



# **CITY OF MESA ENGINEERING DEPARTMENT**

## **WATER & WASTE WATER MAIN SUBMITTAL GUIDELINES**

*Large Transmission Mains, Distribution Water Lines,  
Waste Water Collection System Mains and Reclaimed Lines*

January 2013



## **ALIGNMENT STUDY**

The intent of the alignment study is to show running line alignment alternatives on recent aerial photographs or plan sheets so staff can evaluate impacts of new utility construction on existing and future improvements. The alignment study will show preliminary potential utility conflicts, right-of-way needs, and potential impacts to adjacent businesses, residences and consider constructability issues. Items to be included in the Alignment Study are as follows:

1. Pipe alignment alternative plotted on recent 40 scale aerial photos or plans showing the following:
  - a. Curb and gutter
  - b. Sidewalk
  - c. Raised median
  - d. Driveways
  - e. Centerline alignment
  - f. Existing right-of-way
  - g. Proposed right-of-way
  - h. Existing utilities
  - i. Dimensions to curb and gutter, existing and proposed right-of-way, and etc.
  - j. Property lines
  - k. Parcel numbers and addresses
  - l. Business names
2. Initial construction cost estimate for each alternative alignment.
3. Initial right-of-way quantities and cost estimate for each alternative alignment.
4. A discussion of the pros and cons for each alternative alignment.
5. Recommendation of a preferred alignment.

## **CONCEPTUAL DESIGN (30% Submittal)**

The intent of the 30% submittal is to provide preliminary horizontal and vertical alignments of the preferred pipeline alternative on 20 scale base sheets. All sheets should be prepared on the City of Mesa approved base sheets. This submittal will be used by the outside utility companies to verify their existing utility locations and help identify their initial utility installation and/or relocation needs. This submittal should show all existing features that could influence the proposed pipeline alignment. Items to be included in the 30% submittal are as follows:

### **Cost Estimate**

#### **Transmission Water Lines (larger than 16")**

1. Cover sheet in standard City of Mesa layout showing:
  - a. Project title and project number



- b. Vicinity map
  - c. Sheet index
2. 20 scale plan and profile sheets generated from a new topographic survey and from record drawings showing all existing above ground and underground improvements:
- a. Standard City of Mesa title block
  - b. North arrow, horizontal and vertical scales
  - c. Existing horizontal control (monumentation)
  - d. Existing vertical control (City of Mesa datum or benchmark)
  - e. Existing roadway features (curb, gutter, sidewalk, medians and driveways)
  - f. Existing utilities showing type, size, and materials
  - g. Preliminary plan and profile of proposed pipeline
  - h. Preliminary locations of valves, vaults, air release assemblies and drains
  - i. Preliminary locations of connections to other lines or facilities
  - j. Existing and proposed right-of-way and easements with dimensions
  - k. Property lines, adjacent parcel numbers, business names, and addresses
  - l. The topographic survey field notes and benchmark level loop should be compiled in booklet form for use by the City Project Engineer.
3. A list of all properties, listed by parcel number and street address, with right-of-way impacts identified.

#### **Distribution Water Lines (16" to 8")**

All of the above requirements apply with the exception of the following:

1. For Water Lines smaller than 12" diameter a profile is not required.
2. Replace item "h" with the following:
  - h. Preliminary locations of valves, air release assemblies, drains and fire hydrants

#### **Gravity Waste Water Mains**

All of the above requirements apply with the exception of the following:

1. Replace item "2h" with the following:
  - h. Preliminary locations of manholes and intersecting sewer lines w/ inverts.

#### **PRELIMINARY DESIGN (60% Submittal)**

The intent of the 60% submittal is to provide final horizontal and vertical alignment of the utility improvements. Preliminary roadway improvements and landscape plans, if required, along with a detailed construction cost estimate should be included in this submittal. This submittal will be used by the outside utility companies to help finalize new utility locations, and determine pothole and right-of-way needs. The previous 30% review comments should be returned to the individual reviewer(s) with the new submittal. Items to be included in the 60% submittal are as follows:



1. Cover sheet in standard City of Mesa layout showing:
  - a. Project title and project number
  - b. Vicinity map
  - c. Sheet index
  - d. Sheet index map
  - e. General notes (may go on separate sheet)
  - f. Legend and abbreviations (may go on separate sheet)
2. Typical section and detail sheets:
  - a. Trench sections depicting joint use relationships if used
  - b. Other miscellaneous details as required
3. Plan and profile sheets:
  - a. Standard City of Mesa title block
  - b. North arrow, horizontal and vertical scales
  - c. Existing horizontal control (monumentation)
  - d. Existing vertical control (City of Mesa datum or benchmark)
  - e. Existing roadway features (curb, gutter, sidewalk, medians and driveways)
  - f. Existing utilities showing type, size, and materials
  - g. Preliminary plan and profile of proposed pipeline
  - h. Preliminary locations of valves, vaults, air release assemblies, and blow-offs
  - i. Preliminary locations of connections to other lines or facilities
  - j. Construction notes clearly describing new improvements along with limits of new installations and removals
  - k. Existing and proposed right-of-way and easements with dimensions
  - l. Property lines, adjacent parcel numbers, business names, and addresses
4. Landscape and irrigation sheets – if landscape restoration is required:
  - a. Plan view showing all existing and proposed improvements
  - b. Plant material legend noting symbols, plant name, quantity and size
  - c. Irrigation legend with symbols and material requirements
  - d. Planting and groundcover details
  - g. Construction notes
  - h. General notes
5. Specifications:
  - a. Prepare preliminary Technical Provisions
6. Pothole plans and summary list:
  - a. Prepare pothole plan sheets designating existing utility type, size, station and offset location for each pothole.
  - b. Prepare pothole summary list on the City's standard pothole form.



7. Right-of-way maps and legal descriptions:
  - a. Right-of-way strip map:
    - 100-scale plan view map of entire project
    - Existing and new right-of-way and easements
    - Parcel numbers, property lines and addresses
    - Monument lines
    - Street names
  - b. Prepare written legal descriptions and 8½" x 11" exhibits of all new right-of-way and easements for each individual parcel.
8. Previous redlined plans and specifications will be returned with answered responses from the design consultant.

(NOTE – add this to 90% also)

### **FINAL DESIGN (90% Submittal)**

The 90% submittal should include final plans and specifications for the City's and outside utility company's final comprehensive review. Sealed Plans shall also be submitted to the Maricopa County Environmental Services Department (MCESD) for review and approval. The 90% submittal should incorporate all the City's previous comments and concerns. An updated detailed construction cost estimate should be provided. The plans should show final outside utility designs and final right-of-way needs. The 60% review comments should be returned to the individual reviewer(s) with new submittal. Items to be included in the 90% submittal are as follows:

1. Final plans:
  - a. Complete Cover sheet
  - b. General Notes and Legend sheet(s)
  - c. Typical section and detail sheet(s)
  - d. Horizontal and vertical controls
  - e. Utility plan and profile sheets with construction notes & pothole elevations shown
  - f. Roadway, Landscape and Irrigation plans, as required
2. Final specifications:
  - a. City of Mesa standard front end documents tailored per project needs:
    1. Advertisement for Bids (completed by COM Staff)
    2. Bid Proposal with Bid Schedule (completed by COM Staff assisted by Consultant)
    3. Contract (completed by COM Staff)
    4. Settlement of Claims form (completed by COM Staff)
    5. Certificate of Insurance forms (2 each) (completed by COM Staff)
    6. Special Provisions (completed by COM Staff)
    7. Technical Provisions (completed by Consultant)



3. Right-of-way maps and legal descriptions:
  - a. May need to adjust strip maps, legal descriptions and exhibits based upon revised utility and project needs as a result of the 90% submittal. The revisions need to be kept to a minimum since the real estate acquisition process may already be underway.

#### **BID DOCUMENTS (100% Submittal)**

The 100% submittal should include final plans, specifications and construction cost estimate ready for bid advertisement. The City's Project Manager should only need to do a cursory review to confirm all previous review comments were adequately addressed. The 100% submittal should include the following items:

1. Final plans on 3-mil to 5-mil mylar with original seal and signature
2. Final specifications with original seal and signature
3. Electronic files of final plans in AutoCad 2007
4. Electronic file of specifications in Microsoft Word
5. Electronic file of bid schedule and construction cost estimate