being a two percent slope. The maximum slope of turfed area should not exceed one to three ratio (rise to run).

10. Plan for parking and terrace areas to have a minimum slope of one and one-half percent. The maximum slope for parking areas should not exceed seven percent.

11. Plan grading between buildings to have graceful contouring in order to appear natural.

12. Plan all proposed contours to meet existing grades at the property lines or contract limit lines in smooth flowing curves. Avoid sharp angles in contours.

13. Consider banks with slopes in excess of one to three rise in run to be too steep for mowing. Where these slopes are unavoidable, a vine or shrub type of ground cover should be installed to insure slope stabilization and reduce maintenance. If a design results in slopes of 2:1 or steeper, the use of a retaining wall or bank revetment should be considered.

14. Direct surface run-off to drainage structure inlets within the limits of the site.

15. Develop an erosion control plan for use during construction and a storm water management plan for post construction following Federal, State, and local guidelines.

16. Develop grading and drainage plans in consultation with the State Historic Preservation Officer and the Advisory Council on Historic Preservation whenever the plans may have an adverse effect on an archeological sensitive area or on the environs of an historic property.

F. Location of Buildings. In determining the location of buildings on the site, particular attention should be given to the character of adjacent areas and such related facilities as access roads, parking areas, service drives, and service areas and walks. Setbacks, spacing, and the orientation of the building or buildings must provide for proper light, air circulation, and fire safety clearances. Orientation of the buildings on the site should take full advantage of sunlight, prevailing breezes, views and vistas, topography, trees, and all features that would help enhance the proposed building. Location of buildings must take into account the potential effect on the surroundings of historic properties.

G. Vehicular and Pedestrian Circulation.

1. Interface with Private Highway Systems. It is the responsibility of the agency, with the assistance from an Architect/Engineer (A/E) firm, to contact the local officials and determine whether a comprehensive street-widening program exists or is being prepared which will in any way affect the streets or roads within or adjacent to the project. This program would include widening streets and closing or relocating streets or alleys. If such a program exists, the A/E firm shall notify the agency immediately. This information should be presented to the agency prior to submittal of schematic drawings. (Any street-widening program being planned or implemented by the city must be in accordance with a Comprehensive Street-

Widening Program officially approved by the local governing body.) The necessity for utility line relocations should also be checked with city officials. Where municipal standards for sidewalks, curbs, and gutters in public space are established, the municipal standards should be followed.

2. Government Highway Systems - On Government reservations, any new streets constructed to serve the project in question should reflect proposed circulation as indicated on the approved Master Development Plan. Streets, parking areas, and walks should indicate a functional design that will expedite the convenient and safe access, to and from the building or buildings.

H. Circulation Structures

1. General - Sidewalks, curbs, steps should be of concrete unless another material is required by local code. Driveways and parking areas should be of bituminous or concrete paving unless economic conditions require less expensive materials that are locally available.

2. Roads

a. Alignment of roads should be designed for directness of approach and should parallel the land contours as close as possible to avoid undue cuts and fills.

b. A vehicular connection to existing city streets should have minimum 6 100 mm radii, preferably 7 600 mm.

c. For two-way traffic roads, provide two 3 700 mm lanes or a 7 400 mm curb-to-curb total width. A one-way single lane road should have a 4 600 mm minimum curb-to-curb width.

3. Curbs. Integral concrete curbs or combined concrete curb and gutter should be used when storm water is directed against the curb, and the curbs should direct water into catch basins recessed beneath the curbs. This type of curb is used on both sides of a road. Use integral curb if the road or service area has a concrete surface, and combined curb and gutter if the surface is bituminous. This type of curb should be used as a bumper curb on ramps into buildings, with the width of the top modified as necessary.

4. Ramps

a. Ramps should be designed for adequate movement of all traffic. Vehicular traffic ramps and grades should not exceed 12 percent inside building and 10 percent outside. Concrete bumper curbs 200 mm high and 300 mm wide should be on each side of the ramp. If the ramp contains curves, the bumper curb should have a minimum width of 450 mm. A pedestrian walk along one side of the ramp will serve as a bumper curb. Ramps for hand trucks from loading platforms should be designed with handrails and protected with bumper curbs.

b. Pedestrian and equipment ramp slopes shall not exceed 1 in 12. All ramps in a design must be detailed by a centerline profile, vertical curve data, and suitable overhead clearances. (Equipment 4 400 mm min.; pedestrian 2 200 mm min.)

c. A typical cross section should be indicated which would include any heating facility provided for the slab. Where possible, drains should be connected to the city's storm sewer system by gravity flow. If the drain inlets are below the invert elevation of the storm sewer system, they should lead to a sump pit to pump water to existing storm drain lines. This system should be used as a last choice alternate.

5. Pedestrian Sidewalks and Walks. Walks of 1 500 mm width should be considered the minimum. Walk fillets should be designed to decrease cross-cutting of lawn and shrub corners.

I. Flagpole Location. Where applicable, the location of the flagpole should be indicated. The flagpole should be to the left of the main entrance of the building when viewed by a person approaching the building. PHS recommends one flagpole per government installation (U.S.), with a maximum of three (U.S., PHS, and state).

J. Off-Street Parking. Parking ratios and parking standard detail should be indicated in the Program of Requirements.

PHS:
4-5-20 SITE UTILIZATION PROCEDURES

A. Collaboration of the Design Professions. A multi-disciplinary team approach is especially important on major projects, and is required whenever an Environmental Assessment or Environmental Impact Statement is prepared. To assure good site utilization planning and the development of an effective pre-design planning, the A/E firm must collaborate with a qualified landscape architect, an urban planner, an environmental planner, or other appropriate professionals, at the inception of the project unless such services are available in-house.

B. Existing Site Condition Data. Architects/Engineers shall visit the site prior to the preparation of project grade studies. Comprehensive information on site conditions must be obtained and decisions reached regarding certain design policies.

1. An accurate, certified Boundary Survey, Topographic Survey, and existing Utilities Plan (BSTSUP) should be prepared. This report should indicate the established grades of city streets bordering or crossing the site. Cross sections of new streets and drives should also be furnished in the report.

2. High water elevations may be available from the U.S. Army Corps of Engineers, which should indicate if any part of the site is subject to flooding either from streams, tides, or surcharged storm sewers.

3. Scale of the surveys should be the same as the Site Plan. The survey drawing should have the same orientation as all other architectural and engineering drawings, including the Site Plan.

4. The Boundary Survey should indicate not only boundaries but also encasements, setbacks, encroachments, proposed street widenings, alley closings, right-of-ways, etc.

5. Data should be provided on existing trees: location, identification by common name, diameter of trunk (300 mm above the ground), approximate spread of branches, and average ground elevation at the base of isolated trees 150 mm or more in caliper, and principal trees on property lines. The largest and best trees should be indicated within wooded areas at the rate of not less than 40 per hectare, together with foliage outlines for edges of woods and for shrub masses.

C. Analysis of Basic Site Information. Basic site information should be analyzed with regard to the entire area surrounding the site, and to the relationship of the area to specific project requirements. On projects that will have a significant impact on the surrounding community, a comprehensive urban design study will be required (see Chapter 2-2 for details). The A/E firm shall submit a Site Analysis drawing with the diagrammatic submission. The A/E firm should make frequent visits to the site to learn about and record perceptions of the area and its surroundings during various stages of site plan development. This is important in order to ensure that the proposed plan correlates with (or adapts to) the specific site, and to obtain any information not previously noted.

D. Site Development - Contract Drawings

1. Site Plan or Layout Plan. This plan should show the locations accurately by dimensions of all buildings, walks, roads, parking areas, planting areas, historically sensitive areas, etc. If practicable, additional information may be shown on a separate grading plan.

2. Grading Plan. This plan, based on the original Topographic Survey, establishes grades for all buildings, roads, retaining walls, outside steps and ramps, terraces, parking areas, and all other ground-surface areas. It shall include the locations and grades of any required surface drainage structures and archeological sensitive areas.

3. Planting Plan. This plan should show the locations and identifications of all items of plant material to be used, and any existing material to be preserved or removed. A plant list, including quantities, sizes, and varieties of all materials, shall be included in this plan. Details of planters, tree guying, etc., shall be included on this sheet or on a separate sheet if their construction is part of the landscape contract. An inventory of endangered or threatened plant species shall be provided.

4. Site Construction Details. Construction details include plans, sections, and elevations of the individual elements of the site plan such as roads, walks, steps, walls, curbs, gutters, drain inlets, paving patterns, fences, planter pits and boxes, etc. Site construction details shall not be included on a planting plan if the planting is to be advertised as a separate contract. When planting is a separate contract: the spreading of topsoil seeding or sodding shall be part of the general construction contract.
5. Site Utilities - All site utilities should be coordinated with the appropriate disciplines, e.g., electrical, mechanical, environmental, etc.

SUBJECT: PROJECT SPECIFICATIONS

PHS:
4-6-00 PURPOSE

The purpose of this chapter is to establish a uniform format to be used in the development of project specifications. Development of project specifications is as important as the development of the working drawings. The project specifications shall be complete and accurate. This Chapter must be used in conjunction with FAR part 10, Specifications, Standards, and other purchase descriptions.

PHS:
4-6-10 GENERAL

A. The project specifications shall be developed based on the Construction Specifications Institute (CSI Document MP-2-1) "MASTERFORMAT" sixteen divisions, three part format (copies can be obtained from AIA Service Corporation, 44 Industrial Park Drive, P.O. Box 753, Waldorf, Maryland 20601 or the local State Society of Architects). The project specifications shall be written in WordPerfect (latest edition utilized by the agency) and provided in accordance with the Scope of Work (SOW).

   The project specifications must include all applicable environmental requirements, (for example, the use of recycled materials).

B. Exact guide specifications will not be available for use on PHS projects, unless specifically noted in the Program of Requirements (POR).

C. The project specifications shall be developed based upon materials and performance concepts established by federal specifications, the American National Standards Institute (ANSI), the American Concrete Institute (ACI), the American Society for Testing and Material Standards (ASTM), U.S. Environmental Protection Agency (EPA) regulations on the use of recycled materials, and other Government and industry standards-setting and specification-setting organizations. References shall be of the latest edition; cite approval date and dates of any applicable amendments or revisions.

D. Trade names and proprietary systems and designations may be referenced to establish a "Standard of Quality", noting at least 3 trade names. Whether trade names are used or not, specifications must include a complete description or listing of all prominent features. All project specifications shall contain the following statement referenced at the beginning of each specifications section which calls for materials that have not been justified for sole source procurement:

   Product Substitutions:

   Reference to any materials, products, article, service or process by name, make or catalog number shall be interpreted as establishing a standard of quality and not

construed as limiting competition or prohibiting substitution of any such material, product, article, service or process.

E. The contract drawings and specifications shall be coordinated for respective functions. Specifications shall define testing requirements, material, referenced standards, shop drawing requirements, sample requirements, certifications requirements, and performance requirements. The project specifications shall also define equipment performance characteristics, maintenance requirements, finish requirements, and workmanship standards.

F. The project specifications shall be developed to ensure competitive bidding except where proprietary, sole source procurement is justified (see FAR Subpart 6.3 - Other Than Full and Open Competition).

G. Selection of materials and procedures shall be based on project location, design requirements, cost analysis and availability. Commercially available material and equipment should be specified whenever possible, subject to the requirements of applicable EPA regulations on the use of recycled materials.

H. The project specifications shall contain as an integral part a complete Log of Required Submittals (See PHS Exhibit X4-6-A). The "Submittal Log" will be developed as a part of the A/E's normal backcheck process of the 100% specifications and should be an integral part of the final working drawing submission. During the Bidding Process the submittal Log becomes a useful tool for the contractor during pricing. During the Construction Phase the Submittal Log should be used as a submittal requirements register and routing log.

I. The project specifications shall contain specific requirements for Operations and Maintenance Manuals. The specified manuals will contain information necessary for the safe and efficient operation and maintenance of building equipment and operating systems, and information relative to the inspection, care, and maintenance or repair of architectural products and finishes.

1. Product warranties will be contained as an integral part of the manual. Warranties will commence upon turn over of the complete facility and written acceptance by the government of the complete facility (or beneficial occupancy of any portion of the facility) and <u>not</u> upon delivery and set up of the subject material or equipment.

2. User training will be called out and required where applicable for specific facility features such as pneumatic controls operation, energy management systems chillers, boilers, air handlers, etc. Architectural features requiring training would include, fire alarm systems, roofing systems, high tech flooring systems such as seamless vinyl flooring.

3. Spare parts requirements will be called out and itemized, and quantified for all mechanical, electrical, and architectural features. Spare parts should be limited to 10% of total installed.

PHS:
<u>4-6-20</u> SUBMITTALS (See Section 4-8-30, PHS Chapter 4-8 "General Design Requirements")

A. Preliminary Design Documents

1. The A/E firm shall furnish an "Outline Specification" with the submittal of the Preliminary Design Submission.

2. The Outline shall be based on the CSI sixteen divisions. This outline shall include a preliminary statement of all major systems, materials and types of major equipment components. The Outline shall be supplemented and/or enhanced to express the environmental and/or historic preservation requirements of the project.

B. Intermediate Design Documents

1. Preliminary drafts of the project specifications shall be prepared by the A/E Contractor to substantiate form, arrangement and procedures for development of all sections. The draft shall include all technical sections prepared with headings that illustrate broad scope contents. This submittal may be marked-up, and edited. An environmental summary or other environmental document should accompany this submittal.

2. Copies of the preliminary draft shall be submitted to the Project Officer for review and comment in quantities as specified in the SOW.

3. Copies shall be retained by the agency for future reference and one marked-up copy returned to the A/E .

C. Pre-Final Design Documents

1. Complete draft specifications shall be prepared for submittal to the Project Officer in the form required for the Intermediate submittal.

2. Specifications shall be complete and in final format. (Cut and paste drafts are not acceptable.)

3. Final environmental documents should accompany this submittal.

D. Final Design Documents

The final specifications shall incorporate all previous review comments and be typed (on one side) on A4 bond paper. The A/E contractor shall provide covers of a design approved by the agency for each volume of specifications. The A/E shall submit specification quantities in accordance with the SOW. The original documents will not be forwarded at this time. The agency will verify the 100% Final Submission. The original documents will be requested under separate cover after the backcheck. The agency verification does not relieve the A/E of backcheck responsibilities of providing a 100% package.

Final environmental (including historic preservation) clearances should accompany this submittal.

PHS:
4-6-30 ADVERTISING DOCUMENTS

A. Agencies shall furnish the A/E with copies of the complete contract documents as the project is advertised, in the quantities specified within the SOW. The A/E shall review the complete bid package and submit any pertinent comments to the agency so that amendments may be issued if necessary.

B. The A/E shall prepare and submit to the Project Officer any drawings or revised specifications necessary for the issuance of any amendments.

SUBJECT: COST ESTIMATING

PHS:
4-7-00 PURPOSE

The purpose of this manual chapter is to establish the policy and procedures in developing the cost estimate at each phase of project development. Also, cost estimating is an important element of the design stage, since it is intended to keep the Government fully apprised of the project costs during the development of the contract documents.

PHS:
4-7-10 GENERAL

A. The architect/engineer (A/E) shall be responsible for completing the design within the budget estimate or funds appropriated for construction of the project. Any changes which may be necessary to bring construction costs within the available funds are not reimbursable; therefore, the A/E shall devote the proper time and attention to ensure that the cost estimates are adequate and accurate.

B. The project cost shall include, but not be limited to the following: (1) site development costs, (2) building costs, (3) fixed equipment, (4) moveable equipment, (5) construction management, (6) contingency funds, and (7) environmental (including historic preservation) studies and consultations. The project costs shall also include general conditions, labor, materials, equipment rentals, contractors' overhead and profit. Direct costs (labor, material and equipment rentals) should be shown separately from indirect costs (overhead, profit, bonds, insurance, etc.). The take-off of material and labor for placing them shall be itemized separately for checking revisions and future reviews.

C. The Cost Estimate shall be developed based on the Construction Specifications Institute (CSI Document MP-2-1) "MASTERFORMAT" sixteen divisions. (Copies can be obtained from AIA Service Corporation, 44 Industrial Park Drive, P.O. Box 753, Waldorf, Maryland, 20601 or the local State Society of Architects). The cost estimate shall also include costs associated with environmental and/or historic preservation issues.

D. Cost estimates will be required for each phase of development of the contract documents. (See contract documents this chapter.)

PHS:
4-7-20 BUDGET ESTIMATES

This cost estimate shall be the responsibility of the agency proposing the project. Refer to Chapter 3-1 for requirements for budget estimates.
PHS:
4-7-30 DESIGN ESTIMATES

A. Schematic Documents - Order of Magnitude or "Square Meter"Cost Estimates: This estimate shall be based on diagrammatic sketches and documents (square- meter costs) and shall include the major components of the projects, i.e., site, building, fixed and movable equipment, cost allowances for construction administration, environmental compliance features, appropriate contingency fund, and any other special feature of the project not included in the above headings but incorporated in the design of the facility. Cost allowances will be based on the historical data consisting of 5 to 10 completed projects of similar facilities.

B. Preliminary Submission; Schematic Design Documents - Order of Magnitude or "Square Meter Cost" Cost Estimate - Based on Preliminary drawings and documents (square meter costs) and shall be prepared listing the cost of major project components, i.e. site, building, plumbing, heating and air conditioning, electrical, outside utilities, fixed and movable equipment. Also include an allowance for construction administration, contingency fund and other known special design features to be incorporated in the design.

C. Preliminary Submission; Design Development - Unit Price Cost Estimate: An estimate based on Design Development drawings and documents shall be prepared from unit pricing by material types for the complete project, and the estimate shall be broken down into the sixteen divisions, supplemented with environmental and/or historic preservation costs. Lump-sum prices should be avoided whenever possible. Also to be included is an allowance (3% maximum) fee for construction compliance; a contingency fund allowance and any other special design features incorporated in the design.

D. Contract Documents Submissions - Quantitative Take-Off Cost Estimate: An estimate based on the level of detail and information available with the each submission (i.e. 60%, 80%, 100%). This estimate shall reflect a specific response to the labor and materials requirements represented with each specific design. Materials quantities will reflect direct material take offs from the working drawings. Labor costs will be reflective of the Davis-Bacon rates, labor classification, and local geographical escalation. Environmental compliance costs shall be summarized by statutory requirement (e.g., Clean Air Act, Federal Water Pollution Control Act, Resource Conservation and Recovery Act, National Historic Preservation Act, etc.). The Contract Documents Phase Estimates will include a 3% percent fee for construction administration, a contingency fund not to exceed 5% of the estimated construction cost, and other known special features to be incorporated in the design. The 100% Contract Documents Estimate shall be all inclusive and consider all final revisions to the bid package. This estimate shall be completed in sufficient detail to constitute the government estimate during bidding.

PHS:
4-7-40 CONSTRUCTION ESTIMATES

A. Contractor's Payment Breakdown - The contractor shall submit a payment breakdown for the complete project. The submittal shall be broken down in the 16 divisions based on the Construction Specifications Institute (CSI Document MP-2-1) "MASTERFORMAT", and supplemented with environmental/historic preservation costs.

B. Change Orders and Claims - Contractor shall submit cost estimates for all changes and claims. The estimates shall be broken down into trades, quantities and units. The submittal shall include copies of material and equipment invoices for work installed by the general contractor and/or all sub-contractors involved in the change or claim as support evidence for work installed by each contractor. Lump-sum quotations will not be accepted. Overhead and profit will not be allowed in FICA and FUTA at any time. Changes and

claims associated with environmental/historic preservation issues shall cite the specific statutory requirement.

C. Changes and Claims - The Project Officer will prepare the Government estimates for all changes and claims, for comparisons with the contractors proposal to accomplish the work. The Contracting Officer's or the Contracting Officer Representative will conduct negotiations with the contractor.

SUBJECT: GENERAL DESIGN REQUIREMENTS (Also referred to as ARCHITECTURAL REQUIREMENTS in a print version with the same date)

PHS:
4-8-00 PURPOSE AND SCOPE

A. The purpose of this chapter is twofold:

1. To convey to the project Architect/Engineer (A/E) both general and specific guidelines regarding architectural design features required for U.S. Public Health Service (PHS) projects.

2. To inform the project A/E of the requirements for each submittal of the construction documents for government approval.

B. The scope of this chapter includes all special-purpose type construction required by PHS components, including research facilities, health care facilities, and quarters.

PHS:
4-8-10 CODES AND STANDARDS (Edit in hard copy to use local or state codes along with NFPA 101)

A. The general design requirements of PHS facilities shall conform to the following nationally recognized codes and standards, depending on the code jurisdiction for the project under consideration. In all design projects, new construction and renovation, the National Fire Protection Association (NFPA) 101, Life Safety Code shall be complied with in its entirety. Where a conflict arises between the 101 NFPA and another applicable building code, the NFPA 101 will govern. The following applicable codes and standards are:

1. National Fire Protection Association, 101 Life Safety Code.

2. American Standard Safety Code for Elevators, Dumbwaiters and Escalators.

3. Uniform Federal Accessibility Standards.

4. The American Institute of Architects Guidelines for Construction and Equipment of Hospitals and Medical Facilities.

5. Department of Energy (DOE) Energy Conservation Standards (10 CFR Part 435): see Executive Order; Energy Policy of 10/18/92.

6. CAD Layer Guidelines (American Institute of Architects), and

One of the following three (3) codes:

7. Building Officials and Code Administrators International, Inc. (BOCA), National Building Code; or
8. Southern Building Code (SBC), Standard Building Code; or

9. Uniform Building Code (UBC).

B. State and Local Codes: Federally-owned facilities are not subject to state and local codes and ordinances. However, it is the policy of PHS to comply with such codes wherever feasible. If such compliance presents a major cost impact, the government representative should be advised.

C. Exceptions: When deviations from the criteria and standards specified in this chapter are required to meet special conditions or problems, determinations for compliance shall be the responsibility of the Authority Having Jurisdiction (AHJ). Each Public Health Service Agency is considered the AHJ unless that agency has formally delegated the AHJ to another body. Practical conflicts between code requirements shall be documented, and copies shall be submitted to the Contracting Officer for consideration during the periodic update of this manual. (Hard copy manual –refers to PHS Agency Facilities Officer, (Also known as "Authority Having Jurisdiction" per NFPA) shall make final determination and place written documentation in the official contract file.)

PHS:
4-8-20 DRAWING CONVENTIONS (Information in this section also applies to Volume I, Chapters 4-9, "Civil/Structural Requirements", 4-10, "Electrical Requirements", and 4-11, "Mechanical Requirements".)

A. Numbering: All drawings shall be numbered as follows:

1. Civil (Site) C - 1, C - 2, etc.

2. Landscaping L - 1, L - 2, etc.

3. Architectural A - 1, A - 2, etc.

4. Structural S - 1, S - 2, etc.

5. Mechanical M - 1, M - 2, etc.

6. Plumbing P - 1, P - 2, etc.
7. Electrical E - 1, E - 2, etc.

Additional sections (e.g., Demolition, Site Utilities, Kitchen Equipment, Laboratory Furniture) may be added as warranted by specific projects.

B. Sheet Size: Within a single project, all contract drawings shall be uniform in size. The standard sheet size is A1 (841 x 594 mm). This size may be increased to a maximum size of A0 (1189 x 841 mm).

C. Scale: Various scales relating to each stage of drawing preparation are specified in this chapter. A graphic scale should be placed under the title of each plan drawing.

D. Title Block: No standard title block is required by PHS. Each agency may develop its own standard title block, if desired. However, all title blocks shall contain the following information:

1. Department of Health and Human Services

2. U. S. Public Health Service

3. Agency Name

4. Project Name

5. Project Location

6. Other pertinent information

E. Match Lines: Floor plans requiring division onto more than one sheet shall be provided with match lines, which shall be cross-referenced on each sheet.

F. Key Plan: Projects requiring more than one sheet for the plan of a single floor level shall include a key plan on each floor plan sheet, which shows the location of the partial floor plan. The key plan shall be located near the title block.

G. North Arrow: Each site plan and building floor plan shall be accompanied by a north arrow.

H. Standard Details: Reference details which are typical and which apply to the specific project may be incorporated into the drawings or specifications by tracing the standard details onto the project drawings, by the use of transparent "applique film" decals, or by computer-aided means. However, such standard details must be fully applicable to the specific project.

I. Quality of Drawings: All drawings submitted for review shall represent the best professional quality of graphic presentation. Drawings shall be clear, legible, accurate, and properly coordinated. Changes or corrections shall be made with mild abrasive erasers or correction fluids. Original mylar drawings at final submittal shall not contain any cut-in panels. If, in the opinion of the government, the quality of the drawings does not meet these requirements, the drawings will not be approved.

J. CAD Drafting: The use of computer-aided design shall be required for all new construction, and highly encouraged for all repair and improvement work to existing facilities. Contract documents shall observe the CAD Layering Standards and sheet formatting recommended within the CAD Layering guidelines published by the American Institute of Architects (AIA) Press.

PHS:
4-8-30 ARCHITECT/ENGINEER SUBMITTALS

A. The A/E shall submit design documents for review and approval to the Contracting Officer at the following stages of development: (The Government may reduce the number of stages and percentage complete to suit specific projects.)

1. SUBMITTAL I: Pre-design Studies (e.g., pre-design surveys, site analysis, and feasibility studies) are optional, depending on the complexity of the project. See Volume I, Chapter 3-5, "Feasibility and other Facilities Studies" for details.

2. SUBMITTAL II: Preliminary Submission; Concept Design shall include alternate schemes, depending on size and complexity of the project. Project design is approximately 5% complete. Specific Requirements are found in Section 4-8-40B.

3. SUBMITTAL III: Preliminary Submission; Schematic Design shall include the further development of the selected concept scheme. Project design is approximately 10% complete. Specific Requirements are found in Section 4-8-40C.

4. SUBMITTAL IV: Preliminary Submission; Design Development Project design is approximately 35% complete. Specific Requirements are found in Section 4-8-40D.

5. SUBMITTAL V: Contract Documents Initial Submission Project design is approximately 60% complete. Specific Requirements are found in Section 4-8-40F.

6. SUBMITTAL VI: Contract Documents Intermediate Submission (Optional Submission) Project design is approximately 80% complete. Requirement of the 80% Contract Documents Submission is discretionary by the AHJ and should be limited to large facilities or projects with specific complexity. Specific Requirements are found in Section 4-8-40.G.

7. SUBMITTAL VII: Contract Documents Final Submission Design Documents (Contract Documents 100% complete). Specific Requirements are found in Section 4-8-40.H.

8. SUBMITTAL VIII: Contract Documents Backcheck Submission Backcheck Documents Specific Requirements are found in Section 4-8-40.I.

B. The number of copies of plans submitted for review at each submittal shall be as specified in the A/E Scope of Work (SOW).

C. See Volume I, Chapters 4-9, 4-10, and 4-11 for information on work expected to be completed at various stages of civil/structural, electrical, and mechanical design. Also, see Volume I, Chapter 4-7, "Cost Estimating" for requirements for cost estimates, and Volume I, Chapter 4-6, "Project Specifications" for project specifications.

D. Design Calculations: Submit as prescribed in the SOW, commensurate with each phase of design.

PHS:
4-8-40 REQUIREMENTS FOR DESIGN DOCUMENTS

A. Submittal I: Predesign Studies: This submittal includes all work conducted by the A/E prior to the Schematic Design stage, and may consist of one or more of the following tasks, depending upon the complexity of the project:

1. Site Analysis: A rough sketch of the site showing all of the observations of site conditions and environment which would have an effect upon project development.

   a. The A/E shall obtain a local land map, city or county map, or United States Geological Survey map. This map, together with the survey, shall be used to prepare the site analysis sketch.

b. General topographic survey information, such as boundaries, grades, roads, walks, water features, structures, tree masses, major utility lines, and property lines shall be shown on the site analysis sketch.

c. The site analysis sketch shall be drawn directly on a print of the survey to show the existing conditions of the site and the immediate surroundings. An additional sketch or overlay, at a scale of 1:2000 or smaller, shall be prepared if site conditions outside the survey area are required to present the information adequately.

2. Predesign Survey: Study and documentation of existing site conditions and structures (particularly in renovation work) in order to determine the basis for work for future design .

a. A/E shall obtain as-built or other drawings of existing structures from the agency, if available, and verify field conditions .

b. A/E shall verify the conditions of existing structures by making a field survey, making record drawings if needed, taking photographs, and analyzing findings.

c. The predesign survey report shall document all findings regarding the condition of existing structures, including mechanical and electrical systems, in a format which can be readily reproduced.

3. Feasibility Studies: Analyses, including rough sketches (plans and elevations) of proposed design solutions, used in conjunction with the site analysis sketches and photographs (snapshots) of the site and surrounding area.

a. Feasibility studies are generally used to compare various alternative proposals, such as use of different sites, renovation versus new construction, single story versus multi-story schemes, use of different structural systems, etc.

b. Feasibility studies should recommend a course of action among the various alternative proposals studied.

B. Submittal II: Preliminary Submission; <u>Concept Design</u>:

1. This submittal constitutes approximately 5 percent completion of the design stage.

2. The A/E's initial site analysis, studies, and sketches, together with all of the information required by the following paragraphs in this section, shall make up the concept submittal.

3. Concept Studies; Alternate Schemes: The A/E may be required to provide rough sketches (plans and elevations) of proposed alternative design solutions, based on site analysis sketches and photographs of the site and surrounding area.

a. Sketches may be freehand, but shall show enough information to illustrate the architectural features of the proposed project with emphasis on unity and compatibility with surrounding areas and buildings, regional architectural character, proportions, local zoning requirements, and structural systems.

b. Alternate schemes shall fully meet all basic requirements of the project Program of Requirements (POR) before the A/E proceeds with the development of the schematic drawings.

4. Specific Requirements for Drawings:

a. Concept drawings shall consist of a site plan, complete plans of all floors with all rooms identified, roof plan, elevations, and both longitudinal and transverse sections for each proposed design solution.

b. Drawings shall show clearly the basic design of the project, but need not be elaborated beyond the requirements of this section.

c. The space assigned to each program activity (as assigned in the POR space schedule and functional diagrams) must be shown.

d. Drawings must show entrances, circulation areas, stairs, and elevators. Any required smoke and/or fire partitions shall be indicated on the floor plans. Space for all mechanical and electrical equipment, toilet rooms, and stacks must be shown.

e. Scales and Dimensions:

(1) Site Plan: Any scale, see paragraph 4-8-40G.4.a for requirements.

(2) Other concept drawings: 1:200 scale (single line). Larger scales may be used, if appropriate.

(3) Note scale and graphic scale under title of each drawing.

(4) Dimensions on drawings shall be correct.

5. Schedule of Areas:

a. A schedule of areas shall be provided at the right hand side of each sheet containing a floor plan, giving the net assignable square meters "requested" in the POR and "provided" by the concept design for each activity by floors. See PHS Manual, Volume I, Chapter 4-1, "Net and Gross Area Calculations" for guidance in computing net and gross areas. (See Exhibit X4-8-A, "Health Facilities Area Tabulation," for a suggested format for this schedule.)

b. On the first sheet of the series of floor plans, there shall be a table of "Grand Totals of Areas" in square meters. The table shall show net areas and gross areas per floor. The ratio (percentage) of total building net area to total building gross area shall also be noted in the table.

c. The net areas of rooms or other spaces shall be noted on the floor plans in each individual space along with the name or function of the space.

6. Elevations: The proposed building elevations shall consist of block outlines and breaks to indicate the various masses and how they coincide with the plans. Typical proposed window arrangement and exterior materials indication shall be shown, only to the extent

necessary, to suggest a possible design in accordance with the study sketches. Locations of floor levels shall be indicated.

7. Sections: The longitudinal and transverse sections shall include the major rooms to be shown and labeled (abbreviated if necessary), as well as floor-to-floor dimensions.

8. Identification of Floors: The floor which is approximately on the same level as the main entrance is to be designated at the "first floor". Where the site slopes downward from the main facade, so that one or more secondary entrances leads to a level below the first floor, this level is designated as the "ground floor". Floors below grade are to be designated as "basement".

9. Future Expansion: Definitely planned or probable future extensions of the building shall be indicated by dotted outlines on the plans and elevations. The plans shall be noted with the words "future expansion".

10. Square Meter Cost Estimate: A cost per square meter estimate shall be submitted. See PHS Manual Volume I, Chapter 4-7, "Cost Estimating" for detailed information.

C. Submittal III: Preliminary Submission; Schematic Design: This submittal constitutes approximately 10 percent completion of the design stage. Schematic Phase Documents constitute the refinement of the Government's selected conceptual design solution presented during the Conceptual Design Submittal, and shall include the following information:

1. The A/E's revised site analysis, studies, and sketches correcting property line boundary and property corner survey data discrepancies.

2. Engineering Subsurface Investigation Report: An appropriate number of test borings shall be taken within the building footprint to sound bearing stratum. A minimum of two test borings shall be taken in the parking area.

3. Site Plan of Proposed Building Site: Refined from Concept Design Phase to include any revisions resulting from the more detailed Schematic Design Development. This phase of design should show a complete site plan with property lines, legal description, contours, pedestrian walks, roadways, parking, and utilities. The plan should also show the provisions for making the site and building accessible to the physically handicapped such as ramps, curbs and entrances for wheelchairs and parking spaces reserved for the handicapped (See Uniform Federal Accessibility Standards).

4. Facility Plans shall be enhanced from the concept drawing stage to show all refinement which occurred from the freehand concept stage including any changes to actual room square footage.

5. Specific Requirements for Drawings:

   a. Schematic drawings shall consist of an enhanced site plan, complete plans of all floors with all rooms identified, roof plan, elevations, and both longitudinal and transverse sections for the selected concept design scheme.

   b. Drawings shall show clearly the basic design of the project, but need not elaborate beyond the requirements of this section.

   c. The space assigned to each program activity (as assigned in the POR space schedule and functional diagrams) must be shown.

d. Drawings must show entrances, circulation areas, stairs, and elevators. Any required smoke and/or fire partitions shall be indicated on the floor plans. Space for all mechanical and electrical equipment, toilet rooms, and stacks must be shown.

e. Scales and Dimensions:

(1) Site Plan: Any scale, see subparagraph 4-8-40G.4.a for Submittal V requirements.

(2) Other schematic drawings: 1:200 scale (single line). Larger scales may be used, if appropriate.

(3) Note scale and graphic scale under title of each drawing.

(4) Dimensions on drawings shall accurately reflect the selected concept scheme.

6. Schedule of Areas:

a. A schedule shall be provided at the right hand side of each sheet containing a floor plan, giving the net assignable square meters "requested" in the POR and "provided" by the schematic design for each activity by floors. See PHS Manual, Volume I, Chapter 4-1, "Net and Gross Area Calculations" for guidance in computing net and gross areas. (See Exhibit X4-8-A, "Health Facilities Area Tabulation," for a suggested format for this schedule.)

b. On the first sheet of the series of floor plans, there shall be placed a table of "Grand Totals of Areas" in square meters, broken down by floors into net areas and gross areas. The ratio (percentage) of total building net area to total building gross area shall also be noted in the table (this requirement may be carried over from the concept submittal if no changes are identified).

c. The net areas of rooms or other spaces shall be noted on the floor plans in each individual space along with the name or function of the space (this requirement may be carried over from the concept submittal if no changes are identified).

7. Elevations: The elevations shall consist of block outlines and breaks to indicate the various masses and how they coincide with the plans. Typical proposed window arrangement and exterior materials indication shall be shown. Locations of floor levels shall be indicated.

8. Sections: In both the longitudinal and transverse sections, the major rooms shall be shown and labeled (abbreviated if necessary), as well as floor-to-floor dimensions.

9. Square Meter Cost Estimate: A cost per square meter estimate shall be submitted. See PHS Manual Volume I, Chapter 4-7, "Cost Estimating" for detailed information.

D. Submittal IV: Preliminary Design; Design Development:

1. This submittal constitutes approximately 35 percent completion of the design stage.

2. Scale of Drawings: The site plan shall be drawn at the same scale as that used for the site plan required for the working drawings (see Section 4-8-40E). Unless otherwise

noted, all drawings shall be at 1:100 scale. A smaller scale may be used only when approved in writing by the Project Officer.

3. Site Plan: The following note shall appear on the site plan: "BASED ON TOPOGRAPHIC SURVEY DATED _____."

4. Floor Plans:
   a. Floor plan drawings shall have the following note: "BASED ON PROGRAM OF REQUIREMENTS DATED _____ AND ON SCHEMATIC DRAWINGS APPROVED _____."

   b. Floor plans shall indicate wall thicknesses, door swings, and door sizes.

   c. Each room or space shall be noted by its name (abbreviated when necessary). Directly below the room name shall be the finish number, corresponding to the finish schedule. The area of the room or space in square meters shall be noted in the lower right corner of the space.

   d. Schedules of net assignable square meters, gross area, and "Grand Totals of Areas" shall be included in the same manner as on the schematic drawings.

   e. Materials of all partitions shall be indicated by either symbol or note to agree with those materials described in the supporting data.

   f. Floor plans shall include section lines showing locations of longitudinal and transverse sections.

5. Fire Protection: Design Development shall indicate the following fire protection features for the project site and for each floor of the building, reflecting National Fire Protection Association, "Life Safety Code", Section 101 requirements: fire hydrants, siamese connections and post indicator valves; standpipe locations; fire and smoke partitions; door swings; areas covered by automatic fire extinguishment systems; locations of fire hose cabinets and/or portable extinguisher cabinets; locations of fire alarms and annunciator panels; and locations of fire and/or smoke detectors.

6. Elevations: Major design features and materials shall be noted directly on the elevations. Notations shall be in general terms such as brick, stone, granite, architectural cast concrete, bronze, aluminum, etc. Terminology and materials must agree with the supporting data submitted by the A/E for approval.

7. Sections (Longitudinal and Transverse): At least one longitudinal and one transverse section through the major portion of the building shall be included in the design development. All major rooms exposed by the section shall be shown and identified by name. Complete floor-to-floor dimensions from the lowest floor to the roof shall be shown; and the various ceiling heights throughout the building shall be indicated.

8. Wall Sections: One wall section shall be cut on a line through windows and another on a line through the exterior wall , accompanied on the same sheet at the same scale by a partial elevation and plan section. Wall sections are required for all substantial variations in wall design. The purpose of these sections is to delineate the fundamental concepts of the proposed exterior wall design.

9. Design of Special Areas: Design sketches, including 1:50 scale plans, interior elevations, and reflected ceiling plans of lobbies, auditoriums, kitchens, laboratories, and other areas which are to be given special architectural treatment shall be submitted with the design development documents. Floor plans at 1:50 scale shall be started, showing health-related casework and equipment.

10. Possible future expansion shall be indicated by dotted outlines on the plans and elevations, and shall be noted with the words "future expansion".

11. Outline Specification (see Volume I, Chapter 4-6).

12. Cost Estimate: A cost per square meter estimate, listing the costs of the major components (i.e., building, plumbing, heating and air-conditioning, electrical, refrigeration, outside utilities, site development, laboratory casework, equipment, etc.) shall be submitted. (See Volume I, Chapter 4-7.)

E. Contract Documents Submissions (Submittals V @ 60%, VI @ 80%, and VII @ 100%).

1. The term "working drawings" is used to refer to all contract document development following approval of the Design Development Submission. These drawings and related documents are submitted for review and approval in three stages:

   a. SUBMITTAL V: Contract Documents Initial Submission specific requirements are found in subsection 4-8-40F.

   b. SUBMITTAL VI: Contract Documents Intermediate Submission specific requirements are found in subsection 4-8-40G.

   c. SUBMITTAL VII: Contract Documents Final Submission specific requirements are found in subection 4-8-40H.

   d. SUBMITTAL VIII: Contract Documents Backcheck Submission Backcheck Documents Specific Requirements are found in subection 4-8-40I.

2. The detailed requirements of this section deal with the architectural drawings, and with the general instructions to the site planning, structural, mechanical, and electrical drawings. (See Volume I, Chapters 4-9, 4-10, and 4-11 for other detailed requirements.)

3. Preparation of Drawings: Sheet size, scales of drawings, and title blocks shall be in accordance with Section 4-8-20 unless otherwise noted. Each drawing must bear the name, number, and location of the project.

4. Tracing Material: An approved plastic film shall be used so that sharply defined prints can be produced.

5. Components: The drawings should include:

   a. A Cover or Index sheet and data on site survey and soil borings.

   b. Site Work.

c. Architectural Floor and Roof Plans. A separate plan must be drawn for each floor, including all basement, mezzanine, and penthouse levels. A detailed floor plan should be required in rooms with special requirements such as reception areas, kitchens, locker rooms, mechanical rooms, etc.

d. Elevations and Longitudinal and Transverse Sections.

e. Reflected Ceiling Plans.

f. Architectural Schedules (Finish, Door, Window, etc.); Exterior and Interior Details.

g. Structural Drawings (see Volume I, Chapter 4-9).

h. Mechanical Drawings (see Volume I, Chapter 4-11).

i. Electrical Drawings (see Volume I, Chapter 4-10).

j. Landscaping and Planting Drawings.

k. Additional drawings (e.g., Demolition, Kitchen Equipment, etc.) as warranted by the project.

6. Placement of Drawings on Sheets:

a. General: Drawing should be arranged on sheets with economical use of space and without crowding or overlapping. A systems approach to contract documents organization such as the AIA "CONDOC" system should be used.

b. Combination of Drawings: Different categories of drawings may be combined. If this is done, categories should be arranged in groups of related items. For example, exterior wall sections should be separated from interior wall section details if both are shown on the same sheet. Similarly, plans should be separated from elevations. For small projects, where such combinations are feasible, the sheet numbering system, which normally requires a separate number for each class of drawings, may be modified.

c. Floor Plans: One or more floor plans may be placed on a single sheet, depending on the size of the project.

d. Elevations and Sections: Several elevations and/or sections may be placed on one sheet so long as it remains easily legible. When more than one sheet is used, the elevation showing the main entrance should be placed on the first sheet.

7. Floor and Roof Plans:

a. Scale: 1:100 or 1:50 scale may be selected. In either case, the scale selected should allow all necessary information to be shown clearly to avoid repetition at a larger scale, but without becoming illegible.

b. Titles of Spaces: In the center of each space on the floor plan should appear, underlined, its name and space number.

(1) If the space is too small to contain these items, they should be placed in a clear area outside the room or space with an arrow pointing to the space.

(2) On mechanical and electrical floor plans, names may be omitted from the spaces in order to allow clarity in delineation of utility systems. Names should then be placed in schedules located adjacent to the plans.

c. Numbering of Interior Spaces: Related numbers shall be assigned to each separate subdivision of space of each floor, with the first digit or letter indicating the floor level (B-1, G-1, 101, P-1, for example). Space numbers shall be assigned to stairs, elevators, dumbwaiters, escalators, and major duct shafts, with the same number repeated on each floor (Stair No. 1, Elevator No. 1, etc.).

d. Partitions:

(1) Permanent: Permanent partitions shall be shown on floor plans. This includes any partition so constructed that it is not intended to be moved, or if moved, the parts generally are not salvageable.

(2) Relocatable: "Relocatable partition" means any partition which is designed so that it can be moved readily from one location to another after building occupancy, with nearly complete salvageability. It may be either ceiling high or less than ceiling high, but never above a suspended ceiling. A separate drawing nomenclature shall be used for relocatable partitions.

8. Accessibility of Mechanical and Electrical Equipment: The A/E shall ensure that the design is coordinated to provide clearance around all machines and equipment, for removal of parts for repairs or replacement. Door or window openings, removable panels, corridor sizes and locations, and floor or roof load capacities shall be designed so that equipment can be removed without structural changes to the building.

9. Elevations and Sections:

a. Scale: It shall be the same as that used for the floor plans.

b. The extent of each building material used shall be indicated clearly on the elevations.

c. Cutting Plane for Longitudinal and Transverse Sections: A plane shall be chosen which cuts through the most important spaces and reveals the maximum number of different construction conditions. In addition to complete sections, other complete or fragmentary sections needed for clarity shall be shown. The planes through which the longitudinal and transverse sections have been taken shall be indicated on the related floor plans.

10. Schedules: Since the Contract Clauses of the contract specifications state that schedules on drawings shall take precedence over any conflicting notations on the drawings, it is important that schedules be accurately prepared to ensure that the desired finishes and materials are obtained. The following schedules shall be provided:

Interior Finish Schedule
Interior and Exterior Color Schedule

Door Schedule
Window Schedule
Equipment and Furnishings Schedules

11. Wall Sections: Complete wall sections are required, showing each type of wall construction from the top member to the lowest floor level, including the footing.

    a. Anchorage details for stone, brick and other masonry shall be checked for structural adequacy by structural engineers engaged by the A/E.

    b. Details shall be developed and referenced back to the information shown with the wall or building section to thoroughly describe all material requirements.

12. Details: Details shall be drawn at a scale sufficient to indicate clearly the desired arrangement of materials where special conditions apply. The selected scales will be utilized consistently throughout the drawings by all disciplines.

    a. Standard details may be used as an integral part of the working drawings, and they should be tailored to fit the specific project.

    b. In case of differences between small and large scale drawings, the large scale drawings shall govern and shall be so stated within the contract specifications.

    c. All details shall be cross-referenced as well as back-referenced to the plans which they detail. When a large scale drawing of a major element is made, it shall be referenced on the floor plans.

13. Material Indication: A materials legend showing hatching examples and corresponding materials shall be provided.

    a. On areas of drawings where hatching is needed to indicate materials, only enough area to show clearly the type and extent of the material need be hatched.

    b. Where hatching is used to indicate the extent or scope of new work, in contrast to existing work, the entire area of the new work shall be hatched.

14. General Notes: General notes for each category of drawing shall be placed on the first sheet of each series, preferably on the right above the title block. These notes should be kept to a minimum. They may be referred to on other sheets in the same or other series as necessary without repetition. Notes should be clear, concise, and non-repetitive, and should complement and amplify the drawings and specifications.

    a. Notes shall be directed only to the General Contractor. The A/E shall not put any notation or statement on the drawings indicating or designating portions of the work to be done by a specific subcontractor or trade.

    b. Consistency of Nomenclature: In order to guard against conflicts over ambiguous terms and statements, the terms used on drawings and in specifications shall be identical. The A/E shall refer to the POR and design data for proper terms for rooms, spaces or portions of structures.

15. Coordination of Contract Documents: All contract documents shall be coordinated not only to ensure coverage, but also to eliminate contradictions. As referenced in

paragraph 4-8-40.E.6, a systems approach to contract documents organization such as the AIA "CONDOC" system should be used. Special care shall be taken to coordinate the architectural drawings and specifications with the landscape, civil, structural, mechanical and electrical drawings and specifications.

16. A minimum size for all lettering on full size drawings shall be 4 mm to provide for drawing clarity if the original documents are reduced to 1/2 size sets.

F. Submittal V: Contract Documents Initial Submission

1. This submittal constitutes a minimum of 60 percent of the final contract documents. All disciplines must be at the 60 percent completion stage.

   a. When all portions of the drawings (architectural, structural, mechanical and electrical) have reached the information required by this section and related sections in Volume I, Chapters 4-9, 4-10 and 4-11 are incorporated, and the drawings become the Contract Documents Initial Submission. These documents are then reviewed by the Government reviewers to guard against expansion in the scope or change in design or materials which may increase costs above the limit of authorized funds. The Contract Documents Initial Submission shall be in accordance with the approved Design Development Submittal, the approved POR and the written comments made during the preliminary review.

   b. Completeness of drawings: The descriptions of components which follow do not necessarily include all initial elements which may be required at the 60% Contract Documents Submission. Each specific facility scope will dictate if greater detail is necessary at this stage of contract documents development. Drawings not specifically required to be completed may be submitted in a partial state, although this submittal must be comprehensive enough to permit a detailed estimate of cost. Where drawings are required to be complete, a partial submittal will not be acceptable until the degree of completion required is reached.

   c. Drawings shall be at final drawing scale. Each detail, section or elevation shall be identified by a title. All drawings submitted shall be identified by a drawing number, date, and identification of submittal.

2. Floor Plans: A plan of each floor level at 1:100 scale is required. Plans shall be complete, showing materials, dimensions, room names and numbers, finishes, ceiling heights, door types, materials and sizes, and any fire retardant walls, partitions and doors. Those areas which are complex and/or require fixed furniture or equipment shall be drawn at 1:50 scale.

3. Roof Plans: A complete roof plan, including details of flashings and drains, is required.

   a. Roofs shall be sloped as required for good roof drainage, at a rate not less than 1:50. Patterns of slope to drains shall be shown on the roof plan.

   b. For roofs having high and low points, the plan shall indicate the elevations of these points above the roof slab or the top floor.

4. Elevations and Sections: A complete elevation of each side of the building and at least one complete longitudinal section and one complete transverse section through the

building are required. The elevations and sections shall include notes to indicate materials specified in the approved POR or as directed by the Project Officer.

5. Exterior Wall Details: A typical Wall section for each different type of wall construction is required. Wall sections must be complete, showing materials, dimensions, structural bonding and anchoring systems, windows, doors, and flashings.

   a. If architectural cast concrete (stone) panels are used, all reinforcing required for a typical panel shall be indicated.

   b. Provide 1:5 scale details of all anchors required to secure the exterior facing to the structure, and of head, jamb and sill conditions for all openings in exterior walls.

6. Interior Details:

   a. Interior elevations are required for those spaces which require fixed furniture or equipment or an acoustical analysis, or where elevations are necessary to show the extent of wall material. Elevations shall be drawn at 1:50 scale, and shall indicate clearly the design, materials and major dimensions.

   b. Partial Floor Plans: In addition to elevations of architecturally significant spaces, partial floor plans at 1:50 scale shall be provided to explain interior elevations or to supply information on equipment layout, floor materials, patterning, etc.

   c. Reflected ceiling plans are required to show extent of materials and to coordinate architectural, mechanical and electrical items.

   d. Explanatory sections at 1:20, 1:10, or 1:5 scale should be included where necessary to show fully the design of an element.

   e. The drawings shall show all necessary details for the special areas which were started in the preliminary design. There shall be sufficient detail to allow final approval by the agency.

7. Acoustical Analysis: Where a building contains an auditorium or similar place of assembly, or where required by the design criteria, an acoustical analysis shall be submitted for such spaces no later than the Contract Documents Initial Submission Phase. This submission shall consist of a recommendation for optimum reverberation time at 500 cycles per second, and a calculation of the reverberation time for the usual audience present. In addition, a statement shall be included with the analysis certifying that the construction enclosing the space, as designed, will provide a Sound Transmission Coefficient (STC) of not less than 50, or higher if required by the design criteria, to provide an acceptable noise level within the space. (See Chapter Volume I, 4-11 for noise level requirements for mechanical equipment.)

   a. The term "auditorium" in this section means any space larger than 140 square meters in area or 420 cubic meters in Volume and containing either a stage, fixed seats, or both; or, if not containing either a stage or fixed seats, any space that will be used primarily for public speaking or training presentations.

   b. The acoustical analysis shall be prepared by an acoustical consultant or a registered acoustical engineer. Analyses submitted by representatives of manufacturers or acoustical materials are not acceptable.

c. Drawings: All interior elevations and profile sections, as well as a reflected ceiling plan, are required at this stage for spaces for which an acoustical analysis is required. All materials shall be indicated on submitted drawings.

d. Review of Final Design Documents: The acoustical consultant shall review the final design documents, and revised calculations shall be submitted to reflect any changes in design from that shown in the intermediate design submittal.

8. Designs incorporating Elevators, Escalators, Dumbwaiters and Materials Handling Equipment shall show the following:

a. Plans at 1:50 scale of elevators, showing floors served; typical floors in blind portions of hoistway, if any; elevator pits; secondary levels and machine room; with access thereto. Plans shall include platform size, counterweight space, door space and clearance dimensions.

b. Sections at 1:50 scale through elevator hoistways, pits, secondary levels and machine rooms. Runby dimensions shall also be shown.

c. Details at appropriate scale of hoistway vents for elevator hoistways serving four or more floors.

d. Details at appropriate scale of trolley beams, trap doors, or other provisions for removal of components of elevator equipment from elevator machine rooms.

e. Details at appropriate scale of supports for elevator machine beams, elevator dead end hitch beans, and escalator trusses. Elevator machine and hitch beams shall rest on their support beams rather than frame into the support beams.

f. Elevations at appropriate scale of elevator entrances at typical and nontypical floors, showing signal fixtures, elevation of elevator Starters, indicator and control panels.

g. Details at appropriate scale of special elevator cabs and special hoistway entrances where applicable.

h. Plans and sections at 1:50 scale of escalators, dumbwaiters, adjustable loading ramps, scales and conveyors, showing clearances.

i. Diagrammatic layout of materials handling systems.

j. Details at appropriate scale of power-operated doors (pedestrian and vehicular), control systems, and space for door operators.

9. Schedules: The information on schedules takes precedence over other drawings. Therefore, it is most important that these schedules be coordinated closely with the project specifications, and that the nomenclature is identical. The schedules should include the following items:

a. The Interior Finish Schedule should list every material which is exposed to view in each space (including unfinished walls or undersides of structural slabs). The word "exposed" shall not be used in lieu of the name of the material. For each space this

schedule shall identify the room number, room name, material and finish of floor, base, each wall (i.e., north, east, south, and west), ceiling, ceiling height and space for remarks.

b. The Interior and Exterior Color Schedule should be placed on the last sheet of the schedule sheets. The color schedule should identify the room name, number, material, color and other pertinent information. Colors, textures and finishes of specific manufacturers may be used in this schedule or the finish schedule. A note shall be included stating that the naming of a manufacturer is not intended to limit competition.

c. The Door Schedule should include all doors by door number and room number, giving frame material and detail, door material and elevation, size of door, glazing, other openings and hardware set. The schedule shall refer to detail drawings of jamb and head conditions.

d. The Window Schedule should indicate all window sizes, location of operating units and type of glazing used in each window.

10. Landscape Plan:

a. The A/E is responsible for retaining a qualified landscape architect for the development of a landscape plan for submission with the Contract Documents.

b. When required by the POR, a lawn sprinkler system shall be prepared for each project, fully coordinated with the landscape plan. A water supply source for the system shall be shown on the plumbing drawings, Volume I, Chapter 4-11. The lawn sprinkler design shall be shown as part of the landscape plan drawings, and shall include the location of piping, heads, valves and controls. These plans shall be drawn on separate sheets so that this part of the project may be bid as a separate contract.

11. Preliminary Exterior and Interior Perspective Sketches:

General: When required by the A/E contract, a preliminary line perspective depicting a proposed perspective view of the facility for the rendering and a proposed typical interior view perspective shall be submitted. A block model of the building may be required by the contract in lieu of the preliminary perspective sketch.

a. The Preliminary Exterior and Interior Perspective Sketches shall be submitted with the drawings. The exterior sketch shall present the proposed view of the building. The intent of the exterior rendering is to clearly express the proposed finish materials as well as the architectural massing and overall presentation of the new facility. An eye level perspective depicting the main entry is preferred over a birds eye view perspective. The environment of the building after completion of construction, shall be portrayed; emphasis, however, shall be given to the building rather than its surroundings. Human figures shall be provided at or near the entry to establish building scale. The Interior Perspective Sketch will clearly define the proposed interior materials and overall quality of the major public interior spaces. An eye level perspective of the main public lobby/waiting area, reception desk, and major pedestrian circulation routes are the preferred perspective views. These sketches shall be approved by the Project Officer before the rendered perspectives are initiated in this submittal.

12. Preliminary Color and Sample Boards:

    a. The A/E contract Color Boards shall be submitted in the specified quantities in a A4 three ring binder. Samples will be submitted of all major building interior and exterior finishes. Fold outs may be employed to A1 size as long as they refold within the standard binder configuration. Actual material samples shall be displayed showing color, texture, pattern, finish, thickness, etc., for all appearance related items where choice exists. These samples shall be large enough to indicate true patterns. Samples shall be organized by color schemes with a separate sample group for each scheme. The schemes shall be coordinated with elevations for the exterior and by room names and numbers shown on the architectural floor plans for the interior. Materials and colors shall be labeled by manufacturer, source, and product description for color and pattern purposes.

13. Preliminary Draft Project Specifications (see Volume I, Chapter 4-6).

14. Quantitative Take-off Cost Estimate (see Volume I, Chapter 4-7).

G. Submittal VI: Contract Documents <u>Intermediate Submission</u>

1. This submittal constitutes a minimum of 80 percent of the final contract documents. All disciplines must be at no less than the 80% completion stage. This submittal also includes all architectural and engineering drawings and specifications necessary for bidding. All contract documents shall be accurate, and coordinated among disciplines. Subsequent paragraphs of this section describe essential elements of the Pre-Final drawings. However, this submittal is not necessarily limited to these elements. Requirement of the 80 percent Contract Documents Submission is an option determined by the Contracting Officer and should be limited to large construction or projects with specific complexity.

2. Cover Sheet with Index: A cover sheet and an index sheet of the same size as the drawings must be provided, all drawings to be included in the Final Documents shall be listed by number and title, in numerical sequence with the following general headings:

   Civil
   Landscaping
   Architectural
   Structural
   Mechanical
   Plumbing
   Electrical

   Titles and numbers listed in the index must be identical to those shown in each title block.

3. Topographic Survey: This survey, when required, shall be inserted as the first drawing in the set (See also Volume I, Chapter 4-9, section 4-9-30.).

4. Site and Grading Plans: These plans must show all of the site involved, and must establish the grading and project limits of the contract. These plans also must show as much of the adjoining area as needed to indicate final clearances in congested districts. In open districts, they must show approach roads, and the relationship to other buildings on the site, etc. The ground plan of the building on the site plan should be oriented the

same way as the floor plans, so that the entrance faces the same side of the sheet on all plans.

a. Recommended scales for this submittal are 1:250 to 1:500, provided that uniform sheet size can be maintained. For larger projects a scale of 1:1000 is acceptable, with areas of complex design shown in detail at 1:250. The scale of the topographic or boundary survey shall be used if it permits an adequate explanation of the work.

b. Multiple Buildings: For projects consisting of several buildings with a road system, the site plan and grading plan are placed on separate sheets. For very large projects, both the PHS site plan and grading plan may be divided into sectional sheets to keep within the established sheet size.

c. Road Curve Data: Road curve data, vertical curve data for ramps, and other related elements concerning the location and layout of the work are to be shown on the site plan.

d. Contours and Grading: The contours of existing topography, new grading and other grading data shall be shown on the grading plan. Existing contours are to be indicated by dotted lines; finished contours are to be shown as solid lines. Spot elevation shall be shown whenever necessary to explain details of grading or abrupt changes in grade.

e. Demolition and Clearing of Site: If the demolition and the site clearing cannot be shown clearly on the site plan, a separate plan shall be furnished. On this plan, the extent of the work shall be indicated and noted, including removal of existing buildings, filling of old foundations, removal of trees, erosion control, etc.

f. Standard details shall be incorporated on the site plans wherever applicable.

5. Additional Specific Requirements for Drawings: In addition to the requirements listed in Section 4-8-40G for the Contract Documents Intermediate Submission, the following items are required:

a. Plans: If floor plans are drawn at 1:100 scale, detailed 1:50 scale plans are usually required to show spaces that need special architectural treatment.

b. Interior Elevations: Generally submitted at 1:50 scale.

c. Details: Portions of interior plans and elevations may need to be enlarged to 1:20, 1:10, or 1:5 scale to indicate the contract requirements adequately. Window and door frame details shall be drawn at 1:10 or 1:5 scale.

d. Toilets: If floor plans are at 1:100 scale or smaller, additional toilet plans shall be furnished at 1:50 scale, to indicate location of fixture enclosures, and to provide other necessary information. This plan does not apply to private toilets. Toilet room elevations are required only when all necessary information cannot be shown on the plans.

e. Stairs shall be laid out fully at 1:50 scale, and all basic dimensions and necessary enlarged details shall be provided.

6. Building Sign: If a permanent building sign is required by the POR, a spacing diagram and details for the title letters in the sign shall be included in the design documents.

7. Construction Sign: The location of the construction sign shall be indicated on the site plan. The construction sign layout and lettering details of this sign shall be shown on the plans. The A/E may include the names of his principal engineer subcontractors on this sign.

8. Civil, Structural, Electrical and Mechanical Requirements: For specific civil, structural, mechanical and electrical requirements and detailed criteria, refer to Volume I, Chapters 4-9, 4-10 and 4-11.

9. Complete Draft Project Specifications (see Volume I, Chapter 4-6).

10. Quantitative Take-Off Cost Estimate (see Volume I, Chapter 4-7).

H. Submittal VII: Contract Documents Final Submission

1. When the contract documents are 100 percent complete, they are submitted to the agency for final review. This submission includes all architectural and engineering drawings, specifications, and for the contract record, all previously approved design calculations necessary for bidding. All components shall be accurate, coordinated among disciplines, and complete from the A/E's position. Submissions which are found to be less than 100 percent should be returned to the A/E for completion and resubmitted prior to review by the government. The specific elements of the Contract Documents Final Submission are as outlined within subsection 4-40-G (Contract Documents Intermediate Submission), however, all elements must be developed to 100% completion.

2. Final Exterior and Interior Perspective Renderings:

   General: Upon approval of the preliminary exterior and interior perspective sketches (required within Submittal V, Contract Documents, Initial Submission), the A/E shall proceed with the final renderings. The renderings shall be done by a professional renderer who shall produce a graphic work of high quality, observing the following requirements:

   a. Medium: Renderings shall be in color, in any medium suitable for photographic reproduction.

   b. The original color renderings plus a specified number of color copies will be required as identified within the A/E design contract.

   c. The Exterior Perspective Rendering shall have a matted overall A1 size. The Interior Perspective Rendering may be a smaller scale with a maximum overall A1 size. Both renderings will be mounted under glare reducing glass surrounded by a good quality 25mm minimum flat top black metal frame.

   d. Two color slides of the final renderings shall also be submitted with the final framed renderings.

12. Final Color Boards:

a. All changes called for as a result of the review of the Preliminary Color Boards shall be incorporated in the final submission. The final submission shall be complete with all originally approved and new materials presented in a single revised package.

I. SUBMITTAL VIII: Contract Documents Backcheck Submission

1. When the Contract Documents Final Submission is returned to the A/E with written government review comments and approval contingent thereon, these comments are incorporated into the original drawings. When the A/E team has incorporated the Contract Documents Final Submittal government review comments, the A/E will forward a complete set of Plans and Specifications for final backcheck. The original reproducible documents will not be requested from the A/E until after the Contract Documents Backcheck Review cycle.

2. The backcheck review should be conducted to confirm the incorporation of all previous design comments and the compatibility of anticipated government-furnished equipment. This submission should not be considered an additional design review. After the original tracings are revised, to include any necessary corrections indicated in the back-check review; these tracings shall be stamped with a seal by the responsible professional A/E representative indicating compliance with all codes and standards. The original tracings or film base reproducibles (Mylars) shall be submitted to the agency for use in bidding and contracting. If reproducibles are to be used, a sample drawing may be submitted for approval. Tracings or reproducibles not capable of producing clear prints will be rejected. Sepia Tone Diazo produced reproducIbles are not acceptable final original due to their initial poor reproductive quality, and long term decline when exposure to light.

PHS:
4-8-50 REVIEW AND APPROVAL

A. At the completion of each design submittal (I through VII: see section 4-8-30), the A/E shall submit the required materials for reviews by the Government representative. Reviews shall be for overall design concept, adherence to the POR and approved previous submissions. Generally, these submittals will be reviewed and written comments returned to the A/E within three weeks of receipt of a complete submittal, or as stipulated in the A/E contract. Exhibit X4-8B is an automated review comment form which is suggested for the compilation of government review comments and A/E responses.

B. The Government representative's review is not intended to indicate a complete or detailed check of all drawings, and does not in any way relieve the A/E of the responsibility for checking his own work, verifying compliance with codes, standards and POR; and producing a complete, coordinated set of documents. Any comments and notations made by the Government representatives after review of a submittal are not intended to indicate a complete and detailed check, or that these are the only corrections required.

C. Changes to Drawings: After review of any submittal, the government representative may require changes to the drawings. The A/E shall make these changes prior to completion of the following submittal, and is responsible for the follow-through on each drawing of all comments made on the submittal, as long as the original scope is not exceeded.

D. The A/E shall submit a written response to the Government representative's review comments after each submittal (Exhibit X4-8-B provides an A/E Action block for the A/E's annotated response). The response shall address each individual comment. Without

express written approval, there shall be no exceptions to comments requiring additional details, sections, notes or cross references to make the drawings more understandable. If for any reason the A/E believes that a comment cannot be complied with, he/she shall make an explanation as to why in his/her written response.

E. The A/E shall not proceed to the next phase of the project design until written approval of the current submittal is received (or until approval contingent upon noted changes in the design documents is received).

HEALTH FACILITIES AREA TABULATION

[This is a suggested format]

_____ _____ _____
Facility Name Location POR Date

_____ _____
Design Submittal Date of Plans

Dept. No.	Department/Area	Net Area per POR	Net Area per Plans	Area +/-	Percent +/-
I.	**INPATIENT SERVICES**				
11.0	Acute Care Nursing	_____	_____	_____	_____
12.0	Nursery	_____	_____	_____	_____
13.0	Intensive	_____	_____	_____	_____
14.0	Surgery	_____	_____	_____	_____
15.0	Labor/Delivery	_____	_____	_____	_____
16.0	Substance Abuse	_____	_____	_____	_____
17.0	Psychiatric Nursing	_____	_____	_____	_____
SUBTOTAL: INPATIENT SERVICES		_____	_____	_____	_____
II.	**DIAGNOSTIC SERVICES**				
21.0	Laboratory/Pathology	_____	_____	_____	_____
22.0	Radiology/Diagnostic Imaging	_____	_____	_____	_____
SUBTOTAL: DIAGNOSTIC SERVICES		_____	_____	_____	_____
III.	**AMBULATORY SERVICES**				
31.0	Emergency & Urgent Care	_____			_____
32.0	Ambulatory Care	_____	_____	_____	_____
33.0	Community Health	_____	_____	_____	_____
34.0	Dental Clinic	_____	_____	_____	_____
35.0	Pharmacy	_____	_____	_____	_____
36.0	Physical Therapy	_____	_____	_____	_____
37.0	Respiratory Therapy	_____	_____	_____	_____
38.0	Rehabilitation Medicine	_____	_____	_____	

39.0 End Stage Renal Disease _____ _____ _____

SUBTOTAL: AMBULATORY SERVICES _____

Dept. No.	Department/Area	Net Area per POR	Net Area per Plans	Area +/-	Percent +/-
IV.	**ADMINISTRATIVE SERVICES**				
41.0	Administration	_____	_____	_____	_____
42.0	Health Records	_____	_____	_____	_____
43.0	Employee Facilities	_____	_____	_____	_____
44.0	Education & Consultation	_____	_____	_____	_____
45.0	Public Facilities				
	Info/Switchboard	_____	_____	_____	_____
	Public Toilets	_____	_____	_____	_____
	Meditation/Chapel	_____	_____	_____	_____
	Concession	_____	_____	_____	_____
	Lobby/Waiting	_____	_____	_____	_____
	Ambul. Care Waiting	_____	_____	_____	_____
	Other Waiting	_____	_____	_____	_____
	Other Waiting	_____	_____	_____	_____
SUBTOTAL: ADMIN. SERVICES		_____	_____	_____	_____
V.	**SUPPORT SERVICES**				
51.0	Medical Supply	_____	_____	_____	_____
52.0	Property and Supply	_____	_____	_____	_____
53.0	Dietetics Unity	_____	_____	_____	_____
54.0	Housekeeping & Linen	_____	_____	_____	_____
55.0	Facilities Management	_____	_____	_____	_____
56.0	Building Services	_____	_____	_____	_____
57.0	Clinical Engineering	_____	_____	_____	_____
SUBTOTAL: SUPPORT SERVICES		_____	_____	_____	_____

TOTAL NET AREA	_____	_____	_____	_____
Major Mechanical Space	_____	_____	_____	_____
Other Gross Area	_____	_____	_____	_____
BUILDING GROSS AREA	_____	_____	_____	_____

SUBJECT: CIVIL/STRUCTURAL REQUIREMENTS

PHS:
4-9-00 PURPOSE AND SCOPE

A. The purpose of this chapter is twofold:

1. To convey to the project Architect/Engineer (A/E) both general and specific guidelines regarding civil/structural design features required for PHS projects.

2. To inform the project A/E of the requirements for each submittal of the construction documents for government approval.

B. The scope of this chapter includes all special-purpose type construction required by PHS components, including research facilities, health care facilities and quarters.

PHS:
4-9-10 CODES AND STANDARDS

The A/E design shall comply with:

A. Codes and Standards required in Volume I, Chapter 4-8, "General Design Requirements."

B. Executive Order 12699 (January 5, 1990), Seismic Safety of Federal & Federally Assisted or Regulated New Building Construction.

C. Local codes and ordinances (if this represents a major cost impact, advise a Government representative).

D. Rules and regulations of the local utility companies.

E. The applicable guidelines and standards of the following organizations:

AASHTO	(American Association of State Highway and Transportation Officials)
ACHP	(Advisory Council on Historic Preservation)
ACI	(American Concrete Institute)
AISC	(American Institute of Steel Construction)
AITC	(American Institute of Timber Construction)
ANSI	(American National Standards Institute)
ASSE	(American Society of Sanitary Engineers)

ASTM (American Society for Testing and Materials)
AWPA (American Wood Preservers Association)
AWS (American Welding Society)
AWWA (American Water Works Association)
BSSC (Building Seismic Safety Council)
CEQ (Council on Environmental Quality)
CISPI (C.I. Soil Pipe Institute)
DOI (Department of the Interior)
EPA ((U.S.) Environmental Protection Agency)
HABS (Historic American Buildings Survey)
HI (Hydraulics Institute)
ICSSC (Interagency Committee on Seismic Safety in Construction)
NLMA (National Lumber Manufacturers Association)
NFPA (National Fire Protection Association)
PDI (Plumbing and Drainage Institute)
SSPC (Steel Structures Painting Council)
UL (Underwriters Laboratories, Inc.)
UL U.S. Department of Commerce

F. Applicable environmental and historic preservation regulations and guidelines.

PHS:
4-9-20 EARTHQUAKE DESIGN STUDY

A. Scope. The A/E shall prepare special studies to evaluate the geological and seismological characteristics of the region and project site. This paragraph shall apply to all hospitals and health care facilities in all zones and to all projects located in Seismic Zones 3 & 4, identified in the Uniform Building Code. The attached exhibit X4-9-A is to be completed and submitted as noted.

B. Objectives. The A/E shall provide a basic requirement for the seismic design, including seismic criteria reflecting local geologic and seismologic conditions. The building should be designed utilizing facility survival concept if practicable. Under this concept, the building subjected to the maximum seismic intensity may be damaged beyond economical repair. However, the building should not collapse nor should it or its mechanical, electrical, and architectural equipment or components be the cause of loss of life when subjected to the maximum seismic intensity. Additionally, the building has the potential to provide emergency response facilities for the community during an earthquake disaster.

PHS:
4-9-30 SITE SURVEYS

A. The A/E shall prepare the building construction plans, and include a large-scale map(s) of the site showing the information necessary for proper location of the buildings. The site survey map(s) should be drawn to a scale as indicated in Volume I, Chapter 4-8, subparagraph 4-8-40 G.4.a. This survey should be included with the contract documents.

B. Details, provided by the A/E, should be shown and described as follows:

1. Lot corners, state type; property lines, with dimensions and the distances from important structures.

2. Street lines, show dimensions and alignment.

3. Sidewalks and drives, show type and dimensions.

4. Pavements, show type and dimensions.

5. Gas and water mains, state size and show locations.

6. Manholes and storm and sanitary sewers, show size type, and locations.

7. Trees, species, and size.

8. Poles and other vertical structures, show size type, and locations.

9. Fire hydrants, show locations.

10. Existing structures on or near the site, give dimensions, locations and state materials of construction.

11. Show elevations of inverts of sewer outlets from manholes and the gradients of the sewers, and all contour lines as applicable.

12. Water wells, show location and describe construction details.

13. Septic tanks, show location, give dimensions, and describe type of construction.

14. Sewage drain fields, show location and describe layout of field.

15. Electric and telephone utilities, show if underground or overhead.

16. Show historic and/or archeological sites which may be affected by the site development.

17. Show potential sources of environmental contamination which may impact the site.

PHS:
4-9-40 STRUCTURAL DESIGN ANALYSIS

A. General - The A/E design shall be performed by a structural engineer registered in the state in which the project is located, and familiar with the climate and soils of the area of the site. Recommendations for foundation designs shall be based on on-site soils investigations conducted by a qualified soils testing laboratory.

B. Design Analysis - The A/E shall develop alternative framing designs for a unit bay and compared on a square meter cost basis at the schematic stage.

In consultation with the government, the framing method will be selected at the schematic stage. An explanation of major features of the structural design shall be included when the framing method is selected. All loads, long-term arrangements for flexibility and expansion, basic configuration of the framing and bearing system shall be addressed in the explanation. The design analysis, outline specifications, and preliminary drawings should present a clear picture of the total structural design intent.

PHS:
4-9-50 CALCULATIONS

A. The A/E should furnish calculations, and studies as rrequired, to support each phase of the design:

1. Preliminary and final soil, and foundation calculations.

2. Preliminary and final framing calculations.

3. Seismic calculations and studies as required.

4. Final calculations of all connections and miscellaneous structures (e.g., equipment supports, pipe and duct penetrations, electrical vaults).

5. Calculations expressing the sub-surface transport of environmental contaminants which may impact the site.

B. If the design is based on the use of existing structure, the A/E should furnish data and information on the structural capabilities to demonstrate adequacy of the existing members or systems.

PHS:
4-9-60 DRAWINGS

A. See Volume I, Chapter 4-8, for detailed information.

B. The A/E shall provide a coordinated structural utility drawing showing all exterior electrical and mechanical work requiring structures. Show sections and details on structural drawings.

C. The A/E shall identify all individual footings and framing members.

D. The A/E shall design, detail and cross reference all connections. If the same detail or section is repeated, list all drawings where located.

E. The A/E shall use separate schedules for footings, beams, columns, lintels, slabs, and retaining walls where necessary.

F. When 1:100 scale drawings are used, the A/E should provide separate drawings for:
- floor framing
- roof framing
- demolition
- foundations
- penthouses
- special framing systems

G. The A/E should show or provide for penetrations required for mechanical or electrical systems; Coordinate size and location of all floor and wall penetrations, and detail the additional reinforcement required. If penetrations are to be determined in the field, specific size and location must be shown on the contract drawings to maintain structural integrity.

H. The A/E should show and identify on the drawings, and equipment to be furnished and/or installed by the electrical/mechanical sections. The A/E should also design and detail pads, supports and foundations as required.

PHS:
4-9-70 SPECIFICATIONS

A. See Volume I, Chapter 4-6, "Project Specifications" for detailed information.

B. The A/E should include a complete Table of Contents in the front of all sections (wood, steel, concrete, etc.).

C. The A/E should furnish outline specifications with the preliminary submittals. This submittal shall be a statement of all systems and types of major materials and components to be included in the project.

PHS:
4-9-80 SUBMITTALS

Refer to Volume I, Chapter 4-8 for definition of each submittal and to Volume I, Chapter 4-7, "Cost Estimating" for detailed requirements. At each submittal stage, provide the documentation as indicated below.

A. Pre-Design Studies - Soil Study, preliminary seismic study (if required) alternative, framing analysis, and cost comparison.

B. Schematic Design - Framing method and space allotments for framing members. Complete seismic study (if required).

C. Design Development, Preliminary Design

1. Location of layout footings and foundation plans, services and major equipment components.

2. Typical framing for one floor or bay.

3. Block out schedules and detail sheets.

4. Outline specifications.
5. Design analysis.

6. Order of magnitude cost estimate (see Volume I, Chapter 4-7).

D. Design Development, Final Design

1. Foundation plans complete.

2. Layouts of framing on each floor.

3. Schedules (Beams, Columns, etc.) - 50% complete; Some portion of schedule sufficiently completed to indicate design intent.

4. Details - 50% complete; Some portion of details 100% complete.

5. Structural calculations completed. (copies as required by the scope of work)

6. Project specifications (preliminary draft).

7. Cost Estimate, quantitative takeoff (see Volume I, Chapter 4-7).

E. Contract Document, First Submission

1. Drawings complete.

2. Project specifications (final draft).

3. Cost Estimate, updated.

F. Contract Document, Final Submission

1. Drawings revised to reflect PHS comments on previous submittal.

2. Project specifications.

3. Document disposition of Submittal V, Government Review Comments (see Volume I, Chapter 4-8, paragraph 4-8-40G).

4. Cost estimate, final.

SUBJECT: SEISMIC SAFETY FOR PHS FACILITIES

A PURPOSE:

This circular sets forth the policy for implementation of seismic safety into the Design and Construction programs managed by the PHS Agencies. It includes sections on the Existing Real Property inventory and New Construction programs.

B. BACKGROUND:

The "Earthquake Hazards Reduction Program Act of 1977" (Public Law 95-125) was enacted by Congress to reduce risks to life and property from future earthquakes in the United States, including territories and possessions, through the establishment and maintenance of an effective earthquake hazards reduction program. Recent amendments (P.L. 101-614) to the Act also require that standards be adopted for existing Federally owned buildings. Executive Order 12699, "Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction" was prepared by the Interagency Committee on Seismic Safety in Construction (ICSSC) to implement certain provisions of the Earthquake Hazards Reduction Act. It was signed by the President on January 5, 1990. Executive Order 12699 applies to all Federal agencies (including PHS/HHS) that:

1. are responsible for design and construction of new Federally-owned buildings, or
2. are responsible for construction and lease of new buildings for Federal use, or
3. assist in the financing, through grants or loans, of newly constructed buildings, or
4. guarantee the financing, through loan or mortgage insurance programs, of newly constructed buildings, or
5. are responsible for regulating structural safety of new buildings.

PHS Agencies responsible for construction projects of types 1 and 2, must demonstrate compliance for all projects which development of detailed plans and specification is initiated subsequent to the date of the order. Agencies administering the other types of programs, 3, 4, and 5, have three years from the date of the order to establish an appropriate seismic hazard reduction program.

C. PHS SEISMIC COORDINATOR:

The PHS Seismic Coordinator (PHSSC), appointed by the Deputy Assistant Secretary for Health Management Operations, Office of the Assistant Secretary for Health, shall be assigned the responsibility for coordinating all aspects of the PHS seismic safety program. Preferably, the PHSSC should be an engineer with experience in seismic safety. The coordinator shall:

1. be cognizant of all PHS building programs falling under the scope of the Executive Order;
2. participate in developing PHS seismic safety implementation plans;
3. monitor the execution and results of PHS efforts in upgrading seismic safety;
4. recommend seismic safety programmatic changes, as required;
5. document rationale and results regarding risk analysis and cost effectiveness studies which form the basis for PHS seismic safety decisions;
6. serve as PHS representative to the ICSSC;
7. act as a focal point for PHS in maintaining necessary seismic safety records, documents, and statistical information; and
8. provide those reports requested by the Federal Emergency Management Agency, as required by Section 5 of the Executive Order.

The PHSSC may be reached at the Division of Health Facilities Planning, Office of Resource Management, Office of Management, (DHFP/ORM/OM).

D. PHS SEISMIC COMMITTEE:

The PHS seismic committee (SC) shall be composed of the PHSSC, who will be acting as committee chairman and point of contact for PHS seismic activities, and a seismic coordinator from appropriate PHS component agencies and/or Engineering component such as the Office of Engineering Services/Health Resources and Services Administration. Members of the SC would be selected or appointed by their respective Agency Facilities or Administrative Officers. It is preferred that members have facilities experience, including seismic safety. Agencies not participating or represented on the SC will be informed of all proceedings by the PHSSC. The SC is responsible for:

1. determining and prioritizing projects that need additional seismic studies and/or reviews;

2. reviewing requests from agencies for exemptions under the seismic safety policy;

3. reviewing code conflicts and recommending a solution or determination after the review; and

4 convening annually or when the need arises

E. MINIMUM ACCEPTABLE STANDARDS:

Based on the recommendations of the ICSSC, each of the model codes listed below has been found to provide a level of seismic safety substantially equivalent to that provided by use of the 1988 National Earthquake Hazard Reduction Program Recommended (NEHRP) Provisions:

1. 1991 International Conference of Building Officials (ICBO) Uniform Building Code

2. 1992 Supplement to the Building Officials and Code Administrators (BOCA) National Building Code

3. 1992 Amendments to the Southern Building Code Congress International (SBCC) Standard Building Code

Revisions to these model codes that are substantially equivalent to the then current edition of the NEHRP Recommended Provisions, as it is updated triennially, can be considered to be appropriate for implementing the Order. State, county, local, or other jurisdictional building ordinances adopting and enforcing these model codes in their entirety, without significant revisions or changes in the direction of less seismic stringency, are also deemed adequate for implementing the Order. In all other circumstances, substantial equivalency of the ordinances to the seismic safety level contained in the NEHRP Recommended Provisions must be determined by the responsible agency before the Order can be considered as having been properly implemented.

F. PROGRAM IMPLEMENTATION:

For purposes of uniformity, policy development should be at an agency level. Responsibility for implementation may be assigned to lower levels Each PHS agency should determine at what level evaluations and decisions are to be made. Reasonable checking systems should be established.

Any PHS program with construction or real property responsibility will not be allowed to self-exempt, but must submit the exemption request to the

PHSSC and the SC. Exemption criteria for such reasons as non-applicability or low regional seismicity will be reviewed and approved by SC and be applied uniformly within PHS. Programs that identify themselves as exempt should have the exemption verified by the PHSSC. Similarly, local code evaluations should be performed or confirmed by the SC.

PHS Agencies with unique missions requiring exceptional seismic safety requirements should establish rigorous implementation and enforcement procedures. Where typical levels of seismic safety are required, implementation should be cost-effective and enforcement efforts reasonable. PHS will include seismic oriented building plan reviews for Federally-owned buildings and for buildings built or leased for Federal occupancy. For programs without technical staffs, reasonable implementation and enforcement would include notifying appropriate responsible parties of the required minimum standards, and requiring a written acknowledgement of awareness of the requirements and of intent to comply. Responsible parties may include the building owner, architect, engineer, contractor, or others. Release of funds may be tied to receipt of acknowledgement.

For Federally-owned or leased buildings, further statements of compliance may be required prior to acceptance of the building. Such statements of compliance may include the engineer's or architect's signed and stamped verification of seismic design codes, standards, and practices used in the design and construction of the building, construction observation reports, local or state building department plan review documents, or other documents deemed appropriate by the agency.

The PHS seismic safety programs will be reviewed, evaluated, and revised, as necessary, once every three years, as required by Section 4 (b) of the Executive Order.

G. SEISMIC SAFETY PROGRAM FOR NEW BUILDINGS:

1. INTRODUCTION

In order to comply with Executive Order 12699 "Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction," the following procedures are applicable to new construction programs.

2. IDENTIFYING AFFECTED PROGRAMS

A PHS agency head, or other official appointed by the agency head, shall review program missions to determine which of the following categories, if any, apply to each agency program.

Category 1: responsible for design and construction of newly Federally-owned buildings

Category 2: responsible for construction and lease of new buildings for Federal use

Category 3: assist in the financing, through grants or loans, of newly constructed buildings

Category 4: guarantee the financing, through loan or mortgage insurance programs, of newly constructed buildings

Category 5: responsible for regulating structural safety of new buildings

Programs which fall into none of the above categories may be ruled Exempt-Not Affected by the SC. The PHSSC shall create and maintain a list of all affected programs. This list shall include a brief description of each affected program, indicating the new building construction category or categories into which the various program elements fall, and be maintained by the SC.

3. EXEMPTIONS

a. Regional Program Exemptions

Programs or branches of programs that deal solely with one- and two-family dwellings, and that are administered totally within regions of low seismicity, shall be exempt from the agency seismic safety program. Regions of low seismicity shall be defined as those areas identified as having a seismic acceleration coefficient, Av, .05 or less (see map C of the NEHRP Recommended Provisions). The Agency SC must verify exempt status.

b. Other Exemptions

The PHS ASC may be requested to exempt a specific program or portion of a program from the agency seismic safety program. Rationale and basis for the exemption shall be submitted to the SC. Based on the Seismic Committee recommendations, the PHSSC shall issue a written determination. The PHSSC shall maintain documentation justifying all exemptions. Agencies may seek exemptions solely based on low seismic risk locations for most of their facility sites. However, even an exemption of this type (low seismic risk location) should outline the basis for

assuring that the facilities of the Agency are adequately protected.

4. REPORTING

Information shall be maintained on the status of each program's seismic safety procedures, the progress in implementing the procedures, and the impact of the seismic safety procedures on program operation. This information shall be summarized and submitted in writing to the ASC at the end of each fiscal year.

The PHSSC shall, at the request of the Federal Emergency Management Agency, submit information on the status of the agency's seismic safety program.

B. SEISMIC SAFETY PROGRAM FOR EXISTING BUILDINGS

1. INTRODUCTION

The Earthqake Hazard Reduction Program Act of 1977, as amended, '42 U.S.C. sec. 7701, et seq.' requires that standards be developed for existing Federally owned building. The following procedures are applicable to existing PHS owned buildings.

2. IDENTIFICATION OF STRUCTURAL BUILDING TYPE

a. Purpose

In response to Executive Order 12699 the Public Health Service, DHFP/ORM/OM, has implemented a facilities review program to determine the structural adequacy of its facilities in the event of an earthquake. DHFP/ORM/OM is requiring that all facilities owned by PHS be documented as to structural building type. Each facility shall be categorized as one of 15 types (#1-15) as described in the PHS Circular Exhibit 4-9.A. The determination of the structural type of a facility will assist in identifying buildings that may be at high risk for property damage and/or life-safety in the event of an earthquake.

b. Evaluator Qualifications

Facilities managers in corroboration with agency facility engineers will be responsible for the determination of the structural building type. If the building type can not be readily determined, the assistance of a structural engineer may be required. Included with this circular are guidelines to

assist in determining the structural building type, see PHS Circular Exhibit 4-9.B. In the Exhibits of this Circular are a listing (4-9.A) and guidelines (4-9.B) to assist in determining the structural building type.

c. Reporting Responsibilities

The completed structural identification should be sent to the Agency Facilities Officer and the PHSSC, at the Division of Health Facilities Planning (DHFP/ORM/OM).

3. SEISMIC QUESTIONNAIRE

a. Purpose

The Facility Seismic Questionnaire, PHS Circular Exhibit 4-9.C, is intended to provide the PHS ASC and the SC with background information concerning the physical structure and use of PHS facilities. Information obtained through the Seismic Questionnaire will be used to provide initial screening for the agencies Seismic Evaluation program mandated under Executive Order 12699. The Seismic Questionnaire is applicable to all facilities that meet all of the following criteria:

(1) The facility is located in seismic zones 3-7 as defined by NEHRP.
(2) It is a Key Facility (i.e. lab, hospital, hazardous waste storage facility, etc.)
(3) The Facility was not designed in accordance with the 1976 Uniform Building Code or more recent, more stringent seismic criteria.

b. Evaluator Qualifications

The evaluator should be knowledgeable of the physical structure, construction history, and number of occupants of the facility. For example, the evaluator could be an engineer, architect, or building supervisor familiar with the facility.

c. Reporting Responsibilities

The completed structural Facility Seismic Questionaire should be sent to the agency facilities officer and the ASC, at DHFP/ORM/OM/PHS.

4. STRUCTURAL EVALUATION AND SURVEY

a. Purpose

In compiling the seismic screening information, such as the Seismic Questionnaire, to comply with Executive Order 12699, some facilities may be at a high risk due to location and/or type of construction. A structural evaluation or survey will help determine the steps required to reduce seismic risk.

b. Priority of Projects

The PHS Agency Seismic Representatives shall compile lists of projects that may need detailed structural evaluations and furnish them to the PHSSC who shall convene a meeting of the SC to develop a plan for preparing the detailed structural evaluations. This will enable PHS Agencies to spend funds efficiently by focusing on the facilities that are most vulnerable to seismic events.

c. Structural Evaluation

A Structural Evaluation shall be undertaken to examine, using analytical methods, the structural adequacy of the facility related to seismic properties (Procedures of the "NEHRP Handbook for the Seismic Evaluation of Existing Buildings", FEMA-178, are acceptable). The evaluation should result in a determination of the strength of the structural elements against assumed seismic loading. The major question that should be answered in the Structural Evaluation process is: do the facilities structural elements possess the strength and ductility required to resist the loads and displacements generated by the assumed seismic criteria? The Structural Evaluation procedure should also be used as a decision making tool for the purpose of determining if a more detailed Structural Survey should be undertaken.

d. Structural Survey

If the Structural Evaluation, as described in c. above, indicates that elements of the structure may be inadequate to withstand seismic loading, a Structural Survey and Report are required. The Structural Survey will further study the deficient elements identified in the Structural Evaluation and recommendations will be made to alleviate these concerns.

It is recommended that the completed Structural Survey report contain the following items:

1. Executive summary containing a succinct statement of the major deficiencies, proposed mitigation measures, anticipated costs, and recommendations.

2. Description of the existing facility and its structural system (gravity and lateral), seismic rehabilitation criteria, and geotechnical conditions, if relevant.

3 Discussion of the method of analysis and the critical analytical assumptions employed in the work.

4. Description of the structural and nonstructural deficiencies present in the building as identified by the analysis.

5. A narrative description of the proposed structural modifications and sufficiently detailed schematic drawings to permit development of a construction budget cost estimate.

6. A construction cost estimate with sufficient detail to permit evaluation of any fundamental assumptions.

7. Presentation of the conclusions and recommendations.

8. The Structural Evaluation that led to the detailed Structural Survey, and a bibliography.

e. **Evaluator Qualifications**

Only a registered professional engineer (P.E.) shall be given the responsibility of completing a Structural Evaluation and if needed the more detailed Structural Survey. In addition to being registered the engineer should have working knowledge of seismic provisions of model building codes such as: The Uniform Building Code, Southern Building Code, or BOCA.

f. **Reporting Responsibilities**

A copy of the completed Structual Evaluation and/or Stuctural Survey should be sent to the agency Facilities Officer and the PHSSC, DHFP/ORM/OM/PHS.

5. RETROFITTING

If the detailed Structural Survey report indicates that retrofitting is necessary to make a building safe or to meet code requirements the following is recommended:

a. Submit documentation to the Seismic Committee for review and prioritization.

b. Submit project and budget proposals with the Facilities Plan and Agency Repair & Improvement Budgets for design and construction.

STRUCTURAL BUILDING TYPE

Wood Buildings

1. Wood, Light Frame
2. Wood, Commercial and Industrial

Steel Buildings

3. Steel Moment Frame
4. Steel Braced Frame
5. Steel Light Frame
6. Steel Frame with Concrete Shear Walls
7. Steel Frame with Infill Shear Walls

Cast-in-Place Reinforced Concrete Buildings

8. Concrete Moment Frame
9. Concrete Shear Walls
10. Concrete Frame with Infill Shear Walls

Building with Precast Concrete Elements

11. Precast Concrete Tilt-Up Walls
12. Precast Concrete Frames with Concrete Shear Walls

Reinforce Masonry (RM) Buildings

13. RM Bearing Walls with Wood or Metal Deck Diaphragms
14. RM Bearing Walls with Precast Concrete Diaphragms

Unreinforced Masonry Buildings

15. Unreinforced Masonry Bearing Wall Buildings

DESCRIPTION OF STRUCTURAL BUILDING TYPE

a. **Building Type 1 -- Wood, Light Frame:** These buildings are typically single- or multiple-family dwellings of one or more stories. The essential structural character of this type is repetitive framing by wood joists on wood studs. Loads are light and spans are small. These buildings may have relatively heavy chimneys and may be partially or fully covered with veneer. Most of these buildings are not engineered; however, they usually have the components of a lateral-force-resisting system even though it may be incomplete. Lateral loads are transferred by diaphragms to shear walls. The diaphragms are roof panels and floors. Shear walls are exterior walls sheathed with plank siding, stucco, plywood, gypsum board, particle board, or fiberboard. Interior partitions are sheathed with plaster or gypsum board.

b. **Building Type 2 -- Wood, Commercial and Industrial:** These buildings usually are commercial or industrial buildings with a floor area of 5,000 square feet or more and with few, if any, interior walls. The essential structural character is framing by beams on columns. The beams may be glulam beams, sheathed with plywood, stucco, plaster, or other paneling. The walls may have rod bracing. Large openings for stores and garages often require post-and-beam framing. Lateral force resistance on those lines can be achieved with steel rigid frames or diagonal bracing.

c. **Building Type 3 -- Steel Moment Frame:** These buildings have a frame of steel columns and beams. In some cases, the beam-column connections have very small moment resisting capacity but, in other cases, some of the beams and columns are fully developed as moment frames to resist lateral forces. Usually the structure is concealed on the outside be exterior walls, which can be of almost any material (curtain walls, brick masonry, or precast concrete panels), and on the inside by ceilings and column furring. Lateral loads are transferred by diaphragms to moment resisting frames. The diaphragms can be of almost any material. The frames develop their stiffness by full or partial moment connections. The frames can be located almost anywhere in the building. Usually the columns have their strong directions oriented so that some columns act primarily in one direction while the others act in the other direction, and the frames consist of lines of strong columns and their intervening beams. Steel moment frame buildings are typically more flexible that shear wall buildings. This low stiffness can result in large interstory drifts that may lead to extensive nonstructural damage.

d. **Building Type 4 -- Steel Braced Frame:** These buildings are similar to Type 3 buildings except that the vertical components of the lateral-force-resisting system are braced frames rather than moment frames.

e. **Building Type 5 -- Steel Light Frame:** These buildings are pre-engineered and prefabricated with transverse rigid frames. The roof and walls consist of lightweight panels. The frames are designed for maximum efficiency, often with tapered beam and column sections built up of light plates. The frames are built in segments and assembled in the field with bolted joints. Lateral loads in the transverse direction are resisted by the rigid frames with loads distributed to them by shear elements. Loads in the longitudinal direction are resisted entirely by shear elements. The shear elements can be either the roof and wall sheathing panels, an independent system of tension-only rod bracing, or a combination of panels and bracing.

f. **Building Type 6 -- Steel Frame with Concrete Shear Walls:** The shear walls in these buildings are cast-in-place concrete and may be bearing walls. The steel frame is designed for vertical loads only. Lateral loads are transferred by diaphragms of almost any material to the shear walls. The steel frame may provide a secondary lateral-force-resisting system depending on the stiffness of the frame and the moment capacity of the beam-column connections. In modern "dual" systems, the steel moment frames are designed to work together with the concrete shear walls in proportion to their relative rigidities. In this case, the walls would be evaluated under this building type and the frames would be evaluated under Type 3, Steel Moment Frames.

g. **Building Type 7 -- Steel Frame with Infill Shear Walls:** This is one of the older types of building. The infill walls usually are offset from the exterior frame members, wrap around them, and present a smooth masonry exterior with no indication of the frame. Solidly infilled masonry panels act as a diagonal compression strut between the intersections of the moment frame. If the walls do not fully engage the frame members (i.e. lie in the same plane), the diagonal compression struts will not develop. The peak strength of the diagonal strut is determined by the tensile stress capacity of the masonry panel. The post-cracking strength is determined by an analysis of a moment frame that is partially restrained by the cracked infill. The analysis should be based on published research and should treat the system as a composite of a frame and the infill. An analysis that attempts to treat the system as a frame and shear wall is not capable of assuring compatibility.

Building Type 8 -- Concrete Moment Frame: These buildings are similar to Type 3 buildings except that the frames are of concrete. Some older concrete frames may be proportioned and detailed such that brittle failure can occur. There is a large variety of frame systems. Buildings in zones of low seismicity or older buildings in zones of high seismicity can have frame beams that have broad shallow cross sections or are simply the column strips of flat-slabs. Modern frames in zones of high seismicity are detailed for ductile behavior and the beams and columns have definitely regulated proportions.

i. **Building Type 9 -- Concrete Shear Walls:** The vertical components of the lateral-force-resisting system in these buildings are concrete shear walls that are usually bearing walls. In older buildings, the walls often are quite extensive and the wall stresses are low but reinforcing is light. When remodeling calls for enlarging the windows, the strength of the modified walls becomes a critical concern. In newer buildings, the shear walls often are limited in extent, thus generating concerns about boundary members and overturning forces.

j. **Building Type 10 -- Concrete Frame with Infill Shear Walls:** These buildings are similar to Type 7 buildings except that the frame is of reinforced concrete. The analysis of this building is similar to that recommended for Type 7 except that the shear strength of the concrete columns, after cracking of the infill, may limit the semiductile behavior of the system. Research that is specific to confinement of the infill by reinforced concrete frames should be used for the analysis.

k. **Building Type 11 -- Precast/Tilt-up concrete walls with Lightweight Flexible Diaphragm:** These buildings have a wood or metal deck roof diaphragm, which often is very large, that distributes lateral forces to precast concrete shear walls. The walls are thin but relatively heavy while the roofs are relatively light. Older buildings often have inadequate connections for anchorage of the walls to the roof for out-of-plane forces, and the panel connections often are brittle. Tilt-up buildings often have more than one story. Walls can have numerous openings for doors and windows of such size that the wall looks more like a frame than a shear wall.

l. **Building Type 12 -- Precast Concrete Frames with Concrete Shear Walls:** These buildings contain floor and roof diaphragms typically composed of precast concrete elements with or without cast-in-place concrete topping slabs. The diaphragms are supported by precast concrete girders and columns. The girders often bear on column corbels. Closure strips between precast floor elements and beam-

column joints usually are cast-in-place concrete. Welded steel inserts often are used to interconnect precast elements. Lateral loads are resisted by precast or cast-in-placed concrete shear walls. Buildings with precast frames and concrete shear walls should perform well if the details used to connect the structural elements have sufficient strength and displacement capacity; however, in some cases, the connection details between the precast elements have negligible ductility.

m. **Building Type 13 -- Reinforced Masonry Bearing Walls with Wood or Metal Deck Diaphragms:** These buildings have perimeter bearing walls of reinforced brick or concrete-block masonry. These walls are the vertical elements in the lateral-force-resisting system. The floors and roofs are framed either with wood joists and beams with plywood or straight or diagonal sheathing or with steel beams with metal deck with or without a concrete fill. Wood floor framing is supported by interior wood posts or steel columns; steel beams are supported by steel columns.

n. **Building Type 14 -- Reinforced Masonry Bearing Walls with Precast Concrete Diaphragms:** These buildings have bearing walls similar to those of Type 13 buildings, but the roof and floors are composed of precast concrete elements such as planks or tee-beams and the precast roof and floor elements are supported on interior beams and columns of steel or concrete (cast-in-place or precast). The precast horizontal elements often have a cast-in-place topping.

o. **Building Type 15 -- Unreinforced Masonry Bearing Wall Buildings:** These buildings include structural elements that vary depending on the building's age and, to a lesser extent, its geographic location. In buildings built before 1900, the majority of floor and roof construction consists of wood sheathing supported by wood subframing. In large multistory buildings, the floors are cast-in-place concrete supported by the unreinforced masonry walls and/or steel or concrete interior framing. In buildings built after 1950, unreinforced masonry buildings with wood floors usually have plywood rather than board sheathing. In regions of lower seismicity, buildings of this type constructed more recently can include floor and roof framing that consists of metal deck and concrete fill supported by steel framing elements. The perimeter walls, and possibly some interior walls, are unreinforced masonry. The walls may or may not be anchored to the diaphragms. Ties between the walls and diaphragms are more common for the bearing walls than for walls that are parallel to the floor framing. Roof ties usually are less common and more erratically spaced than those at the floor levels. Interior partitions that interconnect the floors and roof can have the effect of reducing diaphragm displacements.

SUBJECT: ELECTRICAL REQUIREMENTS

PHS:
4-10-00 PURPOSE AND SCOPE

A. The purpose of this chapter is twofold:

1. To convey to the project architect/engineer (A/E) general guidelines regarding electrical design features required for PHS projects. Each agency shall develop guidelines for their specific requirements, to include economic considerations.

2. To inform the project A/E of the requirements for each submittal of the construction documents for Government approval.

B. The scope of this chapter includes all special-purpose type construction required by PHS components including research facilities, health care facilities and quarters.

PHS:
4-10-10 CODES AND STANDARDS

All standards, codes and regulations used as a basis of design shall be the latest editions including amendments. Unless otherwise indicated by the agency criteria, the standards and codes of the following organizations shall be followed:

A. Codes and Standards required in Volume I, Chapter 4-8," General Requirements."

B. Local codes and ordinances (if this represents a major cost increase, advise the Government representative).

C. Rules and regulations of the local utility companies.

D. National Fire Protection Association (NFPA) Codes and Standards, including the National Electrical Code (NEC, NFPA 70), NFPA 20, 72A, 72E, 78, 99, 101, and 110.

E. Applicable Underwriters Laboratories Inc. (UL) Standards.

F. Other applicable standards such as National Electrical Manufacturers Association (NEMA) and American National Standards Institute (ANSI), including National Electrical Safety Code (NESC).

G. Illuminating Engineering Society of North America (IES).

H. Institute of Electrical and Electronic Engineers (IEEE).

I. American Society for Testing Materials (ASTM).

J. American Institute of Architects' Guidelines for Construction and Equipment of Hospitals and Medical Facilities.

Provisions of local building codes which are significantly different from the codes and standards listed above shall be brought to the attention of the agency. The A/E shall provide specific recommendations concerning these local codes.

PHS:
4-10-20 LIGHTING

The A/E is expected to be knowledgeable in all current lighting design requirements included in the IES, NFPA and NEC. Any requirements which deviate from standards and/or design guides shall be noted and brought to the attention of the project officer. When such deviations occur, the A/E shall provide recommendations that are applicable to the project.

The A/E is encouraged to inform the agency and request approval for the implementation of any different, new or improved lighting products and/or systems beneficial to the agency in providing more suitable lighting, more energy efficient lighting, or other cost savings.

The A/E shall provide a minimum of two (2) proposed lighting schemes for special areas as defined in the Scope of Work (SOW). Each layout shall vary in concept and materials such as fixture layout, fixture type, lamps, louvers, reflectors, etc. This procedure will provide the agency with alternatives to select the best layout to suit its goals and budget limitations.

A. Lighting intensities in health facilities shall be in accordance with IES and American Association for Accreditation of Laboratory Animal Care - Accreditation Standards .

B. Primary interior light source shall be fluorescent fixtures with reduced wattage tubes and electronic ballasts. In selecting reduced wattage tubes, lamp life should not be sacrificed and the Color Rendering Index should be a minimum of 80. In selecting electronic ballasts, harmonic distortion should be considered. Color corrected High Intensity Discharge Lamps (HID) may be used in large utility spaces with high ceilings, high pressure sodium fixtures shall normally be used in parking lots.

C. Control

The A/E shall:

Where fixtures are used that have three or more lamps, switch the fixture lamps symmetrically for two (or three) lighting levels.

If large window areas are present, switch fixture (or fixture rows) nearest to the window separately.

Provide three-way or four-way switching of all room lights where two or three room entrances are not immediately adjacent to each other.

Utilize low-voltage switching in large areas with multiple entrances to allow extinguishing of all lights from any room exit.

Utilize low-voltage switching in large areas to control illumination separately at logical work station locations, such spaces are general laboratories, pharmacy areas, shops, etc.

Control exterior lighting by photoelectric controls and overriding astronomical time switches. Circuit roadway and parking area luminaries in logical groups utilizing time switches to allow cycling off the lighting in unused areas during the night. Some security lighting must be retained.

Where applicable, in large, infrequently used rooms and areas such as crawl spaces, pipe spaces, interstitial spaces, attics, etc., where lights can be left on unnoticed, provide a pilot light outside the area that indicates when the lights are on.

PHS:
4-10-30 SERVICE

A. The project electrical designer shall contact the serving utility company to determine all available options regarding incoming service. All options and a final recommendation in the Design Analysis shall be included.

B. In large installations such as laboratories, primary metering will generally prove to be advantageous. Where two services are available, a secondary redundant system, either spot network or double-ended arrangements shall be provided.

C. In small hospitals where two feeders are available, a primary selective arrangement with secondary metering is adequate. Where a single building transformer is used, the utility company's ability to provide an immediate replacement or some form of temporary service in the event of a transformer failure shall be verified.

D. The A/E shall indicate on the contract drawings work to be provided by utility companies and by the Contractor.

E. Electrical service shall be underground, concrete enclosed conduit, with spare duct(s).

PHS:
4-10-40 DESIGN INFORMATION

A. Space

1. The A/E shall provide adequate space around electrical equipment; to ensure accessibility for maintenance and room for additional equipment, and to accommodate load growth and future construction. Major equipment such as switchboards and engine-generator sets should be in separate spaces, panel boards and telephone equipment in separate wire closets.

2. In selecting the location of engine generators and transformers the A/E shall consider:

   a. The potential for noise problems.

   b. The possibility of replacement without altering architectural features or mechanical and electrical systems.

B. Capacity

1. Equipment and feeders shall be designed with a minimum of 25% spare capacity.

2. Load allowance for special areas, such as laboratory space, shall be determined by the project A/E and Government representative during the early design stage.

C. Laboratory receptacles

1. Continuity of service to lab loads is essential. Provide separate circuits to major equipment items; provide multiple circuits to permit adjacent receptacles on different circuits.

2. Provide uniterruptable power supply (UPS) to critical equipment.

D. Emergency Power and Generators

See Volume I, Chapter 4-11, 'Mechanical Requirements" for detailed mechanical considerations.

1. References

NFPA 70, NFPA 99 and ANSI/IEEE Std. 602, 1986.

2. System Description

An alternate power source shall consist of two or more engine generator sets, designed to provide electrical power for hospital essential electrical systems during an interruption of the normal power supply, as required by NFPA 70 and NFPA 99. The generator sets shall normally be of equal capacity and designed to carry, in parallel, the demand load of the essential electrical system. Motor starting and x-ray KVA loads will be included as applicable in demand load. An additional 30 percent capacity above the demand load will be provided for future loads. Synchronized parallel operation of the generator sets will be provided.

3. Automatic Transfer Switches

Automatic Transfer Switches (ATS) shall be of double-throw construction. Circuit breaker type transfer switches are not acceptable. All ATS will be equipped with by-pass isolation for maintenance purposes suitable for manual operation, and with a single test switch to test all ATS's.

4. Ground Fault Protection Equipment

The essential electrical system shall not be provided with ground fault protection of equipment. The generator circuit breaker and essential electrical system main distribution board circuit breakers shall be provided with ground fault detection feature to indicate a ground fault and sound an audible alarm but not to trip the breaker.

5. Remote Alarm Annunciator

A remote alarm annunciator shall be provided as required by NFPA 99.

A remote alarm annunciator, storage battery powered, shall be provided in a location readily observed by operating personnel. The annunciator will indicate alarm conditions of the

alternate power source as indicated in NFPA 99 and will include as a minimum the following: battery charger malfunction; engine generator run status; engine generator alarms; and less than 3 hours fuel supply. A separate audible and visible derangement signal shall be provided within the hospital at a location that is continuously monitored. This derangement signal shall be appropriately labelled but need not display individual alarm conditions.

6. Distribution System

a. The system arrangement shall be designed to minimize interruptions to the electrical system due to internal failures. Among the factors to be considered are:

b. Multiple transfer switches located as close as practicable to the point of utilization.

c. Capability of achieving the fastest possible restoration of any given circuit(s) after clearing a fault.

d. Effects of future changes such as increased loading and/or supply capacity.

e. Stability and power capability of the prime mover during and after abnormal conditions.

f. Sequence re-connection of loads to avoid large current rushes that could trip over-current devices or overload the generator(s).

g. Current sensing devices should be selected to minimize the extent of interruption to the electrical system due to abnormal currents caused by overload and/or short circuits.

E. Lightning Protection

Assess the need for lightning protection and include a recommendation in the Design Analysis report (see section 4-10-70). Evaluation shall be in terms of a risk factor R included in NFPA 78, Appendix I.

Low buildings may be protected by the lightning protection installed on an adjacent higher building. Refer to Figure 6-3.3.2 of the above referenced NFPA Code.

New buildings that need lightning protection shall receive a Master C Label from a recognized testing laboratory after the new lightning protection system is evaluated and found to be acceptable. The label shall confirm that the whole structure, including all roof levels and terraces, is protected against lightning strikes.

As existing buildings are altered or modified, especially as the outer envelope is changed, it is necessary to have the lightning protection system updated and verified. The vehicle for this is a Letter of Finding rather than a review of the entire building. If a whole building review is required then a new Master C Label is issued and this is called a Reconditioned Master Label.

F. Fault Considerations

The project A/E shall develop a "Fault Current Study" to determine adequate equipment bracing requirements and interrupting capability for protective equipment. On 480 V systems, provide at least two steps of ground fault protection (NEC requires this for hospitals).

G. Grounding

1. Provide switchboards, panel boards, and motor control centers complete with an equipment grounding bus.

2. Provide separate equipment grounding conductors in all feeders, and in all branch circuits except in those supplying ceiling mounted lighting fixtures.

3. Provide special grounding for computer system requirements.

H. Telecommunications

1. In health care facilities, unless directed otherwise, specify the telecommunications systems (telephone, nurses call, paging, etc.) as part of the construction package.

2. In laboratory construction, provide raceway only for the telephone and data communications systems. Specify specialty systems, such as paging, complete.

PHS:
4-10-50 DRAWINGS

See Volume I, Chapter 4-8, " General Design Requirements", for detailed information.

A. Provide a coordinated utility drawing showing all exterior utilities.
B. When 1:100 scale drawings are used, provide separate drawings for:

- demolition

- power

- lighting

- special systems

C. Identify all circuits. Circuits requiring two or three-pole protection shall be identified by one number only (not one number per pole).

D. Identify ground conductors graphically or in schedules, similar to phase or neutral conductors. Do not rely on separate notes or specs.

E. Provide large scale drawings of equipment pads and electrical rooms.

F. Indicate interrupting capacities for switchboards, motor control centers, and panel board schedules. In panelboards, separately identify each special single-pole load and each multi-pole load. Lighting loads and receptacle loads may be grouped in the schedule.

G. Provide riser diagrams for all systems. Provide one-line diagram of incoming service and secondary distribution system. Also show in plan each component shown on riser or one-line. Provide cross-identification.

H. Show and identify on the drawings equipment to be furnished and/or installed by the utility company. Delineate the division of work between the utility company (or Government) and the contractor.

I. For each outlet such as motor, heating device, or special equipment, identify load requirements (HP or KW, volts, phase). Such information may be shown best in equipment schedules.

PHS:
4-10-60 SPECIFICATIONS

See Volume I, Chapter 4-6, "Project Specifications" for detailed information.

A. Include a complete Table of Contents in the front of Section 16.

B. Require Maintenance and Operation Manuals for all major systems and components.

PHS:
4-10-70 DESIGN ANALYSIS

See Chapter 4-8 "General Design Requirements" for detail requirements.

The design analysis is an explanation or rationale for major features of the electrical design. It includes block loads, long-term arrangements for flexibility and expansion, and basic configuration of primary and secondary service. The design analysis, outline specification, and preliminary drawings should present a clear picture of the total electrical design intent.

The design analysis should also include any life cycle costing considerations.

PHS:
4-10-80 CALCULATIONS

All calculations shall use one or more of the techniques described in the IES Lighting Handbook, Reference Volume, Section 9, if required by the SOW.

A. Furnish calculations to support each phase of the design:

1. Preliminary and final lighting calculations.

2. Preliminary load calculations.

3. Final load calculations including voltage drop, short circuit and ground fault considerations. In both preliminary and final load calculations, indicate connected loads and demand factors for each load category.

4. The A/E shall obtain available short circuit voltage and current data from the local power company, and shall include the information with the final load calculations.

B. If the design is based on the use of existing equipment, furnish load data and information on equipment capacities to demonstrate adequacy of the existing equipment.

PHS:
4-10-90 SUBMITTALS

See Volume I, Chapter 4-8, section 4-8-50, for additional information. Requirements for each submittal shall be determined by the Scope of Work (SOW).

A. Pre-design Studies: Provide studies or surveys, such as utility studies, which would normally precede design considerations.

B. Schematic Design Documents: Indicate space allotments for equipment, but show no electrical work.

C. Design Development, Preliminary Design Documents: Provide the following electrical information:

1. Location of services and major equipment components.

2. Lighting layouts in typical areas with supporting preliminary calculations (copies as required by the SOW).

3. Routine outlets - power and communication.

4. Fire alarm system devices.

5. One-line diagram of power distribution scheme.

6. Outline specifications (see Volume I, Chapter 4-6) and design analysis (may be combined). If, during the course of design, there are any significant departures from the original design concept, submit an updated design analysis for approval.

7. Orientation arrow and key plan (when required) on all plan sheets.

8. Room names and numbers in place.

9. Order of magnitude cost estimate (square meter). See Volume I, Chapter 4-7, "Cost Estimating".

D. Design Development, Final Design Documents: Provide the following electrical information:

1. Lighting layout for all areas with final lighting calculations (two copies, bound).

2. Fixture cuts (not required if isometrics are shown on drawings).

3. Equipment room layouts to show clearances and accessibility.

4. Preliminary riser diagrams and panel schedules.

5. Routine outlets and equipment with associated branch circuit wiring.

6. Preliminary load calculations (copies as required by the SOW).

7. Project specifications (preliminary draft).

8. Cost estimate, quantitative take-off.

E. Contract Document, First Submission Documents:

1. Drawings essentially complete.

2. Final load calculations (copies as required by the SOW).

3. Project specifications (final draft).

4. Cost estimate, updated.

F. Contract Document, Final Submission Documents

1. Drawings and calculations complete, revised to reflect government comments on previous submittal. Submit two bound copies of calculations.

2. Project specifications.

3. Cost estimate, final.

4. Document disposition of First Submission Documents Submittal, Government review comments. (See Volume I, Chapter 4-8, subsection 4-8-40G.)

MAINTAINED LIGHTING INTENSITIES, PHS HEALTH FACILITIES

Building Areas		(1) Luxs
Anesthetizing and preparation		325
Auditorium		
	- exhibit	325
	- assembly	0-325
Autopsy		
	- autopsy room	1080
	- morgue	215
Central Supply		
	- work room	325
	- work table	1080
	- storage	325
	- issuing supplies	540
Corridors		
	- operating/delivery suites	215
	- nursing area (day)	110
	- nursing area (night)	30
	- others	110
Cystoscopic Room		
	- general	755
	- table (surgical lamp)	
Dental Suite		
	- operatory	755
	- prosthetic lab bench	1080
Dietary		
	- kitchen, general	325
	- work/preparation areas	540
	- dish and pot washing areas	540
	- can washing/food storage	540
	- cafeteria	
	display and service	755
	cashier	540
	dining	325
EKG, BMR		
	- general	325
	- specimen table	540
	- EKG machine	540

Electromyographic Suite		
	- general	325
	- exam preparation	540
Emergency		
	- general	1080
	- table (surgical lamp)	(2)
Encephalographic Suite		
	- general	325
	- desk or table	755
	- patient preparation	325
	- patient exam	540
Exam and Treatment		
	- general	540
	- table	1080
EENT		
	- darkroom: variable	0-110
	- exam and treatment	540
Fracture Room		
	- general	540
	- table	2150
ICU Nursing Area		
	- general	325
	- bed	1080
Labs		
	- general	325
	- benches/tables	1080 (3)
Laundries		
	- sorting/washing	325
	- flatwork ironing	540
	- sewing station	1080
Libraries		
	- book stocks/reading	325
	- desk	540
Linens		
	- general	325
	- issuing	540

Locker rooms		215
Lobby		
	- day	215
	- night	110
Maintenance		
	- general	325
	- benchwork	540
Medical Records		755
Nurses' Station		
	- general (day)	540
	- general (night)	325
	- desk/charts	755
	- medication room counter	1080
Nurses' Workroom		540
Nurseries (CW lamps only)		
	- general	325
	- treatment room	1080
	- exam (table or bassinet)	1080
Obstetrical		
	- labor room, general	215
	- labor room, local	1080
	- delivery room	1080
	- table (surgical lamp)	(2)
Offices		
	- work stations	540
	- general	325 (4)
Patient Room		
	- general (patient uplight)(5)	110
	- reading (patient downlight)	325
	- exam light	1080
	- toilet	325
Pediatrics		
	- crib Room, general	215
	- bedroom, general	110
	- reading	325
	- dayroom, playroom	325

Pharmacy		
	- general	325
	- work table	1080
	- storage	325
Mech./Elec. Equipment		215
Stairways		160
Storage		
	- bulky	110
	- medium	215
	- fine	325
Surgical Suite		
	- table (surgical lamp)	
	- scrub up	325
	- OR	1080
	- instrument clean-up	1080
	- storage	215
	- recovery	
	general	325
	local	1080
Toilets		215 (6)
Waiting		
	- general	110
	- reading	325
X-ray		
	- radiographic	110
	- fluoroscopic - variable	0-110

(1) Luxs measured at the working surface level.

(2) Established by surgical requirements.

(3) Where benches are against partition, provide continuous 2-lamp fixtures parallel to and centered over edge of bench.

(4) Intensity at floor level.

(5) In addition to general illumination, provide one overhead fixture in room outside patient 's curtain track, controlled from wall switch at door.

(6) In addition to general illumination, provide supplemental lighting over mirrors.

SPECIFIC ELECTRICAL DESIGN FEATURES

RECEPTACLES

1. Install field wired surface raceway above benches: receptacles 24"o.c.

2. Provide a 208V receptacle and an emergency receptacle in each lab module.

GENERATORS

In areas where service is likely to be unreliable (example, single overhead, primary feeder), consider dual generator sets with automatic paralleling. Size each set for 65% of the total emergency demand load.

SUBJECT: MECHANICAL REQUIREMENTS

(Placeholder- new '80" in hard copy for Solar Systems)

PHS EXHIBIT X4-11-A Recommended Mechanical Design Criteria

PHS:
4-11-00 PURPOSE AND SCOPE

A. The purpose of this chapter is twofold:

1. To convey to the project Architect/Engineer (A/E) general guidelines regarding mechanical design features required for PHS projects. Agencies are required to develop specific guidelines related to their projects (see PHS Exhibit X4-11-A, "Recommended Mechanical Design Criteria").

2. To inform the project A/E of the requirements for each submittal of the construction documents for government approval.

B. The scope of this chapter includes all special-purpose type construction required by PHS components including research facilities, health care facilities, and quarters required by PHS components.

PHS:
4-11-10 CODES AND STANDARDS

All standards, codes and regulations used as a basis of design shall be the latest editions including amendments. Unless otherwise indicated by the agency criteria, the standards and codes of the following organizations shall be followed:

A. Codes and Standards required in Volume I, Chapter 4-8, " General Design Requirements".

B. Local codes and ordinances (if this represents a major cost impact advise Government representative).

C. Rules and regulations of the local utility companies.

D. The applicable standards of the following organizations:

AABC (Associated Air Balance Council)
ABMA (American Boiler Manufacturer's Association)
ACGIH (American Conference of Governmental Industrial Hygienists)
ADC (Air Diffusion Council)
AGA (American Gas Association)
AMCA (Air Movement and Control Association)
ANSI (American National Standards Institute)
ACI (Air Conditioning and Refrigeration Institute)
API (American Petroleum Institute)
ASA (Acoustical Society of America)
ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers)
ASSE (American Society of Sanitary Engineers)
ASME (American Society of Mechanical Engineers)
ASTM (American Society for Testing and Materials)
AWPA (American Wood Preservers Association)
AWS (American Welding Society)
AWWA (American Water Works Association)
CGA (Compressed Gas Association)
CISPI (C.I. Soil Pipe Institute)
DEMA (Diesel Engine Manufacturers Association)
HEI (Heat Exchange Institute)
HI (Hydraulics Institute)
HI (Hydronics Institute)
HVI (Home Ventilating Institute)
IBRM (Institute of Boiler and Radiator Manufacturer)
ISA (Instrument Society of America)
MCAA (Mechanical Contractors Association of America)
MSS (Manufacturer's Standardization Society of the Valves and Fittings Industry)
NBBPVI (National Board of Boiler and Pressure Vessel Inspectors)
NEBB (National Environmental Balancing Bureau)
NEMA National Electrical and Manufacturer's Association)
NFPA (National Fire Protection Association)
NSF (National Sanitation Foundation)
NWWA (National Water Well Association)
PDI (Plumbing and Drainage Institute)
PPFA (Plastic Pipe and Fittings Association)
SBI (Steel Boilers Institute)
SMACNA (Sheet Metal and Air Conditioning Contractors National Association)
SSPC (Steel Structures Painting Council)
STI (Steel Tank Institute)
TEMA (Tubular Exchanger Manufacturer's Association)
UL (Underwriter's Laboratory, Inc.)
USDC (U.S. Department of Commerce)

E. (Insert- Special criteria listed in the latest edition of “Guidelines for Construction and Equipment of Hospital and Medical Facilities, ISBN 0-913962-96-1,” or the ASHRAE Handbooks.) Plumbing work shall be in accord with one of the following, as it applies to the location as amended. The design shall be in accord with the following codes as they apply to specific locations:

1. National Standard Plumbing Code (NAPHCC)

2. Uniform Plumbing Code (IAPMO)

3. Basic Plumbing Code (BOCA)

4. Standard Plumbing Code (SBCC)

5. Uniform Mechanical Code (IAPMO) (ICBO)

6. Basic Mechanical Code (BOCA)

7. Standard Mechanical Code (SBCC)

8. Uniform Solar Energy Code (IAPMO)

9. Standard Gas Code (SBCC)

F. The regulations of the Department of Energy on energy conservation, and the regulations of 10 CFR, 29 CFR, and 40 CFR shall be adhered to in the design.

PHS:
4-11-20 HEATING

In many hospitals and research facilities, steam is required at various pressures for program use. The steam requirements for a special use such as sterilizers should not dictate that the central heating unit generate steam. Rather, if the steam load is relatively small and isolated it can be handled by a small unit installed close to the use, fired by gas, oil or electric as the economic and code justification dictates.

PHS:
4-11-30 VENTILATION

GENERAL - Rest room, toilet rooms, janitors closets, etc. shall be exhausted at the rate of 10 air changes per hour. This rate meets all codes and should not be increased.

PHS:
4-11-40 COOLING

GENERAL - In general, temperatures for facilities are listed in the following chapters of the ASHRAE Handbook of Application: "Residences," "Commercial and Public Buildings," "Places of Assembly," "Domiciliary Facilities," "Health Facilities," and "Laboratories."

PHS:
4-11-50 ENVIRONMENTAL CONTROL

Controls shall be designed to operate the heating and cooling systems efficiently and to prevent system "fighting" each other causing waste. Dead bands should be provided between heating and cooling cycles to meet program demands. The dead band range should be wide enough to suit the instrumentation.

PHS:
4-11-60 HVAC SYSTEMS

Mechanical systems for laboratories and hospitals are complex. The interior environment of these facilities must be maintained 24 hours a day, 7 days a week on a continual basis. Also more air of a higher quality with a maximum temperature tolerance must be maintained for research and health facilities.

PHS:
4-11-70 EQUIPMENT

A major design factor for mechanical equipment for research and medical facilities is duplexing. All equipment for research and medical systems where a system is "on-line" or operates 12 months a year, 24 hours a day, and cannot be shut down for maintenance, shall be duplexed for maintenance and reliability purposes. Fan driven systems should have two fans and pump driven systems should have two pumps. Other pieces of equipment that require excessive time for maintenance should also be duplexed.

PLACEHOLDER _ SOLAR SYSTEMS

PHS:
4-11-80 DESIGN FOR MAINTENANCE

A. The floor area dedicated for Mechanical-Electrical equipment shall be a minimum of 12 percent of the final gross area. Increase the percentage accordingly for large pieces of energy conservation or other additional special equipment. When interstitial space is used, which PHS encourages for ease of access for maintenance purposes (see Chapter 5-6), the gross area percentage will be reduced.

B. Clearances around equipment shall be wide enough to allow space for maintenance and replacement.

   Equipment removal routes shall be planned into the design of the building in order to prevent major demolition to replace equipment. Floors or roofs shall be strong enough to carry the equipment along removal routes.

C. The use of roof top exposed equipment (heating and a.c. units) is discouraged because of high heat in the summer, snow loads and poor maintenance in the winter and apparently shorter equipment life.

D. Coil removal space shall be shown dotted in on the plans for all air handling units. This space has to be kept clear of all equipment to permit a clear area for coil removal and cleaning.

E. Design consideration shall be given to any future expansion of the facility. Spaces should be dedicated for future equipment location and/or equipment should be lined up to allow for extension of the mechanical room systems in an orderly fashion.

PHS:
4-11-90 PLUMBING

To ensure reliability, the water supply to hospitals and laboratories ideally should come from two separate points in the pipeline grid system. If there is no grid system and only one water supply then a storage tank should be considered with pumps. On ground or underground storage tanks with pumps may be less expensive than elevated tanks. The water system should also be flowed annually to ascertain the available flow residual capacity and residual pressure. This test determines the available quantities of water for fire protection and other uses.

PHS:
4-11-100 ENGINE GENERATOR ROOM

Alternate sources of electric power are required for all research and medical facilities that provide life support facilities. Some small clinics may not require an alternate source of electric power.

PHS:
4-11-110 DRAWINGS

A. See Chapter 4-8 "General Design Requirements", for detailed information.

B. Provide a coordinated utility drawing showing exterior electrical, and mechanical work.

C. On all medium and large projects, quantities of air and water in L/s, or steam in kg/s shall be shown to keep the contractor informed as to the quantities designed for each run or branch. This will aid the testing and balancing (TAB) contractor as he can use these figures in setting the dampers or balancing cocks to the proper quantities.

D. Provide large scale drawings of shower and toilet rooms, laboratories, utility corridors, mechanical rooms, and any other area that is too congested to clearly understand at a smaller scale.

E. When 1:100 scale drawings are used, A/E shall provide separate drawings for:

- demolition
- ductwork
- piping (other than process piping)
- process piping
- plumbing (domestic water, waste, vent, gases, vacuum, compressed air, etc.)
- fire protection
- special systems

F. Provide riser diagrams for all systems including ductwork, domestic water, steam, heating and/or chilled water, waste, drainage, vent, fire standpipe and process piping. Each component shown on riser should also be shown in the plan; provide cross-identification.

G. Equipment such as meters, piping, and valves to be furnished and/or installed by the utility company shall be shown and identified on the drawings. Delineate the division of work between the utility companies (or Government) and the contractor.

H. Control sequences for all systems shall be included on the drawings or in the specifications.

I. Schedules for all equipment shall be shown on the drawings.

PHS:
4-11-120 SPECIFICATIONS

A. See Volume I, Chapter 4-6, "Project Specifications," for detailed information.

B. Include as complete description or listing of salient features (even when trade names are used).

C. Include a complete Table of Contents in the front of all sections.

D. Require Maintenance and Operation Manuals for all systems and components.

E. Require a detailed testing and balancing (TAB) of the system with complete records. TAB contractor should be hired under a separate contract completely independent of the General or Mechanical contractors (see section 4-11-140 of this chapter).

F. Require training of operating personnel and provide preventive maintenance data.

PHS:
4-11-130 CALCULATIONS

A. Calculations shall be a progressive refinement of the basic design until the final submission. All sources of data or decisions shall be identified. Each sheet that is revised may be crossed out and have the word "revised" written on it. Sheets of calculations should have a suitable binding border. Each sheet should be identified by date and page number. All lettering should be legible and all reproductions complete.

B. Mechanical calculations shall include all systems and all equipment selection information including HVAC, plumbing, fire protection and other special systems.

C. Water, Sewer and Gas Data shall include the following:

1. Domestic fire hydrant flow test results with flows calculated, and with static and residual pressures indicated.

2. Size and capacity of all pumped or gravity sewers. Local jurisdiction should be notified and a letter secured indicating that the local system is large enough to handle the proposed loads. If the existing sewage system is not large enough to handle the proposed loads then the cost estimate should include the necessary costs to upgrade or extend the system to the site.

D. Block and Room Loads

1. Block load calculations should be made for both heat loss and gain. The block loads should be used to determine the size of the primary heating and cooling units for the building or the facility. Block loads are to determine at what time the maximum loads occur and the quantity of these loads.

2. Room load calculations for heating, cooling, ventilation along with fixture use factors for water, waste and vent. Include suggested equipment to meet these loads.

3. The total of all the room loads will usually exceed the cooling block load for refrigerant equipment. Room or terminal unit loads are used for room or zone unit sizing.

4. The calculations as they progress should include riser diagrams, room layouts, pump and fan curves, equipment data, pipe and duct sizing, tank capacities, and all pertinent data and sketches to completely clarify the design intent.

E. Sketches and Hookups

1. Furnish rough sketches used to calculate layout and sizing of duct and piping systems. Duct systems should include supply, returns, exhaust, along with special systems. Piping systems should include domestic cold and hot water, waste and vent, heating water, chilled water, ethylene glycol solutions, oxygen, vacuum, compressed air, refrigerant gas, nitrogen and other special systems.

2. Furnish also equipment piping hookups and details for installation of special systems such as engine generator sets, unit heaters, steam for sterilizers, deionized water, and gases (air, oxygen, nitrous oxide, nitrogen, etc.)

F. Preliminary and final sizing of all tanks and service lines to and within buildings for gases and liquids such as propane (L.P.G.), natural gas, fuel oil, oxygen and water storage tanks should be submitted along with sketches of the system.

G. If the design is based on the use of existing equipment, furnish load data and information on equipment capacities to demonstrate adequacy of the existing equipment.

H. Final submission of calculations are to be bound and include all catalog information on all equipment proposed for installation on this job. There shall be at least three manufacturers of all equipment that can be selected to meet the specified requirements.

PHS:
4-11-140 TESTING AND BALANCING

A. System balancing shall be accomplished prior to final inspection. All systems should be balanced including: air, heating water, domestic water, chilled water, medium or high temperature hot water, boiler combustion, incinerator combustion, steam, distilled water, and deionized water.

B. The balancing process shall include the adjustment of all equipment within the system, such as air terminal boxes, coils of all types, heat convertors, pumps, fans, unit heaters, and fan coils.

C. Testing equipment required to work in conjunction with balancing devices installed permanently shall be provided to the using agency after testing to provide complete facilities for future testing and balancing.

D. Testing of specialized systems, such as medical gases, shall be tested in accordance with appropriate codes and standards.

E. An agency representative shall be present at all times during the system balancing and testing.

PHS:
4-11-150 SUBMITTALS

Refer to Chapter 4-8, "General Design Requirements," for definition of each submittal and to Volume I, Chapter 4-7, "Cost Estimating," for cost estimate requirements. Requirements for each submittal stage will be outlined in the Scope of Work (SOW). Recommended information is as follows:

A. Pre-Design Survey - These are studies or surveys which would normally precede design considerations (e.g., a survey of utilities to determine availability and usage restrictions).

B. Schematic Design

1. The economic analysis for the mechanical systems should be initiated, since the analysis should be approved and the type of system selected by the preliminary stage.

2. The schematic drawings should indicate space necessary for mechanical considerations. Extreme care should be utilized to assure adequate space for maintenance and operation of the equipment.

C. Preliminary Design - The following should be included with this submittal:

1. Plumbing and Process

a. Location and size of existing utilities and service connections to building(s).

b. Location and arrangement of all major items of equipment.

c. Preliminary calculations for determining sizes and types of plumbing and process equipment and systems.

d. Plumbing layout of typical toilet rooms, showing drainage and venting systems.

e. Schematic diagrams showing completed drainage, venting, and water systems. Include process services, if any.

2. Heating

a. Preliminary layout and description of outside distribution systems from central plant, if utilized, including location and size of any existing mains and building connections.

b. Location and arrangement of all major items of heating equipment and of incinerator and engine generator sets, if required.

c. Block load heating calculations based on the exposed wall, glass, and roof areas. Calculations shall include the loads for heating fresh air for ventilation, domestic water heating, process requirements, and summer and winter boiler loads.

d. Complete single-line piping diagrams of all heating systems showing equipment for the entire building. Diagrams shall include air conditioning and ventilating coils, perimeter heating systems, and special heating for stairways, lobbies, entrances, garages, etc.

e. Complete sequence of operation and schematic control diagrams for heating systems.

f. Economic analysis to show comparative costs of and recommendations for, fuels for heating. Economic analysis for snow-melting system (electric, M.I. cable, and heating cable in conduit versus heat transfer coil) if required.

g. Complete equipment and piping diagram with heat balance calculations for steam generating systems operating at over 276 kPa.

3. Air Conditioning

a. Location and arrangement of all major items of equipment.

b. Block load air conditioning calculations for peak time of day.

c. Economic analysis to show comparative costs and recommendations for refrigeration plant.

d. If a high-velocity duct distribution system is proposed, economic justification should be provided.

e. Single-line layout of ventilating and air conditioning ductwork to indicate number of zones, type of system, such as high or low pressure, multizone, etc., and extent of each system. Elevator machine room ventilation should be included.

f. Psychrometric chart study for each type of air-handling system.

g. Complete sequence of operation and schematic temperature control diagrams.

h. Schematic flow diagrams for air-handling equipment, condensing water, and chilled water.

i. Air outlet location for typical areas.

k. Layouts shall suit the modular space arrangement for the building.

l. Location of cooling tower, with method of screening from view.

4. Outline specifications (see Volume I, Chapter 4-6, "Project Specifications")

5. Drawings

a. Orientation arrow and key plan (when required) on all plan drawings.

b. Room numbers and names in place.

6. Cost Estimate - Order of magnitude (per square meter)

D. Intermediate Design - At this stage all system details, equipment piping hookup details, piping riser diagrams, controls and equipment schedules shall be shown. In addition to expanding the drawings, calculations and specifications requirements for the preliminaries the intermediates should include:

1. Heating

a. Layouts of boiler room, incinerator room, and other rooms containing heating equipment, developed to the extent of showing clearances for access and maintenance and showing main piping.

b. Heating piping on floor plans, heating system flow diagrams, riser diagrams, and control diagrams for heating system and major equipment, all sufficient to indicate contemplated design.

c. Layout of underground heat distribution system in sufficient detail to indicate contemplated design.

d. Layout of engine generator sets in sufficient detail to permit evaluation of contemplated design with regard to fuel, air, exhaust and electrical systems.

2. Plumbing

a. Layouts of typical toilet rooms and location of all plumbing equipment in mechanical equipment rooms. Layouts of special spaces such as kill tank rooms, elevator pump room.

b. Typical riser diagrams for water, soil, waste and vent piping.

c. System layout and supply piping for all standpipe hose system and sprinkler systems indicating hazard and zoning.

d. Layout of all fuel systems such as propane, and natural gas, fuel oils and/or solid fuels. Show locations of storage tanks or other storage areas. Provide all safety and fire precautions.

e. Layout of all medical and non-medical gas and other systems such as: oxygen, nitrous oxygen, compressed air, vacuum, nitrogen, hydrogen, acetylene, argon, etc. Other systems could include softened water, deionized water, laboratory water, non-potable water, feed water, ethylene glycol solutions and their feed piping, tankage and other appurtenances as required.

3. Air Conditioning

   a. Flow diagrams for chilled water, condenser water, and refrigerant. Typical riser diagrams for chilled water.

   b. Preliminary sequence of operation and automatic temperature control diagram.

   c. Ductwork layout for typical fan rooms and typical areas.

   d. Equipment room layouts developed to the extent of showing clearances for access and showing trolley beams provided for maintenance.

4. Drawings: Preliminary riser diagrams and equipment schedules.

5. Special Systems: Calculations, riser diagrams and plans.

6. Preliminary load calculations (copies as required by the SOW).

7. Project specifications (preliminary draft).

E. Pre-Final Design

1. Drawings essentially complete.

2. Final calculations - This would be a complete submission of all HVAC, Plumbing, Fire Protection and special purpose calculations. HVAC shall include:

   a. Final block loads for heating, cooling and ventilation quantities.

   b. Individual room loads.

   c. Proposed equipment selection with model number, pump and fan curves with selections indicated.

3. Project Specifications, final draft.

4. Cost Estimate, updated.

F. Final Design

1. Drawings revised to reflect Government comments on previous submittal.

2. Calculations complete in bound copy (copies as required by the SOW).

3. Project specifications complete.

4. Cost Estimate, final

5. Document disposition of Pre-Final Submittal, Government Review Comments.

RECOMMENDED MECHANICAL DESIGN CRITERIA

1. HEATING

A. Boilers. The designer shall analyze the periods of minimum/ maximum demands in sizing the equipment for boilers carrying the heating load, the domestic water load, and the laundry load. The maximum heating usually occurs around 3 a.m. in the morning. The domestic water load occurs during the normal working day with the maximum at the beginning of the day. The laundry load most likely would track the domestic water usage but could be a much larger quantity. The heating load may or may not be at its maximum when the working day starts, therefore, the boiler capacity could be less than the sum of the maximum loads.

B. Fuel Analysis. On all systems with primary heating units, a fuel analysis of available fuels shall be made to determine the most economical fuel to use over the building life. Also, if one kind of fuel is considered to come from an interruptable source, a second kind of fuel shall be made available.

C. Fuel Safety. To protect all fuel burning equipment and prevent loss of life, fuel safety devices/systems and controls shall be installed in accordance with NFPA Standards 85A through 85G.

D. Fuel Oil Storage. Fuel storage tanks, installed in accordance with EPA requirements, shall be sized to meet existing conditions at the site. In isolated areas the tanks shall be large enough to guarantee a continuous supply of fuel oil even during extended periods of no delivery caused by cold weather or heavy snows.

A two-week supply of fuel oil will usually suffice for boilers or engine generators unless unusual conditions warrant otherwise. Situations in Alaska may warrant a different design philosophy depending on the times of fuel supply.

Fuel oils tanks shall comply with NFPA 31 or 37. Liquified Petroleum Gas tanks shall comply with NFPA 58.

2. VENTILATION

A. Electrical Areas. Electrical areas where the heat buildup from equipment energy loss or from sun load would damage or reduce the capacity shall be ventilated. This includes switchgear, transformer, elevator machine, and engine-generator rooms.

B. Air Inlets. Care shall be exercised in the number and location of outside air inlets directed into the building. No inlet shall be placed near or under a parking vehicle or a truck delivery point. The number of inlets should be reduced to a minimum and inlets shall be kept separated from the exhausts. Also, inlets and outlets should be separated by at least 7,500 mm.

C. Air Outlets. Fume hoods and safety cabinets shall be exhausted to the building exterior. The discharge from the stacks above the building shall be high enough and have sufficient velocity to get outside of the turbulent air and up into the air streams to dissipate the exhaust. Refer to the current "Airflow Around Buildings" chapter, ASHRAE Handbook of Fundamentals.

3. COOLING

A. Laboratories

1. Air quantities should be kept to a minimum, providing there is sufficient makeup air for any fume hood and/or biological safety cabinet. Excess heat generated by equipment used in the laboratories can be removed by a fan coil unit installed in the lab ceiling and connected to the chilled water system.

2. Each interior hospital laboratory should be provided with a separate cooling system for cooling during spring and fall. This will keep these areas cool enough to provide a proper working temperature and adequate cooling for material storage.

3. In laboratories where there is a multiplicity of walk-in cold and freezer boxes, a central condenser water system with its own cooling tower should be provided to remove the heat ejected by water cooled compressor units .

4. The use of horizontal sliding sash fume hoods or cabinets is encouraged since the horizontal sliding sash uses less air than the vertical sliding sash.

B. Animal Facilities. Temperatures for cooling of animal facilities are listed in the ASHRAE Handbook of Fundamentals chapters on "Environmental Control for Animals and Plants," AAALAC standards, and NIH Publication No. 85-23, "Guide for the Care and Use of Laboratory Animals."

4. TEMPERATURE CONTROL

Temperature Control. The temperature in all areas shall be controlled and not be allowed to seek its maximum level. However, when waste heat is used to heat water in a preheat tank where the temperature will never reach 373 K, the temperature should not be controlled. (add Solar Heat)

5. HVAC SYSTEMS

A. Pressure Relationships

1. Pressure relationships within a building will vary depending on the use of the space. In general, a building should be positive to the exterior to prevent exterior air, which is unfiltered and untempered, from entering the spaces.

2. Laboratory rooms which handle hazardous materials shall be under negative pressure to the surrounding areas. Clean areas shall be under positive pressure and dirty areas shall be under negative pressure. Animal rooms shall be negative to the corridor. In cage washing, dishwashing, and utensil washing areas, air flow shall be from clean to dirty areas.

3. Boiler rooms, especially those with atmospheric boilers, should have air fan(s) that push into the room with relief dampers in the exterior wall. A fan that pulls air from the boiler room will also pull products of combustion out of the boilers.

B. Ducts

1. Duct systems shall be evaluated to ascertain which of the four methods of design (equal friction, equal velocity, velocity reduction or static regain) will be the most economical method over the life of the system. Ducts shall be constructed in accord with SMACNA Manuals.

2. Duct systems shall be sealed to minimize losses through the duct joints.

3. Fan rooms shall not be used as supply or return plenums.

4. Systems shall be designed for fire safety regulations in accordance with NFPA-90A and B.

5. Ducts shall be designed for a minimum of noise and should be protected from vibration by isolation with flexible connectors.

6. Duct materials shall be chosen to resist erosion or corrosion by the gasses conveyed.

7. Perchloric acid fume duct exhaust shall be welded stainless steel with provisions for washdown. The fan shall be a non-sparking type.

8. Exhaust systems for hot vapor-laden air shall be insulated to prevent condensation, shall be equipped with drains and shall be sloped to drain to the lowest point (exhaust systems from cart washers is a good example of this system).

6. EQUIPMENT

A. Boilers and chillers should be duplexed wherever possible and each should be the size for approximately 67 percent of the total load. This will assure that whenever there is a maintenance shutdown of one unit the matching unit can supply 67 percent of the load.

In Alaskan locations the boilers should be designed to handle 100% of the load, especially if the heating load is a high percentage of the total.

B. Laboratories

1. Selection of fume hoods and safety cabinets shall be made in accordance with HHS Publication Number (CDC) 88-8395, "Biosafety in Microbiological and Biomedical Laboratories;" and National Sanitation Foundation Standard Number 49, "Class II (Laminar Flow) Biohazard Cabinetry." Exhaust system should be installed in accordance with NFPA Standard 91, "Installation or Blower and Exhaust Systems for Dust, Stock and Vapor Removal or Conveying." Designers should also refer to the Laboratories Chapter in the Applications Volume of the current ASHRAE Handbooks.

2. Fume hoods and safety cabinets shall be located in the back corners of the laboratories, to prevent products being handled within the equipment from being drawn into the lab by persons passing. Do not locate this equipment in passageways.

C. Incinerators

1. Incinerators shall be designed in accordance with state regulations. If installed in the building, the height of the stack should be as recommended by the manufacturer, and as approved by the state or local officials. The stack shall be guyed as required by the manufacturer, and in accordance with the architect/engineer's calculations.

2. If in the building, the system shall be installed in accordance with NFPA 82, "Incinerators, Waste and Linen Handling Systems and Equipment," and NEPA 211, "Chimneys, Fireplaces, Vents and Solid Fuel Burning Appliances."

D. Primary and terminal equipment shall be derated whenever conditions occur where it cannot give the rated output. Boilers and other "air using" equipment shall be derated when installed at elevations other than sea level. Another example for derating is when the heat transfer medium within a closed system is other than water. The designer should be cautious to ensure that all equipment can supply the required capacity for the elevation and other conditions where it is installed. Units should be sized with the derated output quantity shown on the plans and in the specifications.

7. MISCELLANEOUS DESIGN CRITERIA

A. Facilities constructed in an earthquake area shall have all equipment and systems designed to prevent damage or position displacement during tremors in accordance with the building code used.

B. Proper design shall be followed in placing and positioning of fans along with associated ductwork to maintain maximum efficiency and minimum operating costs.

C. Variable volume drives are encouraged in systems which experience large variances in demand over the working day. For example, domestic water systems usually experience large variances in the flow. In large buildings or on large reservations where additional plumbing is required for domestic water, variable volume should be considered.

D. Air exhaust registers in animal rooms are usually located in opposite corners of the lab near the floor and are filtered. Supply air to the room should have a very low velocity to prevent chilling animals. Large perforated supply diffusers slow the air to acceptable values.

E. High hazard labs should have duct work dampers installed in order to isolate the room during periods of decontamination.

8. PLUMBING

A. Domestic water run around systems shall be designed with the smallest pump available. The system should only run when the temperature of water that is going to the last unit in the building is below a set value.

B. Make-up water for systems without softeners should be taken from the hot water domestic system from which the temporary hardness has already been removed and which, therefore, will not contaminate the system being filled.

C. Softened water that has a high sodium content shall not be run to hospital areas where there are heart patients or to the ice machine supplying that area.

D. Hot water supplied to mental patients and to areas where a person may be burned by the water shall be supplied at a temperature no higher than 316 K.

E. High Hazard Laboratories

1. All hazardous laboratories shall have a separate hot and cold water supply, separated from the domestic water supply by a backflow valve. Another method used for separation is the break tank, where the water is supplied to a separate tank and pumped into the lab system.

2. Domestic water is usually supplied to rest rooms and drinking water fountains within the laboratory area.

F. Gases

1. Special attention shall be afforded the various gases stored and distributed within the building. Manifolded supply areas shall be constructed, ventilated, manifolded and piped, all in accord with the applicable NFPA code for the gas being installed.

2. Special attention shall be given to all flammable gases within the building. These shall be stored and piped according to NFPA codes.

G. Vacuum

1. Vacuum systems for hospitals shall be designed for maximum cleanability. All sections of the piping system shall be accessible for rodding out obstructions. Systems shall be designed in accordance with the Compressed Gas Association Pamphlet P-2.1.

2. Vacuum systems in high hazard laboratories shall be filtered on the discharge side of the pump before the pipe exits the building.

H. All multi-storied buildings shall have every floor's waste and drainage gravity drained as the elevation permits. Only those pipes below the sewer invert should be pumped. To conserve energy, never allow sewage that can be drained by gravity to be pumped.

I. Crawl spaces under buildings that are large in area and especially those prone to flood, shall have a below-surface pipe drainage grid. If the area is floored, there shall be floor drains installed to provide adequate drainage. This prevents the buildup of mold, etc., which could be a problem to a hospital or other health facility. A domestic water drip system should be used to maintain trap water levels.

J. Fire protection of the building may be composed of many systems.

1. Sprinkler systems are usually dry or wet depending on the location in the building and on the winter temperatures, and shall comply with NFPA codes.

2. A carbon dioxide system shall be installed under kitchen hoods in accordance with NFPA codes.

9. ENGINE GENERATOR SYSTEM

A. Generator Room Ventilation

1. Static loss for air flow through all louvers, ductwork, dampers, screens and sound attenuators shall not exceed that available from the fan, exterior to the radiator (approximately 10 mm water).

2. All intake and exhaust louvers shall have a 50 percent free area in order that the air velocity through them will be below 2.5 m/s.

3. Intake louvers shall accommodate both cooling and combustion air.

4. Exhaust ductwork shall extend from the radiator to the exhaust louver and to any sound attenuators.

5. If possible, the ventilation air should pass over and around the generator, the engine, and through the radiator. Air brought in near the center of the side of the unit will cool all of the above parts.

6. Intake and exhaust dampers shall be motorized to close when not in use.

B. Seasonal Room Conditions

1. Run-around dampers shall be installed in the exhaust ductwork, controlled by a modulating thermostat. In winter, with the engine running, the thermostat will control the temperature within the room.

2. In winter, whenever the unit is not operating, the room temperature shall be controlled by a separate thermostat and a unit heater.

3. In summer, the room temperature shall be lowered by the use of a thermostatically controlled exhaust fan and an air inlet.

C. Fuel Systems

1. Fuel Oil

a. Fuel oil systems shall be comprised of a day tank, storage tank, pumps, piping, pipe fittings, and controls. The supply tank shall be large enough to assure a continuous oil supply with delivery schedules in the worst weather conditions.

b. The system shall have duplex pumps and each pump shall be large enough to supply fuel for combustion and cooling the engine. Fuel for cooling shall be returned to the main supply tank after use. Piping shall be sized in accordance with the latest edition of the Fundamentals Volume, ASHRAE Handbook.

c. The day tank shall be equipped with a backup pump shutoff control which operates automatically when the tank is full. Overflow piping from the day tank to the supply tank shall be large enough to return pump capacity to the

supply tank by gravity without pressurizing the day tank. Care shall be used to size the drain pipe for the full overflow pump capacity plus any oil used to cool the engine.

d. Fuel oil systems shall be installed in accordance with NFPA codes and the Diesel Engine Manufacturer's Association (DEMA) publication "Standard Practices for Stationary Diesel and Gas Engines."

2. Gas Fuel

a. The gas fuel should be delivered from a continuous supply and not an interruptable one.

b. The fuel gas system shall be designed in accordance with NFPA codes and the DEMA Book in C-1-d above.

D. Remote Radiators

1. Remote radiator cooling systems shall be filled with an ethylene glycol-water mixture to prevent freezing.

2. An expansion tank shall be provided in the system to absorb water expansion.

3. The pump provided for water circulation shall be examined for the pressure and volume requirements of the expanded system. Air vents shall be provided in the piping system wherever the pipe turns down in the direction of flow.

4. Since remote radiators only remove the heat from internal sources of the total engine generator heat, a dedicated, thermostatically controlled ventilating system shall be utilized in order to maintain a normal working room environment in the wintertime.

E. Exhaust System

1. Exhaust pipe shall be sized large enough not to allow to increase the back pressure on the engine, to increase above the pressure which is expected normally from the shortest exhaust pipe.

2. The muffler shall be supported on vibration spring-type hangers and shall be insulated thickly enough to prevent room heat buildup.

F. Ventilation

1. If the radiator is installed on the engine frame within the room then ventilation shall be provided by the engine propeller fan through appropriate intake louvers.

2. If the radiator is installed remote to the engine-generator set, then a special fan system within the room shall be provided to exhaust the engine-radiated heat and the generator heat. The room temperature shall not exceed 310 K and the system shall be sized for the local area maximum summer outside temperature.

SUBJECT: VALUE ENGINEERING

PHS:
4-12-00 PURPOSE

The purpose of this chapter is to state the policy and provide PHS facilities staff with guidance an the use of value engineering (VE) in Architectural/Engineering (A/E) and construction contracts.

PHS:
4-12-10 POLICY

It is the policy of PHS to require VE analyses for design and construction contracts when it is deemed that these analyses may result in the reduction of contract costs or in the reduction of life cycle costs of PHS facilities projects. It is also PHS policy that each PHS facilities office that performs technical management of A/E and construction contracts shall designate a value engineering coordinator (VEC), who has received formal, Society of American Value Engineers (SAVE) approved training in value engineering, to coordinate the office's VE activities. It is the contracting officer who is responsible for determining which contracts are subject to VE and for accepting or rejecting VE proposals.

PHS:
4-12-20 DEFINITIONS

A. Life Cycle Cost - The sum of all costs over the useful life of a building, system or product. It includes the costs of design, construction, acquisition, operation, maintenance, and salvage (resale) value, if any.

B. Value Engineering - An organized effort to analyze the functions of systems, equipment, facilities, services, and supplies for the purpose of achieving the essential functions at the lowest life cycle cost consistent with required performance, reliability, quality, and safety.

C. Value Engineering Change Proposal (VECP) - A proposal developed by a construction contractor under a value engineering clause in its construction contract. The proposal involves changes in the drawings and specifications directed at reducing the construction costs or life cycle costs without impairing the project's essential functions or characteristics.

D. Value Engineering Proposal (VEP) - As used in this chapter in connection with an A/E design contract, is a proposal for change developed by the A/E design firm, employees of the Federal Government, or a specialized VE consulting firm. The proposal is similar to the VECP described above and is generally performed on a partially completed facility design.

E. Society of American Value Engineers (SAVE) - A professional Society dedicated to the advancement of value management through education to provide a better understanding of the principals, methods and concepts of value technology.

4-12-30 VALUE ENGINEERING IN DESIGN CONTRACTS

A. General - Federal Acquisition Regulations (FAR) subpart 48.201 authorizes the contracting officer to include a VE clause in solicitations and contracts for A/E services when the Government concludes that substantial savings might result from a sustained VE effort. The contracting officer should consult with the VEC prior to making this determination. While the Government may perform VE services with in-house staff on smaller projects, PHS requires that A/E contractors hire a firm specializing in VE, utilizing a certified value specialist team leader and A/E professionals with VE training and experience when the costs of construction under design is expected to exceed $5 million.

B. Design Contracts for Projects over $5 Million - A PHS agency shall obtain VE analyses on all design contracts where the construction costs are estimated to be in excess of $5 million, based on Washington, D.C. construction costs. This may be accomplished by either a specialized consultant or Government personnel. Regardless of who performs the VE, it is recommended that a VE effort or study be performed when the design is no more than 35 percent complete. The following information shall be included in any resulting VEP.

1. A description of the differences between the existing and proposed design, the comparative advantages and disadvantages of each, a justification when an item's function is being altered, the effect of the changes on system or facility performance, and any pertinent objective test data. This may include but is not limited to sketches, calculations, models, etc.

2. A list and analysis of design criteria or specifications that must be changed if the VEP is accepted.

3. A separate detailed estimate of the impact on project cost of each VEP, if accepted and implemented by the Government.

4. A description and estimate of costs the Government may incur in implementing the VEP, such as design change cost and test and evaluation cost.

5. A prediction of any effects the proposed changes may have on life cycle cost. It is recommended that all costs comparisons use a 30 year building life and the discount rate based on the composite yield on all outstanding T-Bonds neither due nor callable in less that ten years as reported by the Federal Reserves Board in statistical release H.15. Also, it is recommended that all costs analyses use the current dollar or present worth approach. If other methods or assumptions are used, proper justification shall be included with the VE proposal or report.

6. The effect the VEP will have on design or construction schedules.

C. Design Contracts for Projects Under $5 Million - Projects with an estimated construction costs under $5 million may be valued engineered by the A/E contractor, an outside consultant, or an in-house team of Government employees at the discretion of the VEC and the contracting officer, or they may be reviewed by the VEC. When VE is determined to be appropriate, the VEC should proceed as follows:

1. In conjunction with the contracting officer, determine the scope of VE analysis to be undertaken, considering the size and type of the project.

2. If applicable, appoint a VE team, based on the determination in paragraph C-1 above. The VE team shall consist of a minimum of three members with expertise in the areas or disciplines to be reviewed for the project.

3. Upon review by the VE team, based on criteria described in paragraph 4-12-30 B, file a VE report, or a report determining that a VE report is not appropriate, for each project.

4. Maintain copies of VE proposals and supporting documentation in the official files, see paragraph 4-12-50.

D. Generally VEPs should be accepted or rejected within the 45-day time frame established in the FAR subpart 48.103(b) for VECPs.

PHS:
4-12-40 VALUE ENGINEERING IN CONSTRUCTION CONTRACTS

A. General - FAR Subpart 48.201 requires the contracting officer to include a VE clause in solicitations and contracts for construction services when the contract amount is expected to be $100,000 or more, and it permits this official to include a VE clause in construction contracts of lesser value when the Government concludes that substantial savings might result from a sustained VE effort.

B. Review and Acceptance of VECPs - The contracting officer and the VEC must review and accept or reject VECPs in accordance with the policies and procedures delineated in FAR Subpart 48.103(b). These procedures also require the contracting officer to accept or reject VECPs within 45 days of their receipt or advise the contractor in writing of the anticipated decision date.

C. For VECPs that are accepted, the Government and the contractor shall share the savings, as prescribed in FAR Subpart 48.104.

PHS:
4-12-50 RECORD KEEPING AND REPORTING REQUIREMENTS

OMB Circular A-131, "Value Engineering," requires that PHS maintains data on the VE program. It is the responsibility of the VEC to maintain records on the number of VECPs received form construction contractors, the number of VEPs prepared on design contracts and the amount of potential savings accepted by the Government under each of these proposals. This information will be compiled by PHS headquarters to fulfill annual reporting requirements to the Office of Management and Budget.

SUBJECT: INTERSTITIAL SPACE

PHS:
4-13-00 PURPOSE

The purpose of this chapter is to assist US Public Health Service (PHS) agencies and centers in the design and utilization of interstitial space.

PHS programs require buildings to be designed with flexibility to meet varying project requirements (both short and long term) due to ever changing program needs. These requirements can be accomplished by the design and use of interstitial space.

A systematic design approach to the use of interstitial space is essential. Past experiences, where PHS facilities have been designed with interstitial space, has shown that all advantages are lost if the design and construction phases are not controlled to provide carefully laid out utility systems.

PHS:
4-13-10 APPLICABLE STANDARDS AND GUIDELINES

A. Veterans Administration Hospital Building System (VAHBS) Research Report, Development Study, revised August, 1977. This study (current VA policy) provides design criteria for the VAHBS method. The VAHBS is a modular and interstitial space approach, providing continuing adaptability to changing conditions and programs throughout their structural life.

B. U.S. Army Corps of Engineers (USACE) Standard or Guideline. The USACE approach to interstitial space is to provide a central utility system with interior chases. The USACE design also provides corridors (separate lanes for plumbing, electrical, ducts, telecommunications/computer wiring, traffic lanes, etc.) for systems.

PHS:
4-13-20 ORGANIZATIONAL RESPONSIBILITIES

PHS Agency develops the program of requirements (POR) document (see PHS Chapter 2-4), and provides building design.

Agencies are encouraged to develop standards and guidelines in accordance with this chapter. Designs utilizing approved agency standards or guidelines do not require PHS approval.
PHS:
4-13-30 DEFINITIONS

A. Interstitial Space - A space, between floors or parts of a building or structure. Space created by placing a deck below a floor for utility systems, and above ceiling systems.

B. Utility Corridor - Corridor for major utility components (including, but not limited to mechanical runs, electrical raceways, and HVAC duct mains).

C. Utility Zones - Horizontal Zones within the interstitial space dedicated to specific utilities.

D. Modular Systems - Construction in which similar units or subcomponents are combined repeatedly to create a total system.

E. Floor-to-Floor Height - Distance between two floors. This includes the distances to the ceiling, the space above the ceiling and elevated floors above ground level.

F. Fire, Life, and Safety Regulations - Designs must comply with all applicable codes such as National Fire Protection Association (NFPA).

PHS:
4-13-40 TYPES OF INTERSTITIAL SPACE

A. General - The master plan shall reflect thorough planning, permit flexibility of use, and provide for future expansion to meet long-range program planning goals without disrupting the efficiency of the floor plan and its environment.

1. VA Hospital Building System (VAHBS), a modular and interstitial approach.

The VA Hospital Building System has created a disciplined method for approaching hospital design. The system satisfies the user's needs and performance requirements through planning modules, selected building components, and subsystems. The planning modules are blocks of one-story high space including a horizontal zone of service, a horizontal zone of functional space, and can accommodate a variety of hospital activities.

Systems Components:

a. Structural Bay: This is the basic unit establishing dimensional disciplines: 7.2 to 8.1 meters in bay width: 12.3 to 17.8 meters in bay depth (beam span) on a 1.4 meter module; and average floor-to-floor heights of 5.6 to 6.4 meters.

b. Service Module: This module, made up of multiple structural bays, is a unit having three basic components: a Functional Zone; the Service Zone, or interstitial space above the ceiling (for horizontal utility and A/C duct distribution); and a Service Bay located at the module boundary (with mechanical and electrical equipment, vertical shafts, and stairs). When the hospital is designed vertically, Service Bays are always stacked. It is important that the Service Module align with a smoke compartment as defined by the NFPA Life Safety Code (no larger than 2,090 square meters).

2. The U.S. Corps of Engineers Approach (USACE)

USACE utilizes a systems approach, where major mechanical systems are designed for the entire building and generally located on the bottom floor of the building, with

chases leading to the interstitial space. The interstitial space is controlled with corridors for mechanical, electrical, and HVAC equipment, and for worker movement.

B. Design Requirements - Designs must address each of the following areas, and provide viable solutions for any deficiencies or conflicts which may be identified:

1. Structural Systems - Shall include type of structural system, structural bay, service bay, and interstitial floor system.

2. Floor to Floor Heights - Shall show floor to floor ceiling, and interstitial heights.

3. Interstitial Access - Shall show all access to the interstitial space including consideration for access/removal of large pieces of equipment, maintenance of equipment, and repair requirements.

4. Fire and Life Safety - Shall include fire section requirements, smoke compartments, and ingress and egress routes.

5. Utilities - Shall show all utilities, including telecommunications and internal computer networks.

6. Schedules and Cost Estimates - Shall show cost comparisons between normal construction and construction using interstitial space, including consideration for reduced construction time and facility life expectancy.

PHS:
4-13-50 SUBMITTALS (See Chapter 4-8-30, "General Design Requirements")

Building plans developed under contract involve three stages, as described below:

1. Preliminary: This is the initial stage and generally contains single line sketches and several alternatives, including preliminary environmental documentation. The Government review office approval entails selection of the preferred alternative requiring sufficient documentation to support the selection.

2. Intermediates: This stage, submitted at the design development of final design documents to the Government review office, includes work on all disciplines (ie; architectural, structural, mechanical (plumbing and HVAC), electrical, foundation, and site work. The preferred interstitial design plan must also be submitted.

3. Final Plans: At this stage, final plans shall include plans for all disciplines, including interstitial floor plan. PHS recommends consideration be given to the requirement of a scale model of the interstitial space.

PHS:
4-13-60 AGENCY STANDARDS/GUIDELINES, DESIGN APPROVAL

Agencies are encouraged to submit agency standards/guidelines to the Office of the Assistant Secretary for Health for approval (see subsection 4-13-20.A). This will eliminate the need to submit designs for individual projects.

The Director, Office of Management, PHS, may ask to review and approve such plans or agency standards/guidelines on a case-by-case basis.

SUBJECT: CONSTRUCTION CONTRACT ADMINISTRATION

PHS:
5-1-00 PURPOSE AND SCOPE

The purpose of this chapter is to provide general guidance to PHS component organizations for proceeding with construction of facilities for which drawings, specifications and cost estimates have been prepared. The procedures outlined in this chapter are designed to guide PHS component organizations towards achieving an effective and efficient construction inspection and management of any PHS construction contract.
This chapter deals with construction contracting, which differs from the normal, procurement type of contracting. The majority of the procurement contracting process is over once the contract is awarded. However, in the case of construction contracting, the main effort of contract administration occurs after the award. This chapter aims to assist in selecting a proper management team, regardless of size or complexity of the construction contract.

PHS:
5-1-10 REFERENCES

The codes and regulations with particular application and importance relating to construction are listed below:

A. Davis-Bacon Act (40 U.S.C.A. 276, et seq.) - Establishes labor standards for Federal construction projects.

B. Occupational Health and Safety Act (29 U.S.C.A. 651, et seq.) - Sets standards for maintaining safety during construction.

C. Acquisition Regulations (FAR, HHSAR and PHSAR) - Contain regulations for contracting with the Federal government, including making changes, resolving disputes and addressing other applicable subjects.

D. Executive Order 12088 - Requires that all Federal facilities must comply with local pollution codes.

E. "Public Buildings Amendments of 1988"; Public Buildings Act of 1959 (40 U.S.C.A. 601-616) - This amendment to the buildings act stipulates that all Federal building construction or alteration, to the maximum extent feasible, shall be in compliance with one of the nationally recognized model building codes and other applicable nationally recognized codes.

5-1-20 AUTHORITIES AND RESPONSIBILITIES

The authority to contract on behalf of the Government rests solely with the Contracting Officer (CO). In addition, due to the specialized, technical nature of construction contracting, a Project Officer (PO) is appointed for each contract. The PO is a technical person (e.g., engineer or architect) knowledgeable in the subject of the contract. In this capacity, the PO acts mainly as the technical consultant to the CO during construction. The CO has the option of delegating limited authorities to the PO or to the Construction Engineer (CE), such as field Change Order approval.

A. Contracting Officer - The person with authority to execute the construction contracts on behalf of the Government.

   1. The CO has sole authority to contract on behalf of the Government, to amend contracts, issue changes under final decisions, approve payments, terminate contracts and close out contracts upon satisfactory completion.

   2. The CO is responsible for all legal and administrative requirements involved in executing the contract.

B. General Contractor - The successful bidder who has agreed to build or construct the facility(ies) described in the contract documents (drawings and specifications).

   1. The General Contractor (GC) has responsibility to manage his resources (labor, materials and equipment) in an efficient and effective manner, to complete the facility(ies) required by the contract documents.

   2. The GC is responsible for adhering to the rules, regulations, and other legal and technical requirements of the contract documents. This includes, but is not limited to, compliance with safety standards and minimum wage rates.

C. Project Officer - May also be referred to as project manager or project engineer. The individual, (government architect or engineer) who is responsible for the interaction and coordination of activities between the CO, the Architect/Engineer (A/E) and the CE on specific design and construction contracts. The PO also serves as the technical consultant to the CO.

D. Construction Engineer - May also be referred to as the resident engineer or construction inspector. The CE is the Government's on-site representative on construction projects. The CE provides construction surveillance, assures contract compliance, resolves construction problems, manages the schedule and exercises cost control and coordinates on-site activities. When performing certain contracting functions specifically authorized and appointed in writing by the CO, the CE may also serve as the CO's technical representative. The CE may be either a Government employee, a representative of the A/E, or other personnel contracted for this purpose. When the CE is employed by an A/E and not the Government, he/she would generally be under the direction of the PO.

E. Architect/Engineer - The firm or individual who prepared the design documents (plans and specifications) and when retained, provides post-design advisory services including reviews of shop drawings and coordination drawings, resolution of design conflicts, and preparation of clarification drawings, as required.

PHS:
5-1-30 CONSTRUCTION MANAGEMENT SCHEMES

A. General - The administration of construction contracts may be accomplished in a variety of ways. The size and complexity of the construction project are the basic criteria on which the construction management plan is based. The management group may consist of a single CE, a CE and staff of professionals from several disciplines, or a construction manager with a combination of field and office personnel. Model management group schemes are shown below:

1. Construction Engineer Only - Small projects or projects of uncomplicated character that may be easily managed from a central office location, and requiring infrequent visits to the job site. It is not uncommon for the designer to be the CE for small projects.

2. Construction Engineer with Staff Support - Small to medium sized projects or projects of little sophistication that can be easily managed from a central office location, utilizing appropriate architectural and/or engineering disciplines for back-up support, and requiring frequent visits to the job site.

3. Construction Engineer With Staff On Site - A large project or multiple projects at one location requiring full-time on site monitoring by the principal engineer and several professionals of various disciplines dedicated to the project full time.

Note: It is not uncommon for the contract A/E to be retained as the CE on site for situations 1, 2 and 3 and to require the PO to coordinate the construction management.

4. Construction/Engineer Manager with both Field and Office Staff - A large project or multiple projects in scattered locations requiring a combination of full-time, on site monitoring (as described in items 1, 2 and 3 above) and administered from a central office location.

PHS:
5-1-40 DUTIES OF THE CONSTRUCTION ENGINEER

A. General - The PHS engineering office in charge of the construction management of a project may assign the PO, an employee of an A/E firm, or a representative from another Government agency to assume the duties of the CE at the project site. This assignment must be in writing and will be accompanied by a statement from the CO delineating the duties of the CE. The assignment of other technical and support personnel to assist the CE in his/her listed duties at the project site shall also be in writing. The delineation of duties may include, but is not limited to, those items listed in subsection B below. When an A/E serves as CE, the items contained in subsection B shall be modified to incorporate the provisions of the A/E's contract and to delete those items applicable to the PO and other Government personnel. The GC will be advised, in writing, by the CO of the extent of the CE's authority to act on behalf of the CO.

B. Delineation of Duties - In administering a construction contract, the CE should follow the guidelines for carrying out his/her responsibilities as outlined below:

1. General Administration

a. Act as the authorized Government representative in charge of the work at the site, but only to the extent specified in the contract or delegated by the CO.

b. Supervise all technical and clerical personnel assigned to assist the CE in his/her duties at the project site.

c. Interpret drawings and specifications and issue interpretation to the GC orally and in writing. The CE should advise the GC of his/her right to make a formal appeal to the CO if there is any disagreement with the CE's or PO's interpretation of contract requirements.

2. Schedules and Delays

a. Review the contractor's construction schedule and progress chart and forward both to the PO, together with a recommendation as to whether the schedule and chart should be accepted or rejected.

b. Require the contractor to submit a progress chart at the end of each progress payment period. Each chart should document the actual in-place construction progress. A revised chart is required whenever an adjustment in contract time has been approved by the CO.

c. Request and review the contractor's submission of the project schedule (network analysis or critical path method) within the time period noted in the contract specifications and make recommendations to the PO or CO.

d. Be familiar with the procedures and policies concerning contract time extensions.

e. Advise the PO of any factors (strikes, weather, etc.) which are causing delay to the construction progress.

3. Payments

a. Jointly prepare, with the GC, a schedule of estimates which will be used as a basis for monthly progress payments. The breakdown agreed upon shall be summarized in the Contract Progress Report.

b. Review and forward the contractor's payment vouchers to the PO with appropriate recommendations. A complete progress report shall accompany each payment request.

4. Inspection - Acceptance/Rejection

a. Inspect all construction work of the GC and his/her subcontractors to ensure full compliance with contract requirements.

b. Promptly reject, orally and in writing, all construction work that does not comply with contract requirements. The ultimate authority for this action, however, rests with the CO.

c. Advise the CO through the PO if the contractor fails to comply promptly with instructions to remove, correct and/or replace rejected construction work.

d. During the life of the construction contract, prepare and maintain a running list of observed items which are at variance with contract requirements, and document a chronology of efforts to have the contractor correct these items (see section 5-1-50 below and subsection 5-5-20.B in Volume 1, Chapter 5-5, "Final Inspection and Acceptance").

e. Maintain a master copy of the official list of defects and omissions.

f. Follow through to assure that all defects and omissions noted during the life of the construction contract have been corrected or completed by the time of final inspection.

5. Submittals of Samples and Shop Drawings

a. Maintain records of submitted, approved, and disapproved and resubmitted shop drawings and samples. Monitor the contractor's submission of required shop drawings and samples to assure that the submissions are timely and complete (see Volume I, Chapter 5-3, "Submittal Approval").

b. Approve or reject material samples as provided in the contract documents (see Volume I, Chapter 5-3).

6. Contract Changes

a. Request formal proposals for contemplated changes from the GC. Manage contract changes in the manner described in Volume I, Chapter 5-4, "Construction Contract Changes".

b. Maintain Proposals and Change Orders on a current basis. Give special attention to keeping the estimated contingency fund balance and contract amount current, also known as a commitment register. Adjust Contract Time Schedule as needed.

c. Approve change orders up to delegated maximum amount for any one transaction with the total of all change orders not to exceed the amount specifically made available for this purpose. The specific amount to be made available for change orders will be determined by the CO, with concurrence of the program agency finance officer and may be designated as the project contingency fund.

7. Labor Standards and Wage Rates

a. Observe the number of laborers, helpers, apprentices and journeymen. Compare with contractors payroll records and advise the CO of any discrepancies.

b. Report violations of the labor standards (Davis Bacon Act) provisions to the CO.

c. Verify that the GC has posted the schedule of wage rates and Department of Labor notices prominently.

d. Periodically perform informal interviews of workers to verify proper job classifications and correct wages.

e. Maintain a list of and observe the activities of all subcontractors to assure that no on-site work or material installation is performed by an unapproved specialist, firm or individual.

8. Conferences

a. General - Prepare a memorandum for the record of all conferences noting all pertinent facts, those in attendance, and conclusions.

b. Participate in the pre-construction conference. If requested, conduct the pre-construction conference utilizing the guidelines offered in Volume I, Chapter 5-2 "Pre-Bid and Pre-Construction Conferences."

c. Schedule and conduct periodic construction conferences.

d. Participate in conferences with state, county, or city officials and the A/E as required during the course of construction.

9. Record Keeping

a. Maintain a filing system for copies of contract correspondence, shop drawings, change orders, vouchers, commitment register, minutes of meetings, etc. in the official contract files.

b. Maintain a Construction Engineer's Daily Log as outlined in section 5-1-50.

10. Miscellaneous

a. Ensure compliance with all safety requirements. The contractor's failure to adhere to the safety requirements may create situations which could be life threatening, or contribute to injuries or other health concerns. In such cases, the CE shall order the work in progress stopped. This action shall then be followed by a stop order issued by the CO.

b. Assure that a set of as-built drawings and specifications is maintained by the GC throughout the construction period.

c. Direct the GC where to take monthly progress photographs, if required.

PHS:
5-1-50 CONSTRUCTION ENGINEER'S DAILY LOG

A. General - A Construction Engineer's Daily Log shall be maintained on all construction contracts where on-site inspection is provided. The proper documentation of the official files is an invaluable aid to establishment of the Government's position relative to any possible claim by or against a construction contractor. Information recorded at the time of an event occurs or is observed is of significantly more value than personal recollection at a later date. A daily log is the vehicle that provides this proper documentation. Therefore,

any record that the inspector makes must be made on the same day on which it was first observed.

B. It is recommended that only a hard cover, stitch bound field book (similar to a surveyor's field notebook) be used for the daily log. Number the pages consecutively, i.e., do not skip pages; and make all entries with unerasable ink pen or ball-point pen. Make no erasures or multiple strike-throughs; rather, strike through errors with a single line. Never tear a page out of the Daily Log.

C. At the end of each working day, the daily log should be signed by the CE, whether there was construction progress or not.

D. The daily log should reflect all significant events of the day in narrative form, including, but not limited to, weather conditions, delays encountered, adequacy of manpower and manpower difficulties, accidents, progress and setbacks, visitors, status of work and conditions noted in the affected areas of changes, lack of timely approval of shop drawings, etc. Photographs and hand-prepared sketches are important and should supplement the daily log.

SUBJECT: PRE-BID AND PRE-CONSTRUCTION CONFERENCES

PHS:
5-2-00 PURPOSE

The purpose of this chapter is to assist Contracting Officers, Project Officers, Construction Engineers and other PHS personnel involved in PHS construction contracting with the conduct and content of important construction conferences.

PHS:
5-2-10 PRE-BID CONFERENCE

A. General - A conference preferably held at the proposed construction site and open to all prospective bidders conducted by the Contracting Officer (CO) and Project Officer (PO) Architect/Engineer (A/E) attendance is optional) in which all questions and problems relating to the proposed construction contract are addressed. The conference is generally scheduled to take place one week or more before bid opening.

This is not a mandatory conference, but it is generally held if the project is complex or if on-site conditions exist that the contract documents do not adequately convey. Also, during the pre-bidding period contractors may raise many questions which may dictate the need for the conference.

B. Conference Procedures

1. The CO and the PO should attend the conference and either may conduct the conference on an informal basis.

2. If major design conflicts or errors have prompted the conference, the A/E should also be in attendance.

3. If the Construction Engineer (CE) has been appointed, his/her attendance is also recommended.

4. All interested potential contractors and subcontractors may attend and ask questions.

5. The PO records all questions and answers discussed at the conference and furnishes copies to prospective bidders.

6. The PO prepares minutes of the conference and places a copy in the official project file.

C. Topics for Discussion

1. General description and familiarization with site (walk-through if possible).

2. Questions and concerns by the contractors concerning unclear and/or contradictory statements in contract documents.

3. Procedure for preparation and distribution of addenda to contract documents.

PHS:
5-2-20 PRE-CONSTRUCTION CONFERENCE

A. General - A conference held with the successful bidder prior to beginning the actual construction. The prime purpose of the conference is to acquaint the contractor with the policies and procedures to be followed during the construction work; it also serves to develop a mutual understanding of the administration and to answer pertinent questions from the contractor(s). The pre-construction conference is mandatory and may be conducted by either the CE or the PO. It is recommended that the conference be scheduled at the construction site.

B. Preparation Prior to Conference

The CE and/or the PO shall:

1. Confer with his/her staff and the contractor as to recommended topics for the agenda for the preconstruction conference.

2. Review plans and specifications and have them available for interpretation and clarification.

3. Make arrangements for a room of adequate size for the group anticipated and ensure enough space for inspecting the plans.

4. Make arrangements for all interested personnel to attend the conference (e.g., CO, PHS facilities staff, A/E contractor, subcontractors and other personnel whose participation is deemed desirable).

C. Conference Procedures

1. The CO or his/her authorized representative (e.g., CE or PO) shall attend and conduct the meeting on an informal basis.

2. The CE or PO prepares minutes of the meeting, outlining the topics and procedures discussed and distributes them to all concerned. The CE or PO places a copy of the minutes in the contract file.

D. Topics for Discussion

The conference is primarily confined to discussing Government procedures for administrative and construction matters as they may pertain to the construction contract.

1. Personnel - Introduce all personnel and give a brief, descriptive resume concerning each individual responsibility in the project.

2. Goal - Convey to the group the importance of the project and the cooperative effort required by the group to accomplish the mission.

3. Safety and Protection.

4. Labor provisions, equal employment opportunity.

5. Construction schedule, progress chart or graph, cost breakdown, monthly progress payments.

6. Shop drawings, samples, certificates, and mechanical and electrical submittals. Establish time frames for distribution, the number of copies and who shall receive the materials.

7. Contract modifications.

8. Proposals.

9. Correspondence.

10. Delays - time extensions - completion date.

11. Reviews by contractor of all requirements; particularly general provisions, general conditions and special conditions.

12. General discussion of any other items, including questionsraised by those present.

SUBJECT: SUBMITTAL APPROVAL

PHS:
5-3-00 PURPOSE

The purpose of this chapter is to delineate the responsibilities of the designer, the contractor and the Government personnel for the submittal review process. It is also intended to assist the Construction Engineer (CE) in planning the prompt coordination and thorough review of the submittals.

PHS:
5-3-05 DEFINITIONS

A. Submittal - Plans and associated information comprising either a shop drawing or catalog submittal.

B. Shop Drawings - Shop drawings are documents used as the basis for fabrication and installation of equipment and systems as designed in the contract drawings and specifications. They are submitted by the contractor for the purpose of amplifying the contract design. Shop drawings must not conflict with contract requirements. If conflicts with contract requirements do exist in the shop drawings and they are inadvertently approved, the contractor shall not be relieved from his/her obligation to perform the work in accordance with the contract requirements.

C. Catalog Submittal - A catalog submittal is documentation that a contractor furnishes to demonstrate that equipment or material that he/she is planning to install meets what is called for in the specifications. Its simplest form would be pages copied from a manufacturer's catalog and annotated to clearly identify the proposed equipment.

PHS:
5-3-10 SUBMITTALS

A. Variation with Contract Documents

General - The contractor is required to identify in which way the submittals vary from contract requirements. A description of the variation(s) should be annotated on or attached to each submittal copy submitted for review.

B. Types of Variations

Variations generally may be categorized as follows:

1. Minor Modifications - Changes in the design and/or materials that would not affect price or period of completion.

2. Substitution - Replacement of equipment, methods and/or materials that are deemed equivalent in performance.

3. Major Modification - Proposed change in the design and/or materials that would require a change in the contract price and/or period of completion. Generally, the contractor would be responsible for coordinating the change to ensure that a domino effect would not be encountered later in construction, i.e., increased costs directly related to this change.

C. Format and Distribution - Submittals may be submitted in the form of drawings, diagrams, catalog pages, pamphlets, reproducible prints, etc. The copies should be distributed to all concerned parties as determined at the pre-construction conference. If agreed upon at the pre-construction conference, a reproducible shop drawing may be submitted instead of a number of prints.

D. Submittal Schedule - The contractor shall submit all shop drawings, catalog submittals and schedules sufficiently in advance of beginning construction to permit no less than 10 working days for government review and action.

E. Submittal Files

1. A record of submitted, approved, disapproved and resubmitted submittals shall be maintained in the field office by the CE. The record form should be readily available for review. Copies of the record form shall also be maintained by the Architect/Engineer (A/E) when he/she has the responsibility for review and approval of recommendation.

2. Shop drawings shall be filed with the transmittal form attached to ensure a complete submittal. Only shop drawings bearing a stamp of approval shall be kept in the CE's shop drawing file. Letters of approvals shall also be filed with the approved shop drawings.

PHS:
5-3-20 REVIEW OF SUBMITTALS

A. General - The design professionals are directly responsible for the review of the submittals. On a small project, designed in-house, the Project Officer may be responsible for the review. Conversely, on large projects, the submittal review may be vested with the Design A/E. Generally, the CE is not responsible for the approval of the submittals.

B. General Review by Design Professional

1. The importance of shop drawings review cannot be overemphasized. All building trades, manufacturers and suppliers assume that their shop drawings, when returned approved, represent the approved method of construction. The approval of shop drawings and schedules is general and does not relieve the contractor of any contractual requirements. Many serious problems may develop later in the life of the contract if materials or equipment that do not meet contract requirements are installed. In most cases, especially with mechanical and electrical items, the problems are not readily observable until equipment and systems are put into operation.
2. Shop drawings containing proposed major modifications require additional documentation prior to approval. A major modification identified by the contractor or

any discovered by the Government representative during the review of the shop drawings must be approved by the Contracting Officer (CO), e.g., an adjustment in the contract amount or time should be established and a formal change order issued. However, a record of minor modifications need only be acknowledged in writing and accepted during the routine shop drawing review process.

C. Specific Review by Design Professional

1. In some instances, contract specifications do not or cannot make it clear exactly what equipment or material is satisfactory. Or, there may be equipment or material not specifically mentioned that can also be used. Furthermore, knowledge of design intent may be required to make this determination. The designer, or his designated representative, are in a unique position of knowing, or being able to determine, design intent. From design intent proceeds the contractual requirements, which may include equipment and/or material specifications. The contractor's submittal gives the reviewer the opportunity to determine whether the proposed equipment or material is what is actually called for in the contract. Approval of the submittal certifies to the contractor that proper installation of the equipment or material will fulfill the contract requirements.

2. Fulfillment of specifications is not the only requirement for catalog submittal approval. In some instances, an extensive and substantial commitment of resources would be required to make a determination, e.g., a design review of comparable magnitude to the original design effort. Therefore, if a catalog submittal has already been approved, it would be of no benefit to the Government to go through the review process again to see if another catalog submittal for the same specification was also satisfactory. If the contractor insists on another redundant submittal review the contractor may be liable for the resources committed by the Government during the review.

PHS:
5-3-30 APPROVAL/DISAPPROVAL OF SUBMITTALS

A. After the Design A/E or the CO's designated representative completes review of the submittals, recommendations are made advising the contractor of the findings.

B. The same document the contractor uses to transmit submittals may be used by the Government for the purpose of approving, disapproving, "approving as noted" and "resubmitting as noted" the submittals. This may be accomplished by affixing a stamp of approval to the document.

PHS:
5-3-40 USE OF SUBMITTALS

A. Since shop drawings amplify the contract drawings and specifications and are used as installation drawings by general contractors and their subcontractors, the approved shop drawings should be used as a ready reference by the CE.

B. When new materials and equipment arrive at the site or a new trade or construction operation starts, the CE should use the approved submittals to ascertain whether the submittal requirements are being met. In the case of shop drawings, the CE shall then review the contract specifications and drawings to see that the contract requirements are being fulfilled; the contract specifications and drawings govern in all cases.

C. The occupying agency should be furnished copies of the approved submittals after final inspection and acceptance of the building.

SUBJECT: CONSTRUCTION CONTRACT CHANGES

PHS:
5-4-00 PURPOSE

The purposes of this chapter are:

A. To convey to the Construction Engineer (CE) and the Project Officer (PO), the specific guidelines regarding contract changes on PHS construction projects.

B. To inform the contractor and the CE of the policy and procedures for processing contract changes in a fair and equitable manner in order to minimize contract disputes and claims.

PHS:
5-4-10 POLICY AND AUTHORITY

A. PHS Change Order Policy

Every effort shall be made to avoid changes; however, design deficiencies must be corrected, unexpected conditions recognized, and agency change requests considered (refer to subsection 5-4-20C).

B. Change Authority

1. The Contracting Officer (CO) is the only person with authority to issue a change or modification to the construction contract.

2. The CO may delegate authority to the CE or PO for field changes to a maximum dollar amount established by the CO. This authority may be advantageous to the government during the construction process when unexpected site conditions occur (examples are: unknown rock out croppings during excavations; unknown existing utility locations during renovations; etc.).

PHS:
5-4-20 REASONS FOR CHANGES

The three major reasons for changes are listed below. Generally items A and B are in all construction contracts, and item C is unpredictable.

A. Correction of design deficiencies - During construction, conflicts, mistakes, and omissions may become apparent and must be corrected and/or clarified for the construction process to continue without any disruptions, and to avoid delaying the contract completion date.

B. Differing site conditions - During construction, the contractor may encounter subsurface or unknown physical conditions at the site, of an unusual nature. These site differing conditions must be verified by the CE; and remedial actions must be taken, by the CE and the contractor, to avoid any work stoppages.

C. Program agency changes - At times, conditions may exist which necessitate changes during construction to ensure the proper operation of the agency programs. These changes are commonly due to technology advances in equipment and/or research or medical protocols. All efforts should be made to minimize the need for these types of changes, to avoid any time extensions to the contract completion date.

PHS:
5-4-30 PROCESSING PROCEDURES

Specific procedures for submitting a proposal for change and/or for directing the contractor to make a change will be established by the CO in consultation with the PO and CE. General procedures are as follows:

A. Identification of Change - The change is identified and documented in writing, by the PO or by the contractor with concurrence from the PO, and presented to the CO. Generally, the CE and/or the PO develops the narrative and cost estimates before the CO seeks a contractor's proposal.

B. Contractor's Proposal - The contractor describes the proposed change in detail and develops a cost and time proposal to complete the work involved. The written proposal with applicable documentation is forwarded to the CO for approval.

C. Government Estimate - Upon identification of the need for a change, the Government develops an independent cost estimate of the proposed change for use in evaluating the contractor's proposal.

D. Negotiations - If substantial differences exist between the contractor's proposal and the Government's estimate, a negotiation meeting is held to resolve differences and to reach agreement on cost and on any required time extensions for the change. Negotiations shall be conducted by the CO, assisted by the PO and the CE.

E. Issuance of Contract Modification - A contract modification for the change is issued by the CO after the cost and time adjustments to the contract have been agreed to by the contractor and the Government. The contract modification effective date is the date when it was signed by the contractor.

F. Miscellaneous

1. Suspension of Work

a. The CE shall recognize that changes may cause a suspension of work which could result in a delay claim. Delays must be allocated a finite time period and identified on the contractor's schedule, with supporting data and justification subject to Government review.

b. Whenever work is suspended, a daily factual record of affected work including labor, materials and equipment costs, shall be maintained by the CE.

2. Proposal and Change Order Records

a. All requests for proposals, contractors' claims, and/or changes or modification, should be identified separately by a Change Request Number, or Statement of Work (SOW) Number. This numbering system should be

used to identify all correspondence related to a change, proposal and/or claim.

b. All requests for proposals, contractors' claims, and/or changes or modification shall be listed chronologically in a separate record. When a change order or modification is issued and confirmed, the proposal information will be transferred to the record. Those items having an official change order or modification number are to be entered in the record.

c. PHS recommends that the project officer also record all information related to changes or modifications in his/her daily construction diary. This type of information has been very beneficial in past disputes.

3. Other

The CO has the authority to issue unilateral change orders or modifications.

SUBJECT: FINAL INSPECTION AND ACCEPTANCE

PHS:
5-5-00 PURPOSE

The purpose of this chapter is (a) to review the conditions under which completed work is accepted in whole or in part for occupancy; and (b) to facilitate occupancy, final settlement, guarantee clauses, etc., for all special-purpose type construction projects required by PHS, including hospitals, health centers, clinics, quarters, and laboratories.

PHS:
5-5-10 SCHEDULING THE FINAL INSPECTION

A. The Contractor shall give the Contracting Officer (CO) at least ten calendar days advance notice of the date by which the work will be completed and ready for final inspection and tests. An endorsement by the Construction Engineer (CE) should be attached to this notice stating that the work is substantially completed and will be ready for final inspection. Substantial completion is defined as the time when contract work is complete to the point that the Government may take over the facility and receive beneficial occupancy for the purpose intended.

B. Priorities are often given to certain areas in a building or certain buildings in a group so that they may be occupied prior to completion of the entire contract. In these cases, a partial final inspection is requested following the procedure outlined in subsection A, above.

C. It is not uncommon to have all of the mechanical and electrical equipment installed and still have the system not function for some reason. In such a case, the contractor may be charged with any additional cost for inspection of material and workmanship which are not ready at the time specified by the Contractor for inspection. To avoid this possibility, the CO should be informed sufficiently in advance if work, especially for a complex system, is not ready, and the final inspection should be postponed. Also, prior to rescheduling the inspection, the system should be operated or demonstrated to the satisfaction of the CE.

PHS:
5-5-20 PREPARATION FOR FINAL INSPECTION

A. Preliminary List of Deficiencies and Omissions - The CE should keep a running list of items which are at variance with contract requirements and advise the contractor to correct them, making sure that all items are corrected before being reexamined during subsequent construction inspection. As items are corrected, they should be removed from the preliminary list. It should be made clear to the contractor that any preliminary list of deficiencies and omissions does not in any way represent a final inspection of any portion of the work.

B. Correction of Known Deficiencies and Omissions - Prior to requesting the final inspection, the preliminary list should be reviewed by the CE for compliance. A letter conveying the list of items still needing attention should be forwarded to the contractor, requesting that the items on the list be corrected before a final inspection is scheduled. A reasonable period of time should be allowed to accomplish corrections of the deficiencies and omissions.

C. Miscellaneous - The following tasks should also be accomplished prior to final inspection.

1. The CE should provide the contractor with a list of known incomplete or incorrect items and authorized contract changes.

2. Keys should be made available for unlocking doors and checking hardware.

3. All lighting fixtures should be lamped.

PHS:
5-5-30 THE FINAL INSPECTION

A. Inspection Team - The inspection team shall be composed of all the disciplines with the expertise necessary to make final determinations on all work performed under the contract. The CE and PO are generally members of the team and the PO develops and maintains a coordinated list of deficiencies and omissions.

B. Initial Inspection Documentation - The inspection engineers shall conduct their individual discipline inspections compiling a list of deficiencies and omissions for review by the construction engineer. A copy of the list shall be left with the contractor so that correction of items can start at once.

C. Official List - Upon completion of inspection, the official list of deficiencies and omissions prepared by the CE will be forwarded to both the contractor and PO. This list provided to the contractor must be precise, giving all information required to locate and remedy the deficiencies and omissions. After final inspection, the official deficiencies and omissions list cannot be changed in scope and as such represents the sum total of effort required to complete the contract. The only exception allowed is that while correcting a noted deficiency, another deficiency becomes apparent or manifests itself.

D. Follow-up

1. The CE is responsible for assuring that the contractor completes all deficiencies and omissions. The CE should make frequent inspections to determine whether work is being completed satisfactorily. Unsatisfactory work should be called immediately to the attention of the contractor and PO.

2. When all items have been completed, the CO and PO should be notified, in writing, so that steps can be initiated toward final settlement.

PHS:
5-5-40 ACCEPTANCE

A. Authority - Acceptance of any facility or portion thereof must be by the CO, in writing. Generally, acceptance infers approval of all work including satisfactory correction of all the items on the deficiencies and omissions list.

B. Conditions - Acceptance of the contract work is final and conclusive subject to certain contractual conditions such as guarantees, etc. For this reason a facility should not be accepted without a clear delineation in writing of any conditions or exceptions to the acceptance.

C. Miscellaneous

1. In general, a facility should not be accepted until final settlement can be made.

2. Upon acceptance, the CE shall turn over all files to the PO. The CE shall work with the contractor to have the as-built and maintenance manuals delivered to the Government.

PHS:
5-5-50 OCCUPANCY

A. Normal Occupancy - Generally, the facility is occupied after final inspection, acceptance and settlement.

B. Occupancy Prior to Acceptance

1. Failure to accept the structure for a Government construction contract does not mean that occupancy is barred. The Government has the right of beneficial or partial occupancy and use of facilities, services and utilities under the "Use and Possession Prior to Completion" clause included in Federal construction contracts. This clause also states that such occupancy does not imply completion or acceptance of any part of the project by the Government.

2. Government Responsibility - When occupancy is effected prior to acceptance, a careful inspection, preferably on the scope of a final inspection, should precede such occupancy. Since the Government would be responsible for restoration and repair of damage resulting from the beneficial occupancy, records of conditions at the time of occupancy are essential.

C. Occupancy Documentation

1. Occupancy Agreements - The CO shall prepare letters to the contractor setting forth the extent of the occupancy and its effective date and time. Lists of deficiencies and omissions in the occupied area should be included. Also, when partial occupancy is adopted, an agreement with the contractor must be executed which delineates facility service responsibilities (maintenance, utilities security, etc.).

2. Adjustments - When the contractor incurs extra costs due to partial occupancy, the contractor is entitled to an equitable adjustment under the terms of the contract. An evaluation of possible costs must, therefore, be a part of the evaluation of any proposed occupancy.

PHS:
5-5-60 GUARANTEES

A. Basic Guarantee Period - Generally, the guarantee for the building, including workmanship and materials, extends for a period of one year from the date of acceptance and final settlement, unless a different date or time period is established in the contract.

B. Adjustments of Basic Guarantee Period

1. Beneficial occupancy would affect the guarantee period of the occupied portion of the building.

2. The contractor may request an adjustment in a guarantee period based on his/her completion of the work and use of the equipment and/or system by the Government.

3. Systems that are utilized on a seasonal basis must be tested and used through a complete annual load cycle. For example, if the final inspection is held in the fall, the air conditioning system would not be properly tested under full load until the following air conditioning season.

4. For latent defects, the guarantee period is always adjusted to extend for a longer period since the limitations in time and extent of guarantee do not apply. Latent defects are defined as hidden defects not readily determinable by normal inspection procedures.

REVISED CHAPTER 5-5, (Included for review discussions)

SUBJECT: FINAL INSPECTION AND ACCEPTANCE

PHS:
5-5-00 PURPOSE

The purpose of this chapter is (a) to review the conditions under which completed work is accepted in whole or in part for occupancy; and (b) to facilitate occupancy, final settlement, guarantee clauses, etc., for all special-purpose type construction projects required by PHS, including hospitals, health centers, clinics, quarters, and laboratories.

PHS:
5-5-10 SCHEDULING THE FINAL INSPECTION

A. The Contractor shall give the Contracting Officer (CO) at least ten calendar days advance notice of the date by which the work will be completed and ready for final inspection and tests. An endorsement by the Construction Engineer (CE) should be attached to this notice stating that the work is substantially completed and will be ready for final inspection. Substantial completion is defined as the time when contract work is complete to the point that the Government may take over the facility and receive beneficial occupancy for the purpose intended.

B. Priorities are often given to certain areas in a building or certain buildings in a group so that they may be occupied prior to completion of the entire contract. In these cases, a partial final inspection is requested following the procedure outlined in subsection A, above.

C. It is not uncommon to have all of the mechanical and electrical equipment installed and still have the system not function for some reason. In such a case, the contractor may be charged with any additional cost for inspection of material and workmanship which are not ready at the time specified by the Contractor for inspection. To avoid this possibility, the CO should be informed sufficiently in advance if work, especially for a complex system, is not ready, and the final inspection should be postponed. Also, prior to rescheduling the inspection, the system should be operated or demonstrated to the satisfaction of the CE.

PHS:
5-5-20 PREPARATION FOR FINAL INSPECTION

A. Preliminary List of Deficiencies and Omissions - The CE should keep a running list of items which are at variance with contract requirements and advise the contractor to correct them, making sure that all items are corrected before being reexamined during subsequent construction inspection. As items are corrected, they should be removed from the preliminary list. It should be made clear to the contractor that any preliminary list of

deficiencies and omissions does not in any way represent a final inspection of any portion of the work.

B. Correction of Known Deficiencies and Omissions - Prior to requesting the final inspection, the preliminary list should be reviewed by the CE for compliance. A letter conveying the list of items still needing attention should be forwarded to the contractor, requesting that the items on the list be corrected before a final inspection is scheduled. A reasonable period of time should be allowed to accomplish corrections of the deficiencies and omissions.

C. Miscellaneous - The following tasks should also be accomplished prior to final inspection.

1. The CE should provide the contractor with a list of known incomplete or incorrect items and authorized contract changes.

2. Keys should be made available for unlocking doors and checking hardware.

3. All lighting fixtures should be lamped.

PHS:
5-5-30 THE FINAL INSPECTION

A. Inspection Team - The inspection team shall be composed of all the disciplines with the expertise necessary to make final determinations on all work performed under the contract. The CE and PO are generally members of the team and the PO develops and maintains a coordinated list of deficiencies and omissions.

B. Initial Inspection Documentation - The inspection engineers shall conduct their individual discipline inspections compiling a list of deficiencies and omissions for review by the construction engineer. A copy of the list shall be left with the contractor so that correction of items can start at once.

C. Official List - Upon completion of inspection, the official list of deficiencies and omissions prepared by the CE will be forwarded to both the contractor and PO. This list provided to the contractor must be precise, giving all information required to locate and remedy the deficiencies and omissions. After final inspection, the official deficiencies and omissions list cannot be changed in scope and as such represents the sum total of effort required to complete the contract. The only exception allowed is that while correcting a noted deficiency, another deficiency becomes apparent or manifests itself.

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