


CITY OF TUCSON, ARIZONA
DEPARTMENT OF TRANSPORTATION

ENGINEERING DIVISION
ACTIVE PRACTICES GUIDELINES

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APPROVED BY:  DATE: 7/18/11
City Engineer

SUBJECT: LANDSCAPE DESIGN GUIDELINES

A. GENERAL:

1. All design work will utilize the most current edition of the Pima County / City of Tucson, Standard Details and Specifications for Pubic Improvements, this Engineering Active Practices Guideline, and the Tucson Department of Transportation Standard Details and Equipment List approved by the City Engineer's office.
2. All projects shall conform to the City's Native Plant Preservation Ordinance. During the project scoping phase, the Project Manager shall consult with the Transportation Landscape Architect on the necessary level of work to be performed. TDOT will submit NPPO plans to the Planning and Development Services Department. Approved NPPO plans shall be incorporated into the construction documents.
3. All projects shall conform to State and Federal regulations on Threatened and Endangered Species.
4. All projects shall incorporate water harvesting as per City/County Water Harvesting Guidance Manual as noted in section "E" of this document and as per the "Water Harvesting Active Practice Guidelines."
5. All projects and design work shall conform to the City of Tucson Development Standards and the Landscape Irrigation Efficiency Ordinance.
6. All projects shall utilize TDOT Standard Details and Irrigation Equipment List. (Details are available on disc).

B. DESIGN CONCEPT AND INTENT:

The Landscape Consultant shall provide a landscape design concept report at the Engineer's 30% submittal to include the following:

1. Preliminary site analysis and inventory.
2. Potential problems - drainage, site constraints, existing vegetation, existing landscape, all utilities, etc.
3. Planting, grading, and irrigation, and water harvesting written concept.
4. Irrigation concepts shall incorporate phasing water reduction planning, scheduling and a five year final shut off plan. For Type "B" Systems, see Irrigation.

C. SAFETY:

1. Sight Visibility Triangles (SVT): (City of Tucson Development Standard 3-01.5 and 3-01.0 Figure 16). The SVT may not be blocked for any period of time. Any tree placed in the SVT must be of a box size large enough to be pruned up to a 5-foot height immediately for clear SVT. All other trees shall be placed so that severe pruning is not required to keep the SVT clear. The side street and median island SVT shall be shown on the contract documents. No shrub will be allowed within the SVT. No groundcovers or dense accent plants with a mature height above 24 inches shall be placed in the SVT.
2. No planting shall occur in medians that are less than 4 feet wide, as measured from back of curb to back of curb.
3. Trees in medians shall be set back 7 feet from the face of curb. Trees that have mature canopies wider than 20 feet must be set back so that the mature canopy will not extend into the travel lane more than 2 feet. Trees with a mature trunk caliper smaller than 6 inches may be set closer if the mature canopy will not extend into the travel lane more than 2 feet.
4. Shrubs and groundcovers in the medians will be placed so that the mature edge of the plant will be 2 feet back of curb.
5. Trees proposed for the shoulder must demonstrate that the tree location, type, and planting size work with the pedestrian walkway clear safety zone. (5 feet wide and 7 feet high)
6. Shoulder shrub/groundcover must be located so the edge of the mature shrub or groundcover is a minimum of 2 feet clear from sidewalk.
7. Cacti, yuccas, and agaves shall be placed so that the mature growth shall not be closer than 3 feet from the sidewalk edge.
8. Planting between the curb and sidewalk will be reviewed on a case by case basis. No tree or shrub planting will occur in a planting area less than 3 feet wide.
9. If lighting is a part of the project, show lighting layout on planting plans. Trees shall not be located closer than 15 feet to a light pole.

10. All landscape base plan sheets shall show complete utility information. Plant locations must have the proper setback from utility lines, underground and overhead.

Both visual and physical access to manhole covers shall be a top priority. All planting and irrigation design shall take into consideration both a visual and physical access from the closest travel lane to the manhole cover to provide for maintenance purposes. The landscape area between the manhole and the street shall be left open, providing a clear vehicle maintenance access lane width of not less than 15 feet. This lane may contain small shrubs, but no trees, boulders, river rock or swales will be allowed. Trees should be located so that the ultimate canopy will not overhang the access lane or manhole cover. The manhole elevation must be a minimum of 2 inches above finish grade.

All sewer lines will be shown on the project plans. The intent of the planting plan shall be to keep all trees 10 feet from the sewer lines. Where limited right-of-way or other setbacks are prohibitive, the following rules shall apply:

- a. The depth of the sewer line shall be noted on the drawings. In areas where the sewer line is greater than 5 feet deep, the Landscape Architect may select small tree species or non-deep rooted trees to be placed within the 10-foot setback area. The layout shall not place any tree directly over the sewer line.
 - b. In areas where the sewer line is less than 5 feet deep, no tree shall be placed within the 10-foot setback limits. In extremely tight situations, the Landscape Architect may wish to use root barriers or other approved methods to locate trees within the 10-foot setback area. The Landscape Architect will receive prior approval from Pima County Wastewater in this situation.
11. Where trees or shrubs are planted adjacent to the right-of-way (ROW) line and vegetation will grow beyond that line, plans must show adjacent structures, vegetation, and any other items that may interfere with ROW maintenance or with adjacent property.
 12. The designer shall follow standard "Blue Stake for Design" practices.
 13. Provide a section that indicates the finish grade adjacent to sidewalk/curb is 1/2 inch below top of sidewalk/curb.

D. MAINTENANCE:

1. Chilean Mesquites, South American hybrids, and Thornless Mesquites shall only be used in the ROW in special circumstances with no automatic irrigation system. Use with water harvesting only. Explanation: High maintenance, tendency to blow over, natural multi-trunk form, and wide canopy make this a poor choice for ROW use.
2. Use of native Mesquites is encouraged, preferably in an upright multi-trunk form.

3. Groundcover plantings shall be kept to a minimum and placed so that the maintenance crew has access to one side of each plant. All plants must be sustainable through water harvesting once established.
4. The average ten year mature size (plan symbol size) of each plant material shall be utilized on the planting plan. Plan symbols and Plant Key symbols shall be the same size.
5. A plant list with the average, ten year mature size (plan symbol size) will be submitted with the 30% Design Concept Report.
6. The standard tree size shall be 5 gallon, except in special conditions.
7. Tree stakes shall not be utilized except in special conditions or as determined during the maintenance period.
8. Landscape establishment period shall be 730 calendar days.
9. All plant materials shall be on the City of Tucson Land Use Code approved plant list. Plant selection should consider watering needs in Categories 1 and 2.
10. A grading plan shall address all adjacent, existing grade/slope/erosion control issues.
11. In order to maximize the plant material investment, shrub and ground cover plants should be minimal. Tree planting should be emphasized.

E. PRIVATE IRRIGATION SYSTEMS WITHIN PUBLIC R.O.W.

In those cases where private development is providing landscaping within City of Tucson R.O.W., the following rules apply:

1. No major irrigation equipment, such as backflow, controller, remote control valves or mainline shall be located within the R.O.W. Lateral line, emitter and distribution tubing may be located within the R.O.W., but should be as close to the property line as possible.
2. In those cases where lateral lines must cross City of Tucson public streets, the following rules apply:
 - Schedule 80 sleeving
 - Marking tape
 - Minimum 18 inch depth
 - Mark/stamp on curb – IS (Irrigation System) and/or placard at back of curb
 - Sleeves must be in a recorded easement (easement width is dependent on what is needed for installation and/or repairs). To the extent possible, the easements should be created at the time of development/platting
 - Sleeve should extend beyond the right-of-way (into private property), unless otherwise approved by TDOT

- Minimize the number of easements/crossings of arterial and/or collector roadways
3. Whenever planting and irrigation are located within the R.O.W., the following notes are required to appear on the stamped construction drawing:

- It is the owner's responsibility to keep the Sight Visibility Triangles (SVT), and the pedestrian access area clear of vegetation at all times, per Land Use Code (LUC) section.
- Final plant locations must be in compliance with all utility setback requirements.
- The owner understands that if the City of Tucson Transportation Department or any utility company needs to work within the R.O.W. in the landscaped area, plants and irrigation may be destroyed without replacement or repair.
- The owner takes full liability for this landscape and irrigation, and any damage to roadway, sidewalk and utilities.
- The only private irrigation equipment that is allowed within the R.O.W. are lateral lines, tubing and emitters that are not under constant pressure. All other equipment must be on private property. (Excluding water meter).
- Contractor to obtain a Right of Way excavation permit prior to construction within the right-of-way.

F. IRRIGATION:

Irrigation systems shall be either type A or B as noted below. Type "A" systems shall be utilized on major streets only and must be identified as such by the project manager. Type "B" systems shall be utilized for all other projects.

1. TYPE "A" SYSTEM (This is a long term system, with no shut off date)

- All pipe in the emitter system shall be hard (PVC) schedule 40 pipe.
- Each emitter shall be located in a round, 6" plastic meter box.
- Tree and shrub irrigation shall be on separate valves.
- Reclaimed water shall be utilized whenever possible.
- The proposed irrigation equipment list shall be submitted with the 30% drawings.
- The attached standard materials list and details are to be utilized with the understanding that new products need to be introduced to increase water efficiency, durability, and maintainability.
- Provide an electrical plan, which shows the power source, controller, and party responsible for installation.
- Show the wire route, size, and required sleeve size.
- Show a schematic for the entire project including controller, wire route, remote control valves, and power source.
- Provide one hydraulic calculation on the extreme situation. Provide a valve chart with GPM.
- Sleeving for irrigation lines shall also be shown on the Civil Drawings. Provide a separate 2" Schedule 40 P.V.C. for valve wires. (See attached equipment list and standard details.)

- Emitter distribution points should be placed to promote widespread root growth.
- All PVC pipe joints shall use primer before gluing.

2. TYPE “B” SYSTEM (this is a 5 year system and will be abandoned in place).

- Only the main line and header lines will be PVC cl 200 pipe. The emitter lines will be poly .580 lines.
- Emitters shall tap into the poly lines and will not have emitter pit boxes.
- The emitter type shall be Rainbug.
- Utilize plastic Rainbird scrubber valves, plastic valve boxes and solar or battery operated controllers. .

3. WATER HARVESTING:

- The designer shall incorporate water harvesting in all ROW projects. This will require the utilization of grading plans. The grading plan shall be incorporated in the hardscape layout plan.
- The project engineer and the landscape architect shall work together to develop a water harvesting concept and plans. Street runoff shall be utilized through curb cuts per our standard details.
- Type B irrigation systems must be turned off after 5 years and will rely 100% on water harvesting.
- The intent is to retain all of the water that falls within the landscape area and utilize street runoff on all projects.
- The grading plan must show where excess water will flow from each harvest area.
- Utilize the City/County Water Harvesting Guidance Manual.

G. DRAFTING STANDARDS:

All final plans will meet the City of Tucson Department of Transportation Drafting Standards.

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IRRIGATION EQUIPMENT LIST

<u>Item</u>	<u>Description</u>
<u>Backflow Units</u>	<u>Watts 900</u>
RCV & Master V.	Buckner, VDBW brass – 1” plus (plastic on type B systems)
Flow Meter	Calsense *(none on B systems)
Pressure Regulator	Senninger, high or low flow –20 or 30 PSI
Pipe	Schedule 40 (Class 200 on type B systems)
Fittings	Schedule 40
Filter	API Agricultural Products
Emitters	Rain Bird XBT-10-6 and XBT-20-6 (Rainbug on type B systems)
Controllers	Calsense (Battery or Solar type controller on B type systems)
Notes:	All RCV, regulators and filters to be installed with schedule 80 PVC unions.

All RCV assemblies to be installed with brass ball
valve for isolation.

RCV, Master Valves, Flow Meter, Pressure
Regulator and Filters to be installed in
Concrete box (plastic for B type systems)

* Utilized TDOT Standard Details