

AIRPORT PLANNING MANUAL



PART 3

GUIDELINES FOR CONSULTANT/CONSTRUCTION SERVICES

FIRST EDITION — 1983

*Approved by the Secretary General
and published under his authority*

INTERNATIONAL CIVIL AVIATION ORGANIZATION

Published in separate English, French, Russian and Spanish editions by the International Civil Aviation Organization. All correspondence, except orders and subscriptions, should be addressed to the Secretary General.

Orders for this publication should be sent to one of the following addresses, together with the appropriate remittance (by bank draft or post office money order) in U.S. dollars or the currency of the country in which the order is placed.

International Civil Aviation Organization
Attention: Distribution Officer
1000 Sherbrooke Street West, Suite 400
Montreal, Quebec
Canada H3A 2R2

Argentina. El Ateneo, Pedro García S.A.L.E. e I., Dpto. Compras — Importación, Patagones 2463, 1282 Buenos Aires.

Egypt. ICAO Representative, Middle East and Eastern African Office, 16 Hassan Sabri, Zamalek, Cairo.

France. Représentant de l'OACI, Bureau Europe, 3 bis, villa Emile-Bergerat, 92522 Neuilly-sur-Seine, Cedex.

India. Oxford Book and Stationery Co., Scindia House, New Delhi or 17 Park Street, Calcutta.

Japan. Japan Civil Aviation Promotion Foundation, 15-12, 1-chome, Toranomon, Minato-Ku, Tokyo.

Mexico. Representante de la OACI, Oficina Norteamérica y Caribe, Apartado postal 5-377, México 5, D.F.

Peru. Representante de la OACI, Oficina Sudamérica, Apartado 4127, Lima 100.

Senegal. Représentant de l'OACI, Bureau Afrique, Boîte postale 2356, Dakar.

Spain. Librería de Aeronáutica y Astronáutica Sumaas, Desengaño, 12-3º-3, Madrid 13.

Sweden. C.E. Fritzes Kungl. Hovbokhandel, Box 16356, S-103 27 Stockholm.

Thailand. ICAO Representative, Asia and Pacific Office, P.O. Box 614, Bangkok.

United Kingdom. Civil Aviation Authority, Printing and Publications Services, Greville House, 37 Gratton Road, Cheltenham, Glos., GL50 2BN.

Do you receive the ICAO BULLETIN?

The **ICAO Bulletin** contains a concise account of the activities of the Organization as well as articles of interest to the aeronautical world.

The **Bulletin** will also keep you up to date on the latest ICAO publications, their contents, amendments, supplements, corrigenda, and prices.

Available in three separate editions: English, French and Spanish.
Annual subscription: U.S. \$15.00 (surface mail); U.S. \$20.00 (air mail).

Airport Planning Manual

(Doc 9184-AN/902)

Part 3

Guidelines for Consultant/Construction Services

First Edition — 1983



FOREWORD

This manual provides a general overview on contracting for planning or construction services. It is intended for both persons who are directly involved in the preparation and administration of a contract as well as supervisors of such persons.

Primarily, the manual is aimed at contracts related to airport development but it may be of benefit to many other contract applications. Its purpose is to outline the various steps that should be taken from conception of the idea to contract for services to completion of the contract. It is not intended to be a textbook on contracting but rather to identify the various stages and important issues associated with each stage.

In this regard the manual has purposely been kept concise. Specific examples are included but the reader is cautioned that the circumstances surrounding each contract are different and all advice in this manual must be judged accordingly and in relation to the work to be accomplished.

This first edition of the manual was prepared by the Air Navigation Bureau, with the assistance of an expert technical consultant.

It is intended that the manual be kept up to date. Future editions will be improved on the basis of experience gained and comments and suggestions received from users of this manual. Therefore, readers of the manual are invited to give their views, comments and suggestions on this edition. These should be directed to the Secretary General of ICAO.

TABLE OF CONTENTS

| | <u>Page</u> |
|--|-------------|
| CHAPTER 1. Introduction | 1 |
| 1.1 Purpose of Manual | 1 |
| 1.2 Scope and Usage of Manual | 1 |
| 1.3 Sizes and Types of Projects | 3 |
| 1.4 Step by Step Procedure vs Combining Steps | 4 |
| 1.5 Limitations Imposed by National Practice or Agency Standards | 5 |
| 1.6 Limitations Imposed by Lending Agencies | 6 |
| 1.7 Project Organization | 6 |
| CHAPTER 2. Task Identification | 10 |
| 2.1 Introduction | 10 |
| 2.2 Magnitude of Task and Schedule | 10 |
| 2.3 Assembly of Background Materials | 13 |
| 2.4 Preparation of Manpower and Cost Budgets | 15 |
| 2.5 Office Location and Local Participation | 15 |
| 2.6 Schedule of Payments and Currency | 19 |
| 2.7 Terms of Reference | 19 |
| 2.8 Scope of Work | 20 |
| 2.9 Instructions to Proposers | 21 |
| CHAPTER 3. Selection of Consultants | 23 |
| 3.1 Introduction | 23 |
| 3.2 Solicitation Procedures | 23 |
| 3.3 Review and Selection Process | 25 |
| 3.4 Fee Proposal | 41 |
| 3.5 Sources for Locating Qualified Firms | 41 |
| CHAPTER 4. Contract Preparation | 45 |
| 4.1 Introduction | 45 |
| 4.2 Contract Type (Fee Basis) | 45 |
| 4.3 Salary Cost Times a Multiplier Plus Direct Non-Salary Expense ... | 46 |
| 4.4 Cost Plus a Fixed Payment | 47 |
| 4.5 Fixed Lump Sum Payment | 48 |
| 4.6 Percentage of Construction Cost | 49 |
| 4.7 Contract Format and Provisions | 49 |
| 4.8 Standard Provisions | 51 |
| CHAPTER 5. Award of Contract | 52 |
| 5.1 Introduction | 52 |
| 5.2 Negotiation Objectives | 52 |
| 5.3 Verification of Proposals | 53 |
| 5.4 Determination of Possible Scope and/or Schedule Changes | 54 |
| 5.5 Negotiation Process | 55 |

| | | |
|---|---|----|
| 5.6 | Participants | 55 |
| 5.7 | Timing and Location | 56 |
| 5.8 | Record of Negotiations | 56 |
| 5.9 | Revision and Award of Contract | 57 |
| CHAPTER 6. Contract Administration | | 58 |
| 6.1 | Introduction | 58 |
| 6.2 | Method of Administration | 58 |
| 6.3 | Organization Structure | 59 |
| 6.4 | Co-ordination | 60 |
| 6.5 | Administration Functions | 61 |
| 6.6 | Revisions to the Scope of Work | 64 |
| 6.7 | Settlement of Disputes | 64 |
| CHAPTER 7. Construction Contracts | | 66 |
| 7.1 | Introduction | 66 |
| 7.2 | Contract Types and Procedures | 66 |
| 7.3 | Competitive Bidding | 67 |
| 7.4 | Advertising | 68 |
| 7.5 | Pre-Qualification | 68 |
| 7.6 | Bidding Documents | 70 |
| 7.7 | Instructions to Bidders | 70 |
| 7.8 | Bid Form | 71 |
| 7.9 | Construction Contract | 72 |
| 7.10 | Plans, Drawings and Specifications | 73 |
| 7.11 | Bid Opening, Evaluation and Award | 74 |
| 7.12 | Construction Management and Contract Administration | 75 |
| 7.13 | Changes During Construction | 77 |
| CHAPTER 8. Summary | | 79 |
| APPENDIX Standard Contract Provisions | | 81 |

CHAPTER 1.- INTRODUCTION

1.1 PURPOSE OF MANUAL

1.1.1 This manual is intended to provide information and guidance to those individuals and authorities responsible for the planning, design and construction of airports and airport facilities. This information and guidance is specifically related to the processes for selection of international consultants and contractors and the preparation, negotiation and administration of contracts for the work which they have been retained to perform.

1.1.2 There are considerable differences between the organization, the processes and frequently the legal requirements of contracting for consulting services vis-a-vis contracting for construction services. The two are, therefore, dealt with separately in this manual, Chapters 1 through 6 of the text being devoted to consulting services and Chapter 7 to construction contracts.

1.1.3 While the manual is primarily directed toward projects for which the sponsor chooses or is required to solicit proposals from consultants and/or contractors by international invitation, much of the content is equally applicable to projects executed with the help of local consultants/contractors. However, it is not the purpose or intent of this manual to influence the established regulations or procedures employed by each State in contracting services for projects to be planned, designed and constructed by local consultants and contractors.

1.1.4 In some States, the responsibility for construction rests with ministries or agencies separate from those responsible for planning and design; in other States, the process is continuous within one ministry or agency from project inception to completion. In either case, it is desirable to have continuity through the project. Therefore, guidance material is also included in this manual for retaining consultants for post-design services.

1.1.5 One consideration remains paramount in any case. Regardless of the type of contract under which a consultant is retained to perform one or more specific task, and regardless of how well that contract is administered, the quality and cost of the completed work depends on the competence and integrity of the consultant. Thus, the selection of the proper consultant for planning, design and post-design services is one of the most significant steps in the realization of a project, ranking in importance equal to the selection of the contractor for construction.

1.2 SCOPE AND USAGE OF MANUAL

1.2.1 The manual has been prepared to provide guidance for those projects requiring the full range of consulting services from initial planning to placing the facility in service. The suggestions and the logic on which they are based are subject to common sense analysis and adaptation for those projects for which the full range of services are not required. Other than discussion on the possible limitations which might be imposed by lending agencies, this manual does not address the subject of financing the project.

1.2.2 The manual discusses the procedures for each phase of project realization with regard to:

- a) *solicitation of consultants;*
- b) *selection of consultant;*
- c) *negotiations with consultant;*
- d) *award of contract; and*
- e) *administration of contract.*

1.2.3 The phases of project realization considered in this manual are those in which the consultant might participate:

- a) *pre-planning (investigations and forecasts);*
- b) *planning;*
- c) *preliminary and final design;*
- d) *construction (post design services); and*
- e) *placing into operation.*

1.2.4 The starting point for any project is the identification of an apparent need or demand. Satisfaction of this need or demand can, in some cases, be accomplished by expansion or modification of an existing facility; in other cases a new and separate facility might be required. Having identified the need or demand, the next step (pre-planning) is to forecast its potential growth and to develop the programmes for the facilities which will be required to satisfy that demand. Simultaneously, site selection studies and all investigations required to establish the parameters for design and construction should be undertaken.

1.2.5 The second phase (planning) starts with the development of alternative schemes for the selected site, evaluation of those schemes and the preparation of sufficient documentation (sketches, cost estimates, revenue projections) to determine financial feasibility and to form a solid basis for continuing the work. The planning phase culminates in the preparation of a comprehensive master plan which establishes the basic framework for ultimate development, the general locations, approximate sizes and basis of design for all facilities. It also establishes the extent of the initial construction and the steps by which expansion would take place to keep pace with demand.

1.2.6 The third phase of consultant effort is the design, preliminary and final. A co-ordinated preliminary design, supplemented by outline specifications and preliminary cost estimates, should be undertaken for each major physical element of the project. Detailed plans, specifications, cost estimates, bidding schedules and all other contract documents are completed in the final design phase. For airport projects the major design elements include:

- a) *runways and taxiways;*
- b) *the passenger terminal area and buildings;*

- c) *the support and ancillary areas and buildings;*
- d) *the infrastructure (roads and utility systems);*
- e) *automobile parking; and*
- f) *special systems (navigational aids, control tower, movement area lighting, aircraft fuelling, other fixed apron services).*

1.2.7 The fourth phase (post-design services) follows completion of the final design and contract documents and continues through the actual construction and placing the facility into operation. The consultant's role in this phase can have significant variation in form and magnitude. It is primarily dependent on the type and number of construction contracts, and the degree to which the sponsor or other responsible agencies assume those functions themselves. A range of possible functions is described in 2.2.11.

1.3 SIZES AND TYPES OF PROJECTS

1.3.1 The procedures described in this manual entail a considerable expenditure of time and effort on the part of the project sponsor. It follows then that it is principally applicable to large, comprehensive, complex projects. However, it is also useful as a guideline for smaller, less comprehensive projects.

1.3.2 Each consultant receiving a request for proposals will determine his willingness to respond on the basis of the effort required to prepare the proposal in accordance with the terms of reference weighed against the potential profitability of the work and his estimate of the probability of his being selected for the work. It follows then, that widely disseminated requests for proposals containing highly detailed and demanding terms of reference are counterproductive unless the project is very large and complex. For smaller projects, the sponsor is, therefore, advised to examine the suggested procedures with the aim of eliminating or reducing the required effort (both on the part of the sponsor and consultants) in research and preparation of requests for proposals and their responses, commensurate, of course, with the true needs of the project.

1.3.3 Consultants for participation in "turnkey" projects, projects for which the construction contractor is responsible for both design and construction, usually provide their services under sub-contract arrangements directly with the construction contractor. Thus all the normal procedures for soliciting and selecting consultants, and awarding and administering their contracts do not fully apply in those cases. The procedures for these functions as related to construction contracts are discussed in Chapter 7.

1.3.4 The successful completion of any project is dependent on the competency with which both the design and construction are carried out, both functions being equally important. Therefore, in the solicitation and selection of a construction contractor for "turnkey" projects, as much emphasis should be placed on the qualifications of the consultant he proposes as a sub-contractor as on the record of the construction company