

---

# *Development Engineering*

## *Civil Plan Review - List of Standard Comment*

---

### *Development Agreements*

- 1 The Developer and the appropriate representatives (Architects, Engineers, etc..) are hereby notified that right-of-way permit issuance will not occur until the City Council has approved the Development Agreement - City Share and the Development Agreement has been executed. Please note that this process to receive City Council approval can take up to 8 weeks or longer.
  
- 2 The following items potentially qualify for City Share participation:  
  
Public Utility or Facility Oversize (Water, Sewer, Storm Drain):  
  
Extra Width Public Street Paving:  
  
Arterial Streetlights:  
  
Collector Streetlights:  
  
Traffic Signals:  
  
Other:
  
- 3 To verify City Share eligibility, prepare a stamped Engineer's Construction Cost Estimate for the above noted facilities and submit (along with a formal "Letter of Request" from the developer for City reimbursement) directly to the civil plan reviewer, at 55 N. Center, PO Box 1466, Mesa, Az 85211-1466. Failure to formally submit required documentation prior to approval (or approval as noted) of construction drawings will result in forfeiture of any City Share reimbursement. For information concerning the City Share program or procedure, please contact Ms. Ann Edwards at (480) 644-4865.  
  
For projects exceeding \$100,000.00 in City reimbursement, a Public Bid (administered by the City's Engineering Design Services Division) will be required. The requirement for Public Bid documents will be furnished in digital format to assist you in preparing a digital Specification Booklet for submittal to the City.
  
- 4 Street improvements (including the widening of the existing streets), as required by the application of the City's adopted standards are planned for construction by the City or other development projects. A "Development Agreement" for an In-Lieu Payment for the required street improvements will need to be executed by the property owner(s) as a condition of civil plan approval. For information concerning the In-Lieu Payment procedure and process, please contact Ms. Beth Hughes-Ornelas, (480) 644-3254 or Ms. Ann Edwards, (480) 644-4865.

### *Dry Utilities*

- 0 Developer is to provide trenching/boring and conduit designs for City review whenever a "Non-City Utility" will be working in the public right of way and/or P.U.F.E. in conjunction with the developers project.

- 1 Plans submitted on XXX XX, XXXX are incomplete and do not contain enough information for a complete plan review. Please complete the following items and resubmit your plans for further review.
- 2 Delete all plans, details, notes etc... that are not covered by the City of Mesa's Permit to work in the public Right-Of-Way, Public Utility Easements or Public Utilities and Facilities Easements.
- 3 Your proposed project is located outside the Mesa city limits. Add a note to your plans requiring City of Mesa inspection of all crossings involving City of Mesa public utilities.
- 4 Your proposed facilities are located within the limits of a proposed City of Mesa Capital Improvement Project No. XX - XXX. Your plans need to clearly identify and dimension the City's proposed improvements. Contact the City's Project Engineer, XXX at (480) 644-XXXX for information and coordination.
- 5 Previous noted corrections/revisions remain un-addressed. Do not resubmit these plans until all corrections/revisions are resolved. If you have any questions concerning these issues please contact XXX XXX at (480) 644-XXXX.
- 6 Plan(s) need to clearly identify and dimension all existing and/or proposed public rights-of-way and easements.
- 7 Plan(s) need to clearly identify and dimension all existing and/or proposed City of Mesa  
  
Public water mains and services,  
Public sewer mains and services,  
Natural gas mains and services,  
Storm sewer mains.
- 8 Provide a typical cross-section that clearly identifies and dimensions how minimum  
  
(24-inches) horizontal, and  
(12-inches) vertical  
  
clearances will be maintained from your facilities and City of Mesa public XXX main line.
- 9 Design locations of your proposed facilities conflict with existing City of Mesa utilities. Revise plans as follows:
- 10 Plan(s) need to clearly identify and dimension all existing street improvements and or proposed street improvements, I.e.,  
  
Pavement,  
Curb and Gutter,  
Sidewalk,  
Driveways.
- 11 Plan(s) need to clearly identify and dimension all removal and replacement of existing street improvements as a result of your proposed construction.
- 12 Your proposed open cut of the existing pavement on X. XXX XX is not allowed. Revise your plans to indicate that this crossing shall be bored. (See Section D on the back of the Permit Application).

- 13 Show the quantity of pavement to be removed for utility installations. (Geo-technical report must first be obtained) Specify backfill of street excavation per Mesa Standard Detail M-19.4.
- 14 Location of proposed facilities conflicts with the City of Mesa's future street width. Relocate your facilities to back of future street improvements as redlined on the plan(s).
- 15 Location of proposed facilities conflicts with existing/proposed sidewalk. Revise plan(s) to show relocation of back of sidewalk.
- 16 Proposed construction conflicts with existing pedestrian traffic. Add the following note to your plans: "Existing pedestrian crosswalks and walking areas shall be maintained by the permittee at all times. As necessary, temporary pedestrian crosswalks and walking areas shall be provided and maintained per Section VII of the City of Phoenix Traffic and Barricade Manual as adopted and amended by the City of Mesa."
- 17 Proposed construction in  
  
Public alley,  
residential street  
  
conflicts with normal City Of Mesa Solid Waste Collection. Revise as follows:
- 18 Clearly identify and itemize each revision to the previous approved plan(s), permit no. XX
- 19 Please make additional corrections/revisions noted as redlined on plan(s)
- 20 The civil improvements associated with this permit and plan submittal have not been approved. Plans and permit application is being returned and should not be resubmitted until the developer of this project receives a "Notification of Plan Approval" document from the City of Mesa, and mylars have been submitted for review. Please coordinate this submittal with the developer of this project to find out when you can resubmit your plans and permit.

Developer for this project is:

### ***General Requirements***

- 1 We will notify you when the plan review has been completed. To find out the projected turn-around time for plan review, please call the Building Safety Permit Technicians at (480) 644-3145, please do not call the Plans Examiners.
- 2 Upon final plan approval, the Applicant's Project Coordinator will be issued a "Notification of Engineering Plan Approval" for the civil portion of the plan set. The notification will include instructions to be followed by the Applicant for remaining submittals and the City staff to issue the Right-Of-Way Permit(s) required for the construction of public improvements within public rights-of-way and/or PUE/PUFE's (including public utilities, street improvements, streetlights, traffic signals, and landscaping). The project coordinator is responsible to forward the applicable instructions to the other designers of this project to ensure the timely issuance of Right-Of-Way Permits and the Certificate of Occupancy for the building(s). Note: A separate Building Permit is required for construction of "on-site" private features outside the right-of-way.

- 3 The civil improvement plans submitted are incomplete. The civil improvement plans can only be approved after construction drawings for all required improvements have been received (with consecutive numbering) and reviewed by the City. Resubmit with the following:

Plan and Profile drawings conforming to the City's "Engineering & Design Standards" sections 1.7 and 1.8 for:

Landscaping plans for:

Street lighting and/or Traffic Signal plans for:

Solutions to previous City comments;

Other:

- 4 Civil plan review fees will be collected at the time of 1st plan submittal and at the 4th, 7th, etc. according to the City's BSD Schedule of Fees and Charges.. At the time of plan approval, additional plan review fees for changes in number and/or type(s) of sheets of civil sheets shall be calculated and assessed in conjunction with, and as a condition of, permit issuance.
- 5 The proposed and/or existing utility services must be clearly identified and coordinated on all applicable site drawings/sheets:

Civil and/or Street Lighting;

Plumbing;

Architectural;

Landscaping;

Fire Prevention.

- 6 Add the Project Address to the:

Title Banner and

to all Title Blocks.

- 7 Provide a civil engineering cover sheet conforming to the City of Mesa Engineering and Design Standards, Sections 1.2 (Sheet Size), 1.3 (Cover Sheet), 1.4 (Benchmarks), and 1.5 (General Notes, see attached update).

- 8 Plan Approval is required from the following agencies:
- Arizona Department of Transportation;
  - Arizona Department of Environmental Quality;
  - Flood Control District of Maricopa County (FCDMC);
  - Maricopa County Environmental Services Department (MCESD);
  - Maricopa County Department of Transportation;
  - Railroad;
  - Roosevelt Water Conservation District;
  - Salt River Project; and/or
  - Other:
- 9 Comply with all Zoning, Design Review, and/or Subdivision Technical Review case "Development Engineering" conditions regarding required improvements (see attached).
- 10 This project is located in the Desert Uplands Area and shall comply with Subdivision Regulations Development Standards 9-6-5.
- 11 This project is required to extinguish/abandon (process instructions attached); Note a \$300.00 fee is assessed for each location:
- XX.XX feet existing PUFEE;
  - XX.XX feet existing PUE;
  - XX.XX feet existing Right-Of-Way.
- 12 This project is required to dedicate the following:
- 13 Provide the following document(s) required for dedications of Rights-Of-Way (R/W), Public Utilities and Facilities (P.U.F.E.), Public Utilities Easements (P.U.E.) and Drainage Easements (D.E.). The documents must be received, reviewed and approved prior to issuance of Building and Right-Of-Way permits. The City of Mesa will record the dedication(s).
- Legal Description: R/W; PUFEE; PUE; DE
  - Graphic Exhibit with bearings, distances & coordinates: R/W; PUFEE; PUE; DE
  - Property Warranty Deed/Title Report: R/W; PUFEE; PUE; DE
- Note all legal descriptions and graphic exhibits are required to be originals (8.5" x 11" format) with a "wet" Surveyor's or Engineer's seal signed with blue ink. Put documents in a large envelope marked to the attention of XXX.

- 14 For expeditious processing of permits, complete and return the attached form with the final Mylar submittal: "Quantities For City of Mesa Public Right-Of-Way and Public Utilities and Facilities Easements". Also include the following quantities on the cover sheet:

Streetlight & Traffic Signal: No of, Poles; Control Cabinets; Removed Poles; Relocated Poles

Landscaping: Acres of, Area of R/W to be maintained by owner or property owner's association; Area of R/W and/or retention basin(s) to be maintained by the City of Mesa.

Pavement Replacement: Square Yards of: Per Mesa Detail M-19.4, itemize the required pavement replacement for each respective utility.

- 15 Applicant shall identify in the response area below all design changes to the plans that were made independent of plan review comments. Changes to the design in response to comments shall be noted in the response areas of the initial review comment(s).
- 16 Per Subdivision Technical Review, the developer is to provide commitment letters from each affected Public Utility Company to complete required relocations and/or new installations prior to the completion of this project.

Coordinate your submittals with the affected Public Utility Companies; their submittals for the installation and/or relocation of their respective facilities will require the approval of your civil engineering improvement plans. If they submit prior to this project's plan approval, their submittals will be returned without a review.

- 17 Per Subdivision Technical Review; Field verification of lot corners is required prior to issuance of Right-Of-Way Permits. Submit the "Subdivision Plat Staking Verification Request Form" appropriately filled out in order to initiate verification of lot staking.
- 18 The applicant is required to provide at plan submittal, documentation of all "agreements", "deals" or "arrangements" that are made with City staff in relationship to the proposed land development project. Failure to provide these documents may result in a delay to plan approval and/or permitting.

### *Irrigation Utility*

- 1 Abandonment of existing irrigation distribution or tailwater facilities requires the written consent of all downstream users. Otherwise, provide a design to pipe the existing irrigation ditch(es) and/or refurbish the existing irrigation facilities.
- 2 Provide the following information on the plans for all existing irrigation distribution or tailwater pipe: alignment, ownership, diameter, and material type.
- 3 Provide an irrigation tailwater bleedoff system.

### *Natural Gas Utility*

- 1 Contact the City of Mesa Gas Marketing section of the Utility Department at (480) 644-2652 concerning the availability and costs of City of Mesa natural gas service to the proposed project or development.
- 2 Contact the City of Mesa Gas Engineering section of the Engineering Division at (480) 644-2509 concerning the engineering design and required information necessary for natural gas service to this proposed project or development.

- 3 Submit a separate set of the construction drawings for the proposed project directly to the Gas Engineering Section of the Engineering Design Services Division at 20 E. Main Street, Suite 500, Mesa, AZ 85211-1466. The Gas Engineering Section will redline a design for natural gas service to the proposed project and return the design.
- 4 Submit final mylars to the Gas Engineering Section of the Engineering Design Services Division for the addition of the registrants seal & signature responsible for the Natural Gas System design.

### ***Public Sewer Improvements***

- 1 Clearly identify public sewer main material to be used. V.C.P. (all sizes), A.B.S. Truss (8" - 12"), P.V.C. (8" - 18"), Concrete Pipe w/P.V.C. lining (20" and larger) and ceramic lined D.I.P. are approved materials for constructing public sanitary sewer mains.
- 2 Sewer manholes are to be installed per M.A.G. Standard Detail 420 & 424; 5' min. diameter with 30" frame & cover. No steps.
- 3 Sanitary sewer cleanouts are to be installed per M.A.G. Standard Detail 441.
- 4 Sanitary sewer services are to be installed per MAG Standard Detail 440 and Mesa Standard Detail M-24.
- 5 Provide minimum horizontal and vertical distances between sewer lines and other utilities per Maricopa County Environmental Services Department and Arizona Department of Health Services requirements. Otherwise, provide sewer encasement per MAG Standard Detail 404.
- 6 The cover over the crown of the public sanitary sewer main shall be a minimum of six feet (6'). Revise your design accordingly.
- 7 Research and show the location and sizes of any existing sanitary sewer services that could be utilized by this project.
- 8 Drop sewer connections require City approval. Note: Laterals can have a maximum drop of 24" without a drop connection.
- 9 Manholes constructed on 18" or larger pipe shall be installed with T-Lock lining on the interior of the manhole.

### ***Public Street Improvements***

- 1 Provide typical cross-sections of proposed street improvements per Mesa Standard Detail M-19.1 & M.19.2.
- 2 Provide detail of existing pavement where the surface overlay is proposed and reference how the condition was determined (i.e., from recent as-builts, pot-holes, excavations, or geotechnical survey):

Asphalt type, thickness, MCDOT thickened edge, and condition (i.e., severity of cracking or rutting);

ABC Thickness;

Overlay not allowed, replace existing.

- 3 A 2% cross-slope is required for all public street improvements (See Mesa Standard Detail M-19.1 & M-19.2).
- 4 A 0.2% (0.002) longitudinal slope is required for all public street curb and gutter.
- 5 Install curb and gutter per MAG Standard Detail 220, Type XX at XX
- 6 Provide the "as-built" location, dimensions, and elevations of the closest existing curb and gutter.
- 7 Install sidewalk ramps per:  
Mesa Standard Detail No. M-44 at:  
MAG Standard Detail No. 233 at "T" intersections:
- 8 Install X' sidewalk per MAG Standard Detail 230 across the XX frontage. Note: meander sidewalks on all arterial streets, where feasible.
- 9 Specify and show driveway installation:  
Residential driveway per Mesa Std. Detail M-40.1, 40.2 or 40.3  
Commercial driveway per Mesa Std. Detail M-42, 42.1 or 42.2;  
at least 100' from curb of intersection;  
at least 10' from Property Line.
- 10 This project will be allowed a maximum of XX driveways.
- 11 Specify elevation at the back of all driveway aprons. Elevation must be equal to the projected elevation of the adjacent top of curb. Provide the top of curb (existing or proposed curb) elevations adjacent to the propose driveways.
- 12 Horizontal sawcut of the existing curb is required for the installation of all new driveways within existing public street curb and gutter.
- 13 Locate all existing driveways adjacent to this project and specify removal and replacement with vertical curb, gutter and sidewalk if this project will not be utilizing the driveways. Existing non-compliant driveways will require removal and replacement to meet the standards of Mesa Standard Detail M-42 if they are to be used by this project.
- 14 A deceleration lane and/or bus bay (per Mesa Standard Detail M-45.1) is required for the following driveways:
- 15 Provide a merging pavement taper. Length is per the following:  
Where the design speed for the public street is 40mph or less;  $TL = W(S, \text{squared})/60$ .  
Where the design speed for the public street is 45mph or more;  $TL = W(S)$ .  
The variable "W" is the distance in feet from the existing pavement to the new face of curb or edge of pavement.  
The variable "S" is the design speed in miles per hour.



- 16 Install traffic delineators per Mesa Standard Detail M-61. The spacing distance is to be the same as the speed limit for the public street.
- 17 Specify Mesa Standard Details M-62.1 through M-62.4 for refuse dumpster enclosures. Double enclosures are required unless otherwise approved. Pay special attention to the notes on M-62.2 regarding the minimum net enclosure opening(s).
- 18 Access to the refuse dumpster enclosures shall comply with Mesa Standard Detail M-62.1.
- 19 Install street sign posts per Mesa Standard Detail M-22.3 and M-39.
- 20 Private street signs shall be installed per Mesa Standard Details M-21.1 or M-21.2.
- 21 Call out and quantify the public street pavement replacement per Mesa Standard Detail for each respective utility.

### ***Public Street Lighting***

- 1 The design and plan submitted for review:

Is incomplete.

If any part of the design requirements are not supplied the entire plan submitted may be returned without a review.

Supply a design(s) for the following: Streetlights; Traffic Signals; TSFO.

If City Share is anticipated supply the following: A letter requesting participation in the City Share program; If a Public Bid will be required, submit the specification book for review and/or approval.

Supply a sealed, itemized cost estimate per City requirements. See the attached.

Persuades us to believe that you should read and familiarize yourselves with the street light section of the Current Mesa Standard Details, and the City of Mesa Engineering Procedure Manual.

- 2 The street light pole locations:

Have been tentatively approved by the City of Mesa.

Are not acceptable as noted in the comments.

- 3 When resubmitted provide the following:

Street light design complying with the previous comments.

Checklist of review comments and responses.

Voltage drops.

Photometrics.

- 4 The street light design needs to be more specific. Show the following:

Existing street lights at this project's frontage.

Existing adjacent streetlights.

Future streetlights.

Existing circuit information back to the lighting control cabinet.

- 5 Note and information required on street light cover sheet:

Materials and installation of this project shall comply with the current Mesa Standard Details, Amendments to the Uniform Standard Details, the City of Mesa Engineering Procedure Manual and Amendments to the City of Mesa Engineering Procedure Manual.

Blue Stake logo and phone number (required on each sheet).

Transformer conflict detail "A".

Vicinity Map.

Legend.

Street Light plans for projects that do not have civil engineering plans shall include the general notes required for all offsite improvement plans.

Quantities list.

Per Comments.

- 6 It is recommended that the field engineer check this project for potential conflicts & information pertaining to:

Poles and overhead lines.

Existing street light system.

Ditches, culverts and adjacent grade changes

Overhead line locations (elevation and distance measured horizontally from the centerline or face of curb for figuring calculations between light pole and overhead lines).

- 7 When street lights are being designed on the same side of the street as proposed and/or existing overhead electric power, telephone and/or TV cable line:

The davit street light poles may be required.

The davit street light poles require a 19' vertical clearance at the face of curb.

Provide a clearance detail for all locations.

8 The following notes are required to be on the street light plans:

"The contractor shall have at least an IMSA-Certified level II (2) Traffic Signal Technician on site during all phases of any traffic signal work. It is the responsibility of the contractor to provide verification of this certification. If a job site is inspected and no technician is present on site, any work associated with the traffic signal will be suspended."

"The contractor shall have at least an IMSA-Certified level I (1) Street Light Technician or and IMSA Level I (1) Traffic Signal Technician on site during all phases of any Street Light work. It is the responsibility of the contractor to provide verification of this certification. If a job site is inspected and no technician is present on site, any work associated with the Street Lights will be suspended."

"The contractor shall submit a list containing names and qualified status of personnel that will be on the immediate job site to the inspector prior to starting any Street Light Construction. Any change to the list will require that the inspector be notified immediately."

"The cost of any damage to street light equipment is the contractor's responsibility. All repair work will be done by contractor at his own expense to the satisfaction of the City of Mesa Inspector. If the contractor fails to remedy the damage in a timely manner (as deemed appropriate by the City of Mesa Inspector), the City of Mesa Inspector may immediately authorize the City of Mesa Streetlight Group to perform all repair with the costs charged to the contractor."

"All conduit, conductors, wire, and quantities shall be measured by the linear foot horizontally between poles, pull boxes and control cabinets. No additional payment will be made for sweeps and vertical runs, as they shall be considered incidental to the project and included in the horizontal measurement of the quantities."

"The contractor is to use utmost caution working in and around underground and overhead primary or secondary electric lines, high-pressure gas lines, water, sewer and fiber optic lines."

"Conduits should be installed prior to driveway installations. If conduit is installed after driveway installation, the contractor shall bore under the driveway, per (M-18), for conduit installation. Meandering the conduit behind the entrance will not be allowed."

"In traffic areas add a slurry cap to the Traffic Signal Fiber Optic (TSFO) conduit trench where the 48" depth required per (M-93.4 & M-93.5) cannot be maintained. In non-traffic areas (adjacent to sidewalk for example) if the TSFO conduit is installed at a depth of less than 36", a 6" slurry cap is required. The minimum allowable depth for TSFO conduits is 24". The City of Mesa engineering inspector shall be notified 48 hours prior to installing conduits when any variation to details (M-93.4 & M-93.5) is required. If TSFO conduit is required to meander vertically or horizontally, no conduit bend shall exceed 45 degrees."

"TSFO conduits shall be installed 48" deep in a joint trench with street light conduit per (M-93.4 & M-93.5)."

"The location of the Traffic Signal Fiber Optic conduit (TSFO) as shown is drawn at an offset and is for graphical representation only and shall be installed in a joint trench with the street light conduit per COM detail (M-93.4 & M-93.5)."

"All trees shall be planted a minimum of twenty (20) feet from street light poles and

lighting control cabinets. All shrubs shall be planted a minimum of seven 7 feet from street light poles and lighting control cabinets."

- 9 Label specific locations, sizes and dimensions per MAG detail 112 (measured from the centerline and/or monument line of the street) for each of the following. This information is required for each street and at any location the dimension changes:

Existing and proposed underground utilities.

Existing and proposed overhead utilities.

A detail showing location, sizes and depth of underground utilities when 2' or closer to a streetlight pole foundation.

The face of curb.

The width of sidewalk.

The edge of any PUFE.

The edge of right of way.

The edge of pavement.

Note where underground utilities are being relocated or undergrounded who supplied the information. Supply: Name; Phone#; Project#; Location

- 10 Information required from City Transportation Department:

It is recommended that the engineer coordinate with the Street Light Foreman, (480) 644-3178, to field verify information pertaining to existing street light systems that have no available as-built.

- 11 Your professional seal on these plans implies that you have measured the (existing and/or have information of proposed) overhead electric power lines and made calculations supporting the fact that the street light pole locations shown on this plan will have the required clearances between the street light poles, arms and luminaires and the overhead electric power lines per the electric utility and Arizona Revised Statutes. Your seal also implies that applicable requirements including sag and blow out requirements have been considered.
- 12 Your professional seal on these plans implies that you have measured the (existing and/or have information of proposed) overhead secondary electric, telephone, and TV cable lines and have made calculations supporting the fact that the street light pole locations shown on this plan will have the required clearance between the street light poles, arms and luminaires and the secondary electric, telephone and TV cable lines required by the utility company with the minimum of 6 inches including sag and blow out.

- 13 Addresses will be supplied for each of the following as the locations are confirmed:
- New street light poles.
  - New lighting control cabinets.
  - Existing street light poles.
  - Existing lighting control cabinets.
  - See the extra comments sheet(s)
- 14 Station numbers (measured from a monument pin) shall match the stationing on the civil plans. Station numbers are required for:
- Each new street light pole and lighting control cabinet.
  - Existing street light poles and lighting control cabinets.
  - Future streetlights and lighting control cabinets.
  - On all photometric calculations.
  - See the extra comments sheets(s)
- 15 A new engineer's seal, date and signature are required on each street light plan sheet with each submittal for City review.
- 16 If street light pole foundations or locations are modified because of existing and/or proposed underground and/or overhead utilities:
- Mesa Standard Detail (M-76.2) is required on all foundation notes.
  - When a street light pole is centered 6 to 7 inches behind a sidewalk, a detail is required showing the part of the foundation to be under the sidewalk and the size of the smaller foundation cap, and the location and size of the utilities that forced the detail to be applicable.
  - Structural calculations and a detail are required for any special pole foundation.
  - A modified cap detail is required.

- 17 Unless alternates are approved, the following are required as they pertain to light poles:
- Per arterial and major collector street requirements.
  - Per collector street requirements (maximum of 48').
  - Per residential street requirements.
  - Per Desert Uplands requirements.
  - Per Industrial Park requirements.
  - Alternate light poles have been approved.
- 18 The following applies to light pole locations on corner lots.
- Only one light pole is allowed on the same lot.
  - Light poles shall not be in the radius of the street corner.
  - Light poles at a corner shall be placed at the end of the corner radius.
- 19 Unless utility conflicts or Right Of Way issues mandate alternates, light pole setbacks or overhangs are required:
- Per arterial and major collector street requirements.
  - Per collector street requirements (max. of 48').
  - Per residential street requirements.
  - Per Desert Uplands requirements.
  - 1' behind handicap ramp.
  - Any variation to standard setbacks must be approved.
- 20 A minimum of the following is required at intersections to meet light level requirements:
- A minimum of one light pole at each intersection.
- 21 Unless extra width streets mandate alternates, light pole spacing is required:
- Per arterial and major collector street requirements.
  - Per collector street requirements (maximum of 48').
  - Per residential street requirements.
  - To maintain current light levels.
  - Per Desert Uplands requirements.

- 22 Unless alternates are approved, the following are required as they pertain to luminaire type and wattage:
- Per arterial and major collector street requirements.
  - Per collector street requirements (maximum of 48').
  - Per residential street requirements.
  - To maintain current light levels.
  - To meet required light levels.
  - Alternate luminaire type has been approved.
  - Per Desert Uplands requirements.
- 23 Lighting analysis is required to determine light pole spacing, setback, mounting height, wattage and to avoid over lighting:
- Streets with right turn or decel lanes.
  - Streets with bus bays.
  - Streets that are not of standard widths.
  - Intersections: two highest lighting levels combined.
  - Roundabouts and other traffic calming devices with intersecting streets are intersections and must meet minimum lighting standards.
  - See Comments.
  - Supply Photometrics for: Existing; Proposed; Future.
- 24 The following are recommended illuminance design requirements for arterial streets. The first value for R3 pavement classification is measure in Average Foot-candles. The second value for the illuminance uniformity ratio is an Average to Minimum value.
- Commercial, 1.6 A/F, 3-1, A/M Ratio
  - Intermediate, 1.2 A/F, 3-1, A/M Ratio
  - Residential, .84 A/F, 3-1 A/M Ratio
  - Must meet or exceed current light levels.

- 25 The following are recommended illuminance design requirements for collector streets. The first value for R3 pavement classification is measure in Average Foot-candles. The second value for the illuminance uniformity ratio is an Average to Minimum value.

Commercial, 1.1 A/F, 4-1, A/M Ratio

Intermediate, .84 A/F, 4-1, A/M Ratio

Residential, .56 A/F, 4-1 A/M Ratio

Per Desert Uplands Requirements.

Industrial park, .84 A/F, 4-1 A/M Ratio.

Must meet or exceed current light levels.

- 26 The following are recommended illuminance design requirements for residential streets. The first value for R3 pavement classification is measure in Average Foot-candles. The second value for the illuminance uniformity ratio is an Average to Minimum value.

Commercial, .84 A/F, 6-1, A/M Ratio

Intermediate, .65 A/F, 6-1, A/M Ratio

Residential, .37 A/F, 6-1 A/M Ratio

Industrial park, .65 A/F, 6-1 A/M Ratio

Per Desert Uplands Requirements.

Must meet or exceed current light levels.

- 27 Pull box locations and sizes should be designed

Per arterial and major collector street requirements (#5 pull box).

Per collector street (intermediate and commercial requirements, #3 1/2 box minimum).

Per residential street requirements (# 3 1/2 pull box minimum).

With a #3 1/2 pull box adjacent to the pole when the conduit is greater than 1".

With a 210' maximum spacing of pull boxes and/or poles in a conduit run.

With one pull box minimum at street crossings.

With a pull box on any street light stub out over 20' long.



- 28 Conductor and conduit sizes should be designed:

Per arterial and major collector streets requirements which are 2" conduit for conductors no smaller than #10 and no larger than #2/0.

Per collector street requirements which are 1 1/2" conduit for conductors no smaller than #10 and no larger than #1/0.

Per residential street requirements 1" and 1 1/2" conduit for conductors no smaller than #10 and no larger than #1.

Two #6 conductors and a #8 bond maximum in a 1" conduit.

Areas where 24" of cover is not possible see section 9.3.22 in the COM Engineering Procedure Manual; these areas shall be identified on plans. Supply full conflict data, including top of curb, size and material of pipe, invert, etc.

Identify where conduits are to run in areas of conflict.

- 29 For wire splicing, fusing, grounding and bonding, the following notes are required:

Per Detail (M-73.7 and per Detail M-73.6)

- 30 Project Location:

In the county but required to meet City of Mesa Standards.

This project must request that the County create a streetlight improvement district. A copy of this request is required for plan approval.

- 31 Voltage drop calculations are required to show:

A 1% maximum voltage drop between lighting control cabinet and point of service pull box (only applies if run is over 100 feet).

A 3% maximum voltage drops between lighting control cabinet and end of circuit.

The conductor size shall match the conductor size called for in the plans.

Voltage drop calculations, which shall be submitted on 8 1/2" x 11" sheets.

Service shall be 120/240 single phase.

- 32 Median street lighting:

Shall be fed from the street light circuit.

Shall be located a minimum of 10' from bullnose end.

Poles shall be centered in the median.

Lighting control cabinet shall be located in the widest area of the median.

- 33 Double arm poles:
- Shall have two conductors per luminaire and four #10 conductors between the pull box and the light pole hand hole.
- 34 The lighting control cabinet system shall show the:
- Location of the lighting control cabinet.
- Location of the point of service pull box.
- Conduit and conductor sizes per City requirements.
- Conduit depth sizes and color per the utility company requirements.
- City of Mesa utility area point of service with the applicable detail which is required to be shown on the plans.
- Conduit stub from the P.O.S., across street for new or future lighting control cabinet.
- 35 The location of the point of service and/or meter spot must be approved by the:
- Utility company with a stamp and signature on the street light plan or meter spot form.
- City of Mesa Street Light and/or Traffic Signal plans examiner.
- 36 Special clearance requirements apply as follows:
- Fire hydrant's 5' minimum from street light poles and lighting control cabinets.
- Driveway wing 6' minimum from street light poles and lighting control cabinets.
- Utility company transformer - see detail "A" for required clearances.
- 37 Photo control system:
- 120 volts (M-72, PC-101).
- 240 volts (M-72, PC-102).
- Photo control location per redlines.
- 38 Traffic signals:
- Show traffic signal information on the plans as needed per (M-93.1).
- In county areas, supply a design for City comments.
- Traffic signal inter tie is required (2" conduit with one #8 stranded bond wire) between the last pull box and the traffic signal pull box at Collector to Arterial intersections.
- TSFO boxes & conduits installed per (M-93.4 & M-93.5) (See #49).

- 39 For conduit placement:
- A note for boring, per (M-18), is required.
- A note for trenching, backfill and compaction is required per City of Mesa requirements.
- Inside the median run one foot from the curb.
- 40 Coordinate the phasing of parcels or units within a subdivision:
- So that the lighting control cabinet will be in the parcel or unit that will be built first.
- So that all streetlights in each parcel or unit are designed to be energized at the completion of the parcel or unit.
- 41 License or permits with signature and date of approval are required:
- For work in SRP easements.
- For work in WAPA or USBR easement.
- For work in ADOT rights-of-way.
- For work in CAP easements.
- For work in MCDOT rights-of-way.
- 42 Fences, curbs and retaining walls:
- Shall be shown and called out on the street light plans to jog around street light poles.
- Shall be shown and called out on the street light plans to jog around lighting control cabinets.
- 43 Tree and shrub clearances shall be as follows:
- Tree's 20' from street light poles and lighting control cabinets.
- Shrub's 7' from street light poles and lighting control cabinets.
- Add a note to trim tree branches and shrubs away from streetlight equipment.
- Coordinate all design criteria with the landscape architect.
- 44 When street widths change:
- All tapers shall be shown.
- 45 Driveways:
- Shall be shown on the street light plans.

- 46 Sidewalk ramps:  
Shall be shown on the street light plans.
- 47 Street light pole relocations:  
Shall not be approved by the City unless they meet the current City specifications.
- 48 A note to remove existing street light structures and equipment is required for the following:  
Luminaire: Deliver to the COM\*; Dispose of properly.  
Arm: Deliver to the COM\*; Dispose of properly.  
Pole: Deliver to the COM\*; Dispose of properly.  
Lighting Control Cabinet: Deliver to the COM\*; Dispose of properly.  
Lighting Control Cabinet Pad: Deliver to the COM\*; Dispose of properly.  
Pull box: Deliver to the COM\*; Dispose of properly.  
Wire from existing conduit: Deliver to COM\*; Dispose of properly.  
Remove conduit completely: Remove foundation completely and dispose of properly.  
Direct embedded poles and painted arms are to be disposed of by the contractor in a proper manner.
- \* Identify the returns and note to deliver them to the COM storage yard at the northwest corner of North Center Street and Lehi Road, 2430 N. Center, and/or 320 East 6th Street. Contact the Street Light Foreman at 480-644-3178 for delivery arrangements 48 hours in advance. The contractor is responsible for unloading and stacking of all returned materials.
- 49 Traffic Signal Fiber Optic (TSFO) design requirements for Arterial streets per (M-90, M-90.1, M-93.3, M-93.4 and M-93.5)  
Install fiber optic system per details.  
Install fiber optic conduits and boxes with #12 tracer wire.  
Install fiber optic cable per (M-90).  
Install telecommunications cable per (M-90).  
See extra comments sheet(s).  
Stub TSFO conduits into the temporary (street light) pull box, at the beginning / end of project line, use 18" radius nineties to stub the TSFO conduits into the temporary box.
- 50 Contact the Development Engineering section of the Building Safety Division at (480) 644-4296 for procedural and design information regarding the required public street lighting.

***Public Water Improvements***

- 1 Research and show the location and sizes of any existing water services that could be utilized by this project. Provide the meter numbers for any existing water meters. If none exist, note this condition on the plans.
- 2 All public water mains must be Asbestos Cement Pipe (A.C.P.), Ductile Iron Pipe (D.I.P.) or Cast Iron Pipe (C.I.P.).
- 3 All water valves installed on public water mains shall be installed per M.A.G. Standard Detail 391-1, Type "C".
- 4 Construct and install water meter vault(s) per Mesa Standard Detail M-30.1 and M-30.2.
- 5 Install public water services per Mesa Standard Detail M-49.1 and M-49.2.
- 6 Water meters that are 3" and larger (purchased from the City) are to be installed in a vault by the contractor per Mesa Standard Detail M-27.1 and M-27.2 or Mesa Standard Details M-28.1 and M-28.2.
- 7 Tapping sleeves and valves (TS&V) are to be installed per MAG Standard Details 340 and 391-1 Type "C".
- 8 Specify fire hydrant installation per MAG Standard Detail 360. Locate the water valve that will operate the hydrant with ten feet (10') of the hydrant.
- 9 Install a reduced pressure principle backflow prevention assembly per:  
  
Mesa Standard Detail(s): M-31.1; M-31.3 on your  
  
Potable water system;  
  
Landscape irrigation system.
- 10 Private onsite water lines used for fire protection purposes (with fire hydrants and no domestic services) require a Double Check/Detector Check Backflow Prevention Assembly per Mesa Standard Detail M-31.2 retrofitted with a City of Mesa 3/4" by-pass meter. The assembly is not required if the water line is installed as a public water main and located within a 20' PUE/PUFE.
- 11 Provide guard post(s) for the backflow prevention assemblie(s) per Mesa Standard Detail M-32.
- 12 Specify on your plans, the following for each backflow prevention assembly.  
  
Address(es);  
  
Location on Plans;  
  
Size;
- 13 Include the following note on the Landscape Irrigation Plans:  
  
"The required backflow prevention assembly shall be of a manufacturer and model number as designated in the current City of Mesa list of approved backflow prevention assemblies."

- 14 Include the following note on your Landscape Irrigation plans:  
  
"The backflow prevention assembly shall be tested and approved by a certified technician designated in the current City of Mesa list of approved inspectors prior to the request for final inspection".
- 15 All fireline stubs shall be installed per Mesa Standard Detail M-31.7. The minimum fireline size is 4" which can then be reduced to a smaller dimension once on-site.
- 16 The water meter size shall match the service size coming from the public water main.  
  
EXCEPTION: The City will allow 3/4" water meters installed on 1" services.
- 17 If a separate landscape water meter is used, a manifold type installation per Mesa Standard Detail M-49.3 from the domestic water service is allowed. Although, you will still need to call out Mesa Detail M-49.1.

### ***Storm Drainage & Retention***

- 1 Drainage covenants for affected retention basins (areas) are required to be recorded whenever private property receives storm water runoff from public streets or property. Prepare a drainage covenant per the attached sample and include with the plan submittal. The City of Mesa Real Estate Division will prepare a legal document that must be executed and returned to Real Estate for recording prior to plan approval.
- 2 Provide complete design and show calculations for on-site storm water retention in the Drainage Report or on the grading plans that includes the following:  
  
Retention basins sized for runoff generated by a 100-year, 2-hour storm.  
  
Delineate each on-site drainage area and the retention basin(s) where they drain.  
  
Delineate the public street rights-of-way adjacent to this project and the retention basin(s) where they drain:
- 3 Provide design and calculations that address the offsite runoff (including irrigation tailwater) that flows onto, or adjacent to, this project. If none occurs, provide a statement that no offsite runoff impacts this project.
- 4 Provide culvert(s) under the street pavement sized for the peak flows from a:  
  
50-year event storm, or  
  
10-year storm at local streets in the Desert Uplands Area.
- 5 Provide Flood Zone Identification and Certification
- 6 Six to One (6:1) or flatter side slopes are required for the sides of a retention basin adjacent to the public right-of-way or to pedestrian walkways, which may include private parking areas. For other retention basin side slopes, four to one (4:1) or flatter slopes are preferred, however vertical walls or other treatments may be considered upon approval of the City Plans Examiner - Zoning.

- 7 Retention of storm water must be accomplished in a few well defined areas. Shallow spreading of the required stormwater retention over numerous small areas is not acceptable pursuant to Title Nine, Chapter Eight of the Mesa City Code.
- 8 Multiple retention areas cannot be defined as a single basin unless they are connected with an adequately sized pipe or culvert and have the same high water elevation.
- 9 Storm water retention is not allowed in the fire lane.
- 10 Provide drainage facilities to direct runoff from the building roof to the appropriate retention basin. Show direction of roof runoff on the grading and drainage plan.
- 11 Show and label all retention basin contours and drainage structures on:  
  
Civil Plans;  
  
Landscape Plans.
- 12 Provide a cross-section of each retention basin showing the high water level, side slopes and the elevation of adjacent property.
- 13 Use a bold line to identify the elevation(s) and contours of the retention high water level(s) on the grading and drainage plan.
- 14 Identify the elevation and location at the:  
  
Lot Outfall;  
Finished Floor Elevation.  
  
Finished floor elevations should exceed both the flood elevation of a 100-year event storm and the lot outfall elevation.
- 15 Provide typical sections for all XX sides of the project site, showing the existing elevations of the adjacent property.
- 16 Design the onsite grading at the driveway area(s) considering that the XXX street will be widened to XX.XX feet to face-of-curb in the future.
- 17 Install catch basins per Mesa Standard Detail M-64 or per MAG Standard Details 533-1, 533-2, 533-3, 534-1, 534-2, 534-3, 534-4 or 534-5.
- 18 All drain pipes entering and exiting retention basins must have catch basins or headwalls. Call out the MAG and/or Mesa Standard Detail you intend to use for each. Headwalls must have safety railings per Mesa Standard Detail M-65. Trash racks are required at headwalls for lines larger than 8" in diameter.
- 19 Bleed-off is required for:  
  
Retention basins with high water levels greater than 12-inches (12"), or  
  
Basins with impermeable bottoms and sides.
- 20 The Drainage Report shall include calculations showing that the basin(s) will be drained within 36 hours.

- 21 The retained storm runoff volume must drain via an 8" minimum diameter bleed-off pipe within 36 hours. This design shall include a valve or some other MAG approved method of shutting off the flows. These valves shall be readily accessible for operation and maintenance. The valve shall normally be kept in a closed position and opened after the storm passes. Provide a design to drain the retention area(s) to existing storm drain facilities;
- Natural channel;  
City storm drain; or  
Storm drain owned by others (I.e., ADOT, FCDMC) and provide written approval to use.
- 22 Percolation rates resulting from test readings are not considered a method of complying with bleed-off requirements.
- 23 The installation of drywells within the proposed project is prohibited because
- This project is located within a reasonable distance of and is allowed to discharge to the City's or another entity's existing or proposed storm drain system.
- This project is required to retain stormwater runoff from public streets within or adjacent to the project.
- The City of Mesa will assume maintenance responsibility for the retention facilities upon completion of the project.
- 24 Drywells will be accepted at this project where noted. Per Arizona Revised Statutes, drywell locations must comply with the following criteria:
- One hundred-foot (100') separation from any water production wells, underground storage tanks or fuel dispensing areas.
- Prohibited within any area where hazardous or toxic substances are handled.
- Prohibited within loading docks where hazardous substances are handled.
- 25 Upon resubmittal, include details of the drywells on the improvement plans.
- 26 Regardless of percolation tests, the volume of storm water to be drained via drywells shall not exceed the maximum 9,300 cubic feet allowed per drywell. Install XXX additional drywells.
- 27 Scuppers are not allowed unless approved by the City due to special circumstances. Where allowed, the scupper spillway/channel must extend to the right-of-way, be constructed to MAG Standards and must have handrails per Mesa Standard Detail M-65
- 28 All storm drain pipes, 15" and larger, adjacent to Public Right-of-Ways and/or within a retention basin, are required to have headwalls. Call out the specific MAG Detail you intend to use. Headwalls are required to have safety railings per Mesa Standard Detail M-65. Trash racks per MAG Detail 502-2, are required at headwalls for lines larger than 8" diameter.