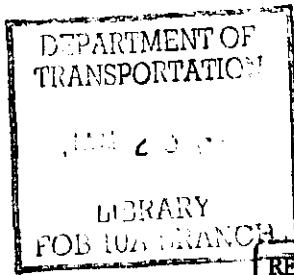




U.S. Department
of Transportation
Federal Aviation
Administration



Advisory Circular

REPRINT INCORPORATES CHANGE 1

**Subject: ARCHITECTURAL, ENGINEERING,
AND PLANNING CONSULTANT
SERVICES FOR AIRPORT GRANT
PROJECTS**

**Date: 4/11/89
Initiated by: AAS-200**

**AC No: 150/5100-14B
Change: 1**

1. PURPOSE. This advisory circular (AC) provides guidance for airport sponsors in the selection and employment of architectural, engineering, and planning consultants under Federal Aviation Administration (FAA) airport grant programs.

2. CANCELLATION. AC 150/5100-14A, Architectural, Engineering, and Planning Consultant Services for Airport Grant Projects, dated February 7, 1985, is canceled.

3. PRINCIPAL CHANGES. The following principal change have been made.

- a. Deletes requirement for competitive negotiation procedures that include price as a selection factor.
- b. Deletes Appendix 1, Curves for Estimating Engineering Services.
- c. Deletes reference to OMB Circular A-102 and substitutes 49 CFR 18.

4. APPLICATION. The guidelines contained herein are recommended by the Federal Aviation Administration for use in selecting consultants for airport grant projects.

5. RELATED READING MATERIAL. Additional information may be found in the following publications:

- a. Guide to Selecting Airport Consultants, Airport Consultants Council, 421 King Street, Suite 220, Alexandria, Virginia 22314.
- b. Consulting Engineering, A Guide for the Engagement of Engineering Services, American Society of Civil Engineers (ASCE), available from Headquarters of ASCE, United Engineering Center, 345 47th Street, New York, New York 10017.
- c. Professional Selection of Professional Engineers, NSPE Publication No. 1974, "National Society of Professional Engineers (NSPE)", available from NSPE, 1420 King Street, Alexandria, Virginia 22314.
- d. A Guide to the Procurement of Architect and Engineering Services, American Consulting Engineers Council, 1015 15th Street, N.W., Suite 802, Washington, DC 20005.

6. BACKGROUND.

a. Section 511, paragraph (a) (16) of the Airport and Airway Improvement Act of 1982 as amended by the Airway Safety and Capacity Expansion Act of 1987 states:

Each contract or subcontract for program management, construction management, planning studies, feasibility studies, architectural services, preliminary engineering, design engineering, surveying, mapping, or related services with respect to the project will be awarded in the same manner as a contract for architectural and engineering services is negotiated under Title IX of the Federal Property Administrative Services Act of 1949 or an equivalent qualifications-based requirement prescribed for or by the sponsor of the airport.

b. Title IX, more commonly referred to as the "Brooks Bill", establishes Federal policy regarding the selection of firms to perform architectural, engineering, and related services for the Federal government. This AC contains procedures for complying with the provisions of Section 511 in the procurement of architectural, engineering, planning, and other services under the FAA's airport grant program.

c. This AC also discusses the types of architectural/engineering services that normally would be included in an airport grant project, types of contracts for these services, contract format and provisions, and guidelines for determining the reasonableness of consultant fee.

7. DEFINITIONS. The following definitions apply to terms used in this advisory circular:

a. **Architect/Engineer (A/E) Services.** Professional services of an architect or engineering nature, i.e., those services that are required by law to be performed by a registered or licensed architect or engineer, as well as special services that members of these professions and those in their employ may logically perform. (See Chapter 1 for listing of special services.)

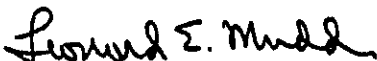
b. **Planning Services.** Professional services of a planning firm to include: aviation, financial and environmental studies.

c. **Consultant.** A firm--an individual, a partnership, a corporation, or a joint venture--that performs architectural, engineering or planning services, as defined in paragraphs 7a and 7b, employed to undertake work funded under an FAA airport financial assistance program.

d. **Primary Engineer or Principal Consultant.** A firm which is held responsible for the overall performance of the service, including that which is accomplished by others under separate or special service contracts.

e. **Fee.** Compensation paid to the consultant for professional services rendered.

f. **Sponsor.** An airport owner or a public or planning agency which has submitted an application under an FAA airport grant assistance program.



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- Appendix 1. Contractor Contractual Requirements (2 pages)**
- Appendix 2. Consultant Services Costs (2 pages)**

CHAPTER 1. TYPES OF CONSULTANT SERVICES

1. CONSULTANT SERVICES. There are two separate and distinct categories of consultant services that are utilized for projects conducted under airport grant programs. The first category involves aviation planning services. The second involves A/E services for the design and construction of airport projects. These two categories of consultant services are discussed below.

2. AVIATION PLANNING SERVICES. This category includes studies under the broad heading of airport system and master planning. These studies normally include a number of activities. Examples are:

- a. Study designs to establish the framework and detailed work program.
- b. Airport data collection and facility inventories.
- c. Aeronautical activity forecasts and demand/capacity analyses.
- d. Facility requirements determination.
- e. Airport layout and terminal area plans development.
- f. Environmental impact assessment reports, noise control plans, and other environmentally related studies.
- g. Compatible land-use planning in the vicinity of airports.
- h. Airport site selection studies.
- i. Airport development schedules and cost estimates.
- j. Airport financial planning.
- k. Participation in public information programs and/or public hearings relating to airport development and planning projects.

3. ARCHITECT/ENGINEER SERVICES FOR AIRPORT DEVELOPMENT PROJECTS. This category includes the basic A/E services normally required for airport development projects. It involves services generally of an architectural, civil, structural, mechanical, and electrical engineering nature. In addition, there may be some specialized services outside those normally considered basic which are discussed in paragraph 4. The basic services are usually conducted in the four distinct and sequential phases summarized below:

a. Preliminary Phase. This phase involves those activities required for defining the scope of a project and establishing preliminary requirements. Some examples of activities within this phase of a project include:

(1) Conferring with the sponsor on project requirements, finances, schedules, early phases of the project, and other pertinent matters; meeting with FAA and other concerned agencies and parties on matters affecting the project.

(2) Planning, procuring, and/or preparing necessary surveys, field investigations, and architectural and engineering studies required for preliminary design considerations.

(3) Developing design schematics, sketches, environmental and aesthetic considerations, project recommendations, and preliminary layouts and cost estimates.

b. Design Phase. This phase includes all activities required to undertake and accomplish a full and complete project design. Examples include:

(1) Meetings and design conferences to obtain information and to coordinate or resolve design matters.

(2) Collecting engineering data and undertaking field investigations and surveys and architectural, engineering, and environmental studies.

(3) Preparing necessary engineering reports and recommendations.

(4) Preparing detailed plans, specifications, and cost estimates.

(5) Printing and providing necessary copies of engineering drawings and contract specifications.

c. **Bidding or Negotiation Phase.** These activities are sometimes considered as part of the construction phase. They involve assisting the sponsor in advertising and securing bids, negotiating for services, analyzing bid results, furnishing recommendations on the award of contracts, and preparing contract documents.

d. **Construction Phase.** This phase includes all basic services rendered after the award of a construction contract, including (but not limited to) the following activities:

(1) Providing consultation and advice to the sponsor during all phases of construction.

(2) Representing the sponsor at preconstruction conferences.

(3) Inspecting work in progress periodically and providing appropriate reports to the sponsor.

(4) Reviewing and approving shop and erection drawings submitted by contractors for compliance with design concept.

(5) Reviewing, analyzing, and approving laboratory and mill test reports of materials and equipment.

(6) Preparing and negotiating change orders and supplemental agreements.

(7) Observing or reviewing performance tests required by specifications.

(8) Determining amounts owed to contractors and assisting sponsors in the preparation of payment requests for amounts reimbursable from grant projects.

(9) Making final inspection and submitting a report of the completed project to the sponsor.

4. SPECIAL SERVICES. The development of some projects may involve activities or studies outside the scope of the basic design services routinely performed by the consultant. These special services may vary greatly in scope, complexity, and timing and may involve a number of different disciplines and fields of expertise. Consultants performing special services may be employed directly by the sponsor to do one or more phases of a project or may be employed by the principal consultant on a subcontractual arrangement. In certain instances, these services may be performed by the principal consultant. Some examples of special services that might be employed for airport projects include:

a. Soils investigations, including core sampling, laboratory tests, related analyses, and reports.

b. Detailed mill, shop, and/or laboratory inspections of materials and equipment.

c. Land surveys and topographic maps.

d. Field and/or construction surveys.

e. Photogrammetry surveys.

f. Onsite construction inspection and/or management involving the services of a full-time resident engineer(s), inspector(s), or manager(s) during the construction or installation phase of a project. This differs from the periodic inspection responsibilities included as part of the basic services.

g. Environmental studies and assessment reports for specific development projects.

h. Expert witness testimony in litigation involving specific projects.

i. Project feasibility studies.

j. Public information activities, studies, and surveys.

k. Preparation of as-built plans.

- l. Assisting the sponsor in the preparation of necessary applications for local, state, and Federal grants.**
- m. Preparation of or updating the airport layout plan.**
- n. Preparation of property maps.**
- o. Construction Management.**

CHAPTER 2. PROCEDURES FOR SELECTION OF CONSULTANTS

5. GENERAL. The procedures included in this chapter are provided as a guide for sponsors in selecting consultants for work under Federal airport grant programs. Adherence to these procedures will assure a sponsor of compliance with the requirements of Section 511 (a) (16) of the Airport and Airway Improvement Act (AAIA) of 1982, as amended. Alternatively, sponsors may use guidelines/procedures developed by governmental agencies, private firms, industries, and professional societies and organizations or their own procurement regulations provided they reflect applicable state and local laws and regulations and so long as they do not conflict with the procurement standards for grant programs contained in 49 CFR 18.36 (formerly Attachment "O" of Office and Management and Budget (OMB) Circular A-102) and in the enabling legislation. If a conflict exists between 49 CFR Part 18 and the enabling legislation, the enabling legislation will prevail.

a. Objective.

(1) The selection of consultants should be made on the basis of fair negotiations and equitable fees and through selection procedures that are professionally acceptable, ensure maximum open and free competition, and avoid any suggestion of unfair or unethical conduct.

(2) Consultants employed for work on projects involving airport grants should be responsible and possess the ability to perform successfully under the terms and conditions of the proposed procurement. Consideration should be given to such matters as integrity, record of past performance, extent of experience with the type of services required by the sponsor, technical resources, and accessibility to other necessary resources.

b. Competitive Negotiation Procedures. Consultants should be engaged on the basis of their qualifications and experience, with fees determined through negotiations. This can be accomplished by means of competitive negotiation procedures whereby proposals are requested from a number of sources, the qualifications of consultants submitting proposals are evaluated, and the best qualified is selected, subject to negotiation of a fair and reasonable price.

c. Special Services.

(1) Where special services are to be performed in conjunction with the architectural or engineering (A/E) services, they should be contracted for in the course of procuring the A/E services.

(2) Where special services such as feasibility studies, construction management, and program management are to be performed, but are not included in the basic A/E services, they should be procured using competitive negotiation procedures.

(3) Where special services are to be performed that are not in conjunction with A/E services and do not require performance by a registered licensed architect or engineer, i.e., soil borings, the services should be acquired using local procurement procedures.

6. SELECTING ORGANIZATION.

a. Within the sponsor's organization, an administrative policy should be established for designating persons authorized to select or recommend consultants for various assignments. The persons designated may include the administrator or the department head to be supplemented by others making up a selection board. The persons empowered to make the selection must be kept free of pressures, both internal and external.

b. The usual procedure for selecting consultants is to use a selection board of at least three persons, one of whom should be an engineer, airport planner, or other professional knowledgeable of the service required. For projects that have special design requirements or are particularly complex, the selection board should have additional technical members. The board should be prepared to evaluate potential consultants, i.e., conduct interviews and inquiries as desired and make recommendations. Based upon the recommendations of the board, the administrator or the governing body should make the final selection of the consultant(s).

7. POLICY FOR SELECTION. The selection of consultants should be based on a comparative analysis of the professional qualifications necessary for satisfactory performance of the service required. Moreover,

the selection process should satisfy requirements for open and free competition. Sponsors may procure a consultant for several grant projects through one procurement action provided the following conditions are met:

- a. The consultant is selected using the competitive negotiation procedures described in paragraph 9.
- b. All parties competing for the work are advised that the work will be accomplished over the course of several grant projects. The expected schedule of projects must be defined, together with the scope of work and the required services. The scope of work should be described in sufficient detail so that all parties are adequately informed of the items to be accomplished.
- c. All parties are advised that some of the services may not be required and that the sponsor reserves the right to initiate additional procurement action for any of the services included in the initial procurement.
- d. The services are limited to those projects which are expected to be initiated within 3 years of the date the contract is signed by the consultant.
- e. The fee is limited to the services to be performed under the initial grant. The contract should be limited to the services covered by the fee.
- f. The negotiation of the fee for subsequent services, i.e., those included in the procurement action but not in the initial contract, shall occur at the time those services are needed. A cost analysis must be performed for each of these negotiations. (See paragraph 11 for information on cost analysis.) If a price cannot be agreed upon between the sponsor and the selected firm, negotiations are terminated and a new procurement action is then initiated.

8. SELECTION CRITERIA. Prior to evaluating consultants, it is recommended that the sponsor's organization develop an agreed-upon list of criteria to be used in evaluating potential consultants. Numerical rating factors (ranges) should be assigned to each criterion on the basis of the sponsor's priorities and conception of the importance of each factor in the attainment of a successful project. Suggested criteria include, but are not limited to, the following.

- a. Capability to perform all or most aspects of the project, such as planning, environmental evaluations, financial analysis, architectural design, and mechanical, electrical, and civil engineering.
- b. Recent experience in airport projects comparable to the proposed project.
- c. Reputation for personal and professional integrity and competence.
- d. Evidence that consultant has established and implemented an Affirmative Action Program.
- e. Key personnel's professional background and caliber.
- f. Current workload.
- g. Recent experience in special areas associated with the project such as energy conservation, life-cycle costing, and environmental planning.
- h. Capability to conduct a value engineering study for projects that are particularly complex or have unique features. It is recommended that value engineering be one of the criterion for large, complex projects, such as terminal buildings, where the estimated cost is \$1 million or more. The savings that result from a value engineering study as a rule are 3 to 5 percent of construction costs. On the other hand, the cost of a value engineering study is approximately 0.2 to 0.4 percent of construction costs.
- i. Demonstrated ability to meet schedules or deadlines.
- j. Capability to complete projects without having major cost escalations or overruns.
- k. Qualifications and experience of outside consultants regularly engaged by the consultant under consideration.
- l. Quality of projects previously undertaken.
- m. Familiarity with and proximity to the geographic location of the project.

n. Capability of a branch office which will do the work to perform independently of the home office, or conversely, its capability to obtain necessary support from the home office.

o. Demonstrate an understanding of the project's potential problems and the sponsor's special concerns.

p. Degree of interest shown in undertaking the project.

q. Capability to incorporate and blend aesthetic and architectural concepts with the project design while accomplishing the basic requirements that transportation facilities be functional, safe, and efficient.

9. SELECTION PROCEDURES. The following selection procedures are recommended for projects involving Federal airport grants, provided they do not conflict with state and local laws or regulations:

a. The selection board should review the nature of the proposed project and the scope of services to be procured in order to ensure an understanding of the project requirements and the qualifications needed by the consultant. FAA field personnel are available to aid sponsors in developing the scope of services for a particular project.

b. The board should develop the selection criteria and the evaluation system to be used in preparing a preselection list of consultants who are best qualified for the project and in determining the final selection.

c. To obtain experience and qualification data from potentially qualified consultants and to ensure the broadest publicity concerning the sponsor interest in obtaining consultant services, public announcements for all projects should be advertised in local newspapers, trade journals, and magazines. The public announcement should include such information as a description of the proposed project and its location, a description of the services to be procured, and the estimated construction cost. The announcement should also invite consultants to submit their experience and qualification data relating to the proposed project.

d. If a sponsor wishes to solicit proposals at the time of advertising, the announcement must indicate where the selection criteria can be obtained. (See paragraph 9k for the elements of a project proposal.) It is recommended that proposals only be requested for small projects where the scope of work can be clearly defined or the sponsor anticipates receipt of less than four proposals, since each submittal will require further evaluation.

e. Sponsors may also send the public announcements directly to known, potentially qualified consultants to determine their interest in the project and to request their experience and qualification data.

f. Affirmative steps should be taken to assure that small and minority firms are used whenever possible. These steps should include, but not be limited to, the following:

(1) Include qualified small business and minority firms on solicitation lists.

(2) Assure that small business and minority firms are solicited whenever they are potential sources.

(3) Divide the total requirements into small tasks, when economically feasible, to permit maximum small business and minority firm participation.

(4) Use the services and assistance of the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

g. There are many sources from which the names of qualified consultants can be obtained. These include, for instance, the Membership Directory of the Airport Consultants Council; the Professional Services Directory of the Civil Engineering Magazine, published by the American Society of Civil Engineers (ASCE); Directory of Engineers in Private Practice, published by the National Society of Professional Engineers (NSPE); directory from the American Institute of Architects (AIA); the directory of the American Consulting Engineers Council (ACEC); professional services directories published in aviation magazines and trade journals; other airport operators having undertaken similar projects; state boards of professional engineering registration; state aviation agencies; and local classified telephone directories. FAA Airports field offices may also furnish the names of consultants who have engaged in projects of similar nature in their areas of jurisdiction. However, FAA personnel will not recommend consultants or participate in the selection process. The address of regional Airports Divisions and Airports District/Field Offices having jurisdic-

tion over specific geographic areas are listed in the current edition of AC 150/5000-3, Address List of Region Airports Divisions and Airports District/Field Offices.

h. From the experience and qualification data obtained from consultants, the selection board should prepare a preselection list of the best qualified consultants for further consideration. The list should consist of, at least, three consultants but no more than five. If proposals were solicited at the time of advertising, all consultants who submitted proposals must be included on the preselection list.

i. At this point, consultants who expressed an interest in the project but were not included on the preselection list should be notified that they were unsuccessful.

j. Detailed information on the qualifications and performance data of each of the consultants on the list should be obtained. This can be achieved by contacting former clients to ascertain the quality of work, ability to meet schedules, cost control, and consultant-client relationship.

k. The selection board should obtain project proposals from each of the firms on the preselection list. At this point the scope of work and the services desired should be provided to each firm. The selection criteria, including their relative importance, that will be used to evaluate the proposals shall be made available to each of the firms on the preselection list. The project proposal will help the selection board recommend a consultant who can achieve design excellence, while successfully controlling time and costs, and who has the ability to understand and accomplish the specialized requirements of the project. The elements of a typical project proposal should include the following:

(1) Team members, other key personnel, previous experience, and the role they will fill on the project.

(2) Current workload.

(3) Proposed project schedule, including major tasks and target completion dates.

(4) Technical approach—a brief discussion of the tasks or steps that the consultant will undertake to accomplish the work described in the scope of work.

(5) Value engineering—when a value engineering study is included in the selection criteria, a brief discussion of the capability, training and experience to undertake such a study.

l. Conduct interviews with each consultant on the preselection list. A visit to the consultant's office to obtain a better idea of their capabilities is suggested whenever practical.

m. Review the experience and qualification data, the project proposal, the interview results, and other relevant data. Using the selection criteria developed for the project, rank the qualified consultants.

n. Prepare a report recommending that negotiations be initiated with the consultant ranked number one. The report should contain sufficient detail to indicate the extent of the review and the considerations used for the recommendations.

o. The report should be forwarded to the sponsor's administrator or governing body authorized to review the recommendations of the selection board. The recommendations of the selection board should normally be accepted unless the report does not adequately support the recommendations. This will help to ensure complete fairness and open competition. If the recommendations are not accepted, the selection board should be reconvened until acceptable recommendations have been agreed on.

10. ALTERNATE SELECTION PROCEDURES. The selection procedure recommended in paragraph 9 should normally be followed in the procurement of consulting services. However, for some projects, circumstances may dictate that the recommended procedures are too time consuming or complex for the particular procurement. In these cases, 49 CFR 18 provides other acceptable procurement methods which may be used such as small purchase procedures or noncompetitive negotiation. Sponsors should consult with FAA Airports personnel before using these alternatives to assure that the circumstances justify their use.

11. COST ANALYSIS.

a. In order to properly evaluate the consultant's cost proposal, a sponsor having a staff with experience in estimating the cost of professional services and negotiating contracts for these services should develop an independent estimate of the cost of the services, based on a detailed analysis of the scope and conditions of the work. Sponsors having no staff or having little or no previous experience in estimating the cost of professional services and negotiating contracts for consultant services may not be able to prepare such a detailed analysis by themselves. In these instances, the sponsor should seek the advice of state aviation personnel or FAA Airports personnel on the extent and scope of the professional services. If the sponsor has an engineer on retainer who is not being considered for the project, the sponsor may engage the engineer to prepare a detailed analysis.

b. Alternatively, an independent engineering, architecture, or planning firm, may be retained by the sponsor to aid in developing a cost estimate for professional services, the scope of work, or the selection criteria. The firm hired to perform any of these functions may be retained without using competitive negotiation procedures. However, that firm will not be eligible for further work on the project.

c. The importance of having a detailed cost analysis cannot be overemphasized. Without such an analysis, the sponsor does not have a benchmark for evaluating the cost of professional services. Figures 1 and 2, contained in Appendix 2, present a suggested format for computing estimated costs of consultant services for the design and construction phases of a project.

12. NEGOTIATIONS.

a. An important objective of the negotiation process is to reach a complete and mutual understanding of the scope of services to be provided. The general scope of services, developed during initiation of the procurement process, is of necessity too broad to serve as the basis for a contractual agreement. The negotiation process offers the opportunity for refinement, amendment, and complete definition of the services to be rendered. Specific elements to be established during negotiations include; project schedule, manpower requirements, level of effort, special services, and cost.

b. When agreement has been reached on the proposed scope of work, the sponsor should request the consultant to submit the proposed fee and supporting cost breakdown. The consultant should prepare a detailed estimate of the hours and cost required for each of the major tasks. In addition to charges for labor, the consultant should, if appropriate, indicate the costs for subcontractors, travel, living expenses, reproduction, and other direct out-of-pocket expenses expected to be incurred.

c. The sponsor should enter into negotiations with the consultant given first preference by the selection board and utilize technical assistance necessary to support the negotiations. During the negotiations, revisions of the proposed fee and supporting cost breakdown (if required) should be requested to reflect changes in, or clarifications of, the scope of work.

d. FAA personnel will *not* be present and will *not* participate in the negotiation process until after the sponsor and consultant have agreed on the scope of work, conditions of the contract, and compensation to be paid. The FAA's role is to make a judgment on the reasonableness of the compensation for the services to be furnished and to ensure that all services required for a particular project have been included in the proposal.

e. If a mutually satisfactory contract cannot be negotiated with the consultant first selected, the negotiations should be terminated and the consultant should be notified. Negotiations should then be initiated with the consultant given second preference by the selection board. This procedure should be continued with recommended consultants in the sequence of ranking established by the selection board until a mutually satisfactory contract has been negotiated. Once negotiations have been terminated with a firm and begun with another, they cannot be reopened with the former firm.

f. Fee negotiations should be based upon the cost data submitted by the consultant and an evaluation of the specific work required for each task. The sponsor should subject the consultant's data to a technical/engineering cost analysis. Significant differences between the estimates submitted by the consultant and the estimates developed by the sponsor should be resolved, and revisions should be made to fee as required.

g. A record of negotiations should be prepared and included in a contract file. This record should contain sufficient detail to reflect the significant considerations controlling the establishment of the fee and other terms of the contract as well as explanations of any significant differences between the sponsor's original estimate and the fee finally agreed upon.

h. Upon completion of successful negotiations, all consultants interviewed by the selection board should be informed of the consultant selected for the project.

13. SPONSOR-FORCE ACCOUNT PROJECTS. Just as steps are taken in the selection process to assure that consultant services under contract will be acceptable, timely, and financially prudent, so should steps be taken to assure that the same services to be done by force account also meet such aims. Accordingly, the FAA requires that proposals for these types of services by force account be submitted in writing and that FAA approval be obtained prior to the start of any of the work. The proposal should include as a minimum:

a. Names and engineering qualifications of personnel performing the work and their capabilities for design, supervision, planning, inspection, testing, etc., as applicable.

b. Details of experience with airport projects of like or similar nature.

c. Information on workload as it may affect capacity to do the work within a required time frame or work schedule.

d. Justification for doing the work by force account rather than by contract.

e. A complete cost breakdown showing (1) the number of work hours and cost per hour for each category of labor, (2) a list of nonsalary costs such as travel, materials, supplies, equipment, etc. A limit on the total cost should be specified in the proposal.

CHAPTER 3. CONTRACT FORMAT AND PROVISIONS

14. GENERAL.

a. The relations of the consultant with the sponsor should be clearly defined by a written agreement before commencement of actual work. All of the terms should be clearly defined in the agreement. It should state the parties to the contract and define the complete extent and character of the work to be performed as well as conditions relating to any time limitations which may be involved. The terms and payments for various services should follow. The scope of the consultant effort should be described in complete detail to determine the sufficiency of the supervisory and inspection staff and to determine whether some services will need to be otherwise contracted for or be provided by the sponsor.

b. Consultant contracts usually cover highly technical services. Therefore, to assure the soundness of a legal document, it is essential that someone who has thorough knowledge of the project prepare the sections describing services to be performed, sequence of work, information to be furnished by the sponsor, and terms of payment.

15. **CONTRACT FORMAT.** Many government agencies, business firms, and engineering organizations have developed standardized forms for engineering and planning contracts. The American Consulting Engineers Council, the National Society of Professional Engineers, and the American Society of Civil Engineers have developed such standardized forms. Some state aviation departments have developed standardized forms for engineering services provided in their own states. The American Institute of Architects has standardized forms for architectural contracts. It is generally necessary to modify these standard agreements to reflect the specific terms and conditions applicable to a particular project, as well as the mandatory contract provisions in paragraph 16.

16. DIVISION OF RESPONSIBILITY AND AUTHORITY.

a. It is common to have one firm provide the basic services and one or more others provide special services. In these cases, the firm providing the basic consultant services is considered the primary engineer or principal consultant as defined in paragraph 7c. As such, the principal consultant represents the sponsor in coordinating and overseeing the work of other engineering/consultant firms and has the overall responsibility for the acceptability and quality of the work. It is, therefore, extremely important that the contract documents clearly specify the division of responsibility and authority between all parties engaged in carrying out elements of the project.

b. The contract between the airport sponsor and the consultant should establish the scope of work based on carrying out his/her professional duties under the requirements of law. Such contract should not attempt to make the consultant an indemnitor, nor should it permit him/her to limit his/her liability in performing services needed for a project funded under a grant.

17. **MANDATORY CONTRACT PROVISIONS.** All contracts involving airport development projects or airport planning must contain the applicable procurement standards in 49 CFR 18.36. Listed below are those provisions which pertain to consultant contracts:

a. Contracts shall contain provisions or conditions which will allow for administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for sanctions and penalties as may be appropriate.

b. Contracts over \$10,000 shall contain suitable provisions for termination by the sponsor, including the manner by which it will be effected and the basis for settlement. In addition, contracts shall describe conditions under which the contract may be terminated for default as well as conditions where the contract may be terminated because of circumstances beyond the control of the consultant.

c. All negotiated contracts shall include provisions to the effect that sponsors, the Federal Aviation Administration, the Comptroller General of the United States, or any of the duly authorized representatives shall have access to any books, documents, papers, and records of consultants which are directly pertinent to a specific grant program, for the purpose of making audits, examinations, excerpts, and transcriptions. Sponsors shall require consultants to maintain all required records for three years after the sponsor makes final payment and all other pending matters are closed.

d. Title VI and Minority Business Enterprise Assurances shall be included in each contract. (See Appendix 1.)

19. TIME OVERRUNS BEYOND CONTROL OF THE CONSULTANT. Frequently, the consultant is called upon to continue technical inspection services on construction contracts—overrunning the program schedule contemplated at the time of negotiation. In most instances, the time element is beyond the control of the consultant. To provide for the contingency of overrun of time, the agreement between the sponsor and the consultant should state the period for which the compensation shall apply and that the consultant shall be reimbursed for services in excess of the specified period of time at a mutually acceptable fee negotiated at the time all the pertinent circumstances are known.

20. OWNERSHIP OF DRAWINGS AND CONTRACT DOCUMENTS.

a. Original documents, such as tracings, plans, specifications, maps, basic survey notes and sketches, charts, computations, and other data prepared or obtained under the terms of the contract, are instruments of service and generally should remain the property of the consultant unless otherwise agreed to by both parties. Reproducible copies of drawings and copies of other pertinent data should be made available to the sponsor upon request.

b. When a contract is for preliminary plans only, no commitment that would constitute a limitation on the subsequent use of the preliminary plans or ideas incorporated therein should be stated or implied.

21. CONTRACT CHECKLIST. The following checklist contains the more important items and provisions to be considered in preparing any contract for consultant services:

a. Effective date of contract.

b. Names and descriptions of the parties to the agreement with their addresses and, in the case of a corporate body, the legal description of the corporation.

c. Nature, extent, and character of the project, the location thereof, and the time limitations.

d. Services, including performance and delivery schedules, to be rendered by the consultant.

e. Delineation of responsibilities of the consultant, the sponsor, and other consultants and parties involved in the performance of the project.

f. Inclusion of mandatory contract provisions as discussed in paragraph 17.

g. Provision for renegotiation of the contract on the basis of change in the scope of the project, changes in conditions, additional work, etc.

h. Provision that reproducible copies of planning and design drawings and specifications be made available to the sponsor upon request.

i. Compensation, including methods of payment and payment schedules, for services to be rendered by consultants.

j. Provision for the termination of the consultant services before completion of work.

22. FAA CONTRACT REVIEW. FAA Airports field office personnel are available to assist the sponsor and provide guidance on:

a. The scope of the services to be provided.

b. The appropriate type of contract.

c. The mandatory contract provisions to be included.

23. FAA CONTRACT APPROVAL.

a. A sponsor's proposed contract must have preaward review and approval in any of the following circumstances:

(1) The sponsor's procurement system is not in compliance with one or more significant aspects of 49 CFR 18.

(2) The procurement is expected to exceed \$25,000 and is to be awarded without competition or only one bid offer is received in response to solicitation.

(3) The contract is to be awarded without price competition.

b. The FAA may require preaward review and approval of a sponsor's proposed contract under any of the following circumstances:

(1) The sponsor's procurement system has not yet been reviewed by the FAA for compliance with 49 CFR 18.

(2) The sponsor has requested preaward assistance.

(3) The proposal is one of a series with the same firm.

CHAPTER 4. METHODS OF CONTRACTING AND ALLOWABLE COSTS

23. GENERAL. The computation of charges and compensation methods for consultant services are dependent on the type of services required and specific circumstances relating to the individual project. The various types of contracts and methods of compensation are discussed below. Contracts may be negotiated to include a combination of two or more of these methods.

24. PER DIEM.

a. Direct personal services are usually charged on a per diem basis. This method is particularly suited to court work or similar efforts involving intermittent personal service.

b. When such consulting or expert services are furnished, the consultant is compensated for the time devoted to the work and to travel time. The per diem charge should be based on the complexity of the work involved and the experience of the consultant. In addition to the compensation based on per diem, the consultant is reimbursed for travel and other out-of-pocket expenses incurred while away from the normal place of business provided they are reasonable, allocable, and of a generally allowable nature.

c. For services in court or on other engagements in which the consultant appears as an expert, a per diem charge is considered to be earned for each day of such appearance, although the consultant may not be called to testify or, if called, may finish his/her testimony in a fraction of the day.

d. On occasions, the urgency of the engagement requires the consultant to work longer than the normal day. In some instances, this requirement is a necessary feature of the services, and an understanding should be made with the sponsor as to what constitutes a day. In such cases, the per diem rate may be based on the normal number of working hours per day, or the per diem rate may be increased to take into consideration the extended work day.

e. For certain kinds of work, compensation based on hourly rates is an equitable arrangement. Compensation for consultant service on an hourly basis demands a higher rate per hour than would be represented in a per diem rate. Also, the hourly rates should apply to time for travel involved plus reimbursement for travel costs, subsistence, and other out-of-pocket expenses. Depending on the duration of the services, compensation on an hourly basis may include an agreement on a preset minimum amount or retainer in addition to the payments based on the hourly rates.

f. If preparation of an environmental impact assessment report is involved in the consultant services, determination of the fee for the public hearing portion of the procedures could present a problem since extensive hearings and followup work may be required. In these instances the per diem approach may be considered as an appropriate method of payment for services rendered subsequent to the initial hearing. An estimated upper limit should be set forth in the contract. The contract should provide for renegotiation of the upper limit if unforeseeable conditions are encountered.

25. RETAINER.

a. The employment of consultants on a retainer basis is a common practice. This practice assures the sponsor of always having the services of a certain individual engineer or organization available for future work. This method is used in cases of protracted litigation or for work over the years when the calls on the consultant may be intermittent. It is also used in the development of undertakings for which the services of a consultant specialist are not required on a full-time basis. On large projects, this method enables the sponsor to have the specialists who prepared the original plans and specifications on hand for maintenance or additions.

b. The retainer fee varies with the character and value of the services to the sponsor and with the reputation and standing of the consultant in his/her profession.

c. The terms of agreement for services on a retainer basis vary widely. Compensation may be based on a fixed sum, paid monthly, or on some other mutually agreeable basis, with per diem or hourly rates in addition for time spent at the request of the sponsor. In any case, the same principles, explained previously for per diem or hourly charges, govern under retainer contracts.

d. This type of contract is rarely used for grant projects. However, it is permissible to use a firm on retainer for projects without further procurement action if:

(1) The retainer contract was awarded as a result of competition.

(2) The parties competing for the retainer were advised that subsequent grant funded projects (including the scope of services for those projects) would be performed under the retainer contract.

(3) The price for the work performed under the grant will be fair and reasonable and supported by a price or cost analysis.

e. Detailed records should be kept to identify that work which is a part of a Federal grant project and eligible for reimbursement.

26. COST PLUS A FIXED PAYMENT.

a. The cost plus a fixed payment contract is frequently used when the consultant is required to start work before the cost and scope of the project can be accurately determined. It is recommended that services for the construction phase of a project be paid for under a cost plus fixed payment type contract.

b. This type of contract provides for reimbursement of allowable costs such as salary, overhead, and direct nonsalary expenses, plus a fixed payment.

c. A cost plus a fixed payment proposal should be accompanied by the consultant's estimate. The estimate should detail the direct labor costs by categories of employees, work hours, and hourly rate; overhead; direct nonsalary expenses; and the fixed payment.

d. The payment is fixed and does not vary no matter what the costs turn out to be. In most instances, however, a ceiling is applied which establishes an upper limit on the allowable costs. In establishing the upper limit, an allowance for contingencies should be included so that, as such contingencies are encountered, renegotiation of the upper limit will not be necessary. The intent of the upper limit is to insure that the allowable costs do not exceed an agreed-upon ceiling without prior approval of the sponsor. (If Federal participation is desired in the increased cost, the sponsor must obtain the prior approval of the FAA.) Such contracts should contain provisions that provide for renegotiation of both the upper limit and the fixed payment if the scope of work described in the contract has changed.

e. Any increase in costs should be fully justified by the consultant prior to approval by the sponsor. As the consultant is approaching the upper limit and it becomes apparent that the project cannot be completed within that limit, he/she should alert the sponsor. Approval must be obtained before the upper limit is exceeded.

f. Overhead charges will vary according to the nature, type, diversity, size of firm, and number/amount of contracts currently held by the firm. The consultant should be prepared to validate the overhead costs with a certified statement from the sponsor's auditor, state's auditor, or consultant's accountant. If the consulting firm has been audited by an agency of the Federal Government within the previous 12 months, the overhead rate determined by this audit may be used.

g. Fixed payment is in addition to reimbursement for salary, overhead, and direct nonsalary expenses. The consultant is paid a fixed amount for profit, willingness to serve, and assumption of responsibility. This may be an amount based on the estimated design cost of the project at the time the consultant is engaged and will vary with the scope of the services involved.

27. FIXED LUMP-SUM PAYMENT.

a. The fixed lump-sum payment contract is normally used when the scope of work can be clearly and fully defined at the time the agreement for services is prepared.

b. The fixed amount of compensation is determined by estimating the allowable costs such as salary, overhead, and direct nonsalary expenses plus a reasonable margin of profit—all expressed as a single lump sum. A lump sum proposal should be accompanied by the consultant's estimate. The estimate should detail the direct labor costs by categories of employees, work hours, and hourly rate; overhead; direct nonsalary expenses; and profit.

c. Where consultation is undertaken on a lump-sum basis, the agreement should contain a clearly stated time limit during which the services will be performed. In design contracts, there should be a provision for changes required after the approval of preliminary designs with a clear understanding as to where the final approval authority lies.

d. Lump-sum contracts should contain a clause that provides for renegotiation if the scope of work described in the contract has changed.

28. COST-PLUS-A-PERCENTAGE-OF-COST. Cost-plus-a-percentage-of-cost (CPPC) methods of contracting are prohibited for consultant services under airport grant programs. CPPC contracts may be defined as a payment formula based on a fixed predetermined percentage rate of actual performance costs by which the sum of the consultant's entitlement, uncertain at the time of agreement, increases commensurately with increased performance costs. The types of contracts discussed below are based on the CPPC methods of contracting and, therefore, are prohibited.

a. **Salary Cost Times a Multiplier, Plus Direct Nonsalary Expense.** This type contract contains CPPC methods of contracting because the consultant's indirect cost and profit are not fixed at the time the contract is signed.

b. **Percentage of Construction Costs.** This type contract contains CPPC methods of contracting since a portion of the consultant's fee which does not reflect actual costs constitutes a profit which is not fixed at the time the contract is executed.

29. PHASING OF WORK. Design projects may be negotiated to be performed in phases and include two or more of the foregoing methods of compensation. For example, the first phase of a project might cover the development of the precise scope of work for a project and be paid for under a cost plus fixed payment contract. The follow-on work could then be negotiated on the basis of information developed in the first phase and might be accomplished under a lump-sum contract.

30. ALLOWABLE COSTS. Costs incurred must be consistent with the Federal cost principles contained in Title 48, Code of Federal Regulations (CFR), Part 31, to be reimbursable under an airport planning or development grant. This document is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20406. The following are typical expenses allowable under the above regulations. Typical nonallowable costs are set forth in paragraph 31. *

a. **Direct Salary Costs.**

(1) Direct salary cost is defined as the cost of salaries of engineers, draftsmen, surveyors, stenographers, clerks, etc., for time directly chargeable to the project.

(2) Salaries or imputed salaries of partners or principals, to the extent that they perform technical or advisory services directly applicable to the project, are to be added to salary cost.

b. **Overhead Costs.** Overhead costs include overhead on direct salary costs and general and administrative overhead.

(1) **Labor Overhead.** Overhead on direct salary costs includes sick leave, vacation, and holiday pay; unemployment, excise and payroll taxes; contributions for social security, employment compensation insurance, retirement benefits, and medical insurance benefits; and any other benefits customarily paid to or enjoyed by all employees. The allowable percentage for labor overhead allocable to a project is the ratio of (a) a firm's total direct labor overhead costs to (b) a firm's total direct salary costs (excluding overtime) for a given period usually the average for the past three years.

(2) **General and Administrative Overhead.** General and administrative overhead includes the following indirect costs which are not directly attributable to specific projects.

(a) Provisions for office, light, heat, and similar terms for working space, depreciation allowances or rental for furniture, drafting equipment and engineering instruments, and office and drafting supplies not identifiable to specific projects.

(b) Taxes and insurance other than those included as salary cost, but excluding state and Federal income taxes.

(c) Library and periodical expenses, and other means of keeping abreast of advances in engineering such as attendance at technical and professional meetings and subscriptions to trade, business, professional, or technical periodicals.

(d) Executive, administrative, accounting, legal, stenographic, and clerical salaries and expenses (other than identifiable salaries included in salary costs and expenses included in reimbursable nonsalary expenses, plus salaries or imputed salaries of partners and principals) to the extent that they perform general executive and administrative services as distinguished from technical or advisory services directly applicable to particular projects.

(e) Costs of memberships in trade, business, technical, and professional organizations.

(f) Incentive compensation for management employees, cash bonuses, suggestion awards, safety awards, and incentive compensation based on production, cost reduction, or efficient performance are allowable to the extent that the overall compensation is determined to be reasonable, and such costs are paid or accrued pursuant to an agreement entered into in good faith between the consultant and the employees before the services are rendered or pursuant to an established plan followed by the consultant so consistently as to imply, in effect, an agreement to make such payment. The allowable percentage for general and administrative overhead allocable to a project is the ratio of (a) all general and administrative costs to (b) total direct salary costs (excluding overtime) for a given period, usually the average for the past three years.

c. **Direct Nonsalary Expenses.** Direct nonsalary expenses usually incurred may include the following (detailed records must be kept to support charges and allow auditing):

(1) Living and traveling expenses of employees, partners, and principals when away from the home office on business connected with the project. (Records must include employee name, dates, points of travel, mileage rate, lodging, and meals.)

(2) Identifiable communication expenses such as long-distance telephone, telegraph, cable, express charges, and postage, other than for general correspondence.

(3) Services directly applicable to the work such as special legal and accounting expenses, computer rental and programming costs, special consultants, borings, laboratory charges, commercial printing and bindings, and similar costs that are not applicable to general overhead.

(4) Identifiable drafting supplies and stenographic supplies and expenses charged to the sponsor's work as distinguished from such supplies and expenses that are applicable to two or more projects.

(5) Identifiable reproduction costs applicable to the work such as blueprinting, photostating, mimeographing, printing, etc.

(6) Advertising costs which are solely for the recruitment of personnel required for the performance by the consultant of obligations arising under the contract.

31. NONALLOWABLE COSTS. The expenses listed below are not allowable for reimbursement under an airport grant.

a. Costs of amusement and social activities and incidental costs relating thereto such as meals, lodging, rentals, transportation, and gratuities.

b. Contributions and donations.

c. Bad debts, including losses due to uncollectible customer's accounts and other claims, related collection costs, and related legal costs, arising from other businesses of the consultant.

d. Dividend provisions or payments and, in the case of sole proprietors and partners, distributions of profit.

e. Interest on borrowed capital.

f. Bonus payment for early completion of work.

32. FIXED PAYMENT. To all the estimated costs, including overhead, a percentage rate is applied to determine payment for profit, willingness to serve, and assumption of responsibility.

APPENDIX 1—CONTRACTOR CONTRACTUAL REQUIREMENTS

TITLE VI ASSURANCES

During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. Compliance with Regulations. The contractor shall comply with the Regulations relative to nondiscrimination in federally assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

2. Nondiscrimination. The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of sub-contractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

3. Solicitations for Subcontracts, Including Procurements of Materials and Equipment. In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

4. Information and Reports. The contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the sponsor or the Federal Aviation Administration (FAA) to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the sponsor or the FAA, as appropriate, and shall set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance. In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the sponsor shall impose such contract sanctions as it or the FAA may determine to be appropriate, including, but not limited to—

(a) withholding of payments to the contractor under the contract until the contractor complies, and/or

(b) cancellation, termination, or suspension of the contract, in whole or in part.

6. Incorporation of Provisions. The contractor shall include the provisions of paragraphs 1 through 5 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the sponsor or the FAA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the sponsor to enter into such litigation to protect the interests of the sponsor and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

MINORITY BUSINESS ENTERPRISE (MBE) ASSURANCES

1. **Policy.** It is the policy of the Department of Transportation (DOT) that minority business enterprises as defined in 49 CFR Part 23 shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with Federal funds under this agreement. Consequently, the MBE requirements of 49 CFR Part 23 apply to this agreement.

2. **MBE Obligation.** The contractor agrees to ensure that minority business enterprises as defined in 49 CFR Part 23 have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with Federal funds provided under this agreement. In this regard, all contractors shall take all necessary and reasonable steps in accordance with 49 CFR Part 23 to ensure that minority business enterprises have the maximum opportunity to compete for and perform contracts. Contractors shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of DOT-assisted contracts.

APPENDIX 2—CONSULTANT SERVICES COSTS

1. Direct Salary Costs

<u>Title</u>	<u>Hours</u>	<u>Rate/Hour</u>	<u>Cost (\$)</u>
Principal			
Project Manager			
Design Engineer			
Draftsman			
Technician			
Others as appropriate			
Total Direct Salary Costs			\$ _____

2. Labor and General & Administrative Overhead *

Percentage of Direct Salary Costs _____ % \$ _____

3. Direct Nonsalary Expenses

Transportation	_____	
Per Diem	_____	
Printing	_____	
Testing	_____	
Consultants	_____	
Other	_____	
Total Direct Nonsalary Expenses		\$ _____

4. Subtotal of Items 1, 2, and 3 \$ _____

5. Fixed Payment \$ _____

_____ % of Item 4

6. Subcontract costs (specify) \$ _____

Total Cost

Items 4, 5, plus 6 \$ _____

* For item 2, the consultant should submit a statement of auditable overhead expenses, certified by the consultant's auditor, the sponsor's auditor, the state's auditor, or a Federal government auditor.

FIGURE 1. Estimated Cost for Consultants' Services (Design Phase)

1. Direct Salary Costs

<u>Title</u>	<u>Hours</u>	<u>Rate/Hour</u>	<u>Cost (\$)</u>
Principal			
Resident Engineer			
Inspector			
Surveyors			
Technicians			
Others as appropriate			

Total Direct Salary Costs \$ _____

2. Labor and General & Administrative Overhead

Percentage of Direct Salary Costs _____ % \$ _____

3. Out-of-pocket expenses

a. Travel

Commercial _____
Private Vehicle _____ miles @ \$ _____ /mile \$ _____

b. Per Diem

\$ _____ /day @ _____ days \$ _____

c. Materials and Supplies

\$ _____

d. Other

\$ _____

Total Expenses \$ _____

4. Subtotal of Items 1, 2, and 3 \$ _____

5. Fixed Payment _____ % \$ _____

6. Subcontract costs (include testing by independent lab) \$ _____

7. Total Cost \$ _____
Items 4, 5, plus 6

FIGURE 2. Estimated Cost for Consultant's Services (Construction Phase)