



CITY OF MESA ENGINEERING DEPARTMENT

PROJECT DEVELOPMENT GUIDELINES

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I GENERAL

A. Project Scope

The City of Mesa Engineering Department is responsible for delivering all Capital Improvement projects undertaken by the City. This includes General Buildings (new and remodel), Transportation, Aviation, Water, Waste Water, Natural Gas, Storm Drain and Parks & Recreation facilities. The Consultant's detailed scope of work shall include a description of the specific project under consideration, and shall include such detail as to accurately describe all aspects of the work required for the project to be completed successfully.

B. Project Budget

All City of Mesa Capital Improvement projects are approved by the City Council with a project specific budget. This budget includes amounts for design, construction, right-of-way acquisition, design and construction administration and any furnishings or commodity purchases as applicable. During contract negotiations, the City of Mesa Project Manager will provide the project specific budget numbers to the Consultant. The Consultant is responsible for developing the project within the approved budget. If the Consultant believes for any reason the project cannot be completed within the approved budget, it shall be the Consultant's responsibility to immediately notify the City of Mesa Project Manager and to propose alternatives for reducing project costs back to within the approved budget amount.

C. Project Schedule

The Consultant is required to prepare for City review and approval, a project schedule that includes all major work tasks, key milestones and all City of Mesa reviews. The Consultant shall prepare and update the project schedule in accordance with Section VI, Item B of these guidelines. The project Bid Date will be established by the Consultant's baseline schedule, as agreed to by the City of Mesa Project Manager. Changes in the Bid Date will not be allowed after agreement on the baseline schedule unless changes in a project's scope require changes to the baseline schedule.

II REFERENCES AND STANDARDS

The following documents are references and standards developed and published by the City of Mesa, or developed by other organizations and adopted for use by the City of Mesa. Included in this listing are standards, specifications, manuals, guides, procedures, and master plans that shall be applied to the various aspects of the project as applicable. The Consultant is responsible for designing in accordance with the current edition, including revisions and supplements thereto, of all applicable documents.

This list is not intended to be all-inclusive, but to identify the most commonly used references. The Consultant is responsible for complying with all Local, State and Federal regulations and guidelines that apply to the project. If the Consultant



proposes to use a standard or specification not listed below, the proposed information must be included in the construction documents in entirety, not via reference.

A. City of Mesa Publications

1. Specifications, Standards, Guides and Procedures (Responsible Department)
 - a. Standard Specifications, Amendment to the Uniform Standard Specifications (Engineering Department)
 - b. Standard Details, Amendment to the Uniform Standard Details (Engineering Department)
 - c. Standard Sheets, Title Block and Layering Conventions for CADD Drawings (Engineering Department)
 - d. CADD Drafting Standards (Engineering Department)
 - e. Signing and Pavement Marking Design Procedures Manual (Transportation Department)
 - f. Barricade Manual (Transportation Department)
 - g. Procedures Manual - Engineering and Design Standards (Development and Sustainability & Engineering Departments)
 - h. Procedures Manual – Landscape and Irrigation Standards (Development and Sustainability & Engineering Departments)
 - i. Procedures Manual – Development Standards (Development and Sustainability & Engineering Departments)
 - j. Mesa City Code (City Clerk's Office)
 - k. Standard List of Preferences (Facilities Maintenance Department)
 - l. Communications Equipment Rooms, A Design Guide for Architects and Engineers (Information Technology Department)
 - m. Outside Plant (OSP), A Design Guide for Communications Infrastructure, A Guide for Architects and Engineers (Information Technology Department)
2. Master Plans
 - a. Water System Master Plan
 - b. Waste Water System Master Plan
 - c. Gas System Master Plan



- d. Storm Drain System Master Plan
- e. Transportation Master Plan
- f. Parks and Recreation Master Plan
- g. 6th Street Service Center Master Plan
- h. East Mesa Service Center Master Plan
- i. General Plan

B. Other Local Publications

- 1. Maricopa Association of Governments (MAG)
 - a. Uniform Standard Specifications for Public Works Construction
 - b. Uniform Standard Details for Public Works Construction
- 2. Arizona Utility Coordinating Committee (AUCC) Public Improvement Project Guide

C. Maricopa County Publications

- 1. Flood Control District of Maricopa County (FCDMC)
 - a. Drainage Design Manual, Volume I - Hydrology
 - b. Drainage Design Manual, Volume II - Hydraulics
 - c. Drainage Design Manual, Volume III – Erosion Control
- 2. Maricopa County Department of Transportation (MCDOT)
 - a. Roadway Design Manual
 - b. Pavement Marking Manual
 - c. Signing Manual

D. State Publications

- 1. Arizona Department of Environmental Quality (ADEQ), Engineering Bulletin No. 11 – Minimum Requirements for Design, Submission of Plans and Specifications of Waste Water Works



E. Federal Publications

1. Federal Highway Administration (FHWA)
 - a. Manual on Uniform Traffic Control Devices
2. Federal Aviation Administration (FAA)
 - a. All applicable Aviation Advisory Circulars
 - b. Standard Specifications for Construction of Airports
3. Federal Register
 - a. Davis-Bacon Act (40 USC 2762), U.S. Department of Labor
 - b. ADA Standards for American with Disabilities Act, Accessibility Guidelines Title I and II

F. AASHTO Publications

1. A Policy on Geometric Design of Highways and Streets, ("Green Book")
2. Roadside Design Guide
3. Standard Specifications for Highway Bridges and Interim Specifications
4. Materials Part I (Specifications) and Part II (Tests)

G. Other Organization's Publications

1. Codes
 - a. Uniform Building Code (UBC)
 - b. Uniform Mechanical Code (UMC)
 - c. National Electric Code (NEC)
 - d. Uniform Plumbing Code (UPC)
 - e. Uniform Fire Code (UFC)
2. American Water Works Association (AWWA) Standards
3. American National Standards Institute (ANSI) Standards
4. American Society for Testing and Materials (ASTM) Standards



5. Instrument Society of America (ISA) Guidelines
6. Illuminating Engineering Society of North America (IESNA) Guidelines

NOTE: For all publications, the latest Editions adopted by the City shall be used.

III DESIGN PHASE SERVICES

The Consultant shall be responsible for the design work outlined in their scope of work and professional services contract. The work shall conform to the standards, criteria, and requirements of these guidelines, as well as any previously prepared Design Concept, Basis of Design and/or Environmental Reports.

A. Project Documents

The Consultant shall prepare all documents required by the specific project scope of work, including, but not limited to reports, plans, details, design calculations, specifications, quantity and cost calculations, schedules, memoranda and meeting agendas and minutes. Upon completion of the project, the Consultant shall deliver all project documentation to the City of Mesa in the format specified in the project scope of work.

B. Cost Estimates

The Consultant shall prepare a detailed construction cost estimate concurrent with each review submittal. The estimate shall be presented in a format approved by the City, either by MAG Section or CSI Division. The Consultant shall immediately advise the City, in writing, if there is any reason to believe the project cannot be constructed within the allocated budget. The Consultant shall identify options to maintain the project within budget, including revising project scope, reducing criteria, or phasing changes.

C. Special Provisions

The Consultant shall be responsible for reviewing the City's standard Special Provisions, and identifying critical elements of construction, including, but not limited to construction phasing, staging and access requirements, construction work-time restrictions, special coordination with affected local agencies (police, fire, outside agencies, etc.), traffic control, City-furnished materials, and limitations specifically addressed in any environmental documents or right-of-way agreements. The Consultant shall provide comments on these items to the City Project Manager for review and possible incorporation into the Special Provisions.

D. Technical Provisions

The Consultant shall prepare Technical Provisions for items, details, and procedures not adequately covered by MAG, the City's supplemental specifications



to MAG, and the City's Special Provisions. Unusual requirements necessary for obtaining permits shall also be included.

E. Bidding Process

The Consultant shall, at the direction of the City, support the bidding process after completion of the final submittal as described below:

1. Through the City Project Manager, answer questions relative to the plans, quantities, and technical provisions.
2. Prepare any addenda required to clarify the work included in the contract documents. Addenda may be required based on a project inspection with the City's Representative, questions developed in a pre-bid conference, or conditions discovered by bidders during the bid period.
3. The Consultant shall be prepared to attend the pre-bid conference, if one is scheduled, and shall be prepared to discuss items that are anticipated to be questioned. The Consultant shall respond to questions related to the plans, details, and technical provisions.
4. Optional service that may be negotiated and included in the scope of work: The Consultant shall prepare a conformed set of construction documents incorporating all addenda material for delivery to the City of Mesa Project Manager.

IV CONSTRUCTION PHASE SERVICES

The City of Mesa will coordinate all construction phase services to be performed by the Consultant. Depending on the project, the Consultant may be responsible for construction phase services including, but not limited to: attend the Pre-Construction meeting; respond to RFI's; review and approve shop drawings; review proposals for substitutions or "approved alternates"; provide field observation and provide Special Inspections as required by the building code. All work shall be performed in accordance with the requirements of these guidelines and other applicable standards and guidelines. Specific project requirements will be identified in the Consultant's scope of work and professional services contract.

V MATERIALS FURNISHED BY THE CITY OF MESA

The City will provide the following materials to the Consultant, if available. The City makes no guarantees as to the accuracy of record drawings or materials from other sources. The Consultant shall be responsible for verifying accuracy of those materials.

A. Mapping and Control

1. Vertical Control on City of Mesa Datum



2. Aerial photos

B. Record Documents

1. "Record Drawings" plans of existing conditions
2. Quarter Section Maps
3. Property Title reports if additional right-of-way is needed

C. Environmental Studies

Available data in the City's possession pertaining to environmental studies.

D. Base Sheet Format

The City requires the use of standard base sheets and title blocks for preparation of plans on City projects. The City will provide the Consultant with an electronic copy, in AutoCAD format, of each of the following base sheets as required for completion of project plans. The sheets are also available on the Engineering Department web page, at www.mesaaz.gov/engineering.

1. Cover Sheet
2. General Notes Sheets (2 sheets – delete/edit those notes that do not apply)
3. Full Plan Sheet
4. Full Grid (Profile) Sheet
5. Plan and Profile Sheet

VI CONTRACT ADMINISTRATION

A. City of Mesa Responsibilities

1. Conduct ongoing reviews of the Consultant's progress in performing the work and furnish technical comments and guidance in a timely manner.
2. Direct design review and agency coordination meetings with appropriate participants at project kickoff and as needed during project development.
3. Review the Consultant's invoices, progress reports, requests for change orders and time extensions, and comment/approve as appropriate.
4. Review all correspondence with public agencies or the general public prior to the mailing of any correspondence.
5. Provide a focal-point contact for all questions, requests, and submittals.



B. Consultant Responsibilities

1. Staffing and Execution

- a. Maintain suitable office facilities and adequate qualified staff to perform the work necessary to complete the project within established and agreed upon schedule.
- b. The Consultant's work shall be performed and/or directed by the key personnel identified during contract negotiations. The Consultant shall request, in writing, any changes in the Consultant's key personnel, which shall be subject to review and approval by the City.
- c. Provide a focal-point contact for all questions, requests, and submittals.
- d. Establish and maintain contract administration procedures and project controls, and procedures for documenting and monitoring project costs, change orders, time extensions and subcontracts.
- e. Participate in design review, agency and utility coordination meetings with appropriate participants as needed during project development.

2. Project-Related Correspondence

- a. The Consultant shall include the complete City of Mesa project name and number on all correspondence related to this contract.
- b. The Consultant shall prepare meeting agendas for distribution no less than 48 hours in advance of any meeting. In addition, the Consultant is responsible for recording and distributing the minutes of all meetings pertaining to the project to meeting participants within one (1) week of the meeting date. All agenda and minutes shall be reviewed and approved by the City's Project Manager prior to distribution.
- c. The Consultant shall furnish to the City for its records, written documentation of communications between the Consultant and any party pertaining specifically to this project within one (1) week of the communication.

3. Field Reviews

The Consultant shall perform any and all field reviews necessary to successfully complete the project. Field reviews shall include, but not be limited to: project kickoff (with City and Consultant representatives, as well as other agencies and utility companies, as appropriate); 60% plan-in-hand review; utility company coordination; and other reviews as necessary to perform the design of the project.



4. Project Controls

The Consultant shall provide data to the City to monitor costs and to report progress. The project controls shall include the following:

- a. Monthly Invoice. Invoices of project costs shall be addressed directly to the City's Project Manager for approval prior to payment. Invoices shall include at a minimum:
 - The original contract amount.
 - The amount earned to date.
 - The amount previously invoiced.
 - The amount earned in the current period.
- b. Monthly Progress Report. Progress reports shall be provided concurrent with the monthly invoice, and include at a minimum:
 - A summary of work completed in the current period.
 - Work forecast to be completed in the upcoming period.
 - Issues needing resolution or information needed for work to progress.
 - Identify any problems encountered or critical obstacles that may impede progress.
 - Budget and schedule status.
 - Potential scope changes, including a description and reason for the change, as well as potential schedule and budget impacts.
- c. Project Schedule. The Consultant and the City agree to a basic schedule during contract negotiations. The Consultant shall develop and submit a detailed schedule to the City for review and approval within three (3) weeks of notice to proceed. The detailed schedule should include all major work tasks, major milestone submittals, review periods, public meetings, field reviews, and any other pertinent project activities. The approved schedule thereafter becomes the baseline schedule. Schedule updates shall be provided concurrent with the monthly invoice and progress report, and shall include at a minimum:
 - Identify actual progress against the baseline schedule for each task.
 - Forecast completion dates from current progress.
 - Determine and highlight critical path as work progresses.
 - Highlight rescheduled work in any area that is out of sequence.
 - If the project is behind schedule, identify measures to make up lost time and return to schedule.

5. Quality Control

The Consultant shall have an established quality control program in effect during the entire time work is being performed under contract with the City of Mesa. The Consultant is responsible for the accuracy and completeness of the



plans, specifications, calculations, and any related design they prepare for City projects, including the responsibility to appropriately address and respond to all owners and permitting entities' review comments, and shall check all such material accordingly. City of Mesa reviews in no way relieve the Consultant of responsibility for the accuracy or completeness of any documents prepared for City of Mesa projects.

C. Acceptability of the Work

Plans, technical specifications, calculations, reports and other documents furnished by the Consultant shall conform to "standards-of-the industry" quality. Criteria for acceptance shall be a product of neat appearance, well organized, accurate and complete, technically and grammatically correct, checked in accordance with the Consultant's Quality Control program, with the designer, reviewer and approver identified. The City will review the deliverables and may accept or reject them based on their conformance to the above criteria. Rejected submittals will not entitle the Consultant to additional fees or extension of time.

D. Project Documentation

1. If requested, the Consultant shall submit design notes, sketches, worksheets, and computations, as appropriate, to document the design.
2. Project Documentation shall include, but is not necessarily limited to:
 - a. Design criteria used for the project
 - b. Design calculations
 - c. Structural calculations
 - d. Right-of-way calculations
 - e. Geotechnical reports
 - f. Drainage reports
 - g. Documentation of decisions reached resulting from meetings, telephone conversations or field reviews
3. At project completion, all project documentation, sealed by an Arizona registrant, shall be submitted with the record plans and specifications.
4. Computer-Aided Drafting and Design

The City of Mesa requires the use of AutoCAD software for all electronically prepared drawings. Drawings shall conform to all applicable City of Mesa drafting standards and layer conventions, and shall be prepared on City of



Mesa standard base sheets. At the completion of the design, all CADD files shall be delivered to the City on CD-ROM media.

E. Review and Submittal Requirements

The Consultant is responsible for the accuracy and completeness of contract documents and related design prepared for City projects. The City will review plans and specifications for conformity with City standards, the design of major project components and related details, and the terms of the Consultant's scope of work and professional services contract. Review by the City in no way relieves the Consultant of the responsibility for reviewing its own documents prior to submittal to the City.

1. Review and coordination of the Consultant's work by the City will continue throughout the project development process. The Consultant may continue design efforts while design submittals are being reviewed. Doing so, however, in no way relieves the Consultant of the responsibility to incorporate review comments into the design, nor does it entitle the Consultant to any additional design fees as a result of making changes due to review comments.
2. Submittals for review shall be made when the studies and/or construction documents have been developed to the levels of completion noted below (as applicable for the project). Detailed guidelines for each submittal are further listed in Appendix A, Submittal Guidelines.

- a. Baseline Project Schedule

- b. Study Phase

At the completion of this phase, all technical and environmental study documents should be complete with a clear direction approved for project design to begin.

- c. Design Phase

During this phase, the Consultant shall make review submittals at the 30%, 60%, 90% and 100% stages of project completion. The City may, at its discretion, choose to eliminate one or more submittals for a project depending on the project's size or complexity. Submittal reviews will include technical content, incorporation of previous comments, and advancement of design and details, as well as:

- i) Completeness of the contract documents
- ii) Clarity of the contract documents
- iii) Consistency of presentation
- iv) Compatibility of plans, special provisions, and technical provisions



v) Coordination of disciplines, phases, and outside parties

If additional submittals are required at any stage of completion due to noncompliance with the Consultant's scope of work and professional services contract, or the City's review comments, the work to bring the submittal into compliance shall not entitle the Consultant to any additional design fees or time extensions.

All review submittals of the construction plans and technical provisions shall be clearly stamped "PRELIMINARY - NOT FOR CONSTRUCTION OR RECORDING". The percentage of completion and date submitted should be clearly evident. Only the final, approved bid documents, properly sealed, shall be issued without the above stamped notation.

All projects undergo a City pre-bid staff review meeting, which occurs at the conclusion of the 90% level review. Comments from the City's pre-bid staff review meeting must be fully addressed prior to submittal of the 100% submittal. Upon approval of the 100% submittal by the City's Project Manager, the Consultant will be requested to submit the Bid Documents.

d. Bid Documents

During this phase, the Consultant shall incorporate any final revisions resulting from the City Project Manager's review of the 100% plans and technical specifications for release to bidding. The following material shall be submitted for completion of the project:

- i) A complete, reproducible set of sealed and signed construction plan and technical specification originals necessary to construct the project
- ii) Final and complete quantity summaries and cost estimates
- iii) An estimate of time for the project construction
- iv) Final survey computations and copy of field books
- v) Approved permits, if required
- vi) Return of any City provided documents and other materials provided for use on this project

The Consultant shall furnish Bid Documents in electronic format on CD-ROM. The City requires the use of AutoCAD 2007 for plan drawings, and of the Microsoft Office Suite programs for text documents and spreadsheets.

3. Reproduction and distribution of review submittals and final bid documents shall be made by the City, unless otherwise specified in the Consultant's



scope of work and professional services contract. To ensure quality reproduction occurs, the following requirements apply:

- a. Plan sheets shall be black printing only. Other colors do not reproduce properly.
- b. All plan sheets for submittals up to and including the 100% level shall be printed on bond paper.
- c. All plan sheets for the bid submittal shall be printed on mylar not less than 3 mil or more than 5 mil.
- d. All original reports, calculations and specifications shall be printed on 8½"x 11" paper, single sided only.
- e. Do not use paste-ups, tape or sticky back applications on plans or specifications.
- f. Do not use pencil markings on final drawings.
- g. All seals must be of good reproducible quality with original signatures in black ink.
- h. Use of photos or aerial photos on the plans or in the specifications shall be with special City permission only, as they often do not reproduce well in the final bid documents.

**APPENDIX A
SUBMITTAL GUIDELINES**