CITY OF MESA
ENGINEERING DEPARTMENT

PARKS & RECREATION
SUBMITTAL GUIDELINES

Parks, Athletic Fields, Retention Basins, Aquatics Facilities, etc.

January 2013

DESIGN CRITERIA FOR PARK AND RECREATIONAL FACILITIES

GENERAL

Shade ramadas and picnic site furnishings are standardized in the City. The Consultant will receive a list of manufacturer's names and current product model numbers of items typically included in City projects, (e.g. ramadas, benches, tables, grills, bike racks, waste receptacles, drinking fountains). Consultants shall be provided with standard park development and signing details (CADD), play area curbing, basketball and volleyball courts, ramadas, ADA ramp details, etc. for use in developing construction drawings and contract documents.

All play units shall be IPEMA approved (International Play Equipment Manufacturers Association, http://www.ipema.org/home.asp.) Park play units and multiple structures shall be selected and or combined to provide a toddler play area and a pre-teen play area. These areas may be separated by concrete walkway (safety surfaced) or combined within the same contained play space. The average size of a neighborhood play area is 95 to 120 feet in "diameter". A 16x16' shade ramada shall be placed in close proximity to the play area and shall be ADA accessible. Accessibility to the ramada shall be from the play area, other sections of the park, and from the public street frontage. The ramada shall have vandal resistant/polycarbonate (Lexan) 100 watt metal halide under-roof lights (2). The ramada shall have one regular size picnic grill located on the south or east side. A City of Mesa master building permit for this ramada is pre-approved, meeting 1994 UBC. Incorporating this ramada in projects within the City of Mesa requires no additional new building plans or structural calculation submittals. The typical manufacturer and model number for the under roof lights shall be provided to the Consultant. The Consultant, however, is required to submit 3 copies of the lighting fixture catalog cuts marked with the actual project plan light fixture schedule "legend" identifier on each page. These will then be submitted (by City of Mesa Engineering Design project coordinator) to the building inspections section along with 3 sets of the project plans for a building permit application.

Toddler play space- as a minimum shall contain:

- The toddler area shall have a two-seat cantilevered swing Playworld model #2UAS or Patterson Williams #2943a or Landscape Structures arch swing #100048.

- Three spring animals on a multiple spring seat unit which is on single base, Playworld "Critter Bounce" model #0602 or multiple single units from manufacturers like Landscape Structures or Playworld or Little Tikes or GameTime or Iron Mountain Forge.

- Tic-tac-toe unit and/or shapes and color match units can be within the toddler area or on the border with the preteen play space. Access to these units is encouraged to be both from the safety surface/ADA side as well as for the play area "sand side".

- One multiple function play structure shall include "ADA" accessible plastic-fiberglass slide, and other play functions as selected by designer, to include upper body exercise units.

Pre-teen play space - as a minimum shall contain:

- One - 8 ft. high two or four seat swing, with vertical/90 degree. Supports - no triangular end supports (this type saves 12 feet of side clearance space or about 200 S.F.), Playworld

model 0205 with 3-1/2" O.D. posts or model 0201 with 5" O.D. Posts, or Miracle model 714-852 (post color selection to be approved).

- Two to three climbing pipe arches at 3'- 4'- 5' heights. (may be shared with toddler space). No 6' high arches.

- One multiple unit play structure which has at least 1 integrated/attached play function "ADA" accessible, including 1 adjacent "activity" panel e.g. Tic-tac-toe, match shapes/colors etc. This would be ADA accessible (accessible both from sand area side and from safety surfaced side).

- Spiral slides, either free standing or as part of a multiple play structure shall not exceed platform height of 72-inches. (Units shall be specified with a roof/"shade top").

- Vault bars, balancing beams and horizontal or inclined ladders are encouraged as either free standing (e.g. Playworld's "Ground Zero" units or equal) or as part of multiple play structures.

- All metal components to be electro-statically painted, (lead-free paint guarantee from manufacturer),"powder-coated", some aluminum components may be left natural or brush finished, i.e. post and platform clamps (to be reviewed on a project - component basis between Consultant and City.)

  Note: All of the contained play area shall be visible from the street side. Grade changes, such as landscape berms or terrace levels, shall be no more than 30 inches in height if the grade change(s) would hide any portion of the play area. The same concept of open viewing shall be applied to plant material landscaping around the play area and other facilities within the park.

  Note: Contained play area shall not be closer than 50' to the public street curb without 4 foot high see through control fencing (e.g. wrought iron) or other approved method of access control.

ADA accessibility shall be provided on a "firm, stable, slip resistant route". Safety surfacing, recycled rubber, such as "tot-turf" (see approved equals on City of Mesa "safety surfacing detail") over a concrete base shall provide the accessible route to or between equipment. Multiple accesses to other play units in the design is encouraged within the limits of the project budget and other required facility developments as identified in the project scope.

ADA - single or dual level drinking fountain shall be provided in a convenient central location to park facilities, a minimum of 75 feet from the "sand" play area(s). Stainless steel drinking fountains by "Sterner-Williams", "MDF", or "Haws", (see current catalogs for model numbers). A detail for the drinking fountain with "remote" drain sump will be provided to the Consultant (AutoCAD details on disk).

Shade Ramadas

- One small 16' x 16' ramada shall be in close proximity to the toddler area and be ADA accessible.

- One medium ramada 20' x 36' with two large grills on the south or east side. The ramada shall have four 10 foot long tables, one of which shall be ADA, (details provided by City). The ramadas shall be located to serve the open space play and picnic functions and, if possible, to also relate to the contained play area.
- Quick couplers are to be next to all ramadas for washing/cleaning purposes.

A (4 pole) lighted basketball court (no "sports lighting fixtures allowed); detail provided by the City, shall be located 50-75 feet or more from the play area and ramadas. A concrete access walkway with a 6 foot minimum width shall connect the court to the other park facilities and be accessible from the street sidewalk. Its design location should also recognize proximity of residential homes, streets, and parking areas. Court shall be oriented north/south.

A lighted sand volleyball court, detail provided by City, shall be located in proximity to a medium sized ramada (20' x 36' roof size). Volleyball court is to be oriented north/south. Ramada east/west.

Park access walkways shall be 4-inch thick concrete over 4-inches of ABC with a minimum of 8 foot in width with 12" turndowns, detail provided by City. Specialty paving (e.g. colored concrete paving units (Pavestone, etc.)) may be used as accent or area definitions - subject to budget constraints and ADA surfacing requirements.

Consultant's design shall include site locations for one or more park entry identification signs. The sign locations shall be in "dry" D.G. planter areas. Any adjacent turf irrigation shall be designed not to overspray park signs. In addition the design shall provide for park rules signs to be installed by the parks' division at all entrances to the park. The park rule sign locations are to be designed by the Consultant and also need to be in the D.G. native planter areas. The rule sign locations may be same as the park identification sign locations - depending on design layout, etc. The park entry identification signs and the park rule signs are to be part of the project plans and construction.

On site parking lot(s), all spaces at 10' o.c., shall have two (minimum) van accessible handicapped spaces including signs; one sign for each stall at back of adjacent walkway. The 10' wide van spaces shall be together, separated by a 10' wide accessibility striped lane/space. The ADA parking spaces shall be located closest/shortest route to the "entry" area to the park facilities.

A gate location shall be designed/provided at entrance to the parking lot. Park gate detail to be provided to Consultant.

Irrigation design shall include turf and drip systems. The maximum time for the turf irrigation cycle shall be 8 hours or less for parks 5 a. & larger. Note: trees are to be on separate irrigation control stations from shrubs in turf areas and also separate from shrubs in D.G. landscape areas.

Park facilities should be designed so that no turf area width is less than optimally covered by a "Hunter" I-25 of I-40 spray head. (Head to head coverage of turf spray heads is minimum standard, design to be adjusted as necessary for special areas which may be susceptible to high winds, etc.), such as can be covered by a "Hunter - I-25" type head. Turf rotor heads "Hunter - I-20-ULTRA is acceptable on a per request basis. The base Hunter I - 20 is unacceptable. All smaller pop-up heads are not allowed. Design of the irrigation system is

preferred to be with the "Hunter "I-40" gear drive rotor head if sufficient dynamic pressure is available. **Consultant must verify** (field verify) current available static and dynamic flow pressures prior to designing the irrigation system. Hunter I-60 may be considered for project, approval from City to be obtained before proceeding to design irrigation with Hunter I-60 gear drive spray heads.

> Booster pump should be considered if static pressure at point of connection to City water main is less than 65 psi. If three-phase power is available it is the preferred type for pump motors. Booster pump motors and related assemblies (include flow sensor within the enclosure, no in-ground installations are allowed) shall be in Stainless Steel lockable enclosures on a minimum 4-inch concrete slab. All piping through concrete shall be PVC sleeved. Pump stations with an external profile higher than 36-inches shall be within a block masonry wall structure with chain link roof framing, with roof panels designed accessible for craning out/in pump(s) and chain link access gate.

Irrigation controller shall be a Motorola Irrinet unit. Irrinet units shall be "Scorpio ready" - includes 2nd radio, specification to include Motorola remote keypad #v308 and sized appropriately for the system needs and allowing for a minimum of two spare stations after park lighting system station/contactor, irrigation master valve and flow sensor needs are met. Typical model number: M5i-"x"(stations required)-00r.

The overhead turf irrigation system shall include a **master valve**: Bermad 910-p with integral flow meter or a Rainbird EFCP Remote Control (master) valve and a Data Industrial flow meter, and shall be located after the Reduce Pressure Backflow Prevention Unit (RPBPU). **Note:** the Bermad's new 3/4-inch master valve and flow meter unit will operate with a drip irrigation system's low flow volumes. The use of this separate drip master control valve with a separate flow meter shall be required for projects involving landscape drip irrigation. The irrigation main line after the RPBPU (where the water meter serves both turf and drip systems) will need to have a manifold dividing the flow to the 2 systems and their respective master valves and flow meters.

Note: Reduced pressure backflow prevention units are the only type allowed for City of Mesa irrigation projects. Our Engineering Standard Detail will be provided to Consultant. The water service main line size, water meter, and RPBPU unit shall be of the **same size unless** otherwise approved in writing by the City project manager.

Remote control valves shall be the latest "Rainbird" model EFA-CP type unless directed otherwise (Rainbird may have an updated model/version, check with Rainbird). **Note:** no reclaimed water (effluent) is available for projects to be irrigated for the City. (If reclaimed water is/becomes available, the Consultant shall select irrigation components suitable for such installation e.g. high particulate abrasion resistant valves and spray heads, and shall submit to the City for approval prior to design of the system).

Quick couplers (Q.C.) for water hoses shall have their own detail showing in-ground installation and separate housings (e.g.10" round lockable valve boxes) for each 'Q.C.'. Typically, 'Q.C.'s are required at ramada locations, basketball courts and other paved areas which require washing down, but not including parking areas. Specify Rainbird 44LRC 1"size quick couplers. All quick couplers on a project shall be on one "branch main line" controlled exclusively by an electrical remote control valve. This control valve for all the quick couplers for the project

(typically on 1 circuit) is to be wired into the Motorola controller as the last numbered station on the system. Or may be all tied in to one of the drip irrigation valves, depending on total potential flows. **Note:** City of Mesa irrigation details will be made available to the Consultant on a hardcopy print basis and as AutoCad.dwg (ver.2000) details on disk.

Irrigation designer shall include on the plans all friction loss calculations. As required in the City of Mesa Engineering Procedures Manual, (calculations for the valve with the largest gpm. and also calculations for the valve and heads farthest from the water meter) and monthly water totals for all valves including proposed design run times for each month of the calendar year.

Irrigation design and plans shall include all water meter locations, vault details (by reference to City standards if no modifications are necessary) and service connections to City water main lines. Irrigation notes on plans are **not** to state "by others." If there are other civil street plans as part of the project design and construction scope, the water meter installation and service line construction can be shown on those plans and referenced on the irrigation plans. But the actual water meter and service line and street water main are required to be shown on the irrigation plans as well.

Electrical - Lighting Design Criteria

- Park area lighting, softball, baseball, and soccer fields, and basketball, volleyball, and racquetball court and swimming pool lighting shall be designed using "Illuminating Engineers Society of North America" (IESNA) sports lighting standards and as directed by the City. The lighting shall be designed with the manufacturers' lighting systems (and in some cases fixture models as well) pre-approved by the City of Mesa. Sample details and plans will be provided. The Lighting Designer and Electrical Engineer shall custom design the facility lighting per the specific project design layouts and related project specific requirements. Computer generated lighting level printouts will be required to be submitted by the Consultant for approval prior to final design of the project plans for plan submittals to the client City department (e.g. Parks) and/or prior to submittal to building inspections for building permit.

  Note: All light poles shall be dimensionally located on the plans. If a coordinate system is utilized for the other project construction elements, light pole layout shall use the same coordinate system. Service entrance section and transformer pad shall be dimensionally located, as per power company approved location plans. The Service Entrance Section shall be shown in elevation view when such facility is near or adjacent to a park structure, e.g. Restrooms, Ramadas, or other significant vertical features of the project. Visual screening of the SES may be required depending on its location and visibility to the public.

  Note: Electrical plans to be complete with all right of way lines, property lines, etc., And show by legend and/or labels all existing conditions and new construction. (Plan submittals with incomplete labels or legends for this required information shall be returned un-reviewed. A Consultant "non-performance" note for not meeting scheduled submittals with completeness as required may be placed in the project file.)

Unless otherwise directed, all lighting (softball/baseball field lighting is excluded) will be designed to be under the control of a Motorola Irrrinet irrigation/lighting controller (new or

existing). The electrical designer to coordinate with irrigation designer for utilizing the Motorola Unit for Control Board and Contactor Requirements, see item 24 above.

- Each ramada with lights may be on an electrical circuit with area lights, however that circuit cannot be one of the "early off - park closing" warning circuits of the area lighting system. (See item d. below)

- Basketball court and volleyball court shall each have a separate circuit. Minimum court lighting level to be 10 average maintained foot candles, 3:1 max/min uniformity ratio. Light level shall be achieved with 4 pole layout, 25' mounting height (pole layout provided).

- Parking area lighting level and walkways are to a minimum of 1.0 average maintained foot-candle with .33 foot-candle minimum. Play areas to have a minimum of 5.0 average maintained foot candles.

- Area lights to design on a minimum of two separate sets of circuits. Each set of circuits shall be able to be controlled by the Motorola controller as a unit for on/off operation, (i.e. 50% of the lights to be turned off at 10:00 p.m.), 50% off 20 minutes later. Lighting design to provide the second set of circuits to "continue" lighting park facilities, (i.e. ramadas, courts, and all formal egress routes from the park, walkways, parking areas, etc.).

- Light poles shall be precast for in-ground installation. Poles shall be exposed aggregate, octagonal, integral concrete color "413", "Ameron" (Watkins Sales, tel. 244-9815) or equivalent poles manufactured by "Stress Crete", in "Mesa Green" integral color (R.C. Lurie, tel. 258-2400). Note: Include Venders names and telephone numbers on plans.

  Note: All lighting level design/foot-candles/lumens for various facility types shall be verified with the City prior to commencing with design

- Construction notes for electrical site plans (as well as rest of project plans) must include directive(s) to contractor for trench area compaction to 85% in turf areas, water settled and with topsoil backfill (MAG 795) utilized for the top 6-inches of backfill. Electrical trenching operations shall include fine grading, removal of all rocks, 1" and larger, in the top 2-inches of trench backfill, and turf reseeding specification, etc.

Structural Calculations

- Structural calculations if required by building inspections, shall be required to be submitted with light pole footing designs and stamped by an Arizona registered Structural Engineer for building inspections review.

- Structural calculations shall be required to be submitted for all new buildings and for picnic ramadas not previously covered by "master" building permits (brand and model numbers of pre-approved ramadas will be provided to the Consultant).

All electrical specifications shall be formatted as 8-1/2" x 11" page size and submitted in booklet form as draft copy for review and approvals. Final specs shall maintain the 8-1/2" x 11" format

but shall be included on the contract construction plan drawings. **Note:** text of specs shall be provided on PC 3-1/2" disk or CD in "MSWord97" or Office2000-Word.

All catalog cuts for all exterior electrical lighting fixtures must accompany plans submitted for Building Safety Division permit application (3 sets). Plans submitted shall be stamped and signed by Arizona Registrant (3 sets required).

CONCEPTUAL DESIGN (30% Submittal)

1. Site survey:
   a. City of Mesa Bench Mark information.
   b. Existing Site Conditions and Topography.
   c. Property Lines.
   d. Rights-of-Way.
   e. Adjacent Street and Utility Information.

2. Demolition plan:

3. Site plan:
   a. Proposed Hardscape.
   b. Proposed Structures (e.g. ramadas, buildings/restrooms).
   c. Driveways and Parking Areas.
   d. Proposed Play Areas.

- Basic grading and drainage plan showing relative differences in elevations, headwalls, storm drain lines and retention area(s).

- Planting plan showing tree and shrub massing proposed including list of plant species proposed for trees, shrubs, and ground covers.

- Electrical site plan showing area light layout proposed and location of service entrance section. Electrical power needs for the project, size and type of service (i.e. 200 amp, 1 phase 120/240, 3 wire etc.).

- Sprinkler irrigation plan showing controller location and main line route proposed including water meter location. Proposed turf sprinkler heads with on center spacing. Quick coupler locations shall be shown relative to facilities requiring them.

- Building floor plans, elevations, basic building materials and colors identified, areas for special ADA compliance identified, lighting, day-lighting and HVAC methods, any special structural design proposed, telephone and drinking fountain locations etc.

- Determine which outside agencies will require permits and approvals.

- Compare preliminary cost estimate to available construction budget.

- Utility Coordination & Pothole Requests.

PRELIMINARY DESIGN (60% Submittal)

- Layout plan with construction dimensions (horizontal control), all pavement types identified, (i.e. Concrete, colored conc., pavers, asphalt, etc. with keyed construction notes and complete legend(s)).

- Grading plan showing all elevations for court games, play area pavement and curbs, parking area drainage, drainage structure inverts and walkway elevations. Include light pole locations on grading plan.

- Landscape plan with plant legend complete, tree, shrub, and ground cover species with proposed sizes and quantities. Light pole locations shall be shown on landscape plans.

- Irrigation plan with main line, all valves, lateral circuits and light pole locations. Show friction loss calculations on the plan, 1 friction loss calculation for each condition, including emitter systems. (Format per Engineering Design Procedures Manual). Show location and size of water meter and backflow prevention unit.

- Electrical plan with all J-boxes and conduit (trenching) runs. Coordinate conduit runs with landscape and irrigation plans. No conduit runs will be allowed crossing the sand play area(s).

- Include all standard and special details.

- Include general notes and construction notes.

- Prepare a draft construction sequencing specification or method of construction.

- Consider special coordination requirements or constraints.

- Prepare a utility conflict report with utility, agency, and type of utility, conflict, resolution, and status of resolution.

- Continue to coordinate with outside agencies for permits and approvals (see list from Task 3).

- Submit 8.5” X 11” sealed legal descriptions and exhibits for acquisition of Right-of-Way, PUFE’s or TCE’s.

- Horizontal and vertical control.

FINAL DESIGN (90% Submittal)

- Prepare 90% PS&E package addressing all 60% comments.

- Technical specifications.

- Update utility conflict report with a status of each conflict resolution.

- Confirm utility relocation designs are progressing and obtain a written schedule from all outside agencies.

- Finalize construction sequencing or method of construction specification.

- Confirm Right-of-Way, PUFE's & TCE's are being finalized.

- Confirm all permits/approvals from other agencies have been submitted.

- Submit PS&E package to MCESD.

- Submit catalog cuts marked for all exterior lighting fixture types to be used on the project showing how fixture housing and lamp placement within fixture provide 100% horizontal light cutoff.

- Submit Structural calculations for all buildings, light pole foundations, retaining walls, and any ramadas which are not on the Building Inspections pre-approved list.

BID DOCUMENTS (100% Submittal)

- Prepare Final PS&E addressing all prior review comments.

- Confirm all permits and approvals are completed.

- Confirm that all Utility Relocations are being completed (Qwest, SRP, Cox, Cable America, etc.).

- Confirm that Utility Companies have approved construction permits and their projects are scheduled for construction.

- Confirm all real estate acquisitions and TCE's are complete.