



# Advisory Circular

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**Subject:** Architectural, Engineering, and Planning  
Consultant Services for Airport Grant Projects

**Date:** Draft

**AC No:** 150/5100-14E

**Initiated By:** AAS-100

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1 1 **Purpose.**

2 This advisory circular (AC) provides guidance for airport sponsors in the selection and  
3 engagement of architectural, engineering, and planning consultants. It also discusses  
4 services that normally would be included in an airport grant project, types of contracts  
5 for these services, contract format and provisions, and guidelines for determining the  
6 reasonableness of consultant fees.

7 2 **Cancellation.**

8 This AC cancels AC 150/5100-14D, *Architectural, Engineering, and Planning*  
9 *Consultant Services for Airport Grant Projects*, dated August 30, 2005.

10 3 **Application.**

11 Airport sponsors must use qualifications based selection procedures in the selection and  
12 engagement of consultants in the same manner as Federal contracts for architectural and  
13 engineering services negotiated under Title IX of the Federal Property and  
14 Administration Services Act of 1949, or equivalent State/sponsor qualifications based  
15 requirements. The guidelines contained in this AC are recommended by the Federal  
16 Aviation Administration (FAA) to comply with Title 49 Code of Federal Regulations  
17 (CFR) § 18.36 when selecting consultants for airport projects funded under Federal  
18 grant programs. This AC does not apply to airport projects that are fully funded with  
19 passenger facility charge (PFC) funds.

20 4 **Principal Changes.**

21 The AC incorporates the following principal changes:

- 22 1. Clarified Independent Fee Estimates processes.  
23 2. Clarified multiple consultant selection process.

- 24 | 3. Added “Specific Rates of Compensation” method of contracting.
- 25 | 4. Revised and expanded discussion of Alternative Project Delivery Methods, moved  
26 | to Appendix G.
- 27 | 5. Updated the advisory circular format to the decimal numbering system.
- 28 | 6. The Office of Management and Budget published the Uniform Administrative  
29 | Requirements, Cost Principles, and Audit Requirements for Federal Awards; Final  
30 | Rule, in 78 Federal Register Notice 78590, December 26, 2013. This final  
31 | guidance contains the administrative requirements formerly contained in (A-110  
32 | and A-102), cost principles (A-21, A-87, and A-22), and audit requirements (A-50,  
33 | A-89, and A-133) for federal awards. OMB has required the Department of  
34 | Transportation to publish a regulation adopting the policies and procedures that are  
35 | applicable to Federal awards by December 26, 2014. Therefore, the standards in 2  
36 | CFR 200 will apply once the Department of Transportation implements the  
37 | regulation. Until that time, the referenced Circulars will apply, and then the Office  
38 | of Airports will issue an update to this Advisory Circular.

39 | Michael J. O’Donnell  
40 | Director of Airport Safety and Standards

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**CHAPTER 1. INTRODUCTION**93 1.1 **Overview.**

94 This advisory circular (AC) provides guidance for airport sponsors in the selection and  
95 engagement of architectural, engineering, and planning consultants. This AC discusses  
96 services normally included in an airport grant project, types of contracts for these  
97 services, contract format, and guidelines for determining the reasonableness of  
98 consultant fees.

99 1.2 **Definitions.**

100 Definitions of the terms used in this AC are listed in Appendix A.

101 1.3 **Referenced Documents.**

102 Documents and regulations referenced throughout this circular are listed in Appendix B.

103 1.4 **Types of Consultant Services.**

104 There are two separate and distinct categories of consultant services that are utilized for  
105 projects conducted under airport grant programs. The first category involves planning  
106 services. The second involves Architectural/ Engineering (A/E) services for the design  
107 and construction administration/inspection of airport projects. These two categories of  
108 consultant services are discussed below.

109 1.4.1 Aviation Planning Services.

110 This category includes studies under the broad headings of airport system and master  
111 planning, airport noise compatibility planning and environmental assessments and  
112 related studies. These studies include, but are not limited to, the following activities:

- 113 1. Design study to establish the framework and detailed work program.
- 114 2. Airport data collection and facility inventories.
- 115 3. Aeronautical activity forecasts and demand/capacity analyses.
- 116 4. Facility requirements determination.
- 117 5. Airfield modeling for capacity and delay.
- 118 6. Airport layout and terminal area plan development.
- 119 7. Airport noise studies under 14 CFR Parts 150 and 161.
- 120 8. Compatible land-use planning in the vicinity of airports.
- 121 9. Airport site selection studies.
- 122 10. Airport development schedules and cost estimates.
- 123 11. Airport financial planning and benefit cost analysis.
- 124 12. Participation in public information and community involvement programs and/or  
125 public hearings relating to airport development and planning projects.

- 126 | 13. Environmental Assessments (EA), Environmental Impact Statements (EIS), and  
127 | other studies in accordance with FAA Orders 5050.4 and 1050.1.
- 128 | 14. Airspace analysis.
- 129 | 15. GIS Mapping/Sketch-up or other graphic abilities

130 | 1.4.2 Architectural/Engineering Services for Airport Development Projects.

131 | This category includes the basic A/E services normally required for airport development  
132 | projects. It involves services generally of an architectural, civil, geotechnical,  
133 | structural, mechanical, and electrical engineering nature. In addition, there may be  
134 | some services outside those normally considered basic that are discussed in paragraph  
135 | 1.5. The basic services are usually conducted in, but are not limited to, the four distinct  
136 | and sequential phases summarized below:

137 | 1.4.2.1 **Preliminary Phase.**

138 | This phase involves those activities required for defining the scope of a  
139 | project and establishing preliminary requirements. Some examples of  
140 | activities within this phase of a project include, but are not limited to:

- 141 | 1. Coordinating with the sponsor on project scope requirements, finances,  
142 | schedules, operational safety and phasing considerations, site access  
143 | and other pertinent matters.
- 144 | 2. As applicable, coordinating project with local FAA personnel and other  
145 | interested stakeholders to identify potential impacts to their operations.
- 146 | 3. Planning, procuring, and/or preparing necessary surveys, geotechnical  
147 | engineering investigations, field investigations, and architectural and  
148 | engineering studies required for design considerations.
- 149 | 4. Developing design schematics, sketches, environmental and aesthetic  
150 | considerations, project recommendations, and preliminary layouts and  
151 | cost estimates.
- 152 | 5. Preparing project design criteria and other bridging documents  
153 | commonly used for alternative project delivery methods such as design-  
154 | build contracting.

155 | 1.4.2.2 **Design Phase.**

156 | This phase includes all activities required to undertake and accomplish a  
157 | full and complete project design. Examples include, but are not limited to,  
158 | those below:

- 159 | 1. Conducting and attending meetings and design conferences to obtain  
160 | information and to coordinate or resolve design matters.
- 161 | 2. Collecting engineering data and undertaking field investigations;  
162 | performing geotechnical engineering studies; and performing  
163 | architectural, engineering, and special environmental studies.
- 164 | 3. Preparing necessary engineering reports and recommendations.

- 165 4. Preparing detailed plans, specifications, cost estimates, and  
166 design/construction schedules.
- 167 5. Preparing Construction Safety and Phasing Plan (CSPP).
- 168 6. Printing and providing necessary copies of engineering drawings and  
169 contract specifications.

170 1.4.2.3 **Bidding and Negotiation Phase.**

171 These activities are sometimes considered part of the construction phase.  
172 They involve assisting the sponsor in advertising and securing bids,  
173 negotiating for services, analyzing bid results, furnishing recommendations  
174 on the award of contracts, and preparing contract documents.

175 1.4.2.4 **Construction Phase.**

176 This phase may include all basic services rendered after the award of a  
177 construction contract, including, but not limited to, the following activities:

- 178 1. Providing consultation and advice to the sponsor during all phases of  
179 construction.
- 180 2. Representing the sponsor at preconstruction conferences.
- 181 3. Inspecting work in progress periodically and providing appropriate  
182 reports to the sponsor.
- 183 4. Reviewing and approving shop and erection drawings submitted by  
184 contractors for compliance with design concept/drawings.
- 185 5. Reviewing, analyzing, and accepting laboratory and mill test reports of  
186 materials and equipment.
- 187 6. Assisting in the negotiation of change orders and supplemental  
188 agreements.
- 189 7. Observing or reviewing performance tests required by specifications.
- 190 8. Determining amounts owed to contractors and assisting sponsors in the  
191 preparation of payment requests for amounts reimbursable from grant  
192 projects.
- 193 9. Making final inspections and submitting punch-lists and a report of the  
194 completed project to the sponsor.
- 195 10. Reviewing operations and maintenance manuals.

196 1.4.2.5 **Project Closeout Phase.**

197 This phase includes all basic services rendered after the completion of a  
198 construction contract, including, but not limited to, the following activities:

- 199 1. Making final inspections and submitting punch-lists and a report of the  
200 completed project to the sponsor.
- 201 2. Providing record drawings.
- 202 3. Preparing summary of material testing report

- 203 4. Preparing summary of project change orders
- 204 5. Preparing grant amendment request and associated justification, if
- 205 applicable.
- 206 6. Preparing final project reports including financial summary.
- 207 7. Obtaining release of liens from all contractors.

## 208 1.5 **Special Services.**

209 1.5.1 The development of some projects may involve activities or studies outside the scope of  
210 the basic design services routinely performed by the consultant. These special services  
211 may vary greatly in scope, complexity, and timing and may involve a number of  
212 different disciplines and fields of expertise.

213 1.5.2 Consultants performing special services may be employed directly by the sponsor to  
214 implement one or more phases of a project or may be employed by the principal  
215 consultant via a subcontract agreement. In certain instances, these services may be  
216 performed by the principal consultant. Some examples of special services that might be  
217 employed for airport projects include, but are not limited to, the following:

- 218 1. Soil investigations, including core sampling, laboratory tests, related analyses, and
- 219 reports.
- 220 2. Detailed mill, shop, and/or laboratory inspections of materials and equipment.
- 221 3. Land surveys and topographic maps.
- 222 4. Field and/or construction surveys.
- 223 5. Photogrammetry surveys.
- 224 6. Onsite construction inspection and/or management involving the services of a full-
- 225 time resident engineer(s), inspector(s), or manager(s) during the construction or
- 226 installation phase of a project. This differs from the periodic inspection
- 227 responsibilities included as part of the basic services.
- 228 7. Special environmental studies and analyses.
- 229 8. Expert witness testimony in litigation involving specific projects.
- 230 9. Project feasibility studies.
- 231 10. Public information and community involvement surveys, studies, and activities.
- 232 11. Preparation of record drawings.
- 233 12. Assisting the sponsor in the preparation of necessary applications for local, State,
- 234 and Federal grants.
- 235 13. Preparation of or updating of the airport layout plan.
- 236 14. Preparation of property maps.
- 237 15. Preparation of quality control plan.
- 238 16. Preparation of final report.

239           **CHAPTER 2. PROCEDURES FOR SELECTION OF CONSULTANTS**240    2.1       **General.**

241           The procedures included in this chapter provide guidance for sponsors in the selection  
242           and engagement of architectural, engineering, environmental, and planning consultants  
243           on projects funded wholly or in part under Federal airport grant programs. Adherence  
244           to these procedures will assure a sponsor of compliance with the requirements of 49  
245           USC § 47107(a) 17 and 49 CFR 18 § 18.36, as amended.

246    2.1.1    49 USC § 47107(a) 17 states: “Each contract and subcontract for program management,  
247           construction management, planning studies, feasibility studies, architectural services,  
248           preliminary engineering, design engineering, surveying, mapping, and related services  
249           will be awarded in the same way that a contract for architectural and engineering  
250           services is negotiated under Chapter 11 of Title 40 or an equivalent qualifications based  
251           requirement prescribed for or by the sponsor.” In addition to the services described in  
252           this statute, the professional and incidental services listed under A/E Services in  
253           Appendix A, must also be procured using qualifications based procedures.

254    2.1.2    49 CFR § 18.36(t) requires that grantees and sub-grantees extend the use of  
255           qualifications based (e.g., architectural, environmental, planning, and engineering  
256           services) contract selection procedures to certain other related areas and award such  
257           contracts in the same manner as Federal contracts for architectural and engineering  
258           services are negotiated under Title IX of the Federal Property and Administrative  
259           Services Act of 1949, or equivalent State or sponsor qualifications based requirements.

260    2.1.3    If a conflict exists between 49 USC § 47107(a) 17 and 49 CFR § 18.36, the statute will  
261           prevail.

262    2.1.4    Title IX of the Federal Property and Administrative Services Act of 1949 requires that  
263           qualifications based selection procedures be used for the selection of firms to perform  
264           architectural and engineering services. Qualifications based procedures require that a  
265           contract for A/E services be awarded pursuant to a fair and open selection process based  
266           on the qualifications of the firms. The fees for such services are established following  
267           selection of a firm through a negotiation process to determine a fair and reasonable  
268           price.

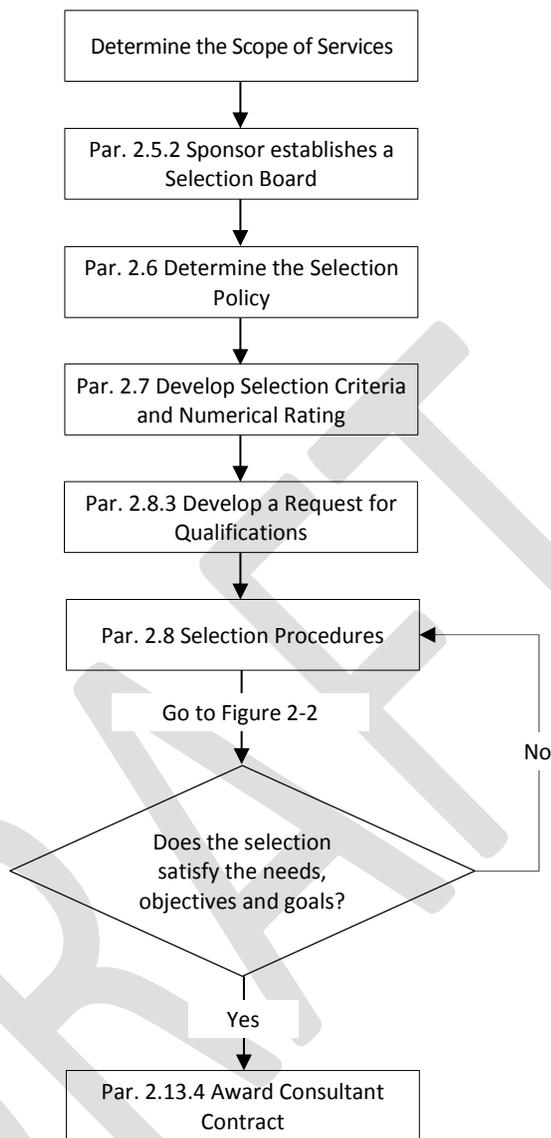
269    2.2       **Procurement Standards.**

270    2.2.1    The selection of consultants must be made on the basis of fair negotiations and  
271           equitable fees and through selection procedures that are professionally acceptable,  
272           ensure maximum open and free competition, and avoid any suggestion of unfair or  
273           unethical conduct.

274    2.2.2    Consultants employed for work on projects involving airport grants must be responsible  
275           and possess the ability to perform successfully under the terms and conditions of the  
276           proposed procurement. Consideration should be given to such matters as integrity,

- 277 record of past performance, extent of experience with the type of services required by  
278 the sponsor, technical resources, and accessibility to other necessary resources.
- 279 2.2.3 The Sponsor's procurement action must be void of individual and organizational  
280 conflicts of interests both real and/or perceived.
- 281 2.2.3.1 Individual conflicts of interest may exist whenever a Sponsor's employee,  
282 officer, agent or family member thereof has a financial or other interest in  
283 the firms competing for the work.
- 284 2.2.3.2 Organizational conflicts of interest may exist when there is a lack of  
285 impartiality, impaired objectivity or an unfair advantage with one or more  
286 of the firms competing for the work.
- 287 2.2.4 Sponsors must maintain sufficient records, made available at the FAA's request, to  
288 detail the significant history of their procurement action. This includes the rationale for  
289 the procurement method; the selection considerations; contract type and basis for  
290 contract price.
- 291 2.3 **Qualifications Based Selection Procedures.**  
292 Consultants must be selected on the basis of their qualifications and experience, with  
293 fees determined through negotiations following selection. The qualifications of  
294 consultants are evaluated and the best qualified consultant is selected, subject to a  
295 mutual understanding of the scope of services and negotiation of a fair and reasonable  
296 fee. Figure 2-1 is an overview of the recommended Qualifications Based Consultant  
297 Selection process.

298

**Figure 2-1. Qualifications Based Selection Process**

299

## 300 2.4 **Other Services.**

301 2.4.1 Where services are to be performed in conjunction with the architectural, planning,  
 302 environmental, or engineering services, they must be contracted for in the course of  
 303 procuring the A/E services.

304 2.4.2 Where services such as feasibility studies, construction management, program  
 305 management and other services as defined in 49 USC § 47107(a) 17 and A/E services as  
 306 defined in Appendix A are to be performed, but are not included in the basic A/E  
 307 services, they must be procured using qualifications based procedures.

308 2.4.3 Where services are to be performed that are not in conjunction with A/E services and do  
 309 not require performance by a licensed architect or engineer, the services should be  
 310 acquired using local procurement procedures. An example of this type of special

311 service would be soil borings, whereby the boring layout plan and interpretations of  
312 tests are not performed by the boring contractor. Soil borings conducted as part of a  
313 geotechnical engineering investigation or for which an independent engineer is  
314 responsible must be procured either in the course of procuring A/E services or by using  
315 qualifications based procedures.

316 2.4.4 Where services are to be performed in assisting the FAA in preparing an Environmental  
317 Impact Statement (EIS), they must be procured using qualifications based selection  
318 procedures (see paragraph 2.10).

319 2.4.5 Where a sponsor decides to utilize an Alternative Project Delivery System (APDS) such  
320 as design-build (DB) or construction manager-at-risk (CMAR), the Sponsor may use the  
321 competitive proposal approach for selection provided price and other factors such as  
322 qualifications, skill, experience, and design approach are considered when selecting a  
323 firm to perform this service. The selection of a professional services firm is the only  
324 instance where prices must be excluded as a consideration under a competitive proposal  
325 selection. Please reference Appendix G, Alternative Project Delivery Systems, of this  
326 Advisory Circular for guidance in procuring these types of services.

## 327 2.5 **Selecting Organization.**

328 2.5.1 Within the sponsor's organization, an administrative policy should be established for  
329 designating persons authorized to select or recommend consultants for various  
330 assignments. The persons designated may include the administrator or the department  
331 head to be supplemented by others making up a selection board. The persons  
332 empowered to make the selection of one consultant over another must be kept free of  
333 pressures, both internal and external. Section 18.36(b)3 requires that sponsors maintain  
334 a written code of standards of conduct governing the performance of their employees  
335 engaged in the award and administration of contracts. They must not participate in  
336 selection or in the award or administration of a contract supported by Federal funds if a  
337 conflict of interest, real or apparent, would be involved.

338 2.5.2 The typical procedure for selecting a consultant is to use a selection board composed of  
339 at least three persons, with at least one being an engineer, airport planner, or other  
340 professional knowledgeable of the service required. For projects that have special  
341 design requirements or are particularly complex, the selection board should have  
342 additional technical members with the appropriate expertise in those required  
343 disciplines. The board should be prepared to evaluate potential consultants, i.e.,  
344 conduct interviews and inquiries as desired and make recommendations to the  
345 governing body in accordance with Paragraph 2.8.14.

## 346 2.6 **Policy for Selection.**

347 2.6.1 The selection of a consultant must be based on a comparative analysis of the professional  
348 qualifications necessary for satisfactory performance of the service required. Moreover,  
349 the selection process must satisfy requirements for open and free competition.

- 350 2.6.2 Sponsors may procure a consultant for several projects through one procurement action  
351 provided the following conditions are met:
- 352 1. The consultant is selected using the qualifications based selection procedures  
353 described in paragraph 2.8.
  - 354 2. The parties competing for the work must be advised that the work may be  
355 accomplished during the course of grants. The expected schedule of projects must  
356 be defined, together with the Scope of Work and the required services. The  
357 statement of work must be described in specific detail so that all parties may  
358 adequately establish the type of services required to accomplish the work. Avoid  
359 generic statements of work.
  - 360 3. All parties are advised that some of the services may not be required and that the  
361 sponsor reserves the right to initiate additional procurement action for any of the  
362 services included in the initial procurement.
  - 363 4. The services are limited to those projects that can reasonably be expected to be  
364 initiated within five (5) years of the date the contract is signed by the consultant.  
365 Unless otherwise approved by the FAA, projects may not be added after the original  
366 selection is made. Sponsors that want to add projects not included in the original  
367 procurement action must conduct a separate and new procurement action.
  - 368 5. If more than one party is selected, the expected projects to be performed by each  
369 party must be defined, together with the Scope of Work and the required services, at  
370 the time of the initial procurement action. The sponsor must provide notification to  
371 each firm of the projects they were awarded. Sponsors must avoid the practice of  
372 selecting multiple firms and assigning project responsibility at a later date.
  - 373 6. The negotiation of the fee is limited to the services expected to be performed under the  
374 initial grant (first grant negotiated during the contract period). The contract must be  
375 limited to the services covered by the negotiated fee. The negotiation of the fee for  
376 subsequent services, i.e., services included in the procurement action but not in the  
377 initial contract, must occur at the time those services are needed. A fee estimate must  
378 be performed for each of these negotiations. (See paragraph 2.12 for information on  
379 fee estimate.) If a fee cannot be agreed upon between the sponsor and the selected  
380 firm, then negotiations are terminated with that firm. However, rather than entering  
381 into negotiations with the firm ranked next in place at the time the initial contract was  
382 negotiated, a new procurement action must be initiated (Order 5100.38, Chapter 9).
- 383 2.6.3 Unless there is a convincing reason to combine eligible and ineligible projects in a  
384 single solicitation, sponsors are discouraged from doing so (Order 5100.38).
- 385 2.7 **Selection Criteria.**
- 386 2.7.1 Based on the proposed scope of service(s) and prior to evaluating consultants, a  
387 sponsor(s) must develop a list of selection criteria to be used in evaluating potential  
388 consultants. Numerical rating factors (ranges) should be assigned to each criterion on  
389 the basis of the sponsor's priorities and conception of the importance of each factor in  
390 the attainment of a successful project. The sponsor(s) should include the criteria with a  
391 Request for Qualifications (RFQ) in advance of the selection process.

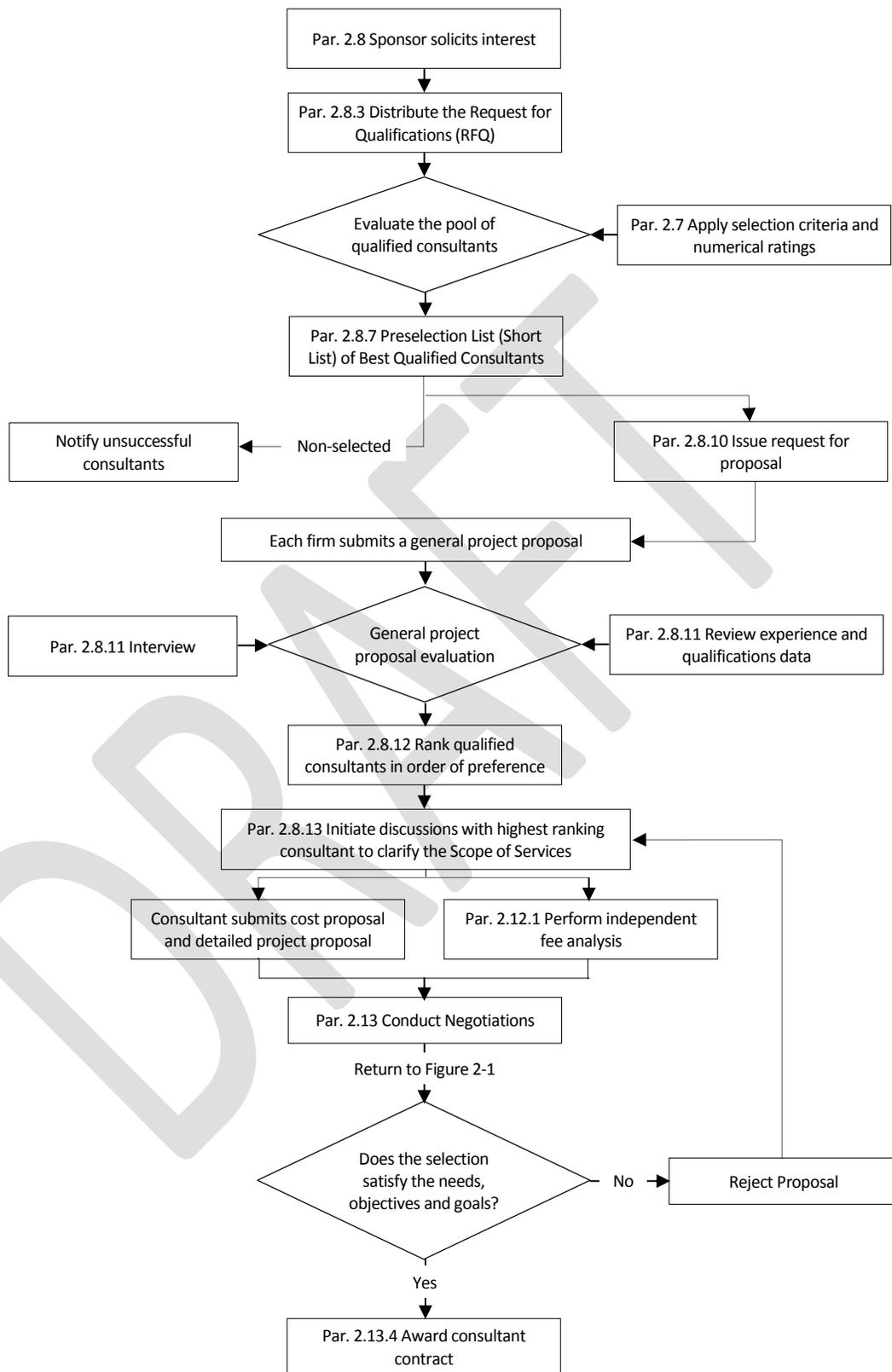
- 392 2.7.2 Based on a sponsor's goals/objectives for each project, the list of selection criteria will  
393 vary for each RFQ and must be appropriate for the proposed scope of services.  
394 Suggested selection criteria include, but are not limited to, the following:
- 395 1. Capability to perform all or most aspects of the project and recent experience in  
396 airport projects comparable to the proposed task.
  - 397 2. Key personnel's professional qualifications and experience and availability for the  
398 proposed project; their reputation and professional integrity and competence; and  
399 their knowledge of FAA regulations, policies, and procedures.
  - 400 3. Capability to meet schedules or deadlines.
  - 401 4. Quality of projects previously undertaken and capability to complete projects  
402 without having major cost escalations or overruns.
  - 403 5. Qualifications and experience of sub-consultants regularly engaged by the  
404 consultant under consideration.
  - 405 6. Capability of a branch office that will do the work to perform independently of the  
406 home office, or conversely, its capability to obtain necessary support from the home  
407 office. The use of geographic location may be a selection criteria provided its  
408 application leaves an appropriate number of qualified firms, given the nature and  
409 size of the project, to compete for the contract.
  - 410 7. Ability to furnish qualified inspectors for construction inspection if applicable.
  - 411 8. Understanding of the project's potential challenges and the sponsor's special  
412 concerns.
  - 413 9. Degree of interest shown in undertaking the project and their familiarity with and  
414 proximity to the geographic location of the project.
  - 415 10. Capability to incorporate and blend aesthetic and architectural concepts with the  
416 project design while accomplishing the basic requirements that transportation  
417 facilities be functional, safe, and efficient.
  - 418 11. Evidence that the consultant has made good faith efforts in meeting Disadvantaged  
419 Business Enterprise (DBE) goals (49 CFR, § 26.53).
  - 420 12. Capability to conduct a Value Engineering (VE) study for projects that are  
421 particularly complex or have unique features. Order 5100.38, Chapter 10, AC  
422 150/5300-15, *Use of Value Engineering for Engineering and Design of Airport*  
423 *Grant Projects*, and AC 150/5370-10, *Standards for Specifying Construction of*  
424 *Airports*, contain additional guidance on VE studies.

## 425 2.8 **Selection Procedures.**

426 The sponsor must use the following selection procedures or equivalent State/sponsor  
427 qualifications based selection for individual project selections or multi-year selections  
428 involving Federal airport grants (see Figure 2-1 and Figure 2-2). This process applies to  
429 both selections for individual projects and for multiple projects that may be  
430 accomplished over the five year period.

431

**Figure 2-2. Consultant Selection Process**



432

- 433 2.8.1 The selection board should review the nature of the proposed project and the general  
434 scope of services to be procured in order to ensure an understanding of the project  
435 requirements and the qualifications needed by the consultant.
- 436 2.8.2 As discussed in paragraph 2.7, the selection board must develop the selection criteria  
437 and the evaluation system used in preparing a pre-selection short-list of consultants who  
438 are best qualified for the project as well as in determining the final selection.
- 439 2.8.3 To obtain experience and qualification data from potentially qualified consultants, the  
440 sponsor should issue an RFQ inviting consultants to submit their experience and  
441 qualifications data relating to the proposed project usually in the form of a Statement of  
442 Qualifications (SOQ). To ensure the broadest publicity concerning sponsor interest in  
443 obtaining consultant services, public announcements for all projects should be  
444 advertised in local newspapers with a wide circulation, national trade journals and  
445 magazines, and through electronic media. Public announcements should include  
446 information such as a description of the proposed project and its location, a description  
447 of the services, and the estimated range of construction costs. The public  
448 announcement should allow sufficient time for submission of the statement of  
449 qualifications.
- 450 2.8.4 Sponsors may also send the public announcements directly to known, potentially  
451 qualified consultants to determine their interest in the project and to request their  
452 experience and qualification data.
- 453 2.8.5 Affirmative steps pursuant to 49 CFR part 18 and good faith efforts should be taken to  
454 assure that small and minority firms are used whenever possible, consistent with 49  
455 CFR part 26. These steps and efforts should include, but not be limited to, the  
456 following:
- 457 1. Include qualified small business and minority firms on solicitation lists.
  - 458 2. Assure that small business and minority firms are solicited whenever they are  
459 potential sources. Consultation with regional Airports Divisions, Office of Civil  
460 Rights, and/or State transportation offices is encouraged.
  - 461 3. Divide the total requirements into small tasks, when economically feasible, to  
462 permit maximum small business and DBE firm participation.
  - 463 4. Use the services and assistance of the Small Business Administration, the Minority  
464 Business Development Agency of the Department of Commerce, and the Minority  
465 Resource Center Regional Centers of the Department of Transportation  
466 (<http://osdbu.dot.gov>).
  - 467 5. Arrange solicitations, time for presentation of offers and delivery schedules to  
468 facilitate DBE and other small business participation.
  - 469 6. Encourage consultants to subcontract portions of the work, even when they might  
470 otherwise perform the work with their own forces.
- 471 2.8.6 There are many sources from which the names of consultants can be obtained. FAA  
472 Airports field offices may also furnish the names of consultants who have engaged in  
473 projects of similar nature in their areas of jurisdiction. However, with the exception of

474 an EIS, FAA personnel will not recommend consultants or participate in the selection  
475 process. The addresses of FAA Airports Regional/District Offices having jurisdiction  
476 over specific geographic areas are available at:  
477 [http://www.faa.gov/airports/news\\_information/contact\\_info/regional/](http://www.faa.gov/airports/news_information/contact_info/regional/)

478 2.8.7 From the experience and qualification data obtained from consultants, the selection  
479 board should prepare a pre-selection short-list of the best qualified consultants for  
480 further consideration. With adequate response to the RFQ, the typical pre-selection  
481 short-list should consist of between three and five consultants.

482 2.8.8 At this point, consultants who expressed an interest in the project but were not included  
483 on the pre-selection short-list should be notified that they were unsuccessful.

484 2.8.9 Detailed information on the qualifications and performance data of each of the  
485 consultants on the pre-selection short-list should be obtained. This can be achieved by  
486 contacting former clients identified by the consultant in their statement of qualifications  
487 to ascertain the quality of work, ability to meet schedules, cost control, and consultant-  
488 client relationship.

489 2.8.10 At this point, the selection organization may elect to obtain a general project proposal  
490 from each of the firms on the pre-selection short-list, typically by issuing a Request for  
491 Proposal (RFP) to each consultant on the pre-selection short-list. The RFP should  
492 include a detailed description of the project and the proposed scope of services required.  
493 The selection criteria, including their relative importance that will be used to evaluate  
494 the proposals must also be made available to each of the firms on the pre-selection  
495 short-list. The RFP may not contain a request for any cost information, such as total  
496 cost, cost per hour, work hours, or other pricing data. Requests for cost or pricing  
497 information, prior to discussions with the best qualified firm, to define the scope of  
498 services is contrary to 49 USC § 47107 (a) 17 and 49 CFR § 18.36(d)(3). The general  
499 project proposal will help the selection board recommend a consultant who can achieve  
500 design excellence, while successfully controlling time and costs and who has the ability  
501 to understand and accomplish the specialized requirements of the project. The elements  
502 of a typical general project proposal should include, but are not limited to, the  
503 following:

- 504 1. Team members, other key personnel, previous experience, and the role they will fill  
505 on the project. The qualifications and time commitment of the project manager  
506 proposed for the project.
- 507 2. Current workload.
- 508 3. Proposed project schedule, including major tasks and target completion dates.
- 509 4. Technical approach – a brief discussion of the tasks or steps that the consultant will  
510 take to accomplish the work described in the scope of services.
- 511 5. Value engineering – when a value engineering study is included in the selection  
512 criteria, a brief discussion of the consultant’s capability, training, and experience to  
513 carry out such a study.

514 2.8.11 Conduct interviews with each consultant on the pre-selection short-list. On small  
515 projects, a telephone interview may be sufficient. Careful consideration of time and

516 | cost should be given to the need for formal interviews. If sponsor has received  
517 | sufficient information included in the qualification submission to make a selection, then  
518 | formal interviews may not be necessary.

519 | 2.8.12 Review the experience and qualifications data, the general project proposal, the  
520 | interview results, and other relevant data. Using the selection criteria developed for the  
521 | project; rank the qualified consultants in order of preference.

522 | 2.8.13 Initiate discussion with the first-ranked consultant to fully define the scope of work and  
523 | services to be provided (see paragraph 2.11). After agreement on a detailed scope of  
524 | services has been reached, the consultant should submit their cost proposals together  
525 | with a detailed project proposal. Negotiations should then be conducted to reach a fair  
526 | and reasonable fee, subject to the procedures indicated in paragraphs 2.12 and 2.13.

527 | 2.8.14 Prepare a report that documents the Sponsor's procurement actions and the selection of  
528 | the consultant they deem most qualified. The report must contain sufficient detail to  
529 | indicate the extent of the review and the considerations used for the recommendations.  
530 | The report should be forwarded to the sponsor's administrator or governing body  
531 | authorized to review the recommendations of the selection board. The  
532 | recommendations of the selection board should normally be accepted unless the report  
533 | does not adequately support the recommendations. This will help to ensure complete  
534 | fairness and open competition. If the recommendations are not accepted, the selection  
535 | board should reconvene until acceptable recommendations have been agreed upon.

## 536 | 2.9 **Alternate Selection Procedures.**

### 537 | 2.9.1 Proposals Requested with Qualification Data.

538 | The selection procedure recommended in paragraph 2.8 should normally be followed in  
539 | the procurement of consulting services. For small projects where the scope of work and  
540 | services can be clearly defined or the sponsor anticipates receipt of less than four  
541 | proposals, the sponsor may wish to solicit proposals at the time of advertising for  
542 | experience and qualification data. In this case, the announcement must contain a  
543 | detailed scope of services and indicate where the selection criteria can be obtained. The  
544 | advertisement cannot request pricing information.

### 545 | 2.9.2 Informal Procedures.

546 | 2.9.2.1 Informal Qualifications Based Selection procedures may be used for A/E  
547 | procurements estimated to be less than \$100,000. However, this does not  
548 | relieve the sponsor from the obligation to perform a cost analysis and  
549 | prepare an independent fee estimate (see paragraph 2.12). Sponsors must  
550 | consult with FAA Airport personnel before using informal procedures to  
551 | assure that the circumstances justify their use.

552 | 2.9.2.2 Under this procedure, a sponsor must contact at least three firms and discuss  
553 | their qualifications to perform the work. Negotiations must then be  
554 | conducted with the best-qualified firm to arrive at a fee. These negotiations  
555 | may be conducted via telephone or e-mail. After selection, using this

556 | procedure, the sponsor must document their procurement action and then  
557 | submit a statement to the FAA explaining the basis for the selection and  
558 | method used to determine reasonableness of the fee.

559 | 2.9.2.3 The informal selection process may not be used to select a firm for multiple  
560 | projects.

561 | 2.9.3 Non-competitive Procedures.

562 | The FAA may authorize non-competitive negotiation for services if the cost of the contract  
563 | is not expected to exceed \$10,000 and the services are incidental to the grant project.

564 | When this procedure is used, the sponsor must submit a statement to the FAA explaining  
565 | the basis used to determine reasonableness of cost as discussed in 2.9.2 above.

566 | 2.10 **Selection Procedures for Environmental Impact Statement (EIS) Preparation.**

567 | The procurement of consultant services to assist the FAA in preparing an EIS is  
568 | somewhat unique because the regulations implementing the National Environmental  
569 | Policy Act (NEPA) (42 USC § 4321 et seq.), require Federal agencies to prepare the  
570 | EIS or select the contractor that prepares the EIS (Orders 5050.4 and 1050.1 provide  
571 | additional guidance). Selection of a consultant must, therefore, be made by the FAA  
572 | from a short-list of qualified consultants submitted by the sponsor. The sponsor and the  
573 | FAA must follow the selection procedures recommended in paragraph 2.8 with the  
574 | following exceptions:

- 575 | 1. The proposed scope of work is to be provided by the FAA.
- 576 | 2. The FAA must concur with the selection and evaluation criteria prepared by the  
577 | sponsor.
- 578 | 3. The FAA will be invited to participate with the sponsor in the interviews with  
579 | consultants on the pre-selection short-list.
- 580 | 4. The sponsor may indicate to the FAA their ranking of the consultants on the pre-  
581 | selection short-list after the interview process has been concluded. The FAA,  
582 | however, is under no obligation to make a selection based on this ranking.
- 583 | 5. Using the previous sponsor/FAA agreed upon selection and evaluation criteria, the  
584 | FAA will independently evaluate and rank the consultants on the pre-selection  
585 | short-list in order of preference, based on qualifications.
- 586 | 6. The FAA must advise the sponsor of the FAA's ranking in order of preference, and  
587 | the sponsor must advise and initiate discussions with the consultant ranked first.
- 588 | 7. The FAA will be invited to discussions on the scope during any IFE process  
589 | conducted by the Sponsor or their consultant, as necessary.
- 590 | 8. The FAA's involvement in the negotiation of the project cost must be limited to  
591 | making a reasonableness determination once a satisfactory cost proposal has been  
592 | reached between the sponsor and the consultant.
- 593 | 9. The FAA must prepare a selection report for its records.

594 2.11 **Scope of Services.**

595 2.11.1 An important step in the negotiation process is to reach a complete and mutual  
596 understanding of the scope of services to be provided. The general scope of services  
597 developed during initiation of the procurement process is of necessity too broad to serve  
598 as the basis for a contractual agreement. A well-defined project description and scope  
599 of services should be developed between the sponsor and first-ranked consultant prior to  
600 negotiating a project design fee. This may be accomplished in a scoping meeting or  
601 separate investigation or study to clearly define the extent of the project. The sponsor's  
602 engineer or independent consultant (see paragraph 2.12) should attend the meeting so  
603 they will have a complete understanding of the scope of services prior to developing a  
604 detailed fee estimate. Such a meeting offers the opportunity for refinement,  
605 amendment, and complete definition of the services to be rendered.

606 2.11.2 The scope of service(s) must be sufficiently detailed so that the consultant can make a  
607 reasonable fee estimate (see Appendix E). Although the scope of service(s) will vary  
608 from project to project (see samples in Appendix C), the following items are typical of  
609 those that should be considered in developing the scope of services:

- 610 1. List of meetings the consultant is expected to attend.
- 611 2. Design schedule.
- 612 3. Special services required.
- 613 4. Complexity of design.
- 614 5. Safety and operational considerations.
- 615 6. Environmental considerations.
- 616 7. Survey and geotechnical testing requirements.
- 617 8. Sponsor representation services during construction.
- 618 9. Quality control during construction.
- 619 10. Preparation of forms, letters, documents, and reports.
- 620 11. Airport Layout Plan updates.
- 621 12. Property map preparation.
- 622 13. Quality control during design.
- 623 14. Coordination with other consultants and agencies.
- 624 15. Deliverables.
- 625 16. Data and material furnished by the sponsor.
- 626 17. Testing and commissioning requirements.
- 627 18. City/county requirements.
- 628 19. Number of bid packages.
- 629 20. Complexity of construction phasing to minimize impacts on airport operations.
- 630 21. Public Outreach.

- 631 2.12 **Independent Fee Estimate.**
- 632 2.12.1 A sponsor must perform a price or cost analysis for every A/E contract (49 CFR §  
633 18.36(f)). The method and degree of analysis is dependent on the facts surrounding the  
634 contract. To properly evaluate the cost of professional services an independent fee  
635 estimate (IFE) is required, prior to receiving the consultant's proposal, as part of the  
636 cost analysis for all A/E contracts and contract modifications. The word "independent"  
637 does not imply that the IFE has to be performed by someone other than the sponsor.  
638 Preparation of an IFE can be completed in a number of ways, such as the following, or  
639 as approved by your local ADO:
- 640 1. A sponsor having a staff with experience in estimating the professional services and  
641 negotiating contracts for these services can develop its own IFE for the services,  
642 based on the scope of services agreed upon in paragraph 2.11.
  - 643 2. Sponsors having no staff with this expertise or having minimal or no previous  
644 experience may engage the services of a consultant on retainer for preparation of  
645 the IFE provided the consultant has experience with the services involved and who  
646 is not being considered for the project.
  - 647 3. Alternatively, an independent engineering, architecture, or planning consultant may  
648 be retained to prepare an IFE provided this consultant was not on the pre-selection  
649 short-list. The consultant must have recent experience in airport work similar to  
650 that proposed and be familiar with FAA requirements and procedures. The sponsor  
651 should request evidence that the consultant meets the above requirements.
- 652 2.12.2 State aviation personnel who have experience with the services involved may also  
653 prepare the IFE for the sponsors use.
- 654 2.12.3 The level of detail needed to satisfy the requirements of an IFE varies and is dependent  
655 on the anticipated value of the A/E contract. For contracts with an anticipated value  
656 less than \$100,000 the sponsor can satisfy the IFE requirement by comparing the A/E  
657 contract with previous contracts of a similar nature, or preparing a detailed fee/cost  
658 analysis (see Appendix E). At a minimum, the independent estimate must address  
659 direct labor work hours, labor rates, general and administrative overhead, non-salary  
660 expenses and a reasonable profit. For contracts anticipated to be greater than \$100,000 a  
661 detailed fee/cost analysis is required.
- 662 2.12.4 If the sponsor hires a consultant to perform any of these functions, the consultant may  
663 be retained using informal qualifications based procedures (see paragraph 2.9.2);  
664 however, that consultant will not be eligible for consideration to perform work on the  
665 project.
- 666 2.12.5 When evaluating the reasonableness of a consultant's fee proposal, a general review  
667 standard used within the FAA and industry is whether the total fee proposal, as well as  
668 individual tasks within the proposal, is within 10% the IFE. When the consultant's fee  
669 proposal and the sponsor's IFE are within 10% of each other, the fee can be determined  
670 to be reasonable. When differences exceed 10%, the sponsor must review individual  
671 task elements with the consultant to determine if there is a misunderstanding of the  
672 scope of services or level of effort required to complete the work. The sponsor then  
673 enters into negotiations for the purposes of resolving differences in cost and time.

674 While this should not be construed as policy, the use of the 10% standard is one method  
675 to help identify areas of significant difference between the consultant's fee proposal and  
676 the IFE.

677 2.12.6 Another source on estimating consultant's cost can be found in ASCE Manuals and  
678 Reports on Engineering Practice No. 45, "How to Work Effectively with Consulting  
679 Engineers." However, these graphs must be used with judgment and within their stated  
680 limitations. Other resources include project history files, previous contracts, etc.

681 2.12.7 Sponsors have an obligation to obtain a fair and reasonable fee in all cases. Prior to  
682 initiating further discussions with the first-ranked consultant, the sponsor must sign and  
683 date the IFE and retain it for their records. Appendices F and G present sample formats  
684 for consultant services fee/cost and detailed fee/cost analysis respectively, however any  
685 format that meets this purpose is acceptable. The FAA retains the right to disallow  
686 negotiated fees that the FAA determines to be unreasonable.

## 687 2.13 **Negotiations.**

688 2.13.1 After developing a detailed scope of services and after the IFE requirements have been  
689 satisfied per Par. 2.12.2, the sponsor must enter into negotiations with the consultant  
690 given first preference by the selection board. At this time the sponsor may elect to  
691 inform the other firms on the pre-selection shortlist that negotiations have been initiated  
692 with the first-ranked firm. If an independent firm has been retained by the sponsor for  
693 the purpose of preparing an independent fee estimate, the firm may be consulted by the  
694 sponsor during negotiations, to clarify problem areas, but not to review the consultant's  
695 fee proposal or attend any negotiating sessions.

696 2.13.2 Based on the scope of services agreed upon in paragraph 2.11, the sponsor must request  
697 the consultant to submit the proposed fee and supporting cost breakdown. The  
698 consultant must prepare a detailed estimate of the hours and cost required for each of  
699 the major tasks. In addition to charges for labor, the consultant should, if appropriate,  
700 indicate the costs for subcontractors, travel, living expenses, reproduction, and other  
701 out-of-pocket expenses expected to be incurred.

702 2.13.3 Negotiations should be based upon the data submitted by the consultant and an  
703 evaluation of the specific work hours required for each task. The sponsor should  
704 subject the consultant's data to a technical/engineering analysis. Based on this analysis,  
705 the sponsor should identify differences in the work-hour estimates. Significant  
706 differences, either positive or negative, between the estimate submitted by the  
707 consultant and the estimate developed by the sponsor should be resolved, and revisions  
708 should be made to the work hours or scope of services as required. The fee should then  
709 be evaluated, taking into consideration the experience level required by the engineer  
710 working on each task. A sample fee/cost analysis form is shown in Appendix E.

711 2.13.4 If a mutually satisfactory contract cannot be negotiated with the first-ranked consultant,  
712 the negotiations must be terminated and the consultant notified. Negotiations must then  
713 be initiated with the consultant given second preference by the selection board. This  
714 procedure must be continued with recommended consultants in the sequence of ranking

- 715 established by the selection board until a mutually satisfactory contract has been  
716 negotiated. Once negotiations have been terminated with a firm and begun with  
717 another, they cannot be reopened with the former firm.
- 718 2.13.5 A record of negotiations must be prepared by the sponsor and included in the contract  
719 file. This record must contain sufficient detail to reflect any changes in the scope of  
720 services controlling the establishment of the cost and other terms of the contract. An  
721 explanation must be provided for any significant differences between the sponsor's  
722 original estimate and the final fee agreed upon. The scope of services, draft contract,  
723 sponsor's independent fee estimate, consultant's fee proposal with any revisions, and  
724 detailed fee analysis must be attached to the report. A sample Record of Negotiations is  
725 contained in Appendix F.
- 726 2.13.6 Upon completion of successful negotiations, all consultants interviewed by the selection  
727 board should be informed of the consultant selected for the project.
- 728 2.13.7 FAA personnel will not be present and will not participate in the negotiation process.  
729 The FAA's role is to make a judgment on the reasonableness of the compensation for  
730 the services to be furnished and to ensure that all services required for a particular  
731 project have been included in the proposal.
- 732 2.13.8 If requested by the FAA, the sponsor must submit the record of negotiations and all  
733 attachments to the FAA for a reasonableness of cost determination (Order 5100.38,  
734 Chapter 9).
- 735 2.14 **Sponsor Force Account Projects.**  
736 Proposals to accomplish airport engineering with the sponsor's own personnel or by its  
737 agent must be approved by the FAA. Proposals must be submitted in writing and  
738 subjected to a review similar to that for engineering contracts. Most of the factors  
739 considered in the selection of a consultant would be applicable to approval of services  
740 to be done by force account. The sponsor's proposal to use force account rather than  
741 contract-engineering services must be fully documented and should contain as a  
742 minimum:
- 743 1. Justification for doing the work by force account rather than by contract;
  - 744 2. Estimate of costs, including detailed data on estimated work hours, hourly rates,  
745 non-salary expenses, and indirect costs;
  - 746 3. Names and engineering qualifications of personnel that will be accomplishing  
747 specific tasks;
  - 748 4. Statements concerning the capability of the sponsor to perform the various tasks of  
749 design, supervision, inspections, testing, etc., as applicable to the project with  
750 arguments to support the decision to use force account;
  - 751 5. Summary of sponsor's experience with airport engineering pertaining to projects  
752 with similar design scopes; and

753  
754  
755

6. Statement by the sponsor on the ability of its personnel to integrate the project into their workload, with a schedule of accomplishment of tasks, date by which the work will be completed, or dates within which it will take place.

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**CHAPTER 3. CONTRACT FORMAT AND PROVISIONS**757 3.1 **General.**

758 3.1.1 The relationship of the consultant with the sponsor should be clearly defined by a  
759 written agreement before commencement of actual work. All of the terms should be  
760 clearly defined in the agreement. It should state the parties to the contract and define  
761 the complete extent and character of the work to be performed as well as conditions  
762 relating to any time limitations that may be involved. The terms and payments for  
763 various services should be included. The scope of the consultant effort should be  
764 described in complete detail to determine the sufficiency of the supervisory and  
765 inspection staff and to determine whether some services will need to be otherwise  
766 contracted for or be provided by the sponsor.

767 3.1.2 Consultant contracts usually cover highly technical services. Therefore, to assure the  
768 soundness of a legal document, it is essential that someone who has thorough  
769 knowledge of the project prepare the sections describing services to be performed,  
770 sequence of work, information to be furnished by the sponsor, and terms of payment.

771 3.2 **Contract Format.**

772 Many government agencies, business firms, and engineering organizations have  
773 developed standardized forms for engineering and planning contracts. The American  
774 Council of Engineering Companies, the National Society of Professional Engineers, and  
775 the American Society of Civil Engineers have developed such standardized forms.  
776 Some State aviation departments have developed standardized forms for engineering  
777 services provided in their own states. The American Institute of Architects has  
778 standardized forms for architectural contracts. It is often necessary to modify these  
779 standard agreements to reflect the specific terms and conditions applicable to a  
780 particular project, as well as the mandatory contract provisions in paragraph 3.4.

781 3.3 **Division of Responsibility and Authority.**

782 3.3.1 It is common to have one firm provide the basic services and one or more firms provide  
783 special services. In these cases, the firm providing the basic consultant services is  
784 considered the primary engineer or principal consultant as defined in Appendix A. As  
785 such, the principal consultant represents the sponsor in coordinating and overseeing the  
786 work of other engineering/consultant firms and has the overall responsibility to  
787 coordinate the work and to review the work products for general conformance to the  
788 requirements of the sponsor. Therefore, it is extremely important that the contract  
789 documents clearly specify the division of responsibility and authority between all  
790 parties involved in carrying out elements of the project.

791 3.3.2 The contract between the sponsor and consultant is based on the scope of services  
792 established earlier in the process (see paragraph 2.11) and involves carrying out  
793 professional duties under the requirements of law. The contract must not attempt to  
794 make the consultant an indemnitor of the sponsor such as in the event of the sponsor's

795 negligence or the absence of any wrongdoing by the consultant. The consultant must  
796 fully stand behind their services and indemnify the sponsor for damages and expenses  
797 caused by their own errors, omissions, and negligent or wrongful acts.

798 3.3.3 Expanding the consultant's liability beyond the scope or purpose of a contract could  
799 affect the competitive process of contract award in a way that conflicts with the  
800 requirements of 49 CFR part 18 and may impact Federal eligibility.

801 3.4 **Mandatory Contract Provisions.**

802 3.4.1 Federal laws and regulations prescribe that certain provisions be included in federally  
803 funded contracts. For purposes of this section, the term "contract" includes  
804 subcontracts. The type of contract must be appropriate for the particular procurement.

805 3.4.2 The provisions that pertain to consultant contracts, including the source of each  
806 requirement are listed in Table 3-1. Specific wording of Federal contract provisions is  
807 available on the FAA website at <http://www.faa.gov/airports/aip/procurement/>.

808 **Table 3-1. Mandatory Federal Contract Provisions for Professional Services (A/E)**  
809 **Contracts**

Provision	Law/Statute
<b>Provisions for all A/E Contracts</b>	
Civil Rights Act of 1964, Title VI - Contractor Contractual Requirements	49 CFR part 21
Airport and Airway Improvement Act of 1982, Section 520	49 USC § 47123
Participation by Disadvantaged Business Enterprises	49 CFR part 26
New Restrictions on Lobbying	49 CFR part 20
Access to Records and Reports	49 CFR § 18.36
Breach of Contract Terms	49 CFR § 18.36
Rights to Inventions	49 CFR § 18.36
Trade Restriction Clause	49 CFR part 30
<b>Additional Provisions for A/E Contracts Exceeding \$10,000</b>	
Termination of Contract	49 CFR § 18.36
<b>Additional Provisions for A/E Contracts Exceeding \$25,000</b>	
Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion	49 CFR part 29

810 3.5 **Time Overruns Beyond Control of the Consultant.**

811 Frequently, the consultant is called upon to continue technical inspection services on  
812 construction contracts overrunning the program schedule contemplated at the time of  
813 negotiation. In most instances, the time element is beyond the control of the consultant.  
814 To provide for the contingency of overrun of time, the agreement between the sponsor  
815 and the consultant should state the period for which the compensation applies and that  
816 the consultant must be reimbursed for services in excess of the specified period of time  
817 at a mutually acceptable fee negotiated at the time all the pertinent circumstances are  
818 known. The cost of additional consultant technical inspection services that would result  
819 from contractor caused construction delays should be included in the liquidated  
820 damages established for construction contracts.

821 3.6 **Ownership of Drawings and Contract Documents.**

822 3.6.1 Original documents, such as tracings, plans, specifications, maps, basic survey notes  
823 and sketches, charts, computations, and other data prepared or obtained under the terms  
824 of the contract, are instruments of service and remain the property of the consultant  
825 unless otherwise agreed to by both parties. Reproducible copies of drawings and copies  
826 of other pertinent data should be made available to the sponsor upon request. Electronic  
827 copies containing all drawings should be furnished to the sponsor. Terms and  
828 conditions for sponsor's reuse of documents/data on other projects should be addressed  
829 in the contract.

830 3.6.2 When a contract is only for preliminary plans, no commitment that would constitute a  
831 limitation on the subsequent use of the preliminary plans or ideas incorporated therein  
832 should be stated or implied.

833 3.7 **Contract Checklist.**

834 The following checklist identifies important items and provisions to be considered in  
835 preparing any contract for consultant services. It is not all-inclusive because each  
836 contract will vary based on the unique requirements of the project scope of services.

- 837 1. Effective date of contract.
- 838 2. Names and descriptions of the parties to the agreement with their addresses and, in  
839 the case of a corporate body, the legal description of the corporation.
- 840 3. Nature, extent, and character of the project, the location thereof, and the time  
841 limitations.
- 842 4. Services, including performance and delivery schedules, to be rendered by the  
843 consultant.
- 844 5. Delineation of responsibilities of the consultant, the sponsor, and other consultants  
845 and parties involved in the performance of the project, particularly key personnel  
846 such as the project manager.
- 847 6. Delineation of the duties and responsibilities of the resident engineer/inspector.
- 848 7. Inclusion of mandatory contract provisions identified in paragraph 3.4.

- 849 8. Provision for renegotiation of the contract on the basis of change in the scope of the  
850 project, changes in conditions, additional work, etc.
- 851 9. Provision that reproducible copies of planning and design drawings and  
852 specifications be made available to the sponsor upon request.
- 853 10. Compensation, including methods of payment and payment schedules, for services  
854 to be rendered by consultants.
- 855 11. Provision for the termination of the consultant services before completion of work.
- 856 12. Provision for preparation of a Quality Control Plan as required by the special  
857 provisions of the grant agreement.
- 858 13. Provision for preparation of an Engineer's Design Report and Final Report.

859 3.8 **FAA Contract Review.**

860 3.8.1 FAA Airports field office personnel are available to assist the sponsor and provide  
861 guidance on:

- 862 1. The scope of services to be provided;  
863 2. The appropriate type of contract;  
864 3. The mandatory contract provisions to be included; and  
865 4. Sponsor certification requirements.

866 3.8.2 If deemed necessary by the FAA, a draft of the contract will be submitted to ensure that:

- 867 1. The scope of the engineering is described completely;  
868 2. The fees and reimbursements are reasonable and eligible as shown by a cost/price  
869 analysis;  
870 3. The type of contract is appropriate; and  
871 4. The engineering/consulting firm and the proposed contract terms are acceptable.

872 3.8.3 Pre-award review of proposed contracts is required under certain circumstances.  
873 Additional guidance is available in Order 5100.38, Chapter 9.

874 3.9 **FAA Contract Approval.**

875 FAA Airports offices are authorized to accept certifications from sponsors that they will  
876 comply with statutory and administrative requirements. Use of sponsor certifications  
877 for selection of engineering, architectural, professional services, and planning  
878 consultants is encouraged. Acceptance by the FAA of the sponsor's certification does  
879 not limit the FAA's ability to request and review documentation to ensure the accuracy  
880 of the certification. Reference Order 5100.38, Chapter 10 and Appendix 5, *Sponsor*  
881 *Certification Forms*, "Selection of Consultants;" and 49 USC 47105 (d).

**882 CHAPTER 4. METHODS OF CONTRACTING AND ALLOWABLE COSTS****883 4.1 General.**

884 The method of contracting selected for consultant services is dependent on the types of  
885 services required and specific circumstances relating to the individual project. The  
886 various types of contracts and methods of compensation are discussed in this chapter  
887 and listed in Table 4-1. Contracts may be negotiated to include a combination of two or  
888 more of these methods. With all of the following methods, the Sponsor must negotiate  
889 profit as a separate element of the price for each contract and supplemental agreement.  
890 When establishing a fair and reasonable profit, consideration must be given to the  
891 complexity of the work to be performed; the risk borne by the firm; the firm's  
892 investment; the amount of sub-consultants; the firm's record of past performance; and  
893 industry profit rates in the surrounding geographical area for similar work.

**894 4.2 Direct Personal Services.**

895 4.2.1 Direct personal services are usually charged on a per diem basis. This method is  
896 particularly suited to court work or similar efforts involving intermittent personal  
897 service.

898 4.2.2 When such consulting or expert services are furnished, the consultant is compensated  
899 for the time devoted to the work and travel. The per diem charge should be based on  
900 the complexity of the work involved and the experience of the consultant. In addition to  
901 the compensation based on per diem, the consultant is reimbursed for travel and other  
902 out-of-pocket expenses incurred while away from the normal place of business provided  
903 they are reasonable, allocable, and of a generally allowable nature. Additionally,  
904 reimbursable expenses at the normal place of business may be reimbursed, such as  
905 special computer work, rendering, exhibits, provided they are reasonable, allocable, and  
906 of a generally allowable nature.

907 4.2.3 Each direct personal services contract must include a ceiling price that the contractor  
908 exceeds at their own risk. Furthermore, the Sponsor must assert oversight in order to  
909 obtain reasonable assurance that the contractor is using efficient methods and effective  
910 cost controls.

911 4.2.4 For services in court or on other engagements in which the consultant appears as an  
912 expert, a per diem charge is considered to be earned for each day of such appearance,  
913 although the consultant may not be called to testify or, if called, may finish his/her  
914 testimony in a fraction of a day.

915 4.2.5 On occasion, the urgency of the engagement requires the consultant to work longer than  
916 the normal day. In some instances, this requirement is a necessary feature of the  
917 services, and an understanding should be made with the sponsor as to what constitutes a  
918 day. In such cases, the per diem rate may be based on the normal number of working  
919 hours per day, or the per diem rate may be increased to take into consideration the  
920 extended work day.

921 4.2.6 For certain kinds of work, compensation based on hourly rates is an equitable  
 922 arrangement. Compensation for consultant service on an hourly basis demands a higher  
 923 rate per hour than would be represented in a per diem rate. Also, the hourly rates  
 924 should apply to time for travel involved, plus reimbursement for travel costs,  
 925 subsistence, and other out-of-pocket expenses. Depending on the duration of the  
 926 services, compensation on an hourly basis may include an agreement on a preset  
 927 minimum amount or retainer in addition to the payments based on the hourly rates.

928 4.2.7 If public hearings are involved in the consultant services, determination of the fee could  
 929 present a problem since extensive hearings and follow-up work may be required. In  
 930 these instances, the per diem approach may be considered as an appropriate method of  
 931 payment for services rendered subsequent to the initial hearing. An estimated upper  
 932 limit should be set forth in the contract. The contract should provide for renegotiation  
 933 of the upper limit if unforeseeable conditions are encountered.

934

**Table 4-1. Contracting Methods and Allowable Costs**

<b>Contracting Method</b>	<b>Compensation</b>	<b>Allowable Cost</b>
<b>§4-2. Direct Personal Services</b>	<ul style="list-style-type: none"> <li>• Per Diem.</li> <li>• Hourly Rate (§4-2.6).</li> </ul>	Costs must be allowable, reasonable, and allocable to the project. Costs must be consistent with 49 CFR § 18.36, FAA Order 5100.38 and OMB Circular A-87.
<b>§4-3. Retainer</b>	<ul style="list-style-type: none"> <li>• Fixed sum.</li> <li>• Paid monthly.</li> <li>• Some other mutually agreeable basis.</li> </ul>	
<b>§4-4. Cost-Plus-a-Fixed-Fee (NTE)</b>	Fixed sum.	
<b>§4-5. Fixed Lump-Sum Payment</b>	Fixed sum.	
<b>§4-6. Cost-Plus-a-Percentage-of-Cost</b>	Prohibited method.	
<b>§4-7. Phasing of Work</b>	May include two or more of the above methods of compensation.	Costs must be allowable, reasonable, and allocable to the project. Costs must be consistent with 49 CFR § 18.36, FAA Order 5100.38 and OMB Circular A-87.

**Note:** See Paragraph 4.9 for non-allowable costs for all types of service.

See Appendix G for Alternative Project Delivery Systems.

- 935 4.3 **Retainer.**
- 936 4.3.1 The engagement of consultants on a retainer basis is a common practice. This practice  
937 assures the sponsor of always having the services of a certain individual engineer or  
938 organization available for future work. This method is used in cases of protracted  
939 litigation or for work over the years when the services of the consultant may be  
940 intermittent. It is also used in the development of undertakings for which the services  
941 of a consultant specialist are not required on a full-time basis. On large projects, this  
942 method enables the sponsor to have the specialists who prepared the original plans and  
943 specifications on hand for maintenance or additions.
- 944 4.3.2 The retainer fee varies with the character and value of the services to the sponsor and  
945 with the reputation and standing of the consultant in his/her profession.
- 946 4.3.3 The terms of agreement for services on a retainer basis vary widely. Compensation  
947 may be based on a fixed sum, paid monthly, or on some other mutually agreeable basis,  
948 with per diem or hourly rates in addition to time spent at the request of the sponsor. In  
949 any case, the same principles, explained previously for per diem or hourly charges,  
950 govern under retainer contracts.
- 951 4.3.4 This type of contract is rarely used for grant projects. However, it is permissible to use  
952 a firm on retainer for projects without further procurement action if:
- 953 1. The retainer contract was awarded as a result of competition.
- 954 2. The parties competing for the retainer were advised that subsequent grant funded  
955 projects (including the scope of work for those projects) would be performed under  
956 the retainer contract.
- 957 3. The price for the work performed under the grant will be fair and reasonable and  
958 supported by a price or cost analysis.
- 959 4.3.5 Detailed records should be kept to identify the work that is part of a Federal grant  
960 project and eligible for reimbursement.
- 961 4.4 **Cost-Plus-a-Fixed-Fee (Not to Exceed (NTE)).**
- 962 4.4.1 The cost-plus-a-fixed-fee contract is frequently used when the consultant is required to  
963 start work before the cost and scope of the project can be accurately determined. It is  
964 recommended that services for the construction phase of a project be paid for under a  
965 cost-plus-a-fixed-fee type contract.
- 966 4.4.2 This type of contract provides for reimbursement of allowable costs such as salary,  
967 overhead, and direct non-salary expenses, plus a fixed fee.
- 968 4.4.3 A cost-plus-a-fixed-fee proposal should be accompanied by the consultant's estimate.  
969 The estimate should detail the direct labor costs by categories of employees, work  
970 hours, and hourly rate; overhead; direct non-salary expenses; and the fixed fee.

- 971 4.4.4 The fee is fixed and does not vary no matter what the costs turn out to be. In most  
972 instances, however, a ceiling is applied which establishes an upper limit on the  
973 allowable costs. In establishing the upper limit, an allowance for contingencies should  
974 be included so that, as such contingencies are encountered, renegotiation of the upper  
975 limit will not be necessary. The intent of the upper limit is to ensure that the allowable  
976 costs do not exceed an agreed-upon ceiling without prior approval of the sponsor. (If  
977 Federal participation is desired in the increased cost, the sponsor must obtain the prior  
978 approval of the FAA.) Such contracts should contain provisions that provide for  
979 renegotiation of both the upper limit and the fixed fee if the scope of work described in  
980 the contract has changed.
- 981 4.4.5 Any increase in costs should be fully justified by the consultant prior to approval by the  
982 sponsor. As the consultant is approaching the upper limit and it becomes apparent that  
983 the project cannot be completed within that limit, the consultant should alert the  
984 sponsor. Approval must be obtained before the upper limit is exceeded.
- 985 4.4.6 Overhead charges will vary according to the nature, type, diversity, size of firm, and  
986 number/amount of contracts currently held by the firm. The consultant should be  
987 prepared to validate the overhead costs with a certified statement from the sponsor's  
988 auditor, state's auditor, or consultant's accountant. A firm can demonstrate that the non-  
989 allowable costs are not included in its overhead calculation rather than requiring a  
990 complete audit in advance of contracting. Otherwise, if the consulting firm has been  
991 audited by an agency of the Federal Government within the previous 12 months, the  
992 overhead rate determined by this audit may be used.
- 993 4.4.7 Fixed-fee is in addition to reimbursement for salary, overhead, and direct non-salary  
994 expenses. The consultant is paid a fixed amount for profit, willingness to serve, and  
995 assumption of responsibility. This may be an amount based on the estimated design  
996 cost of the project at the time the consultant is engaged and will vary with the scope of  
997 the services involved.
- 998 4.5 **Fixed Lump-Sum Payment.**
- 999 4.5.1 The fixed lump-sum payment contract is normally used when the scope of work can be  
1000 clearly and fully defined at the time the agreement for services is prepared.
- 1001 4.5.2 The fixed amount of compensation is determined by estimating the allowable costs such  
1002 as salary, overhead, and direct non-salary expenses, plus a reasonable margin of profit  
1003 all expressed as a single lump sum. A lump sum proposal must be accompanied by the  
1004 consultant's estimate. The estimate must detail the direct labor costs by categories of  
1005 employees, work hours, and hourly rate; overhead; direct non-salary expenses; and  
1006 profit.
- 1007 4.5.3 Where consultation is undertaken on a lump-sum basis, the agreement must contain a  
1008 clearly stated time limit during which the services will be performed. In design  
1009 contracts, there should be a provision for changes required after the approval of  
1010 preliminary designs with a clear understanding as to where the final approval authority  
1011 lies.

- 1012 4.5.4 Lump-sum contracts must contain a clause that provides for renegotiation if the scope  
1013 of work described in the contract has changed.
- 1014 4.5.5 Overhead charges will vary according to the nature, type, diversity, size of firm, and  
1015 number/amount of contracts currently held by the firm. Guidance is provided in  
1016 paragraph 4.4.6.
- 1017 4.6 **Cost-Plus-a-Percentage-of-Cost.**  
1018 Cost-plus-a-percentage-of-cost (CPPC) methods of contracting are prohibited for  
1019 consultant services under airport grant programs. CPPC contracts may be defined as a  
1020 payment formula based on a fixed predetermined percentage rate of actual performance  
1021 costs by which the sum of the consultant's entitlement, uncertain at the time of  
1022 agreement, increases commensurately with increased performance costs. The types of  
1023 contracts discussed below are based on the CPPC methods of contracting and, therefore,  
1024 are prohibited:
- 1025 | 1. Salary Cost Times a Percentage Multiplier, Plus Direct Non-salary Expense. This  
1026 | type of contract contains CPPC methods of contracting because the consultant's  
1027 | indirect cost and profit are not fixed at the time the contract is signed.
  - 1028 | 2. Percentage of Construction Costs. This type of contract contains CPPC methods of  
1029 | contracting since a portion of the consultant's fee that does not reflect actual costs  
1030 | constitutes a profit that is not fixed at the time the contract is executed.
- 1031 4.7 **Specific Rates of Compensation (Not to Exceed (NTE))**
- 1032 4.7.1 The "specific rates of compensation" payment method should only be used when it is  
1033 not possible at the time of procurement to estimate the extent or duration of the work or  
1034 to estimate costs with any reasonable degree of accuracy. Consultants must secure  
1035 advanced approval from both the Sponsor and the FAA for all work conducted under  
1036 this method.
- 1037 4.7.2 The "specific rates of compensation" payment method provides for reimbursement for  
1038 consultant services on the basis of direct labor hours at specified fixed hourly rates  
1039 (including direct labor costs, indirect costs, and fee (profit)) plus any other direct  
1040 expenses/costs, subject to an agreed maximum amount.
- 1041 4.7.3 While the inclusion of fee (profit) in the loaded hourly rate(s) established for a contract  
1042 allows the fee earned to be based on the labor hours worked on the project, this is not  
1043 considered a "cost plus a percentage of cost" payment method. A key distinction for the  
1044 "specific rates of compensation" payment method is that indirect costs and fee must be  
1045 recovered as a component of the established, fixed hourly billing rates for labor hours  
1046 worked. The negotiated rate is typically fixed for the life of the project, however, the  
1047 Sponsor must reserve the right (by contract) to audit and adjust multiplier rates.
- 1048 4.7.4 Use of this payment method requires close monitoring to ensure efficient methods and  
1049 cost controls are employed by the consultant.

1050 4.8 **Phasing of Work.**

1051 Design projects may be negotiated to be performed in phases and include two or more  
1052 of the foregoing methods of compensation. For example, the first phase of a project  
1053 might cover the development of the precise scope of work for a project and be paid for  
1054 under a cost-plus-fixed-payment contract. The follow-on work could then be negotiated  
1055 on the basis of information developed in the first phase and might be accomplished  
1056 under a lump-sum contract.

1057 4.9 **Allowable Costs.**

1058 Costs incurred must be consistent with the Federal cost principles contained in 48 CFR  
1059 part 31, Office of Management and Budget (OMB) Circular A-87, and FAA Order  
1060 5100.38 to be reimbursable under an airport planning or development grant. The  
1061 following are typical expenses allowable under the above regulations:

1062 1. Direct Salary Costs.

1063 a. Direct salary costs include the cost of salaries of engineers, planners, computer  
1064 aided design and drafting (CADD) technicians, surveyors, stenographers,  
1065 administrative support etc., for time directly chargeable to the project.

1066 b. Salaries or imputed salaries of partners or principals, to the extent that they  
1067 perform technical or advisory services directly applicable to the project, are to  
1068 be added to salary cost.

1069 2. Overhead Costs. Overhead costs include overhead on direct salary costs and  
1070 general and administrative overhead. See OMB Circular A-87 for additional  
1071 information on allowable overhead costs.

1072 3. Direct Non-salary Expenses. Direct non-salary expenses usually incurred may  
1073 include the following (detailed records must be kept to support charges and allow  
1074 auditing):

1075 a. Living and traveling expenses of employees, partners, and principals when  
1076 away from the home office on business connected with the project. (Records  
1077 must include employee name, dates, points of travel, mileage rate, lodging, and  
1078 meals.)

1079 b. Identifiable communication expenses such as long-distance telephone,  
1080 telegraph, cable, express charges, and postage, other than for general  
1081 correspondence.

1082 c. Services directly applicable to the work such as special legal and accounting  
1083 expenses, computer rental and programming costs, special consultants, borings,  
1084 laboratory charges, commercial printing and bindings, and similar costs not  
1085 applicable to general overhead.

1086 d. Identifiable computer and office supplies and stenographic supplies and  
1087 expenses charged to the sponsor's work as distinguished from such supplies and  
1088 expenses that are applicable to two or more projects.

1089 e. Identifiable reproduction costs applicable to the work.

- 1090 f. Advertising costs that are solely for the recruitment of personnel required for  
1091 the performance by the consultant of obligations arising under the contract.  
1092 g. Sub-consultant and outside services.

1093 4.10 **Non-Allowable Costs.**

1094 Costs incurred must be consistent with the Federal cost principles contained in 48 CFR  
1095 part 31, Office of Management and Budget (OMB) Circular A-87, and FAA Order  
1096 5100.38 to be reimbursable under an airport planning or development grant.

1097 4.11 **Fixed Fee.**

1098 A percentage rate is applied to determine payment for profit, willingness to serve, and  
1099 assumption of responsibility. Expenses and any pass-through costs may not be included  
1100 when applying profit to the price.

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**APPENDIX A. DEFINITIONS**

1103 Some common terms used in this AC are defined below. Additional definitions of terms and  
1104 phrases are available in Order 5100.38, Airport Improvement Program Handbook, current  
1105 version.

1106 1. **Architectural/Engineering (A/E) Services.** The term “architectural and engineering  
1107 services” means:

1108 a. Professional services of an architectural or engineering nature, as defined by State law,  
1109 if applicable, which are required to be performed or approved by a person licensed,  
1110 registered, or certified to provide such services as described in this paragraph;

1111 b. Professional services of an architectural or engineering nature performed by contract  
1112 that are associated with research, planning, development, design, construction,  
1113 alteration, or repair of real property; and

1114 c. Such other professional services of an architectural or engineering nature, or incidental  
1115 services, which members of the architectural and engineering professions (and  
1116 individuals in their employ) may logically or justifiably perform, including studies,  
1117 investigations, surveying and mapping, tests, evaluations, consultations,  
1118 comprehensive planning, program management, conceptual designs, plans and  
1119 specifications, value engineering, construction phase services, soil engineering,  
1120 drawing reviews, preparation of operating and maintenance manuals, and other related  
1121 services.

1122 2. **Consultant.** A firm, individual, partnership, corporation, or joint venture that performs  
1123 architectural, engineering or planning services as defined in paragraphs 1 and 4, employed to  
1124 undertake work funded under an FAA airport grant assistance program.

1125 3. **Fee.** Compensation paid to the consultant for professional services rendered.

1126 4. **Planning Services.** Professional services of a planning firm include: airport master and  
1127 system plan studies, airport noise compatibility plans (14 CFR part 150 studies), and  
1128 environmental assessments and related studies.

1129 5. **Primary Engineer or Principal Consultant.** A firm that is held responsible for the overall  
1130 performance of the service, including that which is accomplished by others under separate or  
1131 special service contracts.

1132 6. **Sponsor.** A public agency or private owner of a public-use airport that submits to the  
1133 Secretary an application for financial assistance for the airport (49 USC § 47102(19)).

1134 7. **Bridging Documents.** Preliminary engineering documents intended to define a scope of  
1135 work for a design-build proposal. These documents are typically prepared by a professional  
1136 services firm who is not eligible to bid on the proposal.

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**APPENDIX B. BIBLIOGRAPHY**

1139 | This bibliography covers Public Law, FAA Orders, Advisory Circulars (ACs), and Code of  
1140 | Federal Regulations (CFRs) referenced within this AC.

1141 | **B.1 Public Law.**

- 1142 | 1. Brooks Act: Federal Government Selection of Architects and Engineers. Public  
1143 | Law 92-582, 92nd Congress, H.R. 12807, October 27, 1972. (See  
1144 | <http://www.usa.gov/>.)
- 1145 | 2. *United States Code*. Title 40 Subtitle I, Chapter 11 Selection of Architects and  
1146 | Engineers. (See <http://uscode.house.gov>.)
- 1147 | 3. *United States Code*. Title 42 Chapter 55 USC 4321 National Environmental Act of  
1148 | 1969. (See <http://uscode.house.gov>.)
- 1149 | 4. *United States Code*. Title 49 Subtitle VII, Aviation Programs, USC §47123  
1150 | Nondiscrimination. (See <http://uscode.house.gov>.)
- 1151 | 5. *United States Code*. Title 49 Subtitle VII, Aviation Programs, §47107(a) 17,  
1152 | Project Grant Application Approval Conditioned on Assurances About Airport  
1153 | Operations. (See <http://uscode.house.gov>.)
- 1154 | 6. *United States Code*. Title 49 Subtitle VII, Chapter 471 USC §47102 Definitions.  
1155 | (See <http://uscode.house.gov>.)
- 1156 | 7. *United States Code*. Title 49 Subtitle VII, Chapter 471 USC §47105 Project Grant  
1157 | Applications. (See <http://uscode.house.gov>.)

1158 | **B.2 Code of Federal Regulations.**

- 1159 | Access the Code of Federal Regulations online at  
1160 | <http://www.gpo.gov/fdsys/browse/collectionUScode.action?collectionCode=USCODE>.
- 1161 | 1. Airport Noise Compatibility Planning. *Code of Federal Regulations*. Title 14 CFR  
1162 | part 150.
- 1163 | 2. Contract Cost Principles and Procedures. *Code of Federal Regulations*. Title 48  
1164 | CFR part 31.
- 1165 | 3. Government-wide Debarment and Suspension (Nonprocurement). *Code of Federal*  
1166 | *Regulations*. Title 49 CFR part 29.
- 1167 | 4. Labor Standards Provisions Applicable to Contracts Covering Federally Financed  
1168 | and Assisted Construction. *Code of Federal Regulations*. Title 29 CFR part 5.
- 1169 | 5. New Restrictions on Lobbying. *Code of Federal Regulations*. Title 49 CFR  
1170 | part 20.
- 1171 | 6. Nondiscrimination in Federally-Assisted Programs of the Department of  
1172 | Transportation—Effectuation of Title VI of the Civil Rights Act of 1964. *Code of*  
1173 | *Federal Regulations*. Title 49 CFR part 21.

- 1174 7. Office of Federal Contract Compliance Programs, Equal Employment Opportunity,  
1175 Department of Labor. *Code of Federal Regulations*. Title 41 CFR part 60.
- 1176 8. Participation by Disadvantaged Business Enterprises (DBE) in Department of  
1177 Transportation Financial Assistance Programs. *Code of Federal Regulations*. Title  
1178 49 CFR part 26.
- 1179 9. Uniform Administrative Requirements for Grants and Cooperative Agreements to  
1180 State and Local Governments. *Code of Federal Regulations*. Title 49 CFR part 18.

1181 | **B.3 FAA Orders and Advisory Circulars.** Please refer to current versions.

- 1182 1. U.S. Department of Transportation. Federal Aviation Administration. Order  
1183 1050.1, Environmental Impacts: Policies and Procedures. (See  
1184 [http://www.faa.gov/regulations\\_policies/orders\\_notices/.](http://www.faa.gov/regulations_policies/orders_notices/))
- 1185 2. U.S. Department of Transportation. Federal Aviation Administration. Order  
1186 5050.4, Airport Environmental Handbook. (See  
1187 [http://www.faa.gov/airports/resources/publications/orders/.](http://www.faa.gov/airports/resources/publications/orders/))
- 1188 3. U.S. Department of Transportation. Federal Aviation Administration. Order  
1189 5100.38, Airport Improvement Program Handbook. (See  
1190 [http://www.faa.gov/airports/resources/publications/orders/.](http://www.faa.gov/airports/resources/publications/orders/))
- 1191 4. U.S. Department of Transportation. Federal Aviation Administration. Advisory  
1192 Circular 150/5300-15, Use of Value Engineering for Engineering and Design of  
1193 Airport Grant Projects. (See  
1194 [http://www.faa.gov/airports/resources/advisory\\_circulars/.](http://www.faa.gov/airports/resources/advisory_circulars/))

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**APPENDIX C. SCOPE OF SERVICES SAMPLES**

1197 C.1 This appendix contains three different examples of Scope of Services. Example 1 is a  
1198 Design Services scope, Example 2 is a Planning Services scope, and Example 3 is a  
1199 Construction Services scope. Samples may not necessarily include all provisions and  
1200 terms required by this AC. If a conflict exists between these examples and the AC, the  
1201 AC will prevail.

1202 C.2 **Example 1. Design Services Scope.**

1203 TAXIWAY A SOUTH AND HOLDING APRON RECONSTRUCTION AND NEW  
1204 HARDSTAND

1205 ABC INTERNATIONAL AIRPORT

1206 The consultant will provide the required professional services to design the reconstruction of  
1207 Taxiway A South and holding apron and the proposed hardstand (attach a drawing or exhibit if  
1208 necessary). This work will be performed and constructed under a Federal Aviation  
1209 Administration (FAA) Airport Improvement Program (AIP) grant to the airport.

1210 Taxiway A South will be constructed in Portland Cement concrete and will be widened to 100  
1211 feet and have new 40-foot-wide asphalt shoulders added. The South Holding Apron will be  
1212 reconstructed to essentially the same configuration as presently exists. Centerline taxiway  
1213 lighting will be added to the taxiway and through the holding apron to Runway 18L/36R.  
1214 Control panels in the FAA tower and field lighting electrical vault will also be modified for the  
1215 new centerline lighting.

1216 The new hardstand will be located north of the Airlift Airlines Maintenance Facility (currently  
1217 under construction) south of the northeast Cargo Taxilane and west of the flying Bears  
1218 hardstand. The hardstand will be a Portland Cement concrete apron with lighting similar to other  
1219 hardstands, drainage to the Industrial Waste Sewerage System (IWS), and other utilities  
1220 including fire protection. No downstream IWS changes are anticipated. It is anticipated that  
1221 utilities are immediately available for fire protection adjacent to hardstand.

1222 Professional services to be provided by the consultant will include civil, electrical and structural,  
1223 and geotechnical engineering services required to accomplish the following items:

1224 **PHASE 1 - PRELIMINARY DESIGN**

1225 The preliminary design phase is intended to identify and evaluate alternatives to assure cost  
1226 effective and practical solutions for the work items identified. The consultant will complete its  
1227 evaluation of alternatives through contacts with local authorities and review of the  
1228 preapplication, field investigations, and a practical design approach. The design will take  
1229 advantage of local knowledge and experience and utilize expertise from recent construction  
1230 projects to design a cost-effective project and ensure competitive construction bids. Activities  
1231 include:

1232 1. Coordinate with airport operations, FAA tower, and the airlines to minimize impacts in day-  
1233 to-day operations of the airlines and air cargo lines. Also coordinate with facilities and  
1234 maintenance and fire department. (This will require four coordination meetings throughout  
1235 the design.)

- 1236 2. Prepare a preliminary estimate of probable construction costs and schematic design for each  
1237 element of the project.
- 1238 3. Provide all geotechnical investigation and analysis and pavement and other nondestructive  
1239 testing and analysis required for the design.
- 1240 4. Coordinate with the airport's project manager for required survey information.
- 1241 5. Prepare an overall construction phasing plan in order to maximize project constructability  
1242 and minimize interference with airport operations. The consultant's phasing plan must take  
1243 into account other airport construction projects.
- 1244 6. Determine aircraft usage through coordination with Airport staff and information furnished  
1245 by the sponsor. Design the pavements to meet the anticipated aircraft traffic.

#### 1246 PHASE 2 - ENGINEERING PHASE ACTIVITIES

- 1247 1. Evaluate local conditions.
- 1248 a. Evaluate local material suppliers, sources, and capabilities.
- 1249 b. Evaluate drainage alternatives.
- 1250 c. Review electrical lighting layouts and determine system relocation capacities.
- 1251 2. Review and evaluate project layout.
- 1252 a. Verify master plan dimensions and data.
- 1253 b. Review findings and recommendations with airport personnel.
- 1254 3. Complete a soils investigation, soils report, and recommendations including:
- 1255 a. Field Exploration.
- 1256 i. Conduct test pit explorations with a rubber-tired backhoe at various locations to a  
1257 maximum depth of 8 feet in the runway, taxiway, and apron areas. Log and field  
1258 classify soils and obtain samples for laboratory testing.
- 1259 b. Laboratory Testing.
- 1260 i. Perform laboratory index and strength tests as follows:
- 1261 (1) Compacted CBR test (3 compaction points/test).
- 1262 (2) Standard Proctor (4 point) compaction tests.
- 1263 (3) Atterberg limit determinations.
- 1264 (4) Sieve analysis.
- 1265 (5) Unit weight and water content determinations.
- 1266 (6) FAA soil classifications for all samples.
- 1267 4. Complete necessary topography and site surveying, including establishment of project  
1268 control points.
- 1269 5. Complete pavement section alternatives analysis and provide recommendations including:
- 1270 a. Conduct an initial cost analysis, life-cycle cost analysis, and analysis of locally  
1271 available resources for up to three alternatives.

- 1272        b.    Strategize bidding procedures and pavement section alternatives to provide a basis for  
1273                competitive bidding.
- 1274    6.    Complete preliminary plan and profile design for the runway, taxiway, and apron area.
- 1275    7.    Complete preliminary runway lighting, signing, and system circuitry layout.
- 1276    8.    Provide recommendations for construction phasing to the sponsor for their review.
- 1277    9.    Complete estimates of probable construction costs for the recommended alternatives.
- 1278    10.   Provide five sets of review documents.
- 1279    11.   Complete the preliminary design report including:
- 1280        a.    Geotechnical investigation.
- 1281        b.    Topographical survey.
- 1282        c.    Preliminary plans.
- 1283        d.    Pavement section design and analysis.
- 1284        e.    Drainage design analysis.
- 1285        f.    Estimates of probable construction costs.
- 1286        g.    Final summary and recommendations.
- 1287        h.    Phasing and scheduling recommendations.
- 1288    12.   Solicit comments on preliminary design from airport personnel and the FAA.

### 1289 PHASE 3 - FINAL DESIGN

1290    In the decision phase, the consultant will provide well-defined construction requirements, with  
1291    selected bid alternatives as appropriate to provide a basis for competitive construction bids.  
1292    Construction schedules will be closely coordinated endeavor to to assure the best possible  
1293    weather conditions and the least possible interference with airport operations. Assist the airport  
1294    with the advertisement, notification of local airport users, and generally complete the final  
1295    construction contract documents for the project. The following outline describes in greater detail  
1296    the tasks and products.

- 1297    1.    Incorporate preliminary design comments and respond as necessary to requests for additional  
1298        information.
- 1299    2.    Provide final design drawings, specifications, and final estimate of probable construction  
1300        costs and schedule for the project.
- 1301    3.    Provide Engineering Report.
- 1302    4.    Develop specifications using Advisory Circular 150/5370-10, Standards for Specifying  
1303        Construction of Airports, as amended, and utilize standard provisions supplied by the  
1304        sponsor.
- 1305    5.    Develop a safety plan in accordance with AC 150/5370-2, Operational Safety on Airports  
1306        During Construction.
- 1307    6.    Design all improvements in accordance with FAA standards and guidelines and in  
1308        accordance with the Airport Certification Manual.

- 1309 7. Coordinate the design of the project with existing and ultimate grades established at adjacent  
1310 areas.
- 1311 8. Provide for all required design of utilities and services within the area defined in the  
1312 preliminary design.
- 1313 9. Complete final quantity calculations.
- 1314 10. Solicit sponsor and FAA review and approval.
- 1315 11. Provide \_\_\_ sets of contract documents.
- 1316 12. Assist airport with advertising and interpretation of project requirements.
- 1317 13. Assist airport with preparation of the FAA application.
- 1318 14. Provide review of all submittal and shop drawings during construction.
- 1319 15. Provide technical assistance and recommendations to the sponsor during construction.
- 1320 16. The following project schedule will be utilized unless otherwise approve by the sponsor:  
1321 Taxiway A South and the Holding Apron portion of the project will be phased to be  
1322 constructed on an accelerated basis to be completed within two (2) months of the  
1323 construction consultant's notice to proceed or earlier, if possible. During construction,  
1324 runway 18L/36R will be kept in service at all times. The project limits will be defined such  
1325 that the construction activities will not impact the operation of the runway as defined by  
1326 airport and FAA operational criteria.
- 1327 17. The construction budget for the project is \$\_\_\_\_, including construction change order  
1328 contingency. The consultant will evaluate the feasibility of this budget and keep the sponsor  
1329 apprised during each phase of the design. The consultant will advise the sponsor as to  
1330 options available for reducing construction costs to stay within the budget, if it appears that  
1331 likely consultant bid prices will exceed this budget.

1332 The design schedule is anticipated to be as follows:

- 1333 Commission Authorization of Consultant Contract - 10/10/XX  
1334 Contract Execution - 10/10/XX  
1335 Start Design - 10/11/XX  
1336 50 Percent Design Review - 11/22/XX  
1337 Complete Design, Submit Estimates, Plans and Specs for Review 1/12/XX  
1338
- 1339 Advertise for Bids - 3/21/XX  
1340 Open Bids - 4/11/XX  
1341 Prepare Award Memo - 4/12/XX  
1342 Award Construction Contract - 4/25/XX  
1343 Construction Contract Executed - 5/08/XX  
1344 Construction Notice to Proceed - 5/14/XX  
1345 Complete Taxiway A South & Holding Apron - 7/13/XX  
1346 Complete Hardstand Construction - 11/01/XX

#### 1347 PHASE 4 - CONSTRUCTION SERVICES

1348 During the construction phase of the project, the consultant will assist the sponsor to monitor and  
1349 document progress for quality and cost. Review consultant payment requests, complete  
1350 necessary quality control testing, establish necessary survey control, continually inform the

1351 sponsor on project progress and problems, conduct the final project inspection, and complete the  
1352 associated certification.

1353 **ACTIVITIES**

- 1354 1. Assist with prebid conference and bid opening. Issue addenda, prepare an abstract of bids,  
1355 and make recommendations for award.
- 1356 2. Assist in award notification to successful bidder and notify and return bid bonds to the  
1357 unsuccessful bidders.
- 1358 3. Solicit and review bonds, insurance certificates, construction schedules, etc.
- 1359 4. Conduct preconstruction conference.
- 1360 5. Complete construction staking, provide horizontal and vertical control.
- 1361 6. Provide resident project representative to monitor and document construction progress,  
1362 confirm conformance with schedules, plans and specifications, measure and document  
1363 construction pay quantities, document significant conversations or situations, document input  
1364 or visits by local authorities, etc.
- 1365 7. Prepare change orders and supplemental agreement, if required.
- 1366 8. Prepare and submit inspection reports.
- 1367 9. Prepare and confirm monthly payment request.
- 1368 10. Conduct necessary quality control testing.
- 1369 11. Conduct and document periodic wage rate interviews.
- 1370 12. Conduct a final project inspection with airport personnel, the FAA, and the consultant.
- 1371 13. Prepare as-constructed drawings and the final project from information furnished by the  
1372 consultant.

1373 **C.3 Example 2. Planning Services Scope.**

1374 **AIRPORT LAYOUT PLAN UPDATE**

1375 **ANYTOWN MUNICIPAL AIRPORT**

1376 The purpose of this Airport Layout Plan Update (ALPU) is to identify potential development  
1377 options specifically associated with closed Runway 10-28 at Anytown Municipal Airport. The  
1378 existing Airport Layout Plan (ALP) is an integral component of the Airport Master Plan Update  
1379 (AMPU) completed in 2005, which was based on data compiled in the mid-2000s, which is now  
1380 nearly 10 years old. Since that time, a number of critical growth and operational issues have  
1381 surfaced that need to be assessed and factored into the preferred layout plan. Included in this  
1382 assessment is a fresh look at terminal area development, growth within the adjoining (off-airport)  
1383 industrial park, and an evaluation of airport land usage for aeronautical/nonaeronautical  
1384 purposes.

1385 This ALPU will help the community focus on the best course of action for continued  
1386 development of the airport, by identifying the key critical issues the airport faces in the next five  
1387 to ten years.

## 1388 CRITICAL ISSUES

1389 Anytown is in a multiyear airport development plan that includes the reconstruction of Runway  
1390 15-33, expansion of hangar and aircraft parking facilities, construction of an airport access road,  
1391 plus plans for the development of a new terminal building, expanded aircraft parking, and fueling  
1392 facilities.

1393 The airport is now in a position to start focusing on long-term landside development, particularly  
1394 along the closed runway, with a realistic assessment of the existing terminal area configuration  
1395 on the east end of the closed runway. An equally important component of this study is the  
1396 identification of aviation development limits on the west end of the closed runway over the next  
1397 20 years. These limits are critical to future expansion of both the airport and adjacent industrial  
1398 park.

## 1399 TASKS

1400 XYZ Company proposes to provide the following services. To the maximum extent possible,  
1401 and unless otherwise noted, data from the most recent AMPU and ALP will be used. In the  
1402 interest of cost savings, updated aerial mapping will not be obtained for this project. XYZ  
1403 Company will rely on existing data.

## 1404 CONCEPT

1405 XYZ Company will prepare a written report and update the ALP, focusing on development of  
1406 airport landside facilities, with emphasis on the closed runway, and the limits of compatible  
1407 aviation development. Findings will be presented in written form at key phases through the term  
1408 of this project, with each subsequent part building on previously submitted information. This  
1409 concept will result in the development of a complete draft report that will then be updated to  
1410 reflect agreed upon changes, resulting ultimately in the final ALPU.

## 1411 TASK A - STUDY DESIGN/ADMINISTRATIVE

- 1412 1. Project Scoping Meeting. The consultant will arrange and attend a project scoping meeting  
1413 with the FAA, state, and city of Anytown (Sponsor) to review the project scope and tasks and  
1414 to confirm the specific requirements of the ALPU.
- 1415 2. Refine Scope of Services. XYZ Company will refine and prepare a detailed scope of  
1416 services and fee to complete the defined tasks for submission to the sponsor, state, and FAA.
- 1417 3. Prepare Grant Application. XYZ Company will prepare and submit applications for Federal  
1418 assistance. The sponsor will sign and distribute the applications to state and FAA. The grant  
1419 application will be submitted on or about April 15, 20XX.
- 1420 4. Attend City Council Meeting. XYZ Company will attend a regularly scheduled city council  
1421 meeting for the purpose of answering questions and addressing issues concerning this  
1422 project.
- 1423 5. Grant Administration.
  - 1424 a. XYZ Company will submit a monthly invoice to the sponsor, including supporting  
1425 documentation which specifically describes the work and other items for which the  
1426 billing is submitted. The billing report will also include an estimate of the percent  
1427 complete of each task appearing on the report. The sponsor will be billed on a monthly  
1428 basis for all work conducted in association with this project.

1429 b. The FAA and state will reimburse the sponsor for these fees through the grant  
1430 reimbursement process. XYZ Company will prepare these grant reimbursement  
1431 requests for the sponsor's signature and distribution to the FAA and state. It is  
1432 anticipated that seven grant reimbursement requests will be prepared during the life of  
1433 this project.

#### 1434 TASK B - ALPU REPORT

1435 XYZ Company will prepare an ALPU report consisting of five chapters and various appendices,  
1436 developed in two phases (draft and final).

#### 1437 Chapter 1 - Inventory and Forecasts

- 1438 1. Update Existing Activity: This task will update existing based aircraft totals and evaluate  
1439 current aircraft operations using industry standards, observations, and discussions with  
1440 airport operators and users. The sponsor will provide XYZ Company with an accurate list of  
1441 all based aircraft by aircraft make and model, sorted by hangared aircraft and aircraft parked  
1442 on open aprons.
  - 1443 2. Field Inventory: XYZ Company will conduct a site field investigation of the airport that will  
1444 provide an update of recently constructed facilities as well as potential development areas.
  - 1445 3. Identify On-Airport Developable Land: XYZ Company will use existing base mapping  
1446 superimposed by the airport property line and resource protection limits to identify areas of  
1447 airport property that can be "disturbed" or used for future airport development. This task will  
1448 focus on the closed runway.
  - 1449 4. Evaluate Existing Lease Agreements. XYZ Company will obtain and evaluate existing  
1450 airport lease agreements for compliance with FAA grant assurances.
  - 1451 5. Review SASP: XYZ Company will obtain and review aircraft and operational data in the  
1452 current State Aviation Systems Plan (SASP) as applicable to Anytown.
  - 1453 6. Update 19XX Forecasts. The 20XX AMPU forecasts will be updated based on current  
1454 aircraft loading and operations and projected forward 5, 10 and 20 years using SASP  
1455 forecasts, as applicable.
  - 1456 7. Forward Draft Findings. XYZ Company will prepare and submit a draft Inventory and  
1457 Forecasts Chapter, providing 10 copies of the draft chapter to the sponsor and one copy each  
1458 to the state and FAA. It is recommended that the sponsor post this report on its website.  
1459 XYZ Company will provide a copy of the report as it progresses, in Adobe® PDF format, to  
1460 the sponsor's webmaster or information technology (IT) department.
  - 1461 8. Meeting. XYZ Company will present the Inventory and Forecast data to the sponsor;  
1462 answering questions and resolving any conflicts prior to starting the next phase of the project.
- 1463 Chapter 2 - Demand/Capacity Analysis & Facility Requirements. Pending receipt and resolution  
1464 of comments from the sponsor, state, and the FAA on Chapter 1, XYZ Company will prepare  
1465 Chapter 2. XYZ Company will review and respond to comments to all parties.
- 1466 1. Landside Facility Capacities: XYZ Company will identify the capacity of the existing  
1467 landside facilities including, but not limited to aviation facilities: hangars, aircraft parking,  
1468 fuel facilities; compatible non-aviation facilities: industrial park; and common facilities:  
1469 automobile parking and access roads

- 1470 2. Airside Facility Requirements: This ALPU will not evaluate airside facilities (runway,  
1471 taxiways, etc).
- 1472 3. Landside Facility Requirements: XYZ Company will evaluate existing landside facilities  
1473 and compliance with FAA safety and design requirements. Based on the safety and capacity  
1474 computations as well as the forecasts of aviation demand for the airport, XYZ Company will  
1475 identify the needed improvements for the landside facilities (i.e., hangars, aircraft parking,  
1476 automobile parking and access, and aircraft fueling facilities).
- 1477 4. Forward Draft Findings: XYZ Company will prepare and submit the Capacity and Facilities  
1478 Chapter, providing 10 copies of the draft chapter to the sponsor and one copy each to the  
1479 state and FAA.
- 1480 5. Meeting. XYZ Company will present its findings from the first two chapters to the sponsor;  
1481 answering questions and resolving any conflicts prior to starting the next phase of the project.
- 1482 Chapter 3 - Alternative Developments. Pending receipt and resolution of comments from the  
1483 sponsor, state, and FAA on Chapter 2, XYZ Company will prepare Chapter 3. XYZ Company  
1484 will review and respond to comments to all parties.
- 1485 1. Identify Limits of Short-Term Aviation Development. Based on previously developed  
1486 forecasts (Chapter 1) and identified facility needs (Chapter 2), XYZ Company will identify  
1487 areas of airport property that can be used for future airport development. Emphasis will be  
1488 placed along the entire close runway corridor, with particular attention given to realistic  
1489 development of the existing terminal area.
- 1490 2. Identify Potential Nonaeronautical Use. XYZ Company will analyze future aviation needs  
1491 (projected in 5, 10, and 20 year periods) and then identify on-airport areas potentially  
1492 available for compatible nonaeronautical use. Emphasis will be placed on development in  
1493 the area along or in the vicinity of the west end of the closed runway.
- 1494 3. Identify Development Alternatives: The objective of this task is to identify feasible landside  
1495 alternative development plans for the airport based on Tasks A and B above. While a variety  
1496 of alternative solutions could be considered, for the purposes of this study, XYZ Company  
1497 will develop a series of possible alternatives consistent with the needs of the sponsor.
- 1498 4. Forward Draft Findings: XYZ Company will prepare and submit the Alternatives Chapter  
1499 addressing the tasks in this chapter, providing 10 copies of the draft chapter to the city, and  
1500 one copy each to the state and FAA.
- 1501 5. Preferred Alternative Meeting: XYZ Company will meet with the sponsor to assist him in  
1502 evaluating and selecting the preferred alternative. Subsequent to the selection of the  
1503 preferred alternative, XYZ Company will complete and submit an updated Alternatives  
1504 Chapter to all parties.
- 1505 Chapter 4 - Environmental Evaluation. Pending receipt and resolution of comments from the  
1506 sponsor, state, and FAA on Chapter 3, XYZ Company will prepare Chapter 4. XYZ Company  
1507 will review and respond to comments to all parties.
- 1508 1. Identify Existing Environmental Conditions.
- 1509 2. This task will include the collection of data to identify protected resources and  
1510 environmental issues as defined by the 23 impact categories found in FAA Order 5050.4,  
1511 Airport Environmental Handbook, in the vicinity of the airport that are anticipated to be  
1512 impacted by the proposed capital improvements or existing operations. A review of

- 1513 existing data and coordination with appropriate regulatory agencies will identify potential  
1514 protected resources and issues important to the human and natural environment that may  
1515 require additional data collection beyond the scope of this study. XYZ Company will  
1516 conduct one site visit to compare existing conditions to written data.
- 1517 3. In addition, XYZ Company will review previous environmental permitting and, if  
1518 applicable, protected resource mitigation performed as part of previous airport and  
1519 industrial park improvement projects. This information will be useful to the sponsor  
1520 when future environmental permits need to be obtained.
- 1521 4. Delineated flagged wetlands will be identified and evaluated using the current Federal  
1522 and State (and local, if applicable) methodologies. These wetland boundaries, which are  
1523 already digitized, will be placed on the appropriate airport plans and figures.
- 1524 5. Identify Potential Adverse Impacts: Based upon the recommended airport improvements  
1525 identified as the preferred alternative, potential impacts to the environment that are protected  
1526 by local, State, and Federal regulations will be identified for the first five years of the  
1527 planning period.
- 1528 6. Describe Regulatory Requirements: XYZ Company will identify the permit requirements for  
1529 the anticipated first five years of airport improvements. This information can then be used to  
1530 plan the phasing requirements for each project (refer to Chapter 5 – Implementation Schedule  
1531 & Financial Analysis).
- 1532 7. Forward Draft Findings: XYZ Company will prepare and forward the Environmental  
1533 Chapter covering the tasks described in this section. This chapter will provide the basis for  
1534 the environmental permitting requirements and financial impacts presented in Chapter 6.  
1535 XYZ Company will provide copies as previously described above.
- 1536 Chapter 5 - Implementation & Financial Analysis. Pending receipt and resolution of comments  
1537 from the sponsor, state, and FAA on Chapter 4, XYZ Company will prepare Chapter 5. XYZ  
1538 Company will review and respond to comments to all parties.
- 1539 1. Implementation Schedule. Based on the adopted preferred alternative, a phased  
1540 implementation schedule will be developed. This schedule will be based on demand levels  
1541 and their estimated timeframes for realization. This schedule will not only include the  
1542 development previously mentioned, but also major maintenance projects that were identified  
1543 and necessary to maintain the viability of the airport.
- 1544 2. Capital Improvement Plan. The ALPU will include a CIP using planning-level opinions of  
1545 cost for each of the projects, both for development and maintenance of the airport. The  
1546 distribution of eligible costs between the sponsor, state, FAA, and private investors will be  
1547 evaluated for the presence of extensive financial burdens during any one timeframe; if  
1548 necessary, projects may be shifted to offset this burden.
- 1549 3. Funding Sources: XYZ Company will identify typical and potential funding sources for  
1550 paying for proposed airport improvements or necessary maintenance projects.
- 1551 4. Forward Draft Findings. XYZ Company will prepare and forward the Implementation  
1552 Schedule and Financial Analysis Chapter covering the tasks described in this section. This  
1553 chapter will provide the basis for future capital planning considerations on the part of the  
1554 state and FAA. XYZ Company will provide copies as previously described above.

## 1555 TASK C – UPDATE ALP

1556 Three key components of the ALP will be updated: Existing Airport Layout Plan, Terminal Plan,  
1557 and Ultimate Airport Layout Plan. The Approach Plan and Profile, Land-Use, and CFR Part 77  
1558 Analysis sheets **will not** be updated. Based on the selection of the preferred alternative, several  
1559 drawings of the existing ALP set will require revisions and updating. All plans will be prepared  
1560 to conform to state and FAA CADD standards and will be made available in electronic format.

- 1561 1. Existing Airport Facilities Plan: This drawing will be updated reflecting changes since  
1562 completion of the existing drawing. This drawing will be prepared at a scale of either 1" =  
1563 300' or 1" = 400'.
- 1564 2. Ultimate Airport Layout Plan: This drawing will be revised reflecting the preferred alternate  
1565 layout. This drawing will be prepared at a scale of either 1" = 300' or 1" = 400'.
- 1566 3. Terminal Area Plan: This drawing will be prepared at a scale of either 1" = 50' or 100'  
1567 reflecting the revised preferred layout.
- 1568 4. Forward Draft Findings: XYZ Company will prepare and submit the revised ALP drawings.  
1569 One full-size 24" x 36" set will be provided each to the sponsor, FAA, and the state. In  
1570 addition, a reduced 11" x 17" set will be provided in Adobe PDF to the sponsor's webmaster  
1571 for inclusion on the city's website.

## 1572 TASK D – FINAL DOCUMENTATION

- 1573 1. Final Meeting. XYZ Company will hold a final project meeting with the sponsor, state, and  
1574 FAA to review the project and solicit all final comments.
- 1575 2. Final Report. Pending receipt of comments from all interested parties, a final ALPU report  
1576 will be prepared. Bound, printed copies will be distributed to the sponsor, state, and FAA.  
1577 Additional copies of the final report will be available upon request on CD-ROM in Adobe  
1578 PDF format.
- 1579 3. Airport Layout Plan. Four (4) full-size sets of the final ALP set will be distributed to the  
1580 sponsor, state, and FAA for approval signatures. All signatory parties and XYZ Company  
1581 will receive one (1) signed ALP set for their files.

## 1582 ANTICIPATED PROJECT SCHEDULE

1583 The following anticipated project schedule is based on the timely receipt and resolution of  
1584 comments from the sponsor, state, and FAA:

1585 **Anticipated Project Schedule**

Task	Date
Study Design	May 20XX
Inventory and Forecasts	June 20XX
Capacity Analysis and Facility Requirements	August 20XX
Alternatives Development	September 20XX
Environmental Evaluation	October 20XX

Task	Date
Financial Analysis	November 20XX
Airport Plans	December 20XX
Final Documentation	January 20XX

1586 C.4 **Example 3. Construction Services Scope.**

1587 DESIGN AND CONSTRUCT 6-UNIT HANGAR

1588 ANYTOWN MUNICIPAL AIRPORT

1589 ARTICLE A - DATA COLLECTION AND PROJECT DEVELOPMENT

1590 1. Predesign Conference - A representative of the engineer will attend a predesign meeting at  
 1591 the offices of the state to provide the representatives of the owner, the FAA, and the state  
 1592 with the opportunity to review and discuss the nature and extent of the project and to  
 1593 establish the project design criteria, budget, and schedule. The engineer will coordinate the  
 1594 date and time of the predesign conference via teleconferences, letters, faxes and emails to the  
 1595 representatives of the owner, the FAA and the state. The engineer will prepare a presentation  
 1596 of the project components for discussion at the predesign conference. The engineer will use  
 1597 the Airports Division Predesign Conference Form XX to determine the design and  
 1598 construction parameters that will be used for this project.

1599 2. Review and Evaluate Existing Data - The engineer will compile the existing data that was  
 1600 prepared for previous projects at the airport, that is germane to the project, and that might be  
 1601 useful in the design of the project. The existing data includes airport master plan, airport  
 1602 Exhibit "A" property plan, engineering drawings, airspace obstruction analyses, aerial  
 1603 photogrammetry data, and aerial photographs. The engineer will utilize the pertinent data  
 1604 and information as appropriate to prepare worksheets to facilitate the development of the  
 1605 project. The engineer will review the existing data for accuracy and completeness and to  
 1606 determine the feasibility of utilizing the data to prepare plans and specifications for the  
 1607 design and construction of the project.

1608 3. Site Location Survey - The engineer will retain a professional land surveyor who is licensed  
 1609 in the State to provide site location survey services in the vicinity of the proposed hangar  
 1610 project area sufficient to prepare the project plans. The land surveyor may be required to  
 1611 locate the pertinent existing physical features within the vicinity of the project including  
 1612 pavements, drainage structures, swales and ditches, fence lines, property lines, rights-of-way,  
 1613 and tree and brush lines. The engineer will incorporate the results of the survey into the  
 1614 project plans to supplement the available existing data for the project locations.

1615 Expenses - The engineer will incur certain miscellaneous project related expenses during this  
 1616 phase of the work which may include but will not be limited to: meals, lodging, mileage cost at  
 1617 \$0.405 per mile, tolls, overnight shipping, plans, photocopies, photographic materials, equipment  
 1618 rental, survey materials, long distance telephone calls from the field, newspaper advertisements,  
 1619 and miscellaneous vendor invoices. These expenses will be included in the engineer's contract  
 1620 with the owner.

1621 Outside Services - The engineer will incur certain project related costs during the data collection  
1622 and project development phase of the work in the form of subconsultant costs for land surveying.  
1623 These costs will be included in the engineer's contract with the owner.

1624 ARTICLE B - DESIGNS, PLANS AND SPECIFICATIONS

1625 1. Project Plans - The engineer will prepare preliminary and final plans based on the existing  
1626 conditions plans that were prepared during the data collection phase of the project. The  
1627 engineer will prepare the plans based on the locations of pavements, buildings, wetlands, tree  
1628 lines, pole lines, fences, property lines, aviation easements, rights-of-way and other  
1629 considerations to sufficiently depict the project area for the construction of the hangar. The  
1630 engineer will evaluate the project work area to identify other necessary incidental  
1631 improvements that should be included in the project. The engineer will incorporate the  
1632 electrical and structural plans into the project plans. The engineer will coordinate the  
1633 development of the project plans with the staff of their aviation planning and environmental  
1634 departments including:

- 1635 • Title sheet
- 1636 • Site plan
- 1637 • Grading Plan
- 1638 • Civil Details
- 1639 • Cross Sections
- 1640 • Hangar Elevations and Details
- 1641 • Floor Plan and Details
- 1642 • Foundation Plan and Details
- 1643 • Building Details and Typical Sections
- 1644 • Electrical Layout Plan
- 1645 • Electrical Schedules and One-Line Diagram
- 1646 • Electrical Specifications

1647 a. The engineer will distribute the preliminary plans to the owner, the state, and the FAA  
1648 for review. The engineer will provide the owner with one (1) set of preliminary plans  
1649 for review and comments. The engineer will provide the state with two (2) sets of  
1650 preliminary plans for review and comments. The engineer will provide the FAA with  
1651 five (5) sets of preliminary plans for review and comments. The engineer will further  
1652 develop the preliminary plans into final plans subsequent to the review and comment  
1653 period.

1654 b. The engineer will distribute the final plans to the owner, the state, and the FAA. The  
1655 engineer will provide the owner with one (1) set of final plans. The engineer will  
1656 provide the state with one (1) set of final plans. The engineer will provide the FAA  
1657 with one (1) set of final plans.

1658 2. Project Specifications and Contract Documents – The engineer will prepare preliminary and  
1659 final specifications and construction contract documents based on the preliminary and final  
1660 plans. The engineer will incorporate the electrical and structural specifications into the

- 1661 project specifications. The specifications will establish the requirements for the project in  
1662 accordance with the current version of and changes to FAA AC 150/5370-10, *Standards for*  
1663 *Specifying Construction of Airports*, including general provisions and technical  
1664 specifications.
- 1665 a. The contract documents will include: Invitation to Bid, Information for Bidders, Bid  
1666 Proposal, Schedule of Items, consultant's Qualifications and Certifications, Buy  
1667 American Requirements, Contract Agreement, Notice to Bidders (Bonding), Bid Bond,  
1668 Payment Bond, Performance Bond, Maintenance Bond, and Insurance Requirements.  
1669 The contract documents will include Federal special provisions including: Federal  
1670 Requirements for Construction Contracts \$100,000 and Over, Instructions to Bidders,  
1671 Certification for Nonsegregated Facilities, Required Assurances, Disadvantaged  
1672 Business Enterprise Eligibility Requirements, and Federal wage rate requirements for  
1673 Anytown USA.
- 1674 b. The engineer will distribute the preliminary specifications and contract documents to  
1675 the owner, the state, and the FAA for review and approval. The engineer will provide  
1676 the owner with one (1) set of preliminary specifications and contract documents for  
1677 review and comment. The engineer will provide the state with one (1) set of  
1678 preliminary specifications and contract documents for review and comment. The  
1679 engineer will provide the FAA with one (1) set of preliminary specifications and  
1680 contract documents for review and comment. The engineer will further develop the  
1681 preliminary specifications and contract documents into final specifications and contract  
1682 documents subsequent to the review and comment period.
- 1683 c. The engineer will distribute the final specifications and contract documents to the  
1684 owner, the state, and the FAA. The engineer will provide the owner with one (1) set of  
1685 final specifications and contract documents. The engineer will provide the state with  
1686 one (1) set of final specifications and contract documents. The engineer will provide  
1687 the FAA with one (1) set of final specifications and contract documents.
- 1688 3. Estimates - The engineer will prepare estimates of material quantities and construction costs  
1689 based on the plans, specifications, and environmental permitting requirements. The engineer  
1690 will incorporate the electrical and structural estimates into the project estimates. The  
1691 estimates will be distributed to the owner, the state, and the FAA for review and  
1692 modification. The owner, the state and the FAA each will be provided with one (1) copy of  
1693 the estimates.
- 1694 **Note:** The construction cost estimates will reflect the engineer's opinion of probable  
1695 construction costs and will be based on the engineer's experience with similar recent  
1696 construction. The engineer has no control over the actual cost of consultant labor and  
1697 materials or over the competitive bidding and construction market conditions. The engineer  
1698 cannot guarantee the accuracy of the construction cost estimates when compared to the  
1699 consultants' construction bids or to the final project construction cost.
- 1700 4. Electrical Design, Specifications and Estimates - The engineer will utilize the staff of their  
1701 electrical division for the design of the electrical components of the hangar building. The  
1702 engineer will visit the project site to determine the availability and suitability of the existing  
1703 electrical system for the proposed project. The engineer will prepare electrical plans in the  
1704 form of one line diagrams, electrical service installation details, panel schedules, lighting  
1705 plan, power plan, and fixture schedule. The engineer will prepare electrical specifications  
1706 and cost estimates for the construction of a pre-engineered metal building. The engineer will

- 1707 incorporate the electrical plans, specifications, and cost estimates into the project plans,  
1708 project specifications and project cost estimates.
- 1709 5. Structural Design, Specifications and Estimates - The engineer will utilize the staff of their  
1710 structural division for the design of the structural components of a hangar building measuring  
1711 approximately 33-feet wide by 252-feet long. The engineer will visit the project site to  
1712 determine the suitability of the proposed site for the hangar building. The engineer will  
1713 utilize the geotechnical data compiled for the recent runway, taxiway, and apron  
1714 reconstruction projects to evaluate the suitability of the existing soils to design the building  
1715 foundation. The engineer will prepare structural plans in the form of building elevations,  
1716 floor plans, foundation plans, reinforcing plans, structural cross sections, and details suitable  
1717 for establishing the requirements of a pre-engineered metal building. The engineer will  
1718 prepare structural specifications and cost estimates for the construction of the pre-engineered  
1719 metal building. The engineer will incorporate the structural plans, specifications, and cost  
1720 estimates into the project plans, project specifications and project cost estimates.
- 1721 6. Quality Control and Design Review - The engineer will conduct in-house quality control and  
1722 design review meeting with experienced representatives of the engineer. The engineer will  
1723 provide staff members with the opportunity to perform independent analyses of the final  
1724 plans and specifications to ensure clarity, accuracy, completeness, and constructability. The  
1725 electrical and structural plans will be reviewed separately by senior staff members in those  
1726 disciplines. Subsequent to the independent reviews, a special in-house project review  
1727 meeting will be conducted to discuss and consolidate the findings of the reviewers. The  
1728 recommendations of the design review team will be incorporated into the final plans and  
1729 specifications.
- 1730 Expenses - The engineer will incur certain miscellaneous project related expenses during this  
1731 phase of the work which may include but will not be limited to: meals, lodging, mileage cost at  
1732 \$0.405 per mile, tolls, overnight shipping, plans, photocopies, photographic materials, equipment  
1733 rental, survey materials, long distance telephone calls from the field, and miscellaneous vendor  
1734 invoices. These expenses will be included in the engineer's contract with the owner.
- 1735 ARTICLE C - ENVIRONMENTAL SERVICES
- 1736 1. Regulatory Review - The engineer will evaluate the preliminary design of the project to  
1737 determine the environmental impacts of the project. The engineer will review the latest  
1738 pertinent Federal, State, and local environmental regulatory measures for recent changes and  
1739 compliance issues. The engineer will contact the appropriate Federal, State, and local  
1740 regulatory authorities to ascertain the permitting requirements for the project based on the  
1741 anticipated final design and its potential environmental impacts. The engineer will contact  
1742 regulatory authorities through telephone calls, letter correspondence, fax, and email to  
1743 confirm environmental, aviation, and municipal zoning regulations. The engineer will  
1744 review the available environmental documents including the airport master plan and wetlands  
1745 studies for environmental issues and recommendations. The engineer will incorporate the  
1746 recommendations of the regulatory agencies into the final design of the project to mitigate  
1747 the environmental aspects of the project.
- 1748 2. Facility Storm Water Pollution Prevention Plan - The engineer will amend the owner's airport  
1749 Storm Water Pollution Prevention Plan (SWPPP) which was prepared in 1996 for the owner's  
1750 airport industrial use as required by the National Pollution Discharge Elimination System  
1751 (NPDES) regulations. The engineer will prepare a revised airport base map depicting the  
1752 hangar development and other incidental changes. The engineer will prepare a narrative

1753 describing the changes at the airport. The engineer will deliver the revised base map and  
1754 narrative to the owner for inclusion in the SWPPP as an appendix.

1755 Expenses - The engineer will incur certain miscellaneous project related expenses during this  
1756 phase of the work which may include but will not be limited to: meals, lodging, mileage cost at  
1757 \$0.405 per mile, tolls, overnight shipping, plans, photocopies, photographic materials, equipment  
1758 rental, survey materials, long distance telephone calls from the field, newspaper advertisements,  
1759 permit application fees, and miscellaneous vendor invoices. These expenses will be included in  
1760 the engineer's contract with the owner.

#### 1761 ARTICLE D - PROJECT ADMINISTRATION

1762 1. Scope of Services and Contract - The engineer will communicate and coordinate with the  
1763 owner via telephone, letters, fax, and email requesting the authority to proceed with the  
1764 preliminary phases of the proposed project pending the execution of the engineering services  
1765 agreement. The engineer will prepare an engineering services agreement including a detailed  
1766 work scope narrative and itemized fee schedules for submission to the owner, the state, and  
1767 the FAA for review and approval. The engineer will coordinate the preparation of the  
1768 contract with the staff of their planning, CADD, and environmental departments.

1769 a. The engineer will make changes to the work scope narrative and the fee schedules of  
1770 the selected proposal. The engineer will make changes to the contract document  
1771 standard provisions at the request of the owner's legal counsel and with the approval of  
1772 the engineer's executive management. The engineer will prepare letters of transmittal  
1773 and will distribute three (3) copies the final contract to the owner and the engineer's  
1774 executive management for original authorized signatures. The engineer will prepare  
1775 letters of transmittal and will distribute one (1) signed original copy of the fully  
1776 executed contract to the owner, one (1) signed original copy to the engineer's executive  
1777 management, one (1) signed photocopy to the state, and one (1) signed photocopy to  
1778 the FAA.

1779 2. FAA Grant Application - The engineer will prepare seven (7) copies of the formal FAA grant  
1780 application including letters of transmittal, Standard Form 424, Standard Form 5100-100,  
1781 project narrative, cost estimate, project schedule, location sketch, statement of environmental  
1782 action, statement of airport user coordination, statement of intergovernmental coordination,  
1783 statement of owner DBE program status, sponsor certifications, and grant assurances. The  
1784 engineer will submit the grant application to the owner with transmittal letters for signatures  
1785 and forwarding to the FAA and state. The engineer will review the Federal grant offer and  
1786 assist the owner in complying with the terms and conditions of the grant offer.

1787 3. Executive Order 12372 - The engineer will communicate with the Anystate Office of State  
1788 Planning to confirm the requirements of the submission package for intergovernmental  
1789 agency review in accordance with Executive Order 12372. The engineer will prepare and  
1790 submit six (6) copies of the submission package with a cover letter. The engineer will also  
1791 prepare and deliver one (1) submission package with a cover letter directly to the U.S. Fish  
1792 and Wildlife Service to facilitate Federal agency review of the proposed project. The  
1793 engineer will obtain response letters at the end of the review period identifying specific  
1794 requirements to be incorporated into the proposed project.

1795 4. Reimbursement Requests - The engineer will prepare the Federal and State reimbursement  
1796 requests using FAA Forms 5100-X and 5100-6X and State Form 55XX including letters of  
1797 transmittal to the FAA and state. The engineer will compile the sponsor administration costs,

- 1798 engineering costs, subconsultant costs and construction costs. The engineer will submit five  
1799 (5) copies of each reimbursement request package to the owner with transmittal letters for  
1800 signature and forwarding to the FAA and the state for payment. It is anticipated that a total  
1801 of six (6) reimbursement request packages including the final reimbursement request will be  
1802 prepared and submitted during the course of the project.
- 1803 a. The engineer will compile, review, and approve the consultant's construction cost data  
1804 and will prepare FAA Form 51XX-8 periodic cost estimates. The engineer will submit  
1805 seven (7) copies of the periodic cost estimates to the consultant for signature and return  
1806 to the engineer for inclusion in the reimbursement request packages. It is anticipated  
1807 that a total of four (4) periodic cost estimates will be prepared and submitted during the  
1808 course of the project.
- 1809 5. In-House Administration - The engineer will provide general project administration and  
1810 coordination including in-house staff review of the project's progress, in-house staff  
1811 communication, and dissemination of project data and information to in-house staff in the  
1812 form of internal memos, discussions, meetings, and updates to apprise the project team of  
1813 new developments throughout the design phases of the project. The engineer will prepare an  
1814 in-house project work plan for distribution to the engineer's design team members to inform  
1815 them of the project goals and objectives including scope of work, team assignments and  
1816 responsibilities, project budget, project schedule, project contacts, and contract requirements,  
1817 obligations, and limitations.
- 1818 6. Outside Administration - The engineer will provide general project administration and  
1819 coordination including disseminating interim project data and information to the owner, the  
1820 state, the FAA, and the engineer's subconsultants in the form of telephone conversations,  
1821 letters, faxes, email, copies, etc. to apprise the owner, the state, and the FAA of new  
1822 developments throughout the design phase of the project.
- 1823 7. Accounting Administration - The engineer will provide general project administration and  
1824 coordination with the staff of their accounting department. The engineer will prepare the  
1825 internal close out forms. The engineer will verify and reconcile the monthly accounting  
1826 statements and will prepare memos for adjustments and corrections when necessary. The  
1827 engineer will approve and process invoices received from subconsultants and vendors  
1828 providing services to the engineer throughout the design phases of the project. The engineer  
1829 will prepare and submit monthly invoices to the owner for services provided to the owner  
1830 and for costs incurred by the engineer and their subconsultants. It is anticipated that a total of  
1831 six (6) invoices will be prepared and submitted during the course of the project.
- 1832 8. Miscellaneous Administration - The engineer will provide miscellaneous project  
1833 administration and coordination duties which are not specifically addressed or anticipated in  
1834 other project related tasks including telephone conversations with the owner, the state, the  
1835 FAA, and other interested parties; disseminating interim project information to the owner, the  
1836 state, the FAA, and other interested parties; and organizing, maintaining, and archiving the  
1837 project records for six (6) years.
- 1838 9. Disadvantaged Business Enterprise Program - The engineer will update the airport  
1839 Disadvantaged Business Enterprise (DBE) program in accordance with 49 CFR Part 26,  
1840 *Participation by Disadvantaged Business Enterprises in Department of Transportation*  
1841 *Financial Assistance Programs*. The engineer will review the methodology for evaluating  
1842 the availability of DBE businesses to provide services and products for airport projects in the  
1843 Federal fiscal year 20XX. The engineer will review the airport's service area by analyzing

1844 the utilization of DBE businesses on previous airport projects. The engineer will prepare a  
1845 legal advertisement describing the revised DBE utilization goal and methodology. The  
1846 engineer will deliver the advertisement to the owner to publish in one (1) newspaper as a  
1847 public notice to provide a thirty day public comment period. The engineer will submit the  
1848 revised DBE program to the FAA Office of Civil Rights review and comments. The  
1849 engineer will prepare the DBE program annual update on Form 4XXX at the conclusion of  
1850 Federal fiscal year 20XX to reflect the actual DBE utilization on airport projects.

1851 Expenses - The engineer will incur certain miscellaneous project related expenses during this  
1852 phase of the work which may include but will not be limited to: meals, lodging, mileage cost at  
1853 \$0.405 per mile, tolls, overnight shipping, plans, photocopies, photographic materials, equipment  
1854 rental, survey materials, long distance telephone calls from the field, and miscellaneous vendor  
1855 invoices. These expenses will be included in the engineer's contract with the owner.

#### 1856 ARTICLE E - BIDDING SERVICES AND CONSTRUCTION ARRANGEMENTS

1857 1. Bid Documents - The engineer will prepare XX sets of bid documents comprising the  
1858 construction plans, construction specifications, and construction contract in accordance with  
1859 the requirements of the owner, the state, and the FAA.

1860 2. Bid Advertisement - The engineer will prepare a legal advertisement and deliver it to three  
1861 (3) newspapers to publish as a solicitation for construction bids in accordance with the  
1862 owner's bidding procedures. The engineer will deliver the bid advertisement to five (5) plan  
1863 viewing rooms for publication in order to maximize the project exposure and generate  
1864 widespread consultant interest in the project. The engineer will communicate with the plan  
1865 viewing rooms and similar industry entities to provide technical information for their  
1866 publications. The engineer will notify the state and the FAA of the project's advertisement.

1867 3. Distribute Bid Documents - The engineer will contact consultants who are potential bidders  
1868 in order to maximize consultant participation in the project. The engineer will issue the bid  
1869 documents to the interested bidders and to five (5) plan viewing rooms. The engineer will  
1870 maintain a list of the bid document recipients including the recipient's name, overnight  
1871 mailing address, telephone number, and fax number for use in issuing addenda. The engineer  
1872 will distribute the bid document recipient list to interested parties if requested by potential  
1873 bidders.

1874 4. Pre-Bid Conference - The engineer will attend the pre-bid conference at the airport to present  
1875 the project to interested parties and to answer consultants' and subconsultants' questions.  
1876 The engineer will conduct a site walk of the project area to allow the consultants and  
1877 subconsultants to observe the existing conditions first-hand and to ask questions regarding  
1878 their observations. The engineer will prepare written responses to questions that require  
1879 additional information that is not available at the time of the pre-bid conferences. The  
1880 engineer will distribute the responses to the bid document recipients and pre-bid conference  
1881 attendees.

1882 5. Bid Questions and Addenda - The engineer will answer questions and provide technical  
1883 advice to the potential bidders concerning the bid documents. The engineer will answer  
1884 questions and provide technical advice to the owner concerning the bid documents. The  
1885 engineer will prepare and issue one (1) addenda to the bid document recipients to clarify,  
1886 modify, or correct the bid documents.

1887 6. Bid Analyses, Recommendation and Award - The engineer will conduct a detailed analysis  
1888 of the consultants' bids for completeness and accuracy and will note omissions and

1889 discrepancies. The engineer will compile a bid summary comprising the results of the bids  
1890 for distribution to the bid document recipients. The engineer will write a letter to the owner  
1891 recommending the award of the construction contract to the apparent low bidder based on the  
1892 bid analyses. With the concurrence of the owner, the state and the FAA, the engineer will  
1893 issue a written notification to the successful bidder informing the bidder of the bid results.  
1894 The engineer will disseminate the bid results to the plan viewing rooms.

1895 7. Bid Sureties - The engineer will issue letters to the unsuccessful bidders returning the bid  
1896 sureties, distributing the bid summary, and describing the bid results. The engineer will  
1897 return the bid surety to the successful bidder after the bidder has executed the construction  
1898 contract. The engineer will return the bid surety to the second low bidder after the successful  
1899 bidder has executed the construction contract.

1900 8. Consultant Coordination - The engineer will prepare six (6) copies of the consultant's bid  
1901 proposal package for use as the construction contract document. The engineer will  
1902 coordinate with and provide information to the consultant to facilitate the preparation and  
1903 execution of the construction contract document. The engineer will review the consultant's  
1904 construction contract for accuracy and completeness before submitting the document to the  
1905 owner for final signatures. The engineer will prepare a checklist of tasks to be performed by  
1906 the owner to fully execute the construction contract. The engineer will distribute the  
1907 construction contract documents at the preconstruction conference.

1908 Expenses - The engineer will incur certain project related expenses during this phase of the work  
1909 which may include but will not be limited to: meals, lodging, mileage cost at \$0.405 per mile,  
1910 tolls, overnight shipping, plans, photocopies, photographic materials, equipment rental, survey  
1911 materials, long distance telephone calls from the field, and miscellaneous vendor invoices.  
1912 These expenses will be included in the engineer's contract with the owner.

## 1913 ARTICLE F - CONSTRUCTION ADMINISTRATION

1914 1. Preconstruction Conference - The engineer will coordinate the time, date, and location of the  
1915 preconstruction conference. The engineer will notify the owner, the FAA, the state, the  
1916 consultant, the resident engineer, and other interested parties of the preconstruction  
1917 conference and will invite their representatives to attend. The engineer will conduct the  
1918 preconstruction conference in accordance with FAA AC 150/5300-9, *Predesign, Prebid, and*  
1919 *Preconstruction Conferences for Airport Grant Projects*, to ensure that the attendees are  
1920 aware of the design, construction, and safety requirements of the project and are informed of  
1921 their individual responsibilities.

1922 2. Shop Drawing Review - The engineer will review the shop drawings and materials submittals  
1923 that are furnished by the consultant as required by the construction contract documents. The  
1924 engineer will either fully approve, conditionally approve, or reject the shop drawings and  
1925 materials. The engineer will return conditionally approved and rejected shop drawings and  
1926 materials submittals to the consultant for changes or revisions prior to the use of the materials  
1927 on the project. The engineer will review only one resubmission of a conditionally approved  
1928 or rejected shop drawing or submittal. The engineer will prepare and maintain a submittal  
1929 register identifying the submittal number, description, specification section, specification  
1930 paragraph, received date, action date, and action taken. The engineer will distribute copies of  
1931 the submittals and the updated submittal register to the owner and the consultant.

1932 3. Construction Administration - The engineer will provide general consultation and advice to  
1933 the owner during the construction phase of the project. The engineer will provide general

- 1934 coordination between the owner, the state, and the FAA during the construction phase of the  
1935 project. The engineer will assist the owner with the preparation and issuance of change  
1936 orders, recommend construction specification waivers, and advise the owner as to the  
1937 consultant's performance. The engineer will review daily progress reports, monthly  
1938 construction progress reports, wage survey records, and certified payrolls. The engineer will  
1939 distribute copies of the monthly construction progress reports to the owner, the FAA, and the  
1940 state.
- 1941 a. The engineer will provide general supervision and support to the resident engineer  
1942 including, but not limited to, coordinating field survey personnel, processing the  
1943 resident engineer's weekly time sheets and expense sheets, providing technical  
1944 documentation, providing field office supplies and materials, performing construction  
1945 contract interpretation, analyzing unusual or unique developments or complications  
1946 during construction, and communicating and corresponding with the consultant  
1947 regarding contract administration, project changes, bonding and insurance issues, and  
1948 other construction related matters.
- 1949 b. The engineer will communicate and coordinate with the consultant on a regular basis  
1950 throughout the construction phase of the project in the form of teleconferences, letters,  
1951 memos, faxes, and email.
- 1952 4. Supervisory Site Visits - The engineer will make supervisory visits to the construction site to  
1953 observe the progress, safety, and quality of the construction. The engineer will coordinate  
1954 the site visits with the owner and representatives of the electrical and structural divisions.  
1955 The engineer's representatives will meet with the representatives of the owner and the  
1956 consultant to discuss the project's progress and to identify areas of concern to facilitate the  
1957 construction.
- 1958 5. Final Inspection - The engineer will conduct a site walk and final inspection of the project to  
1959 confirm the completeness and quality of the construction. The engineer will coordinate the  
1960 date and time of the final inspection via teleconferences, letters, faxes and email to the  
1961 owner, the FAA, the state, the resident engineer, and the consultant. The engineer will  
1962 prepare a summary report of the final inspection, including a punch list of work items that the  
1963 consultant must accomplish to complete the project. The engineer will distribute the  
1964 summary report to the owner, the FAA, the state, the resident engineer, and the consultant.
- 1965 6. Record Drawings - The engineer will prepare four (4) sets of paper copies of the record  
1966 drawings and final quantities representing the completed project and reflecting the actual  
1967 work accomplished during construction. The engineer will distribute the four (4) sets of  
1968 record drawings to the owner, the FAA, and the state for signatures. The engineer will  
1969 prepare and distribute one (1) set of mylar copies of the record drawings to the owner after  
1970 the record drawings have been signed by all parties. The engineer will provide the owner  
1971 with electronic files of the record drawings in AutoCAD DWG format and PDF format on  
1972 CD-ROM.
- 1973 7. Airport Layout Plan Drawing - The engineer will update the electronic versions of the  
1974 Ultimate Airport Layout Plan drawing which is identified as Sheet 3 of the Airport Layout  
1975 Plan drawing set. The engineer will update the drawing to reflect the actual work  
1976 accomplished by the project.
- 1977 8. Airport Terminal Area Plan Drawing - The engineer will update the electronic version of the  
1978 Airport Terminal Area Plan drawing which is identified as Sheet 4 of the Airport Layout Plan

- 1979 drawing set. The engineer will update the drawing to reflect the actual work accomplished  
1980 by the project and previous airport development.
- 1981 9. Project Close Out Report - The engineer will prepare the final project documentation in the  
1982 form of a project close out report that consolidates the project related information that will be  
1983 required by the FAA to formally close out the project. The engineer will include in the close  
1984 out report all general, fiscal, miscellaneous, engineering and construction information, and  
1985 submissions/certifications listed on the FAA project closure summary checklist. The  
1986 engineer will distribute one (1) copy of the project close out report each to the owner, the  
1987 FAA and the state.
- 1988 Expenses - The engineer will incur certain project related expenses during this phase of the work  
1989 which may include but will not be limited to: meals, lodging, mileage cost at \$0.405 per mile,  
1990 tolls, overnight shipping, plans, photocopies, photographic materials, equipment rental, survey  
1991 materials, and long distance telephone calls from the field. These expenses will be included in  
1992 the engineer's contract with the owner.
- 1993 Outside Services - The engineer will incur certain project related costs during the construction  
1994 administration phase of the work in the form of subconsultant costs for geotechnical testing  
1995 services. These costs will be included in the engineer's contract with the owner.
- 1996 **ARTICLE G - TECHNICAL OBSERVATION OF CONSTRUCTION**
- 1997 1. Resident Engineer - The engineer will provide a qualified construction resident engineer to  
1998 observe that the construction is carried out in reasonable conformity with the contract  
1999 documents and in accordance with the customary practices of professional engineers and  
2000 consultants. The resident engineer will be available for both full-time and part-time  
2001 construction observation services during the 90 calendar day duration of the project as  
2002 required by the nature of the ongoing construction activities.
- 2003 a. For budgeting purposes, the resident engineer can be available sixteen (16) hours per  
2004 week for twelve (12) weeks including travel time for a total of 192 hours during the  
2005 course of the construction. The resident engineer can also be available for eight (8)  
2006 hours to attend the final inspection. Variations to this proposed manhour distribution  
2007 may be necessary as the work progresses but must not exceed 200 manhours.  
2008 Additional manhours for the resident engineer must be addressed by a supplemental  
2009 agreement.
- 2010 b. The resident engineer will be the engineer's primary contact with the consultant and  
2011 their subconsultants during the course of construction. The resident engineer will be  
2012 available to meet with the representatives of the owner, the FAA, the state, and other  
2013 interested parties at the project location. The resident engineer will coordinate and  
2014 supervise the engineer's subconsultants and personnel who are performing on-site  
2015 testing, surveying, or other project related services.
- 2016 c. The resident engineer will monitor and coordinate the construction progress; will  
2017 coordinate with the owner, the engineer, and the consultant; will provide construction  
2018 oversight to ensure that the work is proceeding according to the construction contract  
2019 documents; and will notify the engineer if problems, disputes, or changes arise during  
2020 the course of construction.
- 2021 d. The resident engineer will prepare and maintain cost estimates and construction  
2022 quantity estimates for use in preparing monthly payment reimbursement requests and

- 2023 for monitoring the progress of the consultant's work. The resident engineer will  
2024 prepare daily construction progress reports of the construction activities that are  
2025 observed and will submit the reports to the engineer for review. The resident engineer  
2026 will prepare monthly construction summary reports of completed work that has been  
2027 accepted and approved by the consultant and will submit the reports to the engineer for  
2028 review.
- 2029 e. The resident engineer will conduct Federal wage rate surveys with the consultant's  
2030 personnel and their subconsultants' personnel to ensure compliance with the U.S.  
2031 Department of Labor regulations for federally funded construction projects. The  
2032 resident engineer will submit the wage rate survey records to the engineer for review.
- 2033 f. The resident engineer will assist the consultant with construction surveying to identify  
2034 the limits of work, to determine elevations and grades, to locate physical features  
2035 discovered during the course of construction, and to calculate quantities of materials  
2036 either removed or utilized on the project. The consultant's construction survey data  
2037 will be incorporated into the record drawings at the completion of the project. The  
2038 engineer will provide the resident engineer with CADD support to plot the results of  
2039 the construction survey data and to generate electronic drawings, sketches, and details  
2040 at the request of the resident engineer to facilitate the construction.
- 2041 Expenses - The engineer will incur certain project related expenses during the course of the  
2042 technical observation of construction phase of the work which may include but will not be  
2043 limited to: meals, lodging, mileage cost at \$0.405 per mile, tolls, overnight shipping, blueprints,  
2044 photocopies, photographic materials, equipment rental, survey materials, long distance telephone  
2045 calls from the field, and miscellaneous vendor invoices. These expenses will be included in the  
2046 engineer's contract with the owner.
- 2047 Outside Services - The engineer will incur certain project related costs during the technical  
2048 observation phase of the work in the form of geotechnical subconsultant costs for quality  
2049 assurance testing of construction materials and practices. These costs will be included in the  
2050 engineer's contract with the owner.

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**APPENDIX D. CONSULTANT SERVICES FEE/COSTS SAMPLE**

2053 This example can be modified as necessary for any type of project.

Airport: \_\_\_\_\_

Project: \_\_\_\_\_

Date: \_\_\_\_\_

THIS IS A SAMPLE  
ANY SIMILAR FORM MAY BE  
USED

TASKS	EMPLOYEE CLASSIFICATIONS							
	DIRECTOR AVIATION	PROJECT MANAGER	AIRPORT PLANNER	ENVIRO. ANALYST	CADD TECH	CLERICAL		
	HOURS							
1 Project Scoping Meeting								
2 Refine Scope and Fee								
3 Prepare Grant Application								
4 Attend City Council Meeting								
5 Update Existing Activity								
6 Field Inventory								
7 Identify On-Airport Developable Land								
8 Evaluate Existing Lease Agreements								
9 Update 1999 Forecasts								
10 Review and Respond to Comments								
11 Landside Facility Capacity & Requirements								
12 Meeting								
13 Review and Respond to Comments								
14 Identify Limits of Aviation Development								
15 Identify Development Alternatives								
16 Review and Respond to Comments								
17 Identify Existing Environmental Conditions								
18 Describe Regulatory Requirements								
19 Prepare and Forward Draft Findings								
20 Implementation Plan & Capital Improvement Plan								
21 Existing Airport Facilities Plan								
22 Ultimate Airport Layout Plan								
23 Final Meeting								
24 Prepare and Forward Final Report								
25 Prepare and Forward Final Airport Layout Plan								
<b>TOTAL HOURS</b>	0	0	0	0	0	0		
<b>HOURLY RATE</b>	\$0	\$0	\$0	\$0	\$0	\$0		
<b>DIRECT SALARY COST</b>	\$0	\$0	\$0	\$0	\$0	\$0		
<b>Direct Nonsalary Expenses</b>						Total Direct Salary Costs	\$0.00	
Travel (x miles at \$x.xx/mile)	\$0.00						Overhead (xxx % of Direct Labor Costs)	<u>\$0.00</u>
Per Diem	\$0.00						<b>Total Labor Cost</b>	<b>\$0.00</b>
Reproduction	\$0.00						Fixed Fee (xx % of Total Labor Cost)	<u>\$0.00</u>
Testing	\$0.00						<b>Subtotal</b>	<b>\$0.00</b>
Consultants/Outside Services	\$0.00						Total Direct Nonsalary Expenses	<u>\$0.00</u>
Other	\$0.00						<b>TOTAL COST (Total Labor, Fixed Fee &amp; Expenses)</b>	<b>\$0.00</b>
<b>Total Direct Nonsalary Expenses</b>	<b>\$0.00</b>							

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**APPENDIX E. DETAILED FEE/COST ANALYSIS SAMPLE**

DATE: \_\_\_\_\_

PROJECT: \_\_\_\_\_

ESTIMATED CONSTRUCTION COSTS (ECC): \$ \_\_\_\_\_

ESTIMATED CONSTRUCTION DURATION: \_\_\_\_\_  
i.e. calendar days

**THIS IS A SAMPLE  
ANY SIMILAR FORM MAY BE  
USED**

ITEM	SPONSOR'S INDEPENDENT ESTIMATE	CONSULTANT FEE PROPOSAL	NEGOTIATION	
			DIFFERENCE	OBJECTIVE
<b>Wages and Overhead</b>	\$	\$	\$	
Overhead Percent				
Principal \$/Hour				
Project Mangager \$/Hour				
Civil Engineer \$/Hour				
Electrical Engineer \$/Hour				
CADD Technician \$/Hour				
Resident Engineer \$/Hour				
Inspector \$/Hour				
Project Engineer (Construction) \$/Hour				
Surveyor \$/Hour				
2-Man Crew				
<b>WORKHOURS</b>				
Principal				
Project Manager				
Civil Engineer				
Electrical Engineer				
CADD Technician				
Resident Engineer				
Inspector				
Project Engineer (Construction)				
Surveyors				
Workhour Totals				
Geotech	\$	\$	\$	
Travel	\$	\$	\$	
Printing	\$	\$	\$	
Total Fee	\$	\$	\$	
As percent of ECC				

EMPLOYEE  
CLASSIFICATIONS AND THEIR  
TITLES VARY WITH EACH  
CONSULTANT AND THE  
PROJECT SCOPE

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**APPENDIX F. RECORD OF NEGOTIATIONS SAMPLE****2060 ARCHITECTURAL AND ENGINEERING SERVICES**

2061 DATE:

2062 Job Title

2063 Location:

2064 Anticipated A.I.P. Grant:

- 2065 1. The consulting firm of XYZ was selected on January 21, 20XX, from those consultants who  
2066 submitted their qualifications. A scope of work and detailed independent cost estimate in the  
2067 amount of \$44,364 for the design phase and \$54,956 for the construction phase were  
2068 prepared by the sponsor on February 21 and submitted to the ADO on February 23.
- 2069 2. The scope of work and request for fee proposal were sent to XYZ Consultants on February  
2070 23.
- 2071 3. The meeting was held on February 27 with the sponsor, consultant, and FAA to ensure the  
2072 consultant had a thorough understanding of the scope of work.
- 2073 4. The consultant submitted their fee proposal for the work on March 2, broken down as  
2074 follows:
- 2075           Design Phase \$58,224  
2076           Construction Phase \$66,345
- 2077 5. A detailed cost analysis comparing the detailed independent estimate with the consultant's  
2078 fee proposal was done on March 6 and negotiation objectives were established.
- 2079 6. The sponsor's negotiator, Mr. A called Mr. X of XYZ Consultants on March 7 to discuss the  
2080 fee proposal. It was agreed that the construction duration of 60 days was adequate. The  
2081 consultant was told that their overhead rate appeared high and asked to submit a detailed  
2082 statement of overhead expenses for the previous year to verify their rate. Also the man hours  
2083 for the principal and project manager seemed excessive. It was also noted that both a  
2084 resident engineer and an inspector were not needed on the construction site fulltime. The  
2085 surveying manhours during construction were also excessive. The consultant agreed to  
2086 revise their fee proposal and resubmit it to the sponsor.
- 2087 7. The consultant submitted a revised fee proposal for the work on March 9, broken down as  
2088 follows:
- 2089           Design Phase \$51,286  
2090           Construction Phase \$59,432
- 2091 8. The detailed cost analysis was revised on March 12 to reflect the consultant's revised fee  
2092 proposal.
- 2093 9. The sponsor's negotiator met with Mr. X of XYZ Consultants at the sponsor's office on  
2094 March 13. Ineligible costs for entertainment and interest expense were deleted from the  
2095 consultant's overhead and an acceptable overhead rate of 134 percent was agreed upon. A  
2096 combined time of 60 man hours for the principal and project manager were agreed upon  
2097 allowing 15 for the principal and 45 for the project manager. The consultant's figures of 302  
2098 civil work hours, 120 electrical work hours, and 410 drafting work hours were accepted. The  
2099 consultant agreed to have a full time inspector on the job with a resident engineer also on the

- 2100 job one third of the time. The construction surveying work hours were reduced to 32 hours  
2101 of a three-man crew. The consultant agreed to make the discussed changes and submit a  
2102 final fee proposal.
- 2103 10. The consultant submitted a final fee proposal for the work on March 14, broken down as  
2104 follows:
- 2105           Design Phase \$47,324  
2106           Construction Phase \$56,658
- 2107 11. The final fee proposal is considered reasonable by the sponsor. A contract has been prepared  
2108 for the agreement between the sponsor and consultant. The scope of work, draft contract,  
2109 sponsor's independent cost estimate, consultant's fee proposals with revisions and detailed  
2110 cost analysis are attached to this record of negotiation and hereby submitted to the ADO for a  
2111 reasonableness of cost determination.
- 2112 12. The negotiations were conducted in good faith to ensure the fees are fair and reasonable. The  
2113 procedures outlined in AC 150/5100-14 have been followed.

2114

2115

Sponsor's Signature

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2117 **APPENDIX G. ALTERNATIVE PROJECT DELIVERY SYSTEMS**2118 **G.1 Alternative Project Delivery Systems.**

2119 G.1.1 Alternative project delivery systems (APDS) are popular construction methods in State  
2120 and local governments. The philosophy behind these types of delivery systems is that  
2121 there is a potential to reduce delivery time and minimize change orders that results in  
2122 overall lower costs and greater efficiency.

2123 G.1.2 Before undertaking alternative project delivery for an AIP funded project, the  
2124 conditions for the project must be evaluated to determine if alternative delivery is more  
2125 beneficial than the traditional design-bid-build method. The information contained in  
2126 this appendix is offered to provide Sponsors with some insight when pursuing  
2127 alternative project delivery. Sponsors should follow all applicable State and local laws  
2128 but must include the required Federal contract clauses and provisions in the  
2129 procurement documents. See Title 49 CFR § 18.36(i).

2130 **G.2 Alternative Project Delivery System Requirements.**

2131 The ADO must approve the use of an alternative project delivery system in advance of  
2132 the project starting. The Sponsor must submit the following documentation to the ADO  
2133 for review:

- 2134 1. A description of the delivery system to be used.
- 2135 2. A full description of the project with preliminary drawings of the proposed work.
- 2136 3. Documentation that provides the reason and justification for using the alternative  
2137 delivery system.
- 2138 4. Documentation that the selection process is allowed under State or local law.
- 2139 5. An organizational chart that shows contractual relationships between all the parties.
- 2140 6. A statement describing what safeguards are in place to prevent conflicts of interest.
- 2141 7. Documentation that the system will be as open, fair and objective as the traditional  
2142 design-bid-build project delivery system.
- 2143 8. Documentation of the amount of experience the parties involved in the project have  
2144 in the proposed project delivery method.

2145 **G.3 Alternative Project Delivery Advantages Not Allowed Under AIP.**

2146 Because of federal contract and procurement requirements, some of the advantages of  
2147 APDS cannot be realized on AIP funded projects. Some of these ineligible advantages  
2148 include:

- 2149 1. Early completion bonuses
- 2150 2. Cost overruns greater than 15%
- 2151 3. Shared cost savings
- 2152 4. Sponsor contingency costs

- 2153 5. Price escalation
- 2154 6. Sponsor insurance costs
- 2155 7. In-state or local preferences
- 2156 **G.4 Design-Build Project Delivery.**
- 2157 G.4.1 49 U.S.C §47142 establishes design-build contracting as an approvable form of project  
2158 delivery under AIP. Under the statute, design-build contracting is defined as an  
2159 agreement that provides for both design and construction of a project by a single  
2160 contractor. That contractor holds responsibility for the entire contract. Design-build  
2161 may provide cost savings because of time savings in the contracting process as well as  
2162 earlier start of construction.
- 2163 G.4.2 Design-build project delivery can be performed by a single company with both design  
2164 and construction ability in-house, or by a joint venture working under a single design-  
2165 build contract. Design-build services can be performed under all the contractual  
2166 methods used for construction including lump-sum, cost reimbursable with not-to-  
2167 exceed ceiling (excluding cost-plus-percentage of costs) and time and material.. If an  
2168 outside firm is used to develop the initial qualifications package, that firm may not  
2169 participate as a competing party or sub-party in step 2. However, they may participate  
2170 as a Sponsor representative on the selection board. Design fees are part of the overall  
2171 contract price, but are separated as a subset of the total price. Contracting for design-  
2172 build services can be done through a two-step Competitive Proposal Selection (CPS) as  
2173 described below:
- 2174 1. **Step one:** The Sponsor prepares a design criteria package for the project using in-  
2175 house staff or a separate professional services firm. The Sponsor also advertises for  
2176 Design-Build firms or Joint Ventures to submit a qualifications package for  
2177 consideration of the proposed project. Interested firms will respond to the  
2178 solicitation, and are short-listed using a similar process used for QBS.
- 2179 2. **Step two:** The design criteria package is issued to the short listed firm or teams,  
2180 who respond with separate technical and price proposals. 49 U.S.C §47142 requires  
2181 at least 3 firms submit proposals. Technical proposals which include preliminary  
2182 drawings, outline specifications, and project schedules, are evaluated first, using a  
2183 numerical points earned system. Then, price proposals are opened and prices are  
2184 factored into the points earned system to decide the final selection. A common  
2185 method of scoring price information is to divide the price by the technical points  
2186 score, and the resulting low score wins.
- 2187 **G.5 Construction Manager-At-Risk (CM-A-R).**
- 2188 G.5.1 Utilizing the CM-A-R delivery system, the Sponsor engages a professional services  
2189 design firm and in the early design phase, a construction manager/general contractor  
2190 (CM-A-R) is selected.

- 2191 G.5.2 The design firm is selected using professional services QBS. The CM-A-R is selected  
2192 using a two-step competitive proposal.
- 2193 1. **Step one:** The sponsor and design firm prepare a RFQ with preliminary project  
2194 information and use qualifications based criteria to rank and short list the top firms.
- 2195 2. **Step two:** More detailed design information is provided to the short listed firms  
2196 who reply with price information for various items such as, profit/contractor fee,  
2197 insurance, bonding and general conditions.
- 2198 G.5.3 The CM-A-R is then selected with qualifications and price as a consideration.
- 2199 G.5.4 After selection, the sponsor then negotiates the fees for pre-construction services that  
2200 may include:
- 2201 1. Design document reviews
- 2202 2. Construction scheduling and sequencing
- 2203 3. Cost Estimating at various stages of the design
- 2204 4. Constructability reviews with recommended cost savings based on construction  
2205 expertise.
- 2206 G.5.5 At some point either in the design stage or after subcontractor bidding, the CM-A-R and  
2207 the Sponsor negotiate a Guaranteed Maximum Price (GMP) for the project. The GMP  
2208 is generally comprised of construction/ materials, contractor fee, general conditions,  
2209 insurance, bonding and a contingency percentage which varies depending on the state of  
2210 the design. The Sponsor and the design firm are directly involved in fixing the GMP  
2211 through cost estimating at different levels of design completion, typically the 30, 60,  
2212 and 90% completion levels. Some State and local laws require that the GMP can only  
2213 be fixed after the CM-A-R publically bids the project design packages.
- 2214 G.5.6 If the CM-A-R and the Sponsor cannot agree on a GMP, the project may consider  
2215 converting to the traditional design-bid-build method . Please consult the FAA program  
2216 manager to discuss any consequences associated with such a change.
- 2217 G.5.7 During the construction phase, the CM-A-R role is of a general contractor. Since the  
2218 GMP is designed to prevent cost overruns for the Sponsor, the CM-A-R bears the  
2219 responsibility for ensuring the project stays on schedule, within budget and conforms to  
2220 the plans and specifications.