ENGINEERING DEPARTMENT

MEMORANDUM

DATE: April 01, 2009

TO: Andy Granger, P.E., Engineering Director

FROM: Jamal Rahimi, P.E., City Traffic Engineer

SUBJECT: Access Management Guidelines - Driveway Criteria

Access Spacing

Minimum access spacing provides with sufficient perception-reaction time to address one potential conflict area at a time. Guidelines for minimum unsignalized driveway or local street spacing should consider the speed of the major roadway, stopping sight distance, the elimination of right-turn conflict overlays and the functional area of the access points. When a driveway is to be located upstream of a major intersection, the possibility of weaving, or lane shifts, to make a left turn at the major intersection should also be considered.

The functional area of any access point should be kept clear of any additional points of access. Guidelines for minimum access spacing are presented in Table 1.

Table 1. Minimum Access Spacing (feet)

Speed (mph)	Spacing
30	150
35	180
40	230
45	260
50	290

Corner Clearance

Corner clearance is the distance between an access drive and the nearest cross road intersection. It should provide drivers with adequate perception-reaction time to access potential downstream conflicts and is aimed at preventing the location of driveways within the functional area of an intersection. It will also minimize driveway/intersection conflicts by preventing blockage of driveways upstream of an intersection due to standing traffic queues. Minimum driveway setback distances should take into consideration typical traffic queue lengths while permitting sufficient movement to driveway traffic. The corner clearance on the upstream side of the intersection should be longer than the longest expected queue, or at a minimum, the distances indicated in Table 2. On the downstream side, the minimum distance should conform to Table 2. Driveways on corner lots should be located on the lesser street and near the property line most distant from the intersection.

Table 2. Minimum Corner Clearance (feet)

Speed (mph)	Distance From Near Side of Street to Near Side of Access Driveway: Major Generator	Minor Generator
30	200	145
35	295	230
40	390	310
45	425	325
50	450	345

Major generators are those developments that are estimated to generate 500 vehicle trips or more during either of the a.m. or p.m. peak hours. Other development projects are considered minor generators.

Vehicle service stations, which are almost always on corner lots, will want to have up to two driveways on each street. Only one driveway on the major street, located near the property is desirable. Depending on the classification of the intersecting street, one driveway is desirable, two are maximum.

On streets with posted speed limits or prima facie speed limits of less than 30 mph the minimum access spacing may be reduced to 50-feet. Other provisions of City of Peoria Standard Detail PE-251-3 (Driveway Criteria) will remain in effect.

Notes:

Location and spacing of driveways affect the safety and functional integrity of streets and highways. Too many closely-spaced streets and driveways increase accident potential and delays. Increasing the spacing and providing a greater separation of conflict points, reduce the number and variety of events to which drivers must respond. This translates into fewer accidents, travel time savings, and preservation of capacity.

Reasonable spacing between driveways is important to the safety and capacity of a road, as well as the appearance of a corridor. Managing driveway spacing is essential on roads intended for higher speeds. At higher speeds drivers have less time and distance to react to unexpected situations.

Inadequate corner clearances can result in poor traffic operation (ingress and egress) along with safety backups and capacity problems. Driveways located too close to intersections can add to traffic congestion.

References:

1. Institute of Transportation Engineers (ITE), Traffic Engineering Handbook, 5th Edition, Washington, DC, 1999.

2. Access Management Manual, Transportation Research Board (TRB), 2003.

3. American Association of State Highway and Transportation Officials (AASHTO "Green Book"), A Policy on Geometric Design of Highways and Streets. Washington, DC, 2001.

4. Federal Highway Administration, "Access Management, Location and Design". National Highway Institute Course No. 15225, June 1998.

5. U.S. Department of Transportation – Federal Highway Administration, Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), Washington, DC 2003.

DEVELOPERS MID CHECKLIST

First MID submittal is to be made with the second civil submittal.

First Submittal to include:

- MID application fee
- 24”x36” bond MID diagram (area table to be included on the diagram)
- Metes and bounds legal description of the MID boundary, with original seal and signature. (The legal description shall be accompanied with back-up material showing it closes)

Second Submittal to include:

- 24”x36” MID diagram (bond or Mylar, as requested by the reviewer)
- Fully executed petition, with original signatures and dates
- Metes and bounds legal description of the MID boundary, with original seal and signature
- 8-1/2” x 11” recordable copy of MID diagram
- ½ size copy of landscape plans (if requested)

Informational Notes:

- MID number is assigned and provided during the first review
- Final Plat to include in the dedication statement the standard maintenance easement note. (Refer to Final Plat notes/review for language.)
- Final Plat shall include a note which states the subdivision is subject to a MID. The assigned MID number shall be included in this note.

MAINTENANCE IMPROVEMENT DISTRICT (MID) POLICY
City of Peoria

PURPOSE

The purpose of this document is to inform and assist the developers in their formation of the Maintenance Improvement District. Under provisions of the City Code, all developers are responsible to completely landscape the development projects according to the approved plans, prior to issuance of a Certificate of Occupancy. Subdivisions shall provide landscape along arterial streets and along collector streets in which lots back onto the streets, and in other locations as provided in the zoning stipulations or subdivisions requirements.

The City of Peoria has a Design Review Manual to assist in the development and review of the landscape projects for conformance to established policies and approved preliminary plats.

Pursuant to the provision of A.R.S. 48-574 the Mayor and Council are empowered to adopt a resolution ordering the formation of a Maintenance Improvement District and a resolution ordering the improvements.

All residential subdivisions are subject to the formation of a Maintenance Improvement District. Under State law the residents will receive, on their property tax bill, an additional charge for maintenance of landscape, irrigation and drainage improvements located adjacent to and within the public rights-of-way, easements and tracts.

The Homeowners Association is responsible to maintain the landscape, irrigation and drainage improvements within the public rights-of-way, easements and tracts. Until such time as the Homeowners Association fails and the City assumes maintenance responsibility, the additional charge to property owners will be $0.00.

DOCUMENTATION

As mentioned above, each residential subdivision is subject to a Maintenance Improvement District (MID). Prior to recordation of the subdivision Final Plat the developer is responsible to have the following documentation submitted to the City.

1. The Engineering Department will provide a MID number. The MID number must be placed on the MID diagram.

2. Each owner/developer shall fully execute a MID petition/waiver. The petition/waiver must be executed in black ink only, include the MID number, acreage of the subdivision, subdivision name, print or type the name of the owner/developer, provide the company name, company address, day of witness of execution of the petition and then sign the document.

3. Provide one copy of the metes and bounds legal description of the MID boundary with ½" top, bottom, and side margins and using font size – Aerial 12. This format is suitable for recording. The legal description shall be prepared and sealed by a professional engineer or surveyor registered in the State of Arizona. The legal description shall be accompanied with back-up material showing it closes.

4. The owner/developer shall provide a MID diagram. The diagram shall be a photo-Mylar (24" x 36").
   The MID diagram shall contain the following information:

   A. All lettering, numbers, and the drawing must be clear and distinct and of sufficient size to enable the City to have useable records when drawings are microfilmed.

B. Prepare the drawing of the proposed MID boundary so that the direction of the north will be toward the top of the sheet. (The top of the sheet will have the 36-inch dimension). All notations should be oriented to read with north pointed up. A north arrow shall be provided in a pertinent manner with a bar scale indicating the scale of the MID boundary drawing.

C. Insert the statement provided below at the top of the page:
"Assessment Diagram"
"Maintenance Improvement District No. (Insert MID#)"
Insert City Emblem
Insert Subdivision Name

D. Following the subdivision name, state the quarter section(s) within which the proposed MID boundary is located, for example: "A portion of the southeast quarter of section 22, township 4 north, range 1 east of the Gila River meridian, County of Maricopa, State of Arizona, more particularly described as follows." This statement should be followed by a complete legal description.

E. A certification must be provided that states the following:

CERTIFICATION

I, Andrew Granger, Engineering Department Director of the City of Peoria, Arizona hereby certify that this is the assessment diagram of the City of Peoria Maintenance Improvement District No. (Insert Number) for (Insert Subdivision Name) was approved by the Mayor and Council of the City of Peoria, and that a quorum was present.
Assessment Diagram Submitted this (Insert date) day of (Insert Month), 20_____.

By: _____
District Engineer

F. A note must be provided that states the following:

NOTE

This improvement district is for the express purpose of providing the maintenance and operation of the landscaping adjacent to and along the public roadways and parkways within the district and drainage and retention facility within such proposed district. Specific authorization is included in the Arizona State Statutes, Title 48, Chapter 4, Article 2, Section 574, as amended.

G. Each MID boundary shall have two survey ties to existing monuments. These ties must be shown, together with the bearings and distances, curve lengths, central angles, radii, etc. for all MID boundary lines. All corners must be identified.

H. Identify all lots by number and all tracts by letter. Show all lots, tracts and street rights-of-way to be within and perimeter the district. Provide all bearings, dimensions and curve data of the MID boundary.

I. Include the vicinity map on the Assessment Diagram.

5. The owner/developer shall provide one 8 ½" x 11" copy of the MID diagram with ½" top, bottom, and side margins suitable for recording.

6. The owner/developer is responsible to provide a table on the diagram listing the rights-of-way, easements and tracts of the areas (square footage) to be included in the MID.

7. The owner/developer shall provide a ½ size copy of the landscape plans, if requested.

8. The dedication statement of the Final Plat shall include the following paragraph:

   The City is hereby given an easement for maintenance of landscaping, drainage and retention areas on tract(s) (insert number or letter of each tract). This easement may be exercised by the City of Peoria at any such time when the homeowners association fails to exist and provide the required maintenance and operation of the landscaping, drainage and retention areas. As long as the homeowner's association is in existence, it is responsible for providing all maintenance of landscaping, drainage and retention areas regardless of the dedication of the easement.

9. Each Final Plat shall include a note, which states that the subdivision is subject to a Maintenance Improvement District.

PETITION, WAIVER AND CONSENT TO FORMATION OF A MUNICIPAL IMPROVEMENT DISTRICT BY THE CITY OF PEORIA

[_____]
MID#

[_____]
Subdivision Name

To: Honorable Mayor and Council
City of Peoria, Arizona

Pursuant to Arizona Revised Statutes, Section 48-574, the undersigned property owner respectfully petitions the City Council of the City of Peoria, Arizona (City Council) to order the formation of a Municipal Parkway Improvement District under Arizona Revised Statutes, Title 48, Chapter 4, Article 2. In support of this petition, the undersigned agrees to waive certain rights under the Arizona Improvement District Law and to consent to the formation and completion of the District.

1. Area of District. The proposed district is described by a map and by a legal description on Exhibit "A" that is attached hereto and incorporated herein by reference. The proposed district consists of _____ acres and is entirely within the corporate boundaries of the City of Peoria.

2. Ownership. The undersigned (is)(are) the sole owner(s) of the real property within the proposed district.

3. Purpose. The district is proposed to be formed for the purpose of the operation, maintenance, repair and improvements for landscape maintenance adjacent to designated public roadways and parkways within the proposed district and drainage and retention within each proposed district.

4. Public Convenience and Necessity. The necessity for the proposed district is for the operation, maintenance, repair and improvements for landscape maintenance adjacent to designated streets and parkways within the proposed district by the levying of special assessments in the proposed district.

5. Waiver and Consent. The petitioners with full knowledge of their rights being waived hereunder, hereby expressly waive:

   (a) Any and all irregularities, illegalities or deficiencies which may exist in the acts or proceedings resulting in the adoption of the Resolution of Intention and the Resolution Ordering the Work;

   (b) Any necessity for publication and posting of the Resolution of Intention and the Notice of Proposed Improvements pursuant to A.R.S. §48-578;

   (c) All protest rights whatsoever under A.R.S. §48-579(A) and (B), which provide for protests against the work; and

   (d) All objections to the filing of and adoption by the City of the plans and specifications, the Engineer's estimate and the Assessment Diagram, all of which provide for the completion of the District.

Further, the improvements described above are of more than local or ordinary public benefit.

In Witness whereof the parties have executed this Petition and Waiver Agreement as of the _____ day of _____ 20____.

_____ Print Property Owner Name _____ Print Name _____ Address _____ Signature	Date: _____	Property (Tax Parcel Numbers) _____
_____ Print Property Owner Name _____ Print Name _____ Address _____ Signature	Date: _____	Property (Tax Parcel Numbers) _____

Accepted and approved by:

CITY OF PEORIA, ARIZONA, an
ARIZONA MUNICIPAL CORPORATION

ATTEST:

By_____
Bob Barrett, Mayor

_____
Mary Jo Kief, City Clerk

APPROVED AS TO FORM:

_____
Stephen M. Kemp, City Attorney

DEVELOPERS SLID CHECKLIST

First SLID submittal is to be made with the second civil submittal.

First Submittal to include:

- SLID application fee
- 24”x36” bond SLID diagram
- Metes and bounds legal description of the SLID boundary, with original seal and signature. (The legal description shall be accompanied with back-up material showing it closes)

Second Submittal to include:

- 24”x36” SLID diagram (bond or Mylar, as requested by the reviewer)
- Fully executed petition, with original signatures and dates
- Metes and bounds legal description of the SLID boundary, with original seal and signature
- 8-1/2” x 11” recordable copy of SLID diagram

Informational Notes:

- SLID number is assigned and provided during the first review
- Final Plat shall include a note which states the subdivision is subject to a SLID. The assigned SLID number shall be included in this note. (Refer to Final Plat notes/review for language).

STREET LIGHT IMPROVEMENT DISTRICT (SLID) POLICY

Each subdivision is subject to a Street Light Improvement District (SLID). Prior to recordation of the subdivision Final Plat the developer is responsible to have the following information submitted to the City.

1. The Engineering Department will provide a SLID number. The SLID number must be placed on the SLID diagram.

2. Each owner/developer shall fully execute a SLID Petition/Waiver. The petition/waiver must be executed in black ink only, include the SLID number, acreage of the subdivision, subdivision name, print or type the name of the owner/developer, provide the company name, company address, day of witness of execution of the petition and then sign the document.

3. Provide one copy of the metes and bounds legal description of the SLID boundary with ½" top, bottom, and side margins and using font size – Aerial 12. This format is suitable for recording. The legal description shall be prepared and sealed by a professional engineer or surveyor registered in the State of Arizona. The legal description shall be accompanied with back up material showing it closes.

4. The owner/developer shall provide a SLID diagram. The diagram shall be a photo-Mylar (24" x 36"). The SLID diagram shall contain the following information:

   A. All lettering, numbers, and the drawing must be clear and distinct and of sufficient size to enable the City to have useable records when drawings are microfilmed.

   B. Prepare the drawing of the proposed SLID boundary so that the direction of north will be toward the top of the sheet. (The top of the sheet will have the 36-inch dimension). All notations should be oriented to read with north pointed up. A north arrow shall be provided in a prominent manner with a bar scale indicating the scale of the SLID boundary drawing.

   C. Insert the statement provided below at the top of the page:

      "Assessment Diagram"
      "Street Light Improvement District No. (Insert SLID #)"
      Insert City Emblem
      Insert Subdivision Name

   D. A certification must be provided that states the following:

CERTIFICATION

I, Andrew Granger, Engineering Department Director of the City of Peoria, Arizona, hereby certify that this is the assessment diagram of the City of Peoria Street Light Improvement District No. (Insert SLID) for (Insert subdivision name), was approved by the Mayor and Council of the City of Peoria, and that a quorum was present.

Assessment Diagram submitted this (Insert date) day of (Insert Month), (Insert year)

By: _____
District Engineer

E. A note must be provided that states the following:

NOTE

This improvement district is for the express purpose of purchasing electrical power and energy, and for the use of lighting facilities. Specific authorization is included in the Arizona Revised Statutes, Title 48, Chapter 4, Article 2, Section 48-571 to 48-619, as amended.

F. Following the subdivision name, state the quarter section(s) within which the proposed SLID boundary is located, for example: "A portion of the southeast quarter of section 22, township 4 north, range 1 east of the Gila River meridian, County of Maricopa, State of Arizona, more particularly describes as follows." This statement should be followed by a complete legal description.

G. Each SLID boundary shall have two survey ties to existing monuments. These ties must be shown, together with the bearings and distances, curve lengths, central angles, radii, etc. for all SLID boundary lines. All corners must be identified.

H. Identify all lots by number and all tracts by letter. Show all lots, tracts, and street rights-of-way to be within and perimeter to the subdivision. Provide the bearings, dimensions and curve data of the SLID boundary.

I. Include vicinity map on Assessment Diagram.

5. The owner/developer shall provide one 8 ½" x 11" copy of the SLID diagram with ½" top, bottom, and side margins suitable for recording.

6. The owner/developer is responsible to hire a registered electrical engineer to prepare a streetlight layout plan. The streetlight plan must be approved by the City and an approved copy will be forwarded to the electrical company, APS or SRP. See the Street Light Policy for further information.

7. The streetlight electrical system plans must be completed by the appropriate electrical company, APS or SRP.

8. Each Final Plat shall include a note, which states that the subdivision is subject to a Street Light Improvement District.

PETITION, WAIVER AND CONSENT TO FORMATION OF A MUNICIPAL IMPROVEMENT DISTRICT BY THE CITY OF PEORIA

[_____]
SLID#
[_____]
Subdivision Name

To: Honorable Mayor and Council
City of Peoria, Arizona

Pursuant to Arizona Revised Statutes, Section 48-617, the undersigned property owner respectfully petitions the City Council of the City of Peoria, Arizona (City Council) to order the formation of a Municipal Street Light Improvement District under Arizona Revised Statutes, Title 48, Chapter 4, Article 2. In support of this petition, the undersigned states agrees to waive certain rights under the Arizona Improvement District Law and to consent to the formation and completion of the District.

1. Area of District. The proposed district is described by a map and by a legal description on Exhibit "A", which is attached hereto and incorporated herein by reference. The proposed district consists of _____ acres and is entirely within the corporate boundaries of the City of Peoria.

2. Ownership. The undersigned (is) (are) the sole owner(s) of the real property within the proposed district.

3. Purpose. The district is proposed to be formed for the purpose of the purchase of electricity for lighting the streets and public parks within the proposed district.

4. Public Convenience and Necessity. The necessity for the proposed district is the purchase of electricity for lighting the streets and public parks within the proposed district by the levying of special assessments in the proposed district.

5. Waiver and Consent. The petitioners with full knowledge of their rights being waived hereunder, hereby expressly waive:

   (a) Any and all irregularities, illegalities or deficiencies which may exist in the acts or proceedings resulting in the adoption of the Resolution of Intention and the Resolution Ordering the Work;

   (b) Any necessity for publication and posting of the Resolution of Intention and the Notice of Proposed Improvements pursuant to A.R.S. §48-578;

   (c) All protest rights whatsoever under A.R.S. §48-579(A) and (B), which provide for protests against the work;

   (d) All objections to the filing of and adoption by the City of the plans and specifications, the Engineer's estimate and the Assessment Diagram, all of which provide for the completion of the District.

Further, the improvements described above are of more than local or ordinary public benefit.

In Witness whereof the parties have executed this Petition and Waiver Agreement as of the _____ day of _____ 20____.

_____ Print Property Owner Name _____ Print Name _____ Address _____ Signature	Date: _____	Property (Tax Parcel Numbers) _____
_____ Print Property Owner Name _____ Print Name _____ Address _____ Signature	Date: _____	Property (Tax Parcel Numbers) _____

Accepted and approved by:

CITY OF PEORIA, ARIZONA, an
ARIZONA MUNICIPAL CORPORATION

By_____
Bob Barrett, Mayor

ATTEST:

_____
Mary Jo Kief, City Clerk

APPROVED AS TO FORM:

_____
Stephen M. Kemp, City Attorney

FIGURE 3-4

TECHNICAL DESIGN REQUIREMENTS BY STREET CLASSIFICATION

ITEM	SUB ITEM		CLASSIFICATION						
			Major Arterial	Minor Arterial	Collector (8)	Residential	Residential Cul-De-Sac (3)	Existing Alley (5)	Emergency Access
Minimum Right-of-Way (Public/Private)			130' (4)	110' (4)	60' to 80'	50'	50' Throat 50' Radius	Varies	20'
Minimum Street Width (Face of Curb to Face of Curb)			(8)	(8)	(8)	26'	45' Radius To Face of Curb	Pavement Full Width of Alley Up to 24'	20'
Curbing (MAG Std. Det. 220)			Vertical Curb & Gutter			Single Family Residential - Roll Curb & Gutter, Unless Curb is Required for Drainage. All Other, Including Multi-Family - Vertical Curb & Gutter		N/A	N/A
Sidewalk (MAG Std. Det. 230)			8' Wide (Detach)		6' Wide (9)	5' Wide			
Minimum Pavement Structure (1)	Asphaltic Concrete (MAG Spec. 710)		5"		4"	3" Minimum		3" Minimum	Note 13
	Base Depth		12"		8"	6" Minimum		6" Minimum	
Longitudinal Slope			0.4% Minimum 6% Maximum - 600' Maximum Length		0.4% Minimum 9% Maximum - 600' Maximum Length	12% (Hillside w/ City Engineer's Approval)	0.4% Minimum 9% Maximum	0.40%	10%
Cross Slope (Straight Crown)			2% Minimum - 3% Maximum						5%
Vertical Curve (6)	Required When		Grade Change Exceeds 1.5%			Grade Change Exceeds 1.5%		N/A	
	Crest Curve (2)		(12)	(12)	(12)	(12)			10%
	Sag Curve (2)		(12)	(12)	(12)	(12)			10%

Figure 3-4 (a)

FIGURE 3-4
TECHNICAL DESIGN REQUIREMENTS BY STREET CLASSIFICATION - Continued

ITEM	SUB ITEM	CLASSIFICATION						
		Major Arterial	Minor Arterial	Collector (8)	Residential	Residential Cul-De-Sac (3)	Existing Alley (5)	Emergency Access
Horizonal Curves	Required When:	Tangent Centerlines Deflect More Than 5 Degrees		Tangent Centerlines Deflect More Than 5 degrees			N/A	WB-50 (inside 19.8') (Outside 45')
	Minimum Radius – No Superelevation	1200' (10)		670' (11)				
	Minimum Radius – 2% Superelevation	1050' (10)		600' (11)				
	Minimum Tangent Centerline Between Reverse Curves	150'		100'				
Tapers	Length	Speed Limit x Width (7)		$\frac{(\text{Speed Limit})^2 \ (\text{Width})}{60}$			N/A	N/A
	Pavement Structure	1. Remove Existing Taper, and Match to Full Width and Structural. 2. When Required, a New Taper = 3" A.C. Over 8" Base and Reconstructed with Future Improvements.						

NOTES

(1) Other structural sections may be required if so indicated by the Soils Report and approved by the City.
(2) A = Algebraic difference of the two slopes.
(3) In all cul-de-sacs: The maximum length from the intersecting street center lines to the radius point shall be 400'.
(4) Full Row for Arterial to Arterial intersections shall be 150' for a distance of 500' as measured from the center line intersection.
(5) Alley entrances to public streets shall be reconstructed per MAG Std. Detail 250 modified to 9" thick Classs "A" concrete per MAG Section 725.
(6) Length of vertical curve shall be adjusted to up to an even one-half station (i.e. 160 x A = 532' - use 550')
(7) Width = difference of the two widths.
(8) See City of Peoria Details PE-010-2, PE-010-3, PE-010-4, and PE-010-5.
(9) Residential collector to have 5' wide S/W attached. Collector to have 6' wide S/W detached where right-of-way permits.
(10) Based on a 50 mph design speed.
(11) Based on a 40 mph design speed.
(12) See Section 3-4-G.
(13) All-weather surface for Max load 75,000 pounds.
(14) Fire signing and striping per MUTCD.

Figure 3-4 (b)

CITY OF PEORIA
GENERAL NOTES

- **GENERAL INFORMATION**
- **GENERAL NOTES**
- **GRADING & DRAINAGE**
- **LANDSCAPE & IRRIGATION**
- **PAVING**
- **SEWER**
- **WATER**
- **RECLAIMED WATER**
- **SIGNING & STRIPING**
- **TRAFFIC SIGNAL NOTES**
- **GENERAL NOTES FOR BRIDGES**

The following general information and general notes must be placed on the detail sheet or cover sheet of each set of construction plans. Additionally, the notes for grading and drainage, landscape and irrigation, paving, striping and signage, traffic signals, sewer and water must be placed on the detail sheet or cover sheet of each set of construction plans, as applicable.

The Design Engineer is responsible to include these notes accurately, without modification, on the plans. The City of Peoria General Notes file is available upon request from the plans reviewer.

GENERAL INFORMATION

1. No person, Corporation, Contractor, or utility shall work within the right-of-way, road, street, or easements granted for public use or alleys without securing an Engineering construction permit from the Engineering Department.

2. Engineering construction permits are required for Grading/drainage, erosion control, flood control structures, grading, hauling material in excess of 100 cubic yards, oiling, graveling or any surfacing of any street, alley, water system, sewer system, storm drain system, trenching, gas or any other types of pipe lines, drywells, paving, curb, gutter, sidewalks, driveways (concrete), flood irrigation, landscape/irrigation, traffic signals, striping and signage, bank stabilization and channelization, street lights, well abandonment, utility lines such as electric, telephones, television, communications and other franchised facilities.

3. The City's Ordinance No. 98-04 establishes construction work hours as follows:

CONSTRUCTION TYPE:		April 2-September 29	September 30-April 1
A	Concrete Work	5:00 am to 7:00 pm	6:00 am to 7:00 pm
B	Other Construction (within 500 ft of residential area)	6:00 am to 7:00 pm	7:00 am to 7:00 pm
C	Construction Work (more than 500 ft of residential area)	5:00 am to 7:00 pm	5:00 am to 7:00 pm

4. This document establishes work hours in the public right-of-way as follows:

   No interference with traffic flow on arterial streets shall be permitted during the hours of 6:00 a.m. to 8:30 a.m. or from 4:00 p.m. to 7:00 p.m. unless prior authorization is obtained in writing by the City of Peoria Traffic Engineer or their designee.

5. Prior to issuance of engineering construction permits, the Contractor/Developer must provide the City of Peoria with the specific information and payment of fees listed below. Any person, Corporation, Contractor, or utility company working in the right-of-way, road, street, or easements granted for public use or alleys without securing a permit is subject to a fine in accordance with Ordinance No. 01-181.

6. The Contractor shall submit a traffic control plan per the Phoenix Traffic Barricade Manual. Barricades must be continually maintained throughout the duration of the project (refer to City Ordinance #01-181). If any part of the traffic control plan falls within 300' of a signalized intersection, an off-duty officer will be required for traffic control. A Traffic Control Plan (TCP) shall be submitted to the Engineering Department and accepted a minimum of three working days; 72-hours prior to construction. An accepted TCP will be stamped and a copy returned to the Contractor. A copy of the accepted plan must remain on the job site at all times.

7. Refer to the "General Information-Final Acceptance of Projects Checklist" for a list of the required close out items. Any questions should be directed to the Engineering Inspector.

GENERAL NOTES

1. All construction shall conform to the latest edition of the Maricopa Association of Governments' (MAG) Uniform Standard Specifications and Details for Public Works Construction. The latest edition of the City of Peoria Infrastructure Design Guidelines, the City of Peoria Supplement to Maricopa Association of Governments Uniform Standards Details and City of Phoenix Standard Details will continue to apply where such details were not adopted or included by MAG. Alternate details and specifications may be submitted for review and acceptance by the Engineering Department. If accepted, alternate details will be shown as part of the approved plans/detail sheets.

2. This set of plans has been reviewed for compliance with City requirements prior to issuance of engineering construction permits. However, such review shall not prevent the Engineering Director from requiring correction of errors or omissions in plans found to be in violation of any law or ordinance.

3. Approval by the Engineering Director means for general layout in right-of-way only. This approval of construction plans is valid for a period of nine months. Engineering construction permits shall be obtained within this period or the plans shall be resubmitted for approval. Work shall also be continuously pursued in order to maintain a valid plan approval and permit. Approval is only for work within the jurisdiction of the City of Peoria.

4. The Engineering Director does not warrant any quantities shown on these plans.

5. Engineering construction permits for any work within the right-of-way and easements, and any grading and drainage, whether on-site or off-site, is required prior to commencing work. The building permit shall not be construed in any way as permission to commence work covered by an Engineering construction permit. It shall be the responsibility of the Contractor/Developer to understand the work covered by various permits.

6. The Engineering Department, Inspection Division, shall be notified 24-hours prior to any construction work by telephone at (623) 773-8445. Any work concealed without inspection shall be subject to removal and replacement at the Contractor's/Developer's expense.

7. An approved set of plans must be available on the job site at all times. The Contractor's/Developer's representative (capable of communicating with the City's representatives) shall be on the job at all times the work is being pursued.

8. The Contractor/Developer is responsible to provide emergency telephone numbers to the City of Peoria at time of issuance of engineering construction permits and have personnel available 24-hours a day to respond to emergencies. If the City is required to respond and make emergency repairs on behalf of the Contractor/Developer, the Contractor/Developer is responsible to reimburse the City for all costs incurred.

9. It shall be the responsibility of the permittee to arrange for the relocation and relocation costs of all utilities, and submit a utility relocation schedule prior to the issuance of an engineering construction permit.

10. All underground tanks require a permit from the Fire Department prior to removal.

11. The procedures and methods used to sample, test materials, and report test results will be determined by the Engineering Department. For all phases of construction, the type, scheduling, frequency and location of all materials testing and sampling shall be determined by the Engineering Department. All test results shall be reported directly (in writing) to the Engineering Department. For each phase of construction, test results (in writing) must be received from the testing laboratory, prior to start of the next phase of construction.

12. The Contractor/Developer must give a location for wasting excess excavation and a letter from the owner giving permission for dumping prior to starting on-site construction

13. It is the Contractor/Developer's sole responsibility to verify the presence and location of all existing overhead and/or underground utilities that may interfere with this construction, whether or not said utilities are shown on the construction plans for this project and to adequately protect and maintain any such utilities.

14. The Engineering Department does not assume any liability for errors of line and/or grade on any staking which has been disturbed in any way, nor does the Design Engineer assume any liability for errors of line and/or grade on any staking that has been in place for a period of 24-hours or more without the commencement of the construction for which it was set.

15. The Contractor/Developer shall contact Blue Stake (602) 263-1100 prior to construction. It is the responsibility of the Contractor to maintain current Blue Stake markings throughout construction.

16. The Contractor/Developer shall obtain a fire hydrant meter for construction from the Management Services Department, Customer Services. Contact Customer Service at (623) 773-7160 to schedule the relocation of hydrant meters. Contractors shall not relocate hydrant meters themselves.

17. All Contractors/Developers are responsible to construct stabilized construction entrances in order to reduce or eliminate the tracking of sediment onto public rights-of-ways or streets. Gravel track-out pads shall meet current Maricopa County standards.

18. All drainage protective devices such as swales, interception ditches, pipes protective berms, concrete channels or other measures designed to protect improvements, whether existing or proposed, from runoff or damage from storm water, must be constructed prior to the construction of any improvements.

19. Traffic control shall conform to the City of Phoenix Traffic Barricade Manual, MUTCD, and the City of Peoria Infrastructure Development Design Guidelines.

20. Any and all obstructions within the rights-of-way and easements shall be removed before any construction is commenced.

21. All Contractors/Developers are responsible to obtain a National Pollution Discharge Elimination System (NPDES) Permit in accordance with Federal and State Regulations, including Notice of Intent (NOI), Notice of Termination, and Storm Water Pollution Prevention Plan (SWPPP). A copy of the NOI and SWPPP shall be available on the job site at all times. All SWPPP plans must include the N.O.I. tracking number administered by Arizona Department of Environmental Quality (ADEQ) on the bottom right hand corner of the sheet.

22. All contractors/developers are responsible to obtain the necessary 401 and 404 permits. A copy of the permit shall be submitted to the City prior to approval of the Grading and Drainage plans.

23. Contractor/Developer shall obtain any and all permits as required by other agencies which have jurisdiction at the Contractor/Developer's expense. The Contractor/Developer shall meet the requirements of these permits as set forth therein.

24. The Contractor/Developer is solely responsible for all job site safety, including but not limited to meeting all requirements of OSHA and ADOSH. The City of Peoria Engineering Inspector is not authorized to advise or direct the Contractor/Developer regarding matters of job site safety. Should the Contractor/Developer act on such advice or direction, it is at the risk of the Contractor/Developer.

25. Per the Maricopa County Air Pollution Control Rules and Regulations on Earth Moving Equipment Permits, no person shall cause or permit the use of any power of mechanical equipment for commercial purposes to clear, excavate or level land, including but not limited to blasting, demolition, road and street construction, swimming pool excavating, trenching, vegetation removal, or engage in any other earth moving activities without first obtaining a permit from the Maricopa County Environmental Services Department. The property owner, lessee, developer, or prime contractor will be responsible for acquiring the permit.

    If the above referenced development has work that needs to be done in the Maricopa County rights-of-way, please obtain all permits from the Maricopa County Department of Transportation. The Engineering construction permits issued by the City of Peoria do not cover the Maricopa County rights-of-way.

GRADING AND DRAINAGE

1. The Grading and Drainage plans must be approved by the Engineering Director or their designee. The Engineering Director's Office shall be notified at (623) 773-7210, 48-hours before any on-site construction begins.

2. A separate permit is required prior to any on-site grading, including custom homes.

3. Grading and Drainage Plan approval includes:

   a. Construction of all surface improvements shown on the approved grading and drainage plan, including but not limited to, retention areas and/or other drainage facilities, drainage patterns, channels, walls, curbing, asphalt pavement, bank protection and channelization, and building floor elevations.

   b. Contractor shall provide minimum slope to the bottom in all retention basins at elevations as shown on the plans. Retention basin side slopes shall not exceed 3:1 (under special circumstances – refer to Section 4-3), as confirmed through the geotechnical report, on private property and 6:1 adjacent to public right-of-way unless noted otherwise on plans.

4. All drainage protective devices such as swales, interceptor ditches, pipes, protective berms, concrete channels or other measures designed to protect homes or other improvements whether existing or proposed, from runoff or damage from storm water, must be constructed prior to the construction of any improvements.

5. Drywells must be drilled a minimum of 10-feet into permeable porous strata and percolation tests will be required. The Engineering Inspector must be present before backfill or wall pipes are placed within any drywell. Percolation tests must be conducted by an independent laboratory and results provided to the Engineering Department. All drywells must be registered with ADEQ. Copies of drilling logs and ADEQ registration information must be provided to the City.

6. All finish floor elevations shown are a minimum of 14-inches above the point of outfall, or one (1) foot above the 100-year base flood elevation as shown on the approved plan.

7. A FEMA Elevation Certificate for all new and substantially improved construction in the floodplain shall be submitted to the Engineering Department prior to final acceptance of the project.

8. Soils compaction test results must be submitted to the Engineering Director's office for all building pads that have one-foot or more of fill material indicated.

9. Staking pad and/or finish floor elevations is the responsibility of the developer and his engineer. No minimum finish floor elevation will be raised or lowered without approval of the Engineering Director. In noncritical areas, developer's engineer shall submit certification of constructed building pad elevations prior to request for final inspection. In critical drainage areas or in the 100-year floodplain, substitute building floor elevation in above note, or FEMA Elevation Certificate.

10. The Contractor is responsible for locating and confirming depth of all existing utility lines within proposed retention and drainage facility areas. If the drainage facilities cannot be constructed per plan as a result of conflict with underground utilities, the Contractor should contact the Engineering Director and the Design Engineer and request modification of the drainage facility design.

11. All bank protection and channelization must be completed prior to final acceptance of the project.

12. A separate haul permit shall be required whenever hauling in excess of 100 cubic yards of material in or out of a site. A haul route must be submitted and approved by the Engineering Department. Additional requirements as set forth by the Engineering Department shall be met.

13. The developer is responsible to obtain a Nation Pollution Discharge Elimination System (NPDES) permit in accordance with Federal and State Regulations, including Notice of Intent (NOI), Notice of Termination (NOT), and Storm Water Pollution Prevention Plan (SWPPP). A copy of the NOI and SWPPP shall be available on the job site at all times. All SWPP plans must include the NOI tracking number assigned by Arizona Department of Environmental Quality (ADEQ).

14. Once an existing shoulder is disturbed by the grading operation or any other phase of construction, the shoulder shall be barricaded. Such barricading shall remain in place until final acceptance of the project.

LANDSCAPE AND IRRIGATION

1. All landscape and irrigation installed within the public right-of-way or other City maintained areas shall be installed per the approved plans. All landscaping approved as a part of the site plan process shall be installed per the approved plans. Any deviations to the approved plans require City approval.

2. Permits are required for electrical connections, including electric meter installation, backflow preventers, and work within the City right-of-way or City dedicated property. The Contractor is responsible for obtaining these permits prior to the commencement of any work.

3. All landscape projects requiring City maintenance or within the City right-of-way shall be inspected for the following:

    A. Plant locations: these locations shall be staked in the field with identification as to trees or shrubs; or holes for the plant materials may be dug with identification of plant type. Use of this method does not relieve the Contractor of any plant relocations made by the City.

    B. Irrigation installation: Inspections shall be made at the point the irrigation system is installed. Inspections of the pipe depth, automatic valve installation and emitter/spray installations will be made.

    C. Substantial Completion: An inspection at completion of the landscape and irrigation installation will be made. Any deficiencies in the installation will be noted and corrected by the Contractor during the maintenance period.

    D. Final Acceptance: A final inspection is required prior to City acceptance of the landscape and irrigation improvements.

The above inspections require a minimum of 48-hours prior notification to the City. Call the City of Peoria Community Development Department at (623) 773-7200 and leave a message including the subdivision, location and type of inspection to arrange for these inspections.

4. Separate inspections are required for the backflow preventer and electrical connections. Please call (623) 773-7200 a minimum of 24-hours prior to arrange for these inspections.

5. Landscape and irrigation, which is installed on private property in conjunction with a City approved site plan, will be inspected by the Community Development Department for conformance to the approved site plan prior to issuance of a Certificate of Occupancy (C of O).

6. The landscape and irrigation for this project will be maintained by the Homeowners Association per the approved plans.

7. All City maintained projects require a 90-day maintenance period to begin at the date of substantial completion as determined by the City.

8. Right-of way and City maintained areas require separate water meter connections. Right-of-way areas designated for maintenance by the adjacent property owners for commercial, industrial and multi-family developments shall have the right-of-way irrigation isolated or separated from the on-site irrigation system.

9. The Contractor shall be responsible for installation, cost and required permit fees for the water meter(s) designated to serve the irrigation system.

10. All plantings at maturity shall maintain a minimum 6'-0" clearance around all fire hydrants and fire suppression devices.

11. Plantings shall not interfere with any traffic control signs and shall maintain a maximum height of 2'-6" within any sight distance triangles.

12. Installation of the landscape and irrigation system including addition of ground plant materials shall not impede the flow of designed drainage facilities nor decrease the design volume of any detention/retention basins.

13. The Contractor is responsible for the location and protection of all underground utilities during the landscape and irrigation installation.

14. All trees shall maintain a minimum of 6'-0" clearance from any City water or sewer line. All plantings shall maintain a sufficient distance to any sanitary and storm sewer manholes to allow access by maintenance vehicles.

15. A swale a minimum of 6" in depth shall be provided in all landscape areas within the City right-of-way per City detail to promote water harvesting.

16. All planting areas (except turf areas) to be maintained by the City shall be treated with a pre-emergent herbicide by a licensed applicator prior to and after the placement of the decomposed granite, river rock etc. Application documentation will be required prior to acceptance of the landscaping by the City.

17. As-built drawings of the landscape and irrigation system are required prior to acceptance by the City and for projects within the City right-of-way or City owned property. The as-built drawings shall be Mylar showing the locations of all plantings and the dimensions to fixed points of all irrigation equipment, piping etc.

PAVING

1. Exact point of pavement matching, termination and/or overlay, if necessary, shall be determined in the field by the Field Engineering Division.

2. All frames, covers, valve boxes and manholes shall be adjusted to finished grade upon completion of paving or related construction. The concrete collar shall be adjusted level with existing bituminous pavement. Adjustment of existing Type "A" or Type "B" water valve boxes in right-of-way shall be considered incidental.

3. All Contractors/Developers shall comply with the City of Peoria Detail PE-211 for Trench Plating.

4. Paving shall not start until all appropriate testing has been completed and accepted (pressure testing of utilities, density testing, videoing of sewer line, etc.). Service stubs to all platted lots shall be extended, and all conflicting utility construction completed prior to start of paving.

5. Trees and shrubbery in the right-of-way, which conflict with the improvements proposed herein, are not to be removed or relocated without prior approval of the City of Peoria. The permittee shall be responsible for obtaining the necessary authorization to remove and/or relocate said trees or shrubbery.

6. In all areas where new construction of curb, gutter, sidewalks, and driveways is required, and the engineer determines the existing grade to consist of soils with swelling characteristics, the moisture content shall be brought as close as possible to optimum required for compaction by the addition of water, blending of dry suitable material or by drying of existing material. The material shall then be compacted to a relative density of 75 percent minimum to 85 percent maximum with 80 percent as ideal.

7. Construction loads: During construction operations, heavy equipment may cross existing or proposed pipe. In this case, an earth fill should be constructed to at least three -feet above pipe. The fill must be sufficient to prevent the lateral displacement of the pipe.

8. Unless otherwise specified, the City of Peoria requires that the asphaltic concrete mix design meet the current mix design specified in Section 3.5 of the City of Peoria Infrastructure Design Guidelines.

9. All street improvements for custom homes must be completed in accordance with the City of Peoria policy on unpaved roads. All private access must be constructed with an acceptable dust palliative.

10. All Contractors/developers are responsible to construct stabilized construction entrances in order to reduce or eliminate the tracking of sediment onto public rights-of-ways or streets. Gravel track-out pads shall meet current Maricopa County standards. The contractor/developer shall immediately remove any sediment tracked onto public rights-of-ways or streets.

11. If any existing barricades, traffic signs or street name signs need to be removed during construction, notify the City of Peoria Public Works Streets Division at (623) 773-7432. A minimum of 48-hours notice is needed for removals. If signs and barricades belong to another agency, it is the responsibility of the contractor/developer to notify them.

12. No water supply hose or ramps shall be placed across or in the arterial or collector streets. Approval in writing from the Engineering Director or his designee is required for placement of the supply hose or ramps in local street streets. Applications shall include submittals of the manufacturer's specifications, materials used, dimensions of the ramp, proposed location, proposed barricading and signage.

SEWER

1. A City of Peoria Engineering construction permit is required for all sewer line construction. Other permits, as required, shall be secured from the appropriate agency, i.e. County permits for County right-of-way.

2. Acceptable Sewer Line Materials are per City of Peoria Standard Detail PE-101. Contractor shall not deviate from the materials specified by the design engineer on the contract documents without written approval from the design engineer and the Engineering Department.

3. Sewer line and grade stakes shall be set by a qualified Arizona Registered Land Surveyor and/or their representative prior to the construction of sewer lines. The qualified Arizona Registered Land Surveyor and/or their representative shall verify that the grades conform to the approved construction plans, and provide cut sheets to the Contractor and Engineering Inspector. After installation and prior to the Engineering Department acceptance, the Engineer of Record shall certify that sewer installation conforms to the approved construction plans.

4. The Contractor shall uncover all existing sewer lines to be connected and verify invert elevations before any other construction.

5. All utility installations in conflict with these plans shall be removed or relocated at the Contractor/Developer's expense. Any utility removals or relocations must be approved by the governing municipality and utility purveyor.

6. Trench excavation, backfilling and compaction shall conform to MAG Standard Specification Section 601 except as modified herein.

7. Bedding and backfill for sewer lines shall conform to the requirements of the City of Peoria Standard Detail PE-401, Bedding and Backfill.

8. Backfill shall be Type I as defined in Section 601 of the MAG Standard Specifications.

9. Service line connections to the sewer main shall have a "Y" fitting. Saddles are not acceptable.

10. Sewer service lines shall not be located under driveways, concrete aprons, scuppers, catch basins, or similar structures.

11. Sewer Lines shall not be located within Retention/Detention basin areas.

12. All sewer lines require the installation of metallic locating tape, which shall be installed in accordance with MAG Spec. 616.4 with the following exceptions: the tape shall be solid green in color, printed with the words “CAUTION SANITARY SEWER LINE BELOW”, and installed directly above the ABC course, approximately one-foot above the top of the pipe.

13. All sewer service laterals require the installation of clean-outs per MAG Standard Detail 440-3, with the exception of the electronic markers, and a curb stamp per MAG Standard Detail 440-4. Cul-de-sacs and other locations, as directed by the City will require the use of double clean-outs per MAG Standard Detail 440-2, with the exception of the electronic markers, and a curb stamp per MAG Standard Detail 440-4.

14. All sewer manhole connections shall be installed with a gasket, joint sealer, or water stop between the base and riser section.

15. All manholes and components shall be constructed of Class A Concrete in conformance with MAG Standard Specification Section 725.

16. Workmanship on manhole bottoms will be closely inspected for uniformity and smoothness of channel. The preferred method for construction of manhole invert channels is to place pipe in manhole bottom and remove top of pipe after manhole is constructed. Failure to provide smooth, uniform channels shall be cause for rejection, removal and re-construction.

17. Manholes which: exceed 10-feet in depth, are 5-feet in diameter, are located in an arterial road, or as indicated per the plans shall have an approved manhole liner per City of Peoria Standard Detail PE-101.

18. Manholes in paved and non-paved areas shall be adjusted to the finish grade upon the completion of pavement work.

19. All manholes located outside paved areas shall have a locking cover, a concrete collar, and Utility Marker per City of Peoria Standard Detail PE-101.

20. Installation of manhole steps is not permitted.

21. Adjusting rings in manholes should be a minimum of 12-inches and a maximum of 24-inches per MAG Standard Detail 420-2.

22. Contractor shall mandrel, air pressure test, and provide a closed circuit television (CCTV) inspection in accordance with NASSCO Pipeline Assessment Certification Program. The CCTV inspection should be provided in digital (DVD) format utilizing a measuring device ahead of the camera to identify deflections in the line. The measuring device shall be able to measure water depth from 0 to 2 inches in ¼ inch increments. Contractor shall perform tests after Dry Utilities are installed and prior to any concrete work, street work, or final acceptance of the sewer.

23. Sewer lines shall remain “plugged” at the point(s) of connection to existing lines (outfalls) until all phases of the project have been accepted by the Engineering Director.

24. No flow shall be released into the City sanitary sewer until after all tests have been passed and approved by the Engineering Inspector.

25. The following MAG Uniform Standard Details are specifically <u>NOT</u> allowed:

    No. 425 24-inch aluminum manhole frame and cover
    No. 428 Manhole steps - "Cast Iron"
    No. 440 Sewer building connection - Type "B"
    No. 441 Sewer clean out - sewer tap with C.O.

26. All pavement replacement shall conform to MAG Standard Detail 200 with a “T-Top” - modified with a one-half (1/2) sack Portland Cement ABC slurry, which conforms to MAG Standard Specification 728, (modified for one-half sack Portland cement), for trench backfill from one-foot above the top of pipe to the existing pavement subgrade. Pavement replacement thickness shall be: as specified by the design engineer on the contract documents, 4-inches, or the existing asphalt pavement thickness; whichever is greater.

27. The Contractor is responsible to notify the Engineer of Record before the sewer line is backfilled so "as-built" measurements may be taken. Any changes to the approved plans must be authorized by the Engineer of Record and the Engineering Director before the change is made in the field.

28. A Certificate of Approval of Construction (AOC) issued by the Maricopa County Environmental Services Department, is required prior to final project acceptance. A copy shall be provided to the City Engineering Inspector. NOTE: It should be noted that the Engineer of Record or designee shall be present during testing procedures so that the requirements of the AOC can be completed in full.

WATER

1. A City of Peoria engineering construction permit is required. Other permits, as required, shall be secured from the appropriate agency; i.e. County permits for County Right-of-Way.

2. Acceptable Water Line Materials are per City of Peoria Standard Detail PE-101. Contractor shall not deviate from the materials specified by the design engineer on the contract documents without written approval from the design engineer and the Engineering Department.

3. Water line and grade stakes shall be set by a qualified Arizona Registered Land Surveyor and/or their representative prior to the construction of sewer lines. The qualified Arizona Registered Land Surveyor and/or their representative shall verify that the grades conform to the approved construction plans, and provide cut sheets to the Contractor and Engineering Inspector. After installation and prior to the Engineering Department acceptance, the Engineer of Record shall certify that water line installation conforms to the approved construction plans.

4. Trench excavation, backfilling and compaction shall conform to MAG Standard Specification Section 601 except as modified herein.

5. Bedding and backfill for water lines shall conform to the requirements of the City of Peoria Standard Detail PE-401, Bedding and Backfill.

6. Backfill shall be Type I as defined in Section 601.4.3 of the MAG Standard Specifications.

7. The minimum cover from finish grade to top of pipe for all waterlines 16-inches in diameter or larger or any size water main located in an arterial street shall be as specified by the design engineer, but no less than 60-inches unless approved in writing by the Engineering Director.

8. The minimum cover from finish grade to top of pipe for all waterlines less than 12-inches in diameter and not located in an arterial street shall be as specified by the design engineer, but no less than 48-inches unless approved in writing by the Engineering Director.

9. All stub-outs shall have a 2-inch brass ball corp. stop as a blow-off, left in place with a 2-inch riser, per MAG Standard Detail 390 "A," and shall be accessible to use.

10. Fire Hydrants shall conform to City of Peoria Standard Details PE-360-1 or PE-360-2, as applicable. The fire hydrant manufacturer shall be per City of Peoria Standard Detail PE-101.

11. All valves 16-inches and smaller shall be per MAG 630 with resilient seat AWWA approved gate valves and shall open by turning counter-clockwise.

12. Valves shall not be located in sidewalks, gutters, curb, or valley gutters.

13. All valve boxes shall conform to MAG Standard Detail 391-1, Type A and City of Peoria Standard Detail PE-270.

14. Contractors shall not operate valves on the existing City system.

15. To request a water system shut down a “Water System Shut Down Request” form must be submitted. This form shall be submitted ten days in advance of any requests to shut down any lines in the City of Peoria’s potable water distribution system. The form is to be submitted through the Engineering Inspector assigned to the project, who will in turn coordinate with necessary Utility staff. Failure to complete this form may result in delays to construction activities.

16. Water lines shall be installed in such a manner to minimize dips or high points. All water lines shall be parallel to the street centerlines or property lines, or as close as possible, unless the design documents indicate otherwise. All horizontal deflections in water lines shall comply with the pipe manufacturer's recommendations for deflection at joints.

17. All joints restraints shall be inspected prior to backfill. For thrust restraints, reinforcing steel and form work shall be inspected prior to placing concrete for thrust blocks. Thrust restraint shall conform to MAG Standard Specification 610.4 and MAG Standard Details 301,340, 380 and 381.

18. Water services 2-inches and smaller in diameter shall conform to the City of Peoria Standard Detail PE-363. The minimum size service connection shall be 1-inch.

19. Water service lines shall not be located under driveways, concrete aprons, scuppers, catch basins, or the like.

20. Water Lines shall not be located within Retention/Detention basin areas.

21. All water valves located outside paved areas shall have a concrete collar, and Utility Marker per City of Peoria Standard Detail PE-101.

22. All water lines require the installation of metallic locating tape, which shall be installed in accordance with MAG Spec. 616.4 with the following exceptions: the tape shall be solid blue in color, printed with the words "CAUTION POTABLE WATER LINE BELOW", and installed directly above the ABC course, approximately 1-foot above the top of the pipe.

23. All pavement replacement shall conform to MAG Standard Detail 200 with a "T-Top" - modified with a one-half (1/2) sack Portland Cement ABC slurry, which conforms to MAG Standard Specification 728, (modified for one-half sack Portland cement), for trench backfill from one-foot above the top of pipe to the existing pavement subgrade. Pavement replacement thickness shall be: as specified by the design engineer on the contract documents, four-inches, or the existing asphalt pavement thickness; whichever is greater.

24. Pressure testing shall not be conducted until after the Contractor has pretested 100% of the lines. Inspection testing must be called for 24-hours in advance. Water lines must pass pressure testing after Dry Utilities are installed and prior to any concrete work, street work, or final acceptance of the sewer.

25. All mains shall be chlorinated in conformance with the City of Peoria Infrastructure Design Guidelines.

26. The contractor shall not connect to any existing public water lines without prior approval of the Engineering Inspector.

27. The following MAG Uniform Standard Details are specifically <u>NOT</u> approved.

No. 345-2	4-inch, 6-inch Water Meter
No. 360	Fire Hydrant Installation
No. 389	Curb Stop with Valve Box & Cover
No. 391-1	Valve Box Installation and Grade Adjustment, Types "B" & "C"

28. The Contractor is responsible to notify the Engineer of Record before the water line or fittings are backfilled so "as-built" measurements may be taken. Any changes to the approved plans must be authorized by the Engineer of Record and the Engineering Director before the change is made in the field.

29. A Certificate of Approval of Construction (AOC) issued by the Maricopa County Environmental Services Department, is required prior to final project acceptance. A copy shall be provided to the City Engineering Inspector. NOTE: It should be noted that the Engineer of Record or designee shall be present during testing procedures so that the requirements of the AOC can be completed in full.

RECLAIMED WATER

1. Unless indicated otherwise in these drawings, reclaimed water pipe, valves, fittings and appurtenances shall be installed and identified in accordance with M.A.G. Section 616.

2. A City of Peoria off-site permit is required. The charges for these permits are 3.5% of the contract price plus $15 dollars. The contractor shall obtain necessary permits and inspections required by the authorities having jurisdiction.

3. Acceptable reclaimed Water Line Materials:
   a. Ductile Iron Pipe shall conform to MAG Section 750.
   b. Ductile Iron Pipe, pressure class 350, is acceptable for reclaimed water lines sizes 6-inches through 12-inches in diameter.
   c. Ductile Iron Pipe, pressure class 250 minimum, is acceptable for reclaimed water lines 16-inches in diameter.
   d. All Ductile Iron Pipe shall be polywrapped in conformance with Section 616.4 of the MAG Standard Specifications. All polywrap shall be purple in color.

4. Trench excavation, backfilling and compaction shall conform with MAG Standard Specification Section 601 except as modified herein.

5. Reclaimed waterlines must maintain minimum separation from potable and sewer lines per MAG Standard Details 404.

6. Backfill shall be Type I as defined in Section 601 of the MAG Standard Specifications.

7. The Contractor is responsible to notify the Engineering Project Manager before the reclaimed water line or fittings are covered. Any changes to the approved plans must be authorized by the Engineering Project Manager and the owner before the change is made in the field.

8. Reclaimed water lines less than 12-inches in diameter shall have a minimum cover of 48-inches over the top of the pipe to finish grade, unless design conditions warrant additional cover.

9. Reclaimed water lines 12-inches or larger in diameter shall have a minimum cover of 60-inches over the top of the pipe to finish grade, unless design conditions warrant additional cover.

10. All valves 16-inches and under shall be resilient seat AWWA approved gate valves and shall open by turning to the left.

11. Valves shall not be located in sidewalks, gutters, curb, or valley gutters.

12. All valve boxes shall conform to MAG Standard Detail 391-1, Type ‘A’ as modified with a square lid and raised lettering with the words “Reclaimed Water”.

13. Contractors shall not operate valves on the existing City system.

14. Thrust restraint shall be inspected prior to backfill. Reinforcing steel and form work shall be inspected prior to placing concrete for thrust blocks. Thrust restraint shall conform to MAG Standard Specification 610.14 and MAG Standard Details 301, 303, 380 and 381.

15. All pavement replacement shall conform to MAG Standard Detail 200 with "T-Top" – modified with a one-half (1/2) sack Portland Cement ABC slurry, which conforms to MAG Standard Specification 728, (modified for one-half sack Portland Cement) for trench backfill from 1-foot above the top of pipe to the existing pavement subgrade. Pavement replacement thickness shall be 1.5 times the existing asphalt thickness.

16. Pressure testing shall not be conducted until after the Contractor has pretested 100% of the lines. Inspection testing must be called 24-hours in advance. Reclaimed water lines must pass testing prior to paving.

17. The Contractor shall not tie into existing mains without prior approval of the City Engineering Inspector.

18. The following MAG Uniform Standard Details are specifically not Approved:
    No.345 two 4-inches, 6-inch Water Meter
    No.360 Fire Hydrant Installation
    No.389 Curb Stop with Valve Box & Cover
    No.391 One Valve Box Installation and Grade Adjustment, Types "B" & "C"

19. It is the contractor's responsibility to meet OSHA standards for "trench safety".

20. The completed installation shall comply with applicable federal, state, and local codes, ordinances and regulations. All work shall be completed in a neat, workmanlike manner in accordance with the latest NECA standards of installations under competent supervision. Install grounding per NEC.

21. Visit the site prior to bidding to become familiar with existing conditions and other factors, which may effect the execution of the work. Include all related costs in the initial bid proposal.

22. The contractor shall coordinate work with the utilities providing services on this project, and shall comply with all their installation requirements.

23. All materials shall be new and of the best quality, manufactured in accordance with NEMA, ANSI, UL, or other applicable standards. The use of manufacturers' names, models, and numbers is intended to establish style, quality, appearance, usefulness, and bid price.

24. Protect all electrical material and equipment installed against damage by other trades, weather conditions, or any other preventable causes. Equipment damaged during shipping or construction, prior to acceptance by the Engineering Project Manager or the owner, will be rejected as defective.

25. Leave the site clean. Remove all debris, empty cartons, tools, conduit, wire scraps and all miscellaneous spare equipment and materials used in the work during construction. All components shall be free of dust, grit and foreign materials, left as new before final acceptance of work. Damaged paint and finishes shall be touched up or repainted with matching color paint and finish.

26. Circuit conductors #6 AWG or smaller shall be THWN stranded copper. #4 AWG through #2 AWG shall be XHHW stranded copper. #1 AWG or larger shall be xhhw-2 stranded copper. Minimum power conductor size shall be #12 AWG with #12 AWG ground.

27. Underground conduits shall be schedule 40 PVC. Minimum conduit depth shall be 24-inches. Minimum underground conduit size shall be 1-inch.

28. Conduits shall be marked at each end with matching numbered brass tags. Spare conduits shall have a pull string installed and secured.

29. Exposed conduits shall be galvanized rigid steel (GRS). Minimum size ¾ inch, unless otherwise noted on the plans.

30. Safety switches, electrical distribution equipment, control panels, and other electrical devices shall be UL listed, and rated for heavy duty service.

31. Wiring devices shall be specification grade.

32. The contractor is responsible for managing, scheduling, documenting, and performing the work so that a complete electrical, instrumentation and control system for the facility is provided. Accurate shop and record drawings and Operation & Maintenance (O&M) manuals shall be submitted prior to final acceptance of the work.

33. Typical details shall apply in all cases, whether specifically referred to or not.

SIGNING & STRIPING

1. The contractor shall notify the City of Peoria's Engineering Inspection Division at least 48-hours in advance of any striping at (623) 773-7536. Striping completed prior to the City's inspection shall be removed if it is not consistent with City standards.

2. The obliteration of conflicting striping shall be accomplished by water blasting or other methods approved by the City.

3. Crosswalks, stop bars, pavement arrows, chevron stencils, and cross hatching shall be installed with 90 MIL thickness ALKYD Thermoplastic materials in accordance with the City of Peoria's Section 450 and 460 Standard Specifications and the project plans. Longitudinal striping shall be installed with 60 MIL Thermoplastic materials in accordance with the City of Peoria's Section 450 and 460 Standard Specifications and the project plans.

4. Signing shall be installed per City of Peoria Standard Detail PE-032.

5. All signs are to be ASTM Type IV high intensity sheeting.

6. All signs are to be provided and installed by the developer per the approved plans.

7. The contractor shall return all removed traffic signal equipment / signs to the City of Peoria Municipal Operations Center (MOC), 8850 N. 79th Avenue. Contact the Streets Administrations Office at (623) 773-7456.

8. Signing and striping installations shall be in accordance with the current Edition of the Manual on Uniform Traffic Control Devices (MUTCD) adopted by the Arizona Department of Transportation (ADOT).

9. Unless otherwise noted, all dimensions are to the face of curb and the center of the stripe. In the case of a double stripe, dimension is to the center of the double stripe.

10. If the approved plans do not match existing field conditions, the City Engineering Inspector may make changes they deem necessary.

TRAFFIC SIGNAL NOTES

GENERAL NOTES:

1. All material, equipment and installation shall conform to:
   - The latest edition of A.D.O.T.'S traffic signals and lighting standard drawings.
   - The Manual on Uniform Traffic Control Devices (MUTCD). Latest edition adopted by ADOT.
   - The City Phoenix Barricade Manual.
   - The City of Peoria Traffic Signal Special Provisions and Standard Details.
   - The City of Peoria bid documentation and these plans.

2. The contractor shall contact all Utilities and Blue Stake 48-hours before starting any construction. It is the responsibility of the contractor to contact all involved agencies and field verify exact locations of all utilities. Prior to construction, the contractor shall pothole and verify the location of existing utilities. If discrepancies exist the contractor shall notify the Engineer immediately.

3. Prior to construction, the contractor shall verify all foundation and pole locations. Contractor shall pot hole and perform site visit to determine any potential overhead or underground conflicts, and coordinate with the City of Peoria Project Manager and the Design Consultant prior to ordering equipment.

4. The contractor shall contact Arizona Public Service (APS) at (602) 371-7546, or Salt River Project (SRP) at (602) 236-4830 for electric service installation requirements.

5. The contractor shall replace in like and kind, per MAG Standard existing landscaping and/or irrigation system disturbed by construction of this project. The contractor shall coordinate this work with the Landscape Maintenance Supervisor, City of Peoria Community Services Department at (623)773-7137.

6. All signal equipment shall be in place and operational prior to removing existing stop signs. Stop signs shall be removed shortly after activation as approved by the City of Peoria Engineering Inspector.

7. The contractor shall provide traffic control during construction per the MUTCD and the City of Phoenix Barricade Manual. A police officer to be provided by the contractor any time the construction occurs within 300' of a signalized intersection, or as determined by the City of Peoria Engineering Inspector/Engineer.

8. The contractor shall notify the City of Peoria's Traffic Engineering Inspector at (623) 773-7536, and the City of Peoria's Engineering Inspection Supervisor at (623) 773-8434 at least 48-hours in advance of any construction.

9. The contractor shall obtain all permits from the City of Peoria and other applicable agencies prior to construction.

10. The contractor shall comply with all provisions for traffic control, barricading, signing and striping as per the City of Phoenix Barricade Manual and the manual on Uniform Traffic Control Devices (MUTCD) latest edition adopted by the Arizona Department of Transportation.

11. The quantities and site conditions on these plans are for informational purposes only and are subject to error and omissions. Contractors shall satisfy themselves as to the actual quantities and site conditions prior to bidding the work for construction covered by these plans.

12. The contractor shall return all removed/unused traffic signal equipment to the City of Peoria Municipal Operations Center, 8850 N. 79th Avenue. For additional information, please contact the Traffic Maintenance Supervisor at (623) 773-7432.

13. Electrical service address _____.

EQUIPMENT NOTES:

1. Prior to construction, the contractor shall verify all foundation and pole locations. Contractor shall pot hole and perform site visit to determine any potential overhead or underground conflicts and coordinate with the City of Peoria Project Manager and the Design Consultant prior to ordering equipment.

2. All traffic signal equipment will be new with full warranty, used or refurbished equipment will not be permitted.

3. All Red, Yellow, Green vehicle indications and inline filled in man/hand pedestrian indications shall be Dialight L.E.D. indications.

4. The contractor shall provide and install an extended riser on all F Heads, Type XI that are located where the mast arm attaches to the signal pole to accommodate for future Q Head installation.

5. All new 12-inch signal heads shall have five-inch metal louvered back plates.

6. All signal heads shall be McCain or Eagle/Siemens.

7. The contractor shall provide and install single channel 711 optical detectors (Opticom) with all appropriate mounting hardware, interface cables, optical cables, and any other equipment required for a fully functioning pre-emption system. Contractor shall provide and install A 754 CARD (opticom) in cabinet.

8. The contractor is responsible for providing and installing video detection equipment. The video detection camera (see project special provisions for model and type) to be mounted on mast arm. Install all necessary equipment including all wiring, cameras, mounting hardware and any controller interface equipment necessary for a fully functioning and operational video detection system. All equipment shall be pre-approved by the City of Peoria Traffic Engineering Division prior to installation.

9. Luminaries are to be 250W, 240V with multi-tap transformer, Type III GE Cobra cutoff with 52,000 hour lamps.

10. The pedestrian push buttons shall conform to ADOT Standard Drawings TS 11-1 except that the push button shall be a minimum of two-inch in diameter. The push button shall be raised from the face of the push button housing. The force required to activate the control shall be no greater than five lbs. of force. Push buttons must meet A.D.A. requirements and be mounted at A.D.A. required height. The contractor is responsible for installing the R10-4B pedestrian push button signs.

11. Contractor is responsible for installation of the illuminated street name signs. The signs are to be flag mounted on the signal pole. Confer with the City of Peoria for mounting instructions. The contractor shall consult with the City of Peoria Signal Maintenance Division at (623) 773-7477, for design approval of the signs prior to ordering of signs.

12. The contractor shall provide a six-foot coiled control cord in the police panel of the controller cabinet.

13. The contractor shall install a Cabinet "Courtesy pad". This shall consist of a four-inch PCC pad in front of the cabinet (door side). Pad shall be set a minimum of two-inches below the cabinet foundation elevation. Slope pad away from cabinet. See ADOT Standard Drawing TS 2-1 for pad details. In addition, the contractor shall provide a four-inch thick concrete walkway between the sidewalk and the PCC pad.

14. All equipment shall be approved by the City of Peoria through the electrical/equipment submittal process prior to the ordering of the equipment.

DETAIL NOTES (WHEN APPLICABLE):

1. All interconnect conduit is to be installed per City of Peoria Standard Detail PE-033.

2. All mid run Interconnect pull boxes to be installed per City of Peoria Standard Detail PE-034.

3. All communication vaults to be installed per City of Peoria Standard Detail PE-036.

4. All signs and sign posts shall be installed per City of Peoria Standard Details PE-031 and PE- 032.

CONSTRUCTION NOTES:

1. The Contractor shall provide new IMSA conductors. No splicing of conductors in conduit run will be allowed. Pull new conductors into conduit as specified in the conductor schedule. All splices shall be scotch coat sealed and all conductors shall be labeled per the City of Peoria color code and wiring detail. All IMSA conductors shall be installed without splicing from the signal head to the pull boxes. TS blocks shall not be used as a connection point between the pull box and the vehicle or pedestrian indications.

2. All pull boxes shall be left in a clean condition. Free dirt and debris upon completion of work.

3. Drilling height for signal faces shall be per ADOT Standard Drawing T.S. 4-21. Type XI mounts shall be used for all vehicle signal indications attached to vertical poles. The contractor shall confer with the City of Peoria Inspector for side-mount drilling locations. The contractor shall provide and install an extended riser on all Type XI mounts for all F Heads that are located where the mast arm attaches to the signal pole to accommodate for future Q Head installation. Type "V" and or Type "VII" mounts shall be used for the pedestrian indications.

4. All signal heads will be bagged/covered with a material that does not allow light penetration when not in full operation.

5. The top of new pole foundations shall be installed 4" below adjacent sidewalk elevation and finished in with apron. Leveling nuts will be blocked/formed out during concrete apron installation and grouted back in to provide for future access. Grout to be installed level with the base of the pole.

6. Prior to turn on, the contractor is responsible for the positioning, leveling and aligning of the individual signal heads, so they are completely visible to the approaching driver that the signal is intended to control.

7. The contractor shall contact Arizona Public Service (APS) or Salt River Project (SRP) for the electrical service. The contractor is responsible for installing all electrical service conductors, unless other wise directed by APS.

8. Video cable to run continuous from cabinet to respective camera without splices. The contractor shall contact the City of Peoria Traffic Engineering Inspector at (623) 773-7536 to coordinate the mounting and installation of the video detection devices.

9. The contractor shall have an authorized representative present from the traffic signal controller and video detection system manufacturer at the time the traffic signal is activated for set up and configuration of the cabinet\controller and video detection.

10. The contractor shall coordinate with the City of Peoria's Traffic Engineering Inspector at (623) 773-7536, three working days prior to signal activation for pre-turn on inspection (refer to special provisions). Installation of ALL equipment wiring and alignment of heads shall be done prior to pre-turn on inspection. It is the City of Peoria's policy that new signal activation shall not occur on a Monday or Friday. The contractor shall coordinate the activation of any new signal, so that it occurs on a Tuesday, Wednesday, or Thursday.

11. The contractor shall provide and install "Traffic Control Change" signs with flags 500 feet prior to the intersection for all affected approaches for 30-days. Contractor is responsible for the removal and return signs to the City of Peoria Public Works Department at 8850 N. 79th Avenue.

12. All signing and striping that pertains to the operation of the traffic signal shall be installed immediately prior to the activation of the signal. The contractor shall contact the City of Peoria Engineering Inspector at (623) 773-7536, three working days prior to installation for approval of layout and sign locations.

13. All ADA facilities shall be in place prior to the activation of the traffic signal.

GENERAL NOTES FOR BRIDGES

1. Construction Specification – Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, Edition of 2008.

2. Design Specification - AASHTO Standard Specifications for Highway Bridges, 17th Edition 2002. AASHTO LRFD Bridge Design Specifications, 4th Edition with latest Revisions.

3. Loading Class - HS25-44 HL-93.

4. Inventory and operating ratings for HS25-44 are in accordance with AASHTO Manual for condition evaluation of bridges, Edition of 1994 and the 1995, 1996, 1998 and 2000 interims, in accordance with the load factor method. For HL-93 are in accordance with AASHTO Manual for condition evaluation and Load and Resistance Factor Rating (LRFR) of Highway Bridges, Edition of 2003 with 2005 interim revisions. In accordance with the LRFD Method.

   Inventory Rating HS - XX.XX
   Operating Rating HS - XX.XX

5. Seismic Performance Category A (ACC = X.XXG).

6. All concrete shall be Class “S” unless noted otherwise.

7. Reinforcing steel shall conform to ASTM Specification A615. All reinforcing shall be furnished as Grade 60.

8. All bends and hooks shall meet the requirements of AASHTO Article 8.23. All bend dimensions for reinforcing steel shall be out-to-out of bars. All placement dimensions for reinforcing steel shall be to center of bars unless noted otherwise.

9. All reinforcing steel shall have two-inch clear cover unless noted otherwise.

10. Barriers shall be constructed after spans have taken dead load deflection. Barriers shall not be slip formed.

11. Chamfer all exposed corners ¾-inch unless noted otherwise.

12. Dimensions shall not be scaled from drawings.

13. Standards list:

    ADOT Bridge Group Structure Detail (SD) drawings and B-Standard drawings.

14. Contractor shall submit Haul Route Permit Application to the City of Peoria Capital Improvements Engineer as required for all excessive vehicle size, weight, and load per the following:

    Arizona revised Statutes Title 28, Transportation; Chapter 3, Traffic and Vehicle Regulation; Article 18, Vehicle Size, Weight, and Load.

    City of Peoria City Code Chapter 14, Motor Vehicles and Traffic; Section 14-72 Permits for the movement of over-dimensional loads.

15. Bridge and Culvert Design are in accordance with the City of Peoria Infrastructure Design Guidelines, current revision; Chapter 10, Design and Submittal Standards for Bridge and Structure Plans.

ADDITIONAL NOTES FOR CONCRETE BRIDGES

1. Dead Load – dead load allowance of 25 pounds per square foot for wearing surface.

2. The bridge design has an assumed dead load of 16 pounds per square foot for the stay-in-place deck forms and additional concrete needed for deck option.

3. Composite Design – dead load carried by girders only. Girders are designed with transformed section properties.

4. Stresses:

Superstructure Except Barriers	f'c =	4500	PSI
Deck	fc =	1400	PSI
Barriers	f'c =	4000	PSI
Abutments and piers	f'c =	3500	PSI
Drilled Shafts	f'c =	3500	PSI
Grade 60 Transverse Deck Reinf	fs =	20000	PSI
All other grade 60 Reinf Steel	fs =	24000	PSI
Prestressing Steel	f's =	270000	PSI (1/2-inch Diameter 7-wire Low Relaxation Strand)

5. The cost of stay-in-place forms is incidental to the cost of deck concrete. Approximate deck concrete quantities are based on the removal forms option. No payment will be made for any additional concrete necessary for the stay-in-place metal deck forming system.

ADDITIONAL NOTES FOR STEEL BRIDGES

1. Dead Load – dead load allowance of 25-pounds per square foot for wearing surface.

2. The bridge design has an assumed dead load of 16-pounds per square foot for the stay-in-place deck forms and additional concrete needed for deck option.

3. Composite Design – dead load carried by girders only. Girders are designed with transformed section properties.

4. Welding Code:

   All welding shall conform to the requirements of the American Welding Society ANSI/AASHTO/AWS D1.5-02 Bridge Welding Code

5. Steel CVN Impact Test Note:

   Main Span Truss Components including top chords, bottom chords verticals, diagonals, lateral braces, gusset and connection plates shall meet the longitudinal Charpy V-Notch Impact values, specified in Section 604-2.01 of ADOT Standard Specifications.

6. Stresses:
   Steel A36 _____ f's = 20000 PSI
   Structural Steel Grade 50W _____fs = 27000 PSI

7. Structural steel shall be weathering Class ASTM A709 Grade 50W.

8. All bolts shall conform to ASTM Specification A325. All bolts, nuts and washers shall be Type III corrosion resistant weathering Steel Grade.

9. All bolted connections shall be Type X (Thread excluded from shear plane).

10. The cost of stay-in-place forms is incidental to the cost of deck concrete. Approximate deck concrete quantities are based on the removal forms option. No payment will be made for any additional concrete necessary for the stay-in-place metal deck forming system.

ADDITIONAL NOTES FOR MASONRY WALLS

1. Construction shall conform to ACI 530.1, specifications for Masonry Structures.

2. Stresses:
   Concrete _____ f'c = 3500 PSI
   Masonry _____ f'm = 1500 PSI
   Grade 60 Reinforcing Steel _____ fs = 24000 PSI

3. Materials:
   Masonry: f'm = 1500 PSI, ASTM C90, medium or normal weight, running bond, slump block unless noted otherwise.
   Mortar: ASTM C270, Type S, cube strength 1800 PSI, ASTM C91.
   Grout: ASTM C476, Type: Coarse, cube strength 2000 PSI.
   Reinforcing Steel: ASTM A615, Grade 60.
   Joint Reinforcing: 9 gauge ladder or truss type, standard weight, fy=33,000 PSI, wire: ASTM A82.

ADDITIONAL NOTES FOR RETAINING WALLS

Stresses:
   Concrete_____ f'c = 3500 PSI
   Grade 60 Reinforcing Steel _____ fs = 24000 PSI

ADDITONAL NOTES FOR BOX CULVERTS

Stresses:
   Concrete_____ f'c = 3500 PSI
   Grade 60 Reinforcing Steel _____ fs = 24000 PSI

"Grading at Owner's Risk"

Permit Application

TO BE COMPLETED BY APPLICANT (ALL INFORMATION MUST BE PROVIDED):

DEVELOPMENT/PROJECT NAME:		
PROJECT DESCRIPTION:		
ADDRESS/LOCATION:		
GROSS AREA (ACRE/SQ. FT.):	**NET AREA (ACRE/SQ. FT.)**	
PARCEL NUMBER(S):		
PROPERTY OWNER:		
ADDRESS:		
CITY:	**STATE:**	**ZIP CODE:**
PHONE NUMBER:	**FAX NUMBER:**	
CONTACT PERSON:	**E-MAIL ADDRESS:**	
CONTRACTOR:		
ADDRESS:		
CITY:	**STATE:**	**ZIP CODE:**
PHONE NUMBER:	**FAX NUMBER:**	
CONTACT PERSON:	**E-MAIL ADDRESS:**	

ITEMS REQUIRED TO OBTAIN A "GRADING at OWNER'S RISK" PERMIT:

1. The application must be completed and signed by the authorizing agent.
2. City must complete the first review of grading and drainage plans for the proposed development and find that the plans are **substantially** acceptable.
3. Developer must provide to City two full-size (24"x36") copies and one half-size (11"x17") copy of red lined grading and drainage plans. The red lined plans will alert the City Off-site Inspector that the project has not been approved, but has been reviewed at least one time and also make them aware of the possible changes.
4. City must review and approve the Storm Water Pollution Prevention plan, (SWPPP).
5. Developer must provide to City two copies of the approved Storm Water Pollution Prevention Plan.
6. Developer/contractor must provide a copy of the signed NPDES "Notice of Intent" and construction schedule.
7. Contractor to provide to City one copy of the Maricopa County Rule 310 (Dust Control Permit).

Engineering Division – 9875 N. 85th Avenue, Peoria, AZ 85345
Office (623) 773-7210 Fax (623) 773-7211

8. Contractor to obtain a "Grading at Owner's Risk" ("At-Risk") permit at a cost of 150% of the actual grading and drainage permit cost, which has a one time "life" of 60-calendar days. The total fee (for the "At-Risk" & final Grading and Drainage permit) will be collected at time of "At-Risk" permit application.
9. Contractor to provide 24-hour emergency telephone and mobile numbers.
10. Contractor shall obtain a Haul Route permit if more than 100-cubic yards of material is to be imported to the site or exported from the site at a cost of $300 per permit.
11. Obtain an actual grading and drainage permit, within 60-calendar days of the issuance of the "Grading at Owner's Risk" permit and following approval of the grading and drainage plans. The Contractor shall cease construction activities at the site if the grading plans and/or the Final Grading Permit not issued within 60-Calendar Days.

The City will issue a "Grading at Owner's Risk" permit, which is **effective for 60-calendar days** provided that the developer/owner/contractor agree to complete the items listed below. **No other permits such as water, sewer, concrete, dry utilities or paving will be issued until such time as:**

1. All civil drawings are approved by the City; and
2. The grading and drainage permit is obtained; and
3. All fees identified by the plan approval letter have been paid to the City; and
4. The Agreement to Install (Install-A or Install-B) has been executed by the developer, submitted to, and accepted by the City; and
5. The financial guarantee for construction of the project has been posted with the City; and
6. The City has accepted all of the documents (the SLID and MID documents, the Street Light Warranty Agreement); and
7. The City of Peoria Sales Tax license is obtained; and
8. Proof of Insurance is submitted to the City.

If the above mentioned items are not submitted to and accepted by the City within the 60-calendar days (*unless otherwise extended by the City Engineer*), the "Grading at Owner's Risk" permit will be withdrawn and the contractor will be required to return the property to its original condition.

It is hereby acknowledged that this application for a "Grading at Owner's Risk" permit is made prior to Grading and Drainage Plan approval and is done solely at the risk of the owner. Any changes required by the plan review process will be complied with by the owner, at the owner's expense. Owner hereby agrees to hold the City of Peoria harmless from any and all actions of any kind, which result from the issuance of this permit.

_____	_____
SIGNATURE OF OWNER	SIGNATURE OF CONTRACTOR
_____	_____
Printed Name and Title of Owner	Printed Name and Title of Contractor
_____	_____
Company	24-hour emergency telephone #'s

IN WITNESS WHEREOF, the parties hereto have executed this GRADING AT RISK PERMIT DISCLAIMER this _____ day of _____, 20____.

OWNER:

By:_____

Title:_____

State of Arizona)
) ss.
County of Maricopa)

The foregoing instrument was acknowledged before me this _____ day of _____, 20_____.

_____
Notary Public

My Commission Expires:

_____

CITY OF PEORIA, an Arizona Municipal Corporation

By: _____
Engineering Director

Haul Route Permit Application

REQUIRED ATTACHMENTS:

- ❑ Application fee, $300/permit
- ❑ Map clearly designating the haul route. Include Name and Address of Haul origin and receiving point.
- ❑ Letter from applicant guaranteeing repair of streets damaged along the haul route or during the hauling process
- ❑ Provide Haul commencement and end dates

TO BE COMPLETED BY APPLICANT (ALL INFORMATION MUST BE PROVIDED):

Development/Project Name: _____

Project Description: _____

_____

Address/Location: _____

Gross Area (Acre/Sq Ft): _____ Net Area (Acre/Sq Ft): _____

Parcel Number(s): _____

Property Owner: _____

Address: _____

City: _____ State: _____ ZIP Code: _____

Phone Number: _____ Fax Number: _____

Contact Person: _____ E-Mail: _____

Contractor: _____

Address: _____

City: _____ State: _____ ZIP Code: _____

Phone Number: _____ Fax Number: _____

Contact Person: _____ E-Mail: _____

City Sales Tax License: _____ State Sales Tax License: _____

APPLICANT SIGNATURE: _____ **DATE:** _____

_____

Project Engineer Date

FOR OFFICE USE ONLY

CITY OF PEORIA

OPEN TRENCH POLICY

1. The maximum allowable length of open trench within the rights-of-way for any street classified as an arterial, collector or residential and currently accommodating vehicular traffic, shall be approved by the Engineering Director or their designee.

2. There will be no maximum length of open trench for water line installation provided the trench is no deeper than 5-feet and it is internal to a development/project. See item #1 of this policy for restrictions of open trench on an existing City street.

3. The maximum length of open trench for sanitary sewer installation internal to a development project will be restricted to 1320 L.F. unless the following conditions listed below are met.

    A. Contractor shall provide a security guard on site seven days a week.
    B. If development is located within two City blocks of a school the site shall be secured with a chain link fence.
    C. Signs, barricades and physical barriers are provided as directed by the Engineering Director or their designee.

See item #1 of this policy for restrictions of open trench on an existing City street.

4. Any excavated area shall be considered open trench until all ABC for pavement replacement has been placed and compacted.

5. There will be no maximum length of open trench for dry utility installation internal to a development provided the trench is no deeper than five-feet and it is internal to a development/project (see restrictions above for restrictions of open trench on existing City streets).

6. The maximum length of open trench for storm drain installation internal to a development project will be restricted to 1,000 feet, unless the following conditions listed below are met.

    A. Contractor shall provide a security guard on site seven days a week.
    B. If development is located within two City blocks of a school the site shall be secured with a chain link fence.
    C. Signs, barricades, and physical barriers are provided as directed by the Engineering Director or his designee.

See item #1 of this policy for restriction of open trench on an existing City street.

7. Trench shoring shall be in accordance with the Construction Standard for Excavations (29 CFR 1926.650-652) Subpart P promulgated by the Arizona Division of Occupational Safety and Health.

8. Signs, barricades and physical barriers shall be provided as directed by the Engineering Director or their designee.

9. In the interest of public safety, the Engineering Director or their designee may make changes or additions to this policy.

CITY OF PEORIA

Repayment and Reimbursement Policy

If approved by the Engineering Director and prior to permits being issued for construction of special public improvements for which a repayment is being requested, the following requirements shall be met:

1. A diagram shall be submitted and approved by the Engineering Director or their designee describing all property, which will be benefited by any special public improvements to be installed.

    a. The diagram shall follow the attached Repayment templates and can be downloaded from our website.
    Legal Description:
    http://www.peoriaaz.gov/uploadedFiles/Peoriaaz/Departments/Engineering/Downloads/ExhibitTemplate1.pdf
    Exhibit:
    http://www.peoriaaz.gov/uploadedFiles/Peoriaaz/Departments/Engineering/Downloads/ExhibitTemplate2.pdf
    b. The diagram shall be prepared by a registered professional engineer in the State of Arizona.
    c. The diagram shall identify all construction, inspection, testing and permit fees, engineering and design fees and administrative costs.
    d. The diagram shall identify the per acre or front footage costs assigned to each lot and/or parcel.
    e. The diagram shall contain a signature block for the Engineering Director and the developer.

2. The owner/developer shall provide a copy of the approved construction plans.

3. The project shall be bid in accordance with the provisions pertaining to Public Works projects contained in Title 34, Arizona Revised Statutes. Bids shall be opened by the City on a pre-determined date agreeable to the owner and the City. The City and the owner reserve the right to reject any and all bids. Construction costs shall be determined prior to the commencement of construction and shall be approved by the City. In the event that the agreed upon construction costs increase, the repayment agreement may be amended upon approval of the additional construction costs by the City.

4. The City shall perform the inspection during construction and shall charge the owner/developer for the inspection of the special public improvements. The costs of such inspections may be included in any repayment agreement.

5. The repayment diagram will be recorded by the City of Peoria with the Maricopa County Recorders Office.

6. The owner/developer must provide the City with mailing labels of property owners located within the repayment boundary prior to recording of the document.

7. An annual charge may be assessed by the City for administration of each repayment agreement. The annual charge shall be calculated on actual construction costs incurred by the City for the administration of the agreement; however, the annual charge shall be less than $500 per year.

8. The repayment obligation under Section 23-37 of the City Code shall terminate ten years or when the total amount provided for by Section 23-37 is repaid, whichever is sooner.

- **SAMPLE WATER SYSTEM ANALYSIS REPORT**

- **RESIDENTIAL SAMPLE WASTEWATER SYSTEM ANALYSIS REPORT**

- **TABLE 1 - UNIT DAILY *NON-RESIDENTIAL* WASTEWATER DESIGN FLOWS FROM ARIZONA ADMINISTRATIVE CODE – TITLE 18, CHAPTER 9, ARTICLE 3**

SAMPLE WATER SYSTEM ANALYSIS REPORT

- SIZE: The "SAMPLE" DEVELOPMENT contains 85 single family residential lots
- LOCATION: NE ¼, NE ¼, SECTION 2, T4N, R1E, Gila and Salt River Meridian; Southwest corner of Jomax Road and 75th Avenue
- ZONING: Zoning is currently R1 and has not changed since January 1995*

**** - A statement of complete zoning history from current back to Jan 1995 is required in this analysis***

*DOMESTIC (RESIDENTIAL)** WATER DEMAND CALCULATIONS:

(* - ***COMMERCIAL*** WATER DEMAND CALCULATIONS MUST USE "BEST ENGINEERING JUDGEMENT" AND REFERENCE ALL SOURCE(S) USED FOR BASIS OF DESIGN)

***Average* Daily Demand:**

1. The average daily demand is 200 gallons per day capita (200 gpcd)*****
2. The lost and unaccounted for water factor is 0.90*****
3. The average population per dwelling unit is 2.8 persons*****
4. The average daily demand per dwelling unit is therefore:
   [(200 gal/capita/day) x (2.8 persons/du)] / (0.90) = 622 gal/day/du
5. The average daily demand for "Sample" Development is therefore:
   (85 du) x (622 gal/day/du) = 52,870 gal/day

***Maximum Daily* Demand:**

1. The maximum day demand is equal to 1.8 times the average day demand*****
2. The maximum daily demand per dwelling unit is therefore:
   (622 gal/day/du) x (1.8) = 1120 gal/day/du
3. The maximum daily demand for "Sample" Development is therefore:
   (85 du) x (1120 gal/day/du) = 95,200 gal/day

***Peak Hour* Demand per Dwelling Unit:**

1. The peak hour demand is equal to 1.7 times the maximum day demand*
2. The peak hour demand per dwelling unit is therefore:
   (1120 gal/day/du) x (day/24 hour) x (hour/60min) x 1.7 = 1.32 gal/min/du

***Total Peak Hour* Demand for "Sample" Development:**

(85du) x (1.32 gal/min/du) = 112 gal/min

***** - Source: City of Peoria Water Master Plan, September 2001; Table 10-1

- **In addition to the peak hour ***Domestic*** Water Demand, the system will be required to provide for ***Fireflow*** requirements as per the City of Peoria Water Master Plan.**
- **ALL DOMESTIC AND FIREFLOW WATER SYSTEM ANALYSIS REPORTS REQUIRE A QUALIFIED PROFESSIONAL'S SEAL & SIGNATURE.**

RESIDENTIAL
SAMPLE WASTEWATER SYSTEM ANALYSIS REPORT

- SIZE: The "SAMPLE" DEVELOPMENT contains 85 single family residential lots
- LOCATION: NE ¼, NE ¼, SECTION 2, T4N, R1E, Gila and Salt River Meridian; Southwest corner of Jomax Road and 75th Avenue
- ZONING: Zoning is currently R1 and has not changed since January 1995*

**** - A statement of complete zoning history from current back to Jan 1995 is required in this analysis***

*DOMESTIC (RESIDENTIAL)** WASTEWATER FLOW CALCULATIONS:

(- **COMMERCIAL*** WASTEWATER FLOW CALCULATIONS MUST USE A.A.C. TITLE 18, CHAPTER 9, ARTICLE 3, TABLE 1 - UNIT DAILY DESIGN FLOWS)

Average Daily Flow per Dwelling Unit:

1. The average daily flow is 100 gallons per day per capita (100 gpcd)*****
2. The average population per dwelling unit is 2.8 persons*****
3. The Average daily flow per dwelling unit is therefore:
   (100 gal/capita/day) x (2.8 persons/du) = 280 gal/day/du

***** - Source: City of Peoria 2002 Wastewater Master Plan

Maximum Daily Flow per Dwelling Unit:

1. The maximum day is equal to 4.0 times the average day flow
2. The maximum daily flow per dwelling unit is therefore:
   (280 gal/day/du) x (4.0) = 1120 gal/day/du

Total *Maximum* Daily Flow for "Sample" Development:

(85 DU) x (1120 GAL/DAY/DU) = 95,200 GAL/DAY

ALL WASTEWATER SYSTEM ANALYSIS REPORTS AND ZONING STATEMENTS REQUIRE A QUALIFIED PROFESSIONAL'S SEAL & SIGNATURE.

TABLE 1 - UNIT DAILY *NON-RESIDENTIAL* WASTEWATER DESIGN FLOWS FROM ARIZONA ADMINISTRATIVE CODE – TITLE 18, CHAPTER 9, ARTICLE 3

Note: Unit flow rates published in standard texts, literature sources or relevant area or regional studies shall be considered by the Department, if appropriate to the project.

Historical Note - New Section adopted by final rulemaking at 7 A.A.R. 235, effective January 1, 2001 (Supp. 00-4).

Type of Facility Served	Applicable Unit	Sewage Design Flow per Applicable Unit, Gallons Per Day
Airport	Passenger (average daily number)	4
	Employee	15
Apartment Building	Resident (if max. number fixed)	100
1 bedroom	Apartment	200
2 bedroom	Apartment	300
3 bedroom	Apartment	400
4 bedroom	Apartment	500
Auto Wash	Facility	Per manufacturer, if consistent with this Chapter
Bar/Lounge	Seat	30
Barber Shop	Chair	35
Beauty Parlor	Chair	100
Bowling Alley (snack bar only)	Lane	75
Camp		
Day camp, no cooking facilities	Camping unit	30
Campground, overnight, flush toilets	Camping unit	75
Campground, overnight, flush toilets and shower	Camping unit	150
Campground, luxury	Person	100-150
Camp, youth, summer, or seasonal	Person	50
Church		
Without kitchen	Person (maximum attendance)	5
With kitchen	Person (maximum attendance)	7
Country Club	Resident Member	100
	Nonresident Member	10
Dance Hall	Patron	5
Dental Office	Chair	500
Dog Kennel	Animal, maximum occupancy	15
Hospital		
All flows	Bed	250
Kitchen waste only	Bed	25
Laundry waste only	Bed	40
Hotel/motel		
Without kitchen	Bed (2 person)	50
With kitchen	Bed (2 person)	60
Industrial facility		
Without showers	Employee	25
With showers	Employee	35
Cafeteria, add	Employee	5
Institutions		
Resident	Person	75
Nursing home	Person	125
Rest home	Person	125
Laundry		
Self service	Wash cycle	50
Commercial	Washing machine	Per manufacturer, if consis tent with this Chapter
Office Building	Employee	20

TABLE 1 - UNIT DAILY *NON-RESIDENTIAL* WASTEWATER DESIGN FLOWS FROM ARIZONA ADMINISTRATIVE CODE – TITLE 18, CHAPTER 9, ARTICLE 3

Note: Unit flow rates published in standard texts, literature sources or relevant area or regional studies shall be considered by the Department, if appropriate to the project.

Historical Note - New Section adopted by final rulemaking at 7 A.A.R. 235, effective January 1, 2001 (Supp. 00-4).

Park		
Picnic, with showers, flush toilets	Parking space	40
Picnic, with flush toilets only	Parking space	20
Recreational vehicle, no water or sewer connections	Vehicle space	75
Recreational vehicle, with water and sewer connections	Vehicle space	100
Mobile home/Trailer	Space	250
Residence		
Single Family Residence - see City of Peoria WWMP		
Mobile home, family	Home lot	250
Mobile home, adults only	Home lot	150
Seasonal and summer	Resident	100
Restaurant/Cafeteria	Employee	20
With toilet, add	Customer	7
Kitchen waste, add	Meal	6
Garbage disposal, add	Meal	1
Cocktail lounge, add	Customer	2
Kitchen waste disposal service, add	Meal	2
Restroom, public	Toilet	200
School		
Staff and office	Person	20
Elementary, add	Student	15
Middle and High, add	Student	20
with gym & showers, add	Student	5
with cafeteria, add	Student	3
Boarding, total flow	Person	100
Service Station with toilets	First bay	1000
	Each additional bay	500
Shopping Center, no food or laundry	Square foot of retail space	0.1
Store	Employee	20
Public restroom, add	Square foot of retail space	0.1
Swimming Pool, Public	Person	10
Theater		
Indoor	Seat	5
Drive-in	Car space	10

City of Peoria
School Traffic Impact Study Criteria

The purpose of these criteria is to improve consistency in school developments to provide safe and effective traffic controls both on- and off-site for all users accessing the school.

The ADOT ***Traffic Safety for School Areas Guidelines*** provide direction for site selection, on-site and off-site school safety, school crossings, school traffic controls, and other school safety issues. In addition to following the ADOT Guidelines, the school district or owner should provide a Traffic Impact Study that reviews and discusses the following key requirements:

1. Describe size of the school (number of students at build-out) and school boundary. A school boundary map may help with trip distribution analysis. The school boundary will also help determine busing and walking areas. Provide maps of busing and walking areas.

2. Describe site location. Elementary schools which are located away from arterial roadways and have street frontage on at least two, preferably three, roadways provide the best opportunities to design safe and efficient traffic circulation plans. Sites at collector-collector intersections are often ideal for elementary schools.

OFF-SITE TRAFFIC

3. Address traffic control signing and striping needs per the ADOT Guidelines and MUTCD.

4. Review turn-lane requirements per standard City of Peoria TIA guidelines.

5. Include signal warrant analysis of intersections per City of Peoria requirements.

6. Install, where appropriate, “NO PARKING” or “NO STOPPING, STANDING, OR PARKING” signs along one or both sides of roadways adjacent to the school and possibly on nearby local streets if problems may occur with parents parking in adjacent residential neighborhoods. All parking restrictions must be reviewed and approved by the City.

7. Install parking lanes on collector roadways adjacent to the school property, where possible, for additional parent vehicle queuing or parking on the street during peak traffic conditions.

ON-SITE TRAFFIC

8. Provide a traffic circulation diagram for pedestrians, bicycles, buses, and passenger vehicles that details circulation of each of these modes on-site, as well as ingress to and egress from the site.

9. If gates will be utilized, describe their location, operation, and how they will affect traffic circulation on- and off-site.

10. Discuss how the driveways will operate, including if they will be gated, one-way or two-way, number of lanes, divided, and throat length. Discuss minimum driveway storage lengths needed to accommodate both entering and exiting driveway queuing demand including back-ups during parent drop-off and pick-up periods or other peak periods, and conflicts with gates.

11. Ensure adequate sight distance is provided in both directions at all driveways per the City of Peoria Infrastructure Design Guidelines. Restrict fencing, walls, and landscaping that may block the view of all gate openings, pedestrian entrances and exits, and all crosswalk locations to ensure users are clearly visible.

12. Provide on-site circulation to eliminate the need for drivers to use the public roadway system to circulate through the school site, parking lot, and/or drop-off/pick-up areas.

13. Address on-site queuing length needed to accommodate student pick-up and drop-off. Provide adequate storage length onsite for buses and parent pick-up and drop-off queues to eliminate back-ups onto the right-of-way and in through lanes. Use the school's maximum enrollment to determine parent vehicle peak queue demand rate. For elementary schools with one dismissal, use 8 vehicles per 100 students. For elementary schools with staggered dismissals, use 16 vehicles per 100 students released in the lower grades, typically during the first dismissal. Use 25-feet per vehicle for this calculation. A greater distance is required for magnet, charter, and private schools that generate more parent vehicle trips than an average neighborhood school, depending on busing, staggering of arrival and dismissal times, and other factors.

14. Provide a sufficient paved waiting area for drop-off and pick-up students. Determine where school children will congregate, typically at or near a main building or campus entrance, and measure the effective length of the parent vehicle queue from the driveway entrance to this waiting area. This waiting area should not obstruct the route for walking students.

15. Determine additional parking lot design requirements to facilitate safe traffic circulation. Speed humps or bumps may be helpful, especially in advance of marked crosswalks. Speed tables installed at crossing locations create raised crosswalks that increase pedestrian visibility and safety.

16. Discuss shared parking options with nearby or adjacent parks, churches, or other community facilities. Include description of how shared parking will operate, pedestrians will circulate, and traffic will circulate for special events, sporting events, and recreation events.

<u>BUSES</u>

17. Separate bus movements from parent drop-off/pick-up areas, as well as pedestrian and bicycle routes. Identify number of buses, how many trips each will make, peak times, and length of queue needed for bus drop-off/pick-up lane. Include description of routes that buses will be using, how they will access site, and contribute to trip distribution analysis. Bus routes should minimize the use of local streets.

18. Address special needs buses, how many, what times, and where they will drop-off and pick-up students if different than other buses.

19. Provide designated waiting areas set back from the curb to safely accommodate large groups of congregated children. This area must be free of all other vehicular and pedestrian traffic per the ***Arizona Department of Administration Minimum Standards for School Buses and School Bus Drivers***.

20. Provide stand-back lines to keep children away from edge of sidewalks and waiting areas where buses or large vehicles may overhang curbs.

PEDESTRIANS AND BICYCLES

21. Address pedestrian and bicycle circulation on-site and off-site. Identify where students will be accessing the school, such as at gate openings and main entrances. Parent and bus drop-off/pick-up driveways should not cross pedestrian routes into the school site. A school walking map is an essential tool to review pedestrian circulation.

22. Review traffic control on the surrounding street system that would affect all modes of transportation traveling to and from the school site. Discuss proposed walking routes based on walking distances and busing boundaries. Address potential crosswalk and crossing guard locations. All 15-mph School Crossings must be approved by the Traffic Engineering Division and installed per the ADOT ***Traffic Safety for School Areas Guidelines.***

23. Include recommendations for a school walking plan. A school walking map will be prepared by the City based on the TIA recommendations, the walking boundary, and direct participation with the school and district. The school walking map will be provided to the school district or school administrator for their review and approval. The school walking map will be approved by the School District and the City of Peoria. Distribution of the map to parents is a valuable tool for the school to use as part of the Safe Routes to School program to help promote safe ways for parents and school children to walk to school.

24. Identify potential conflicts and mitigation solutions. Create walking paths that eliminate the need for students to cross busy school driveways. Provide fencing or landscaping to discourage pedestrians from crossing at undesirable locations.

25. Provide secure bicycle parking racks in visible locations, preferably one bike lot at each main approach to the school site to minimize bicyclists crossing school driveways or parking lots.

26. Provide continuous bike lanes on collector roadway approaches to schools and continuous bike path connections from nearby parks and trails.

27. Provide wheelchair ramps at all crosswalk locations, marked or unmarked, including T-intersections.

28. Provide 8-feetminimum sidewalks, preferably 10-feet, along the school property. Sidewalks that are separated from the curb and straight are preferable.

29. Provide continuous sidewalks from adjacent residential areas. In addition, provide continuous access to school from adjacent trail paths and park sites.

30. Provide larger paved standing areas on corners or at mid-block crossing locations where large groups of students may gather.

31. Reduce pedestrian roadway crossing distances and provide improved/increased sight distances along school walking routes.

32. Provide countdown pedestrian signal heads at all traffic signal locations along the walking routes to and from school.

33. Locate pedestrian gate entrances to maximize the effective length of parent drop-off/pick-up and reduce back-up queuing. To reduce conflicts between children and motor vehicles when waiting for school gates to open in the morning or to be picked up in the afternoon, provide wider sidewalk areas, stand-back lines, and/or buffer zones separating designated waiting areas from vehicle travel ways.

RECOMMENDATIONS

- It is recommended that the school stagger start and dismissal times to address traffic congestion, student population overcrowding, and saturated drop-off and pick-up operations. Typically, dismissals should not be staggered by fewer than 15 minutes to avoid overlapping parent vehicle queues between dismissals. It may also be helpful if parents are not allowed to enter the parking lot for student pick-up prior to a set time to avoid excessive back-up.

- It is recommended that parent and visitor parking is located in spaces closest to the main building entrance to discourage illegal parking or unsafe parent drop-off/pick-up behaviors. Such parking spaces should be marked as VISITOR. Require staff to park in separate lot or in designated spaces.

- It is recommended that the school implement an education program to address safety concerns with school children and parents and promote school traffic safety. Such a program could instruct parents on safe driving behaviors in school areas, school parking lots and pick-up/drop-off areas. Additional safety messages should target "Walking School Bus" programs (groups of children walking to school with an adult supervisor), pedestrian and bicycle safety, bus riding safety, bicycle and skating helmet usage, carpool and trip reduction programs, etc. A community awareness campaign may include incentive and reward programs, special signs on school campus, special safety days or assemblies to promote safety messages, class contests, guest speakers, etc.

- It is recommended that the school implement an organized traffic circulation plan on-site that utilizes staff attendants to direct traffic during drop-off/pick-up times. Parents may be educated on drop-off/pick-up procedures by distributing maps and instruction handout materials. The school should instruct parents and have staff present to direct them to pull forward and make effective use of the pick-up/drop-off lane in order to utilize the full length of the area and not congregate near the parking lot entrance. For more information on drop-off and pick-up procedures, contact the Traffic Engineering Division at 623-773-7394.

SECTION 425

MANHOLE CONSTRUCTON, COATING OF FIVE FOOT SANITARY MANHOLES

425.1

Part 1 General

425.1.1 Description

Scope: this section specifies the lining of sanitary sewer manholes to provide protection against corrosion of the manhole interior and sewer located below the manhole.

A. Requirements

1. Contractors shall furnish all labor, materials and equipment required to clean and line the manholes.
2. Contractor shall comply with the local authority and all occupation safety and health administration (OSHA) requirements for confined space entry.
3. All materials specified by name brand or manufacturer shall be delivered unopened to the job in original containers.
4. All safety precautions recommended by the manufacturer in printed instructions or special bulletins shall be obtained and followed.
5. The work shall be carried out after the sewer is installed.

425.1.2 Quality Assurance

A. Standardization: Materials and supplies provided shall be the standard products of manufacturers. The standard products of manufacturers other than those specified will be accepted when it is demonstrated to the Engineer that they are equal in composition, durability, and usefulness for the purpose intended. Requests for submission shall include directions for the application, descriptive literature, safe storage, handling and disposal of the product.
B. Bonded Warranty: The coating applicator shall supply a five-year bond, payable to the City of Peoria (COP), for the coating that is approved by the COP. The five-year bond shall cover both the material costs and the labor costs associated with installing the approved coating. The bond shall also be unconditional in nature covering any type of failure in the coating and agreeing to repair or replace it at no cost to the COP at any point during this five-year period. The coating applicator shall also supply a warranty from the coating manufacturer addressed to the bonding company and the COP. This warranty shall state, at a minimum, if the coating is applied in accordance with the manufacture's instruction, the coating will not fail for a period of five-years. The definition of a coating failure is blistering, cracking, embrittlement, or softening of the coating is starting to occur.

425.1.3 Submittals

A. Contractor shall submit:

1. Manufacturer's Data

a) Manufacturer's technical literature on coating material.
b) Description of installation method including:

I. Product material safety data sheets (MSDSI).
II. Maximum storage life and storage requirements.
III. Mixing and proportioning requirements (as applicable).
IV. Environmental requirements for application and worker safety, including ventilation, humidity and temperature ranges.
V. Application film thickness PM coat of primer and finish coat.
VI. Curing time required.

2. Sample of finished product showing final color. Lining color shall be white.

Part 2 Products

425.1.4 Coating Material: **Refer to Chapter 6, Design Guidelines, Section 6-3.B.1.c**

425.1.5 Product Data

A. The Contractor shall provide the following information:

1. Manufacturer certification of applicators used for the coating installation work, including spray operators as applicable.
2. Samples of coating and color chart.
3. Coating applicator shall be an Arizona licensed Contractor.

Part 3 – Execution

425.1.6 Manhole Cleaning

A. Cleaning shall remove all sediment, rocks, debris, roots, grease accumulations and obstructions from the manholes. Cleaning of the manhole walls, bench, and channel shall remove all grease, scale encrustation and loose mortar, so that no foreign intrusion shall cause imperfections in the coating. Cleaning methods shall include washing with high-pressure water, mechanical removal, or other as approved by the Engineer.
B. The Contractor shall use water blasting with a minimum water pressure of 3,000 PSI to clean the manhole prior to applying the coating. Contractor shall also be responsible for any additional surface preparation beyond water blasting as required by the coating system manufacturer. Where additional preparation is required, the Contractor shall provide all labor materials and equipment as necessary at no additional cost to the City.
C. Before Installation of the coating system, the surface must be clean. Excess water shall be blown from the surface using compressed air equipment with oil-trapping filters. Suitable heaters shall be used as needed to produce a surface-dry condition. The surface shall be vacuumed to make sure that loose particles are not present.
D. Any sediment or debris from cleaning operations larger than U.S. #8 sieve shall not be deposited downstream in the sewer. Sedimentation deposited downstream, as determined by the Engineer, shall be removed at no cost to the City.

425.1.7 Inspection and Testing

A. Contractor shall give Engineer a minimum of three days advance notice on start of field surface preparation work or coating application work, and a minimum of seven days advance notice start on any shop surface preparation work.
B. All work shall be performed in the presence of an Engineer, unless the Engineer has granted prior approval to perform work in his absence. **The Contractor shall provide testing performed by an independent Special Inspection Testing Agency or Laboratory approved by the City of Phoenix. Cost of this special inspection and testing shall be the responsibility of the Contractor.**
C. Inspection by Engineer or waiver of inspection in any particular portion of work shall not relieve the Contractor of responsibility to perform work in accordance with Specification.
D. Scaffolding shall be erected and moved to locations to facilitate inspection by Engineer. Additional illumination shall be furnished when Engineer requests.
E. Contractor shall furnish (until final acceptance of coatings), inspection devices in good working condition for detection of holidays and measurement of wet and dry-film thickness of protective coatings. Wet and dry-film thickness gauges shall be available for Engineer's use until acceptance of coating process is complete and final acceptance of coatings made. Contractor shall furnish services of trained operator in holiday detection devices until final acceptance of coatings. Holiday detection devices shall be operated in presence of an Engineer.
F. Contractor shall holiday test in presence of an Engineer all coated surfaces. Holiday testing equipment and procedures shall be performed in strict accordance with latest edition of NACE "Standard Recommended Practice-Discontinuity (Holiday) Testing of Protective Coatings." Areas containing holidays shall be marked repaired or re-coated and re-tested in accordance with coating manufacturer's printed instructions. Holiday detectors shall be:

    1. High voltage pulse-type holiday detectors as manufactured by Tinker & Rasor, or D.E. Stearns Co. Unit shall be adjusted to operate at voltage required to cause sparks jump across air gap equal to twice specified coating thickness.

G. Wet film thickness measurement shall be supplemented by report submitted by Contractor or Engineer. The report shall be presented after completion of underlayment, top coating operations, and shall state number of manufacturer's product units used and total square footage of surface area covered. Engineer shall have option of requiring Contractor to document number of units (coating materials) on hand before and after coating operations to verify actual minimum dry film thickness applied.

    All film thicknesses not meeting required minimums will be re-coated per the manufacturer's recommendations.

H. <u>SANITARY SEWER MANHOLE TESTING</u>

    All new sanitary sewer manholes installed shall be tested for exfiltration either by a Watertightness test or by a negative air pressure (vacuum) test. Exfiltration testing shall be performed in accordance with MAG Section 615.10(B) and Arizona Department of Environmental Quality (ADEQ) Engineering Bulletin No. 11, Chapter 4, Section B.

    When using the watertightness test method, exfiltration loss shall not exceed 0.1 gallons per vertical foot of manhole in a 24-hour period.

    Negative air pressure (vacuum) testing shall be performed in accordance with ASTM C 1244. Testing shall be performed at the top of the manhole cone for manholes located in paved areas. Manholes outside paved areas shall be vacuum tested at the ring and cover. A negative air pressure of ten inches of mercury shall be drawn on the manhole. The time shall

be measured for the vacuum to drop from ten inches to nine inches of mercury. The manhole shall pass this test if the time to drop in mercury meets or exceeds the following values:

MANHOLE DEPTH	MINIMUM TEST DURATION (SECS) 48-INCH DIAMETER MANHOLE	MAXIMUM TEST DURATION (SECS) 60-INCH DIAMETER MANHOLE
10 feet or less	60	75
Greater than 10 feet to 15 feet	Not Applicable*	90
Greater than 15 feet	Not Applicable*	105

*Manholes greater than 13-feet in height shall be 60-inch diameter.

If manhole joint compound is pulled out during the vacuum test, the manhole shall be disassembled and the joint repaired or replaced as necessary. The vacuum testing shall then be repeated until the manhole passes.

Exfiltration testing of sanitary sewer manholes is considered incidental to the cost of furnishing and installing the manhole. There will be no separate measurement or payment for this testing.

425.1.8 Correction Period Inspection

A. Inspection shall be conducted during eleventh month following completion of all coating work. Contractor and representative of coating manufacturer shall attend inspection. Defective Work shall be repaired in accordance with specifications and satisfaction of owner. Owner may, by written notice to Contractor, reschedule warranty inspection to another date within one-year correction period, or may cancel warranty inspection altogether. If warranty inspection is not held, Contractor is not relieved of responsibilities under Contract Documents.

CITY OF PEORIA
STOCKPILE PERMIT

GENERAL REQUIREMENTS/INFORMATION

A. **Intent** - A stockpile plan/permit is intended to allow for a temporary storage of suitable fill material for future use in a construction project.

B. **Aesthetics** - Where authorized, stockpiles must be placed to minimize nuisance to the public. Specifically, care must be taken to ensure consideration is given to storm water drainage routing, dust control, safety, and aesthetic appearances.

C. **Final** - The Final disposition of a permitted stockpile must occur within 12-months. The permit may be finalized if the stockpiled fill is placed and compacted in an engineered fill, utilized as earthwork fill as part of a formal grading and drainage plan and permit, or hauled to a landfill or other permitted disposal site.

The following must be supplied with your request for a stockpile permit:

- ☐ A letter from the current property owner authorizing placement of the material.
- ☐ Plans are to be shown on a 24" X 36" sheet with the following information. The applicant is to provide two copies of the full size plans for review along with two copies of the Storm Water Pollution Prevention Plan.:
  - ☐ Address, legal description, and dimensions of the lot.
  - ☐ Dimensions and cross-sections of the proposed fill.
  - ☐ Existing/future Right-of-way (R.O.W.) and Public Utility Easements (P.U.E.'s).
  - ☐ All Floodplains, washes and drainage features shall be clearly identified.
  - ☐ Existing topographic elevations for the affected property and adjacent to the property.
  - ☐ Source site of the stockpiled material.
  - ☐ North arrow and bar scale.
  - ☐ Vertical scale shall be 1" = 2' or 1" = 4'. Horizontal scale shall not be smaller than 1" = 40'. For major streets and cases of unusual topography or complex situations, where more detail is necessary, then the scale shall be 1" = 20'.
  - ☐ Two copies of a Drainage Report/Statement are required. The Drainage report/statement shall comply with the requirements of Chapters 1 and 4 of the City of Peoria Infrastructure Design Guidelines.
  - ☐ Owner's name, address, telephone number and signature.

I:\Guide\Guide-CIP-Direct\Stockpile Permit.doc
Revised: 04/01/09

Stockpile Permit – Continued

- ☐ Applicant's name, address, and phone number.
- ☐ Fill calculations in cubic yards.

☐ The City of Peoria Grading and Drainage Notes shall be placed on the plans along with the City's General Information Notes and General notes. Refer to the Appendix of the Development Guide.

- ☐ The following notes will be placed on the stockpile plan:
- ☐ Stockpile material shall consist of clean earth fill free of construction debris, vegetation, and other deleterious material not suited for fills.
- ☐ Stockpiles in excess of 4-feet in height must be fenced. The maximum height of any stockpile is 8-feet.
- ☐ Maximum side slope for stockpiles is 4-feet horizontal to 1-foot vertical.
- ☐ The stockpile will be lawfully disposed of within 12-months. Inspector will require a permit extension after one year.

☐ A haul permit is also required if the stockpiled material is to be in excess of 100-cubic yards. If this is the case, the haul permit must be obtained concurrently with the stockpile permit.

☐ This project is subject to the National Pollution Discharge Elimination System (NPDES) requirements for construction sites under the Environmental Protection Agency (EPA) General Permit for Arizona. Owners, developers, engineers, and/or contractors are required to prepare all documents required by this regulation, including but not limited to: Storm Water Pollution Prevention Plan (SWPPP), Notice of Intent (NOI), Notice of Termination (NOT). Copies of all requirements, forms, and guidance are available in the "Drainage Design Manual for Maricopa County Volume III Erosion Control" available at the Flood Control District, 2801 West Durango, Phoenix, AZ 85009, (602) 506-1501

☐ Two copies of the SWPPP (as referenced above) are required at submittal. The SWPPP shall be in compliance with the City of Peoria SWPPP Checklist available at http://www.peoriaaz.gov/engineering/Docs/Development_Guide/Appendix-SWPPP.pdf. Stabilization of the material must clearly be addressed on the SWPPP.

☐ At the time of permit, the contractor is to provide the City one copy of the Maricopa County Rule 310 (Dust Control Permit). The Rule 310 number must also be shown on the SWPPP.

CITY OF PEORIA

STREETLIGHTING POLICY

PURPOSE

The purpose of this document is to inform and assist the developers in their planning and installation of streetlighting in the public right-of-way. The developer shall perform installations, per the standards and specifications provided herein.

Under the provisions of the City of Peoria City Code, developers of residential, apartments, condominiums, commercial/industrial projects, etc., are responsible for all design and installation costs of streetlighting on public streets peripheral to their projects.

The developer shall retain a Professional Electrical Engineer, registered in the State of Arizona, to prepare the lighting system layout design and appropriate calculations relative to illumination levels. Illumination design shall follow the recommendation of the American National Standard Practice for Roadway Lighting, Illuminating Engineering Society of North America, IES RP-8. The luminance criteria, with light loss factors of 70 (HPS) shall be used to determine the compliance with the IES, RP-8 and City of Peoria streetlighting standards. High Pressure Sodium fixtures is the standard for all installations.

Streetlight layout plans must be submitted over the counter at the Engineering Department, DCSB, 1st Floor, 9875 N. 85th Avenue.

The developer shall submit four sets of plans, specifications and electrical requirements for first review. Unless otherwise pre-approved, plans not conforming to this policy will be rejected and not reviewed.

Once final review has been completed, four sets of plans and the Mylar cover sheet must be submitted for signature. Approval of the plans is good for nine months. When the plans have been signed the four sets will be distributed as follows:

One copy - Held by Engineering
One copy - Sent to Public Works Field Operations
One copy - Sent to Consultant
One copy - Sent to Electrical Company (APS/SRP)

The developer shall pay all permit, power connection and plan review fees.

GENERAL

The City of Peoria is serviced by two electric companies; Arizona Public Service (APS) and Salt River Project (SRP). The developer should be aware that different standards and specifications exist in each service area. The City of Peoria owns the streetlights located within the APS and SRP service areas.

1. Arterial and collector streets open to traffic in the City of Peoria are to be lighted.

2. In developed areas in the City of Peoria, intersection streetlighting shall be provided. In new subdivisions all streetlighting shall be installed concurrently with other off-site improvements.

3. Developments located north of Deer Valley Road may request reduced level of streetlighting on local and collector streets, as provided in this policy under the section of Rural Streetlighting Standards. Street lighting on arterial streets shall meet City standards.

4. In accordance with the City Code, developers are required to underground the overhead electrical facilities less than 69 KVA and any other utilities located on the same poles concurrently with the construction of other off-site improvements at no cost to the City. See Chapter 3 of the City of Peoria Infrastructure Design Guidelines for further details.

5. For developments with adjacent electrical facilities greater than 69 KVA, streetlights and traffic signals shall be mounted on the same pole when practical. Under built power distribution lines less than 69KVA shall be buried underground unless a waiver is granted by the Engineering Director or their designee.

6. In new construction, streetlight poles shall be located in back of the sidewalk or four-feet behind the curb if the sidewalk is located away from the curb. If the four-feet separation is not possible due to right-of-way constraints, a waiver can be applied for and the Engineering Director will review on a case by case basis.

7. Underground streetlight circuits: responsibility for underground streetlight circuits is fixed in relation to the following conditions:

   A. In existing subdivisions where all utilities are presently placed underground, the developer will install streetlight circuits underground when streetlights are installed.

   B. In new subdivisions under development within the City of Peoria where all utilities are to be provided underground by the developer.

   C. In existing subdivisions where utilities exist overhead, and the property owners' initiate the placing of overhead utilities underground, the property owners' would be responsible for placing the streetlight circuits within that subdivision underground.

   D. Along arterial streets, underground streetlight circuits shall be installed underground. If utility poles exist but cannot be used for new lighting, and the majority of subdivisions adjacent to the arterial street segment have underground utilities, new streetlight circuits should be placed underground.

8. Streetlighting designs, including the location of poles are to be approved by the City of Peoria Engineering Department and Public Works Streets Division.

9. In all new developments, the developer shall be responsible for the installation of new streetlights at no cost to the City. Streetlight design and pole locations are to be reviewed by the City of Peoria Engineering Department and Public Works Streets Division. Streetlights shall be installed by the developer concurrently with other off-site improvements at no cost to the City.

10. All streetlights installed within the APS service area shall be installed by the developer/contractor or APS. Installation and type of equipment shall meet APS standards. Any streetlights installed by contractors other than APS will be inspected and approved by APS. Once approved by APS the City will be notified and accept the streetlights.

11. If contractors other than APS install the streetlights, the developer will be required to submit to the City four original fully executed copies of the **STREETLIGHT WARRANTY AGREEMENT**. The **STREETLIGHT WARRANTY AGREEMENT**. The four copies will be distributed as follows:

    One copy to APS
    One copy to be retained by the City of Peoria Engineering Department

One copy to be retained by the City of Peoria Public Works Department
One copy to be returned to the developer

12. No fax copies will be accepted.

13. The agreement execution date on page four must be filled in by the developer.

14. All streetlights installed within the SRP service area shall be installed by SRP. Any streetlights installed by contractors other than SRP will not be accepted by the City. Installation and type of equipment shall meet SRP standards.

15. The developer is responsible to pay APS and/or SRP all streetlight fees prior to the City issuing the final acceptance of the development project.

16. A City of Peoria permit shall be obtained prior to installation of streetlights.

17. All subdivisions are subject to the formation of a Street Light Improvement District (SLID). As such, all operating, maintenance and administrative costs associated with the streetlights located within the subdivision will be assessed to the individual homeowners. See the Street Light Improvement District (SLID) Policy for further details.

18. All subdivisions with private streets are not subject to a Street Light Improvement District. The monthly operating and maintenance costs associated with the streetlights within the private street subdivision will be the sole responsibility of the Homeowners Association.

19. The City of Peoria will assume responsibility for the monthly operating and maintenance costs for all streetlights on arterial and collector streets.

20. Ornamental type streetlights may be installed with the approval of the Engineering Department Director or their designee.

In new subdivisions with private streets, the developer electing ornamental lights shall provide the streetlights system at no cost to the City. Streetlight design and pole locations are to be reviewed and approved by the Engineering Department. Streetlights shall be installed concurrently with other required off-site improvements. The City will not be responsible for inspection of the streetlights. APS and SRP will be responsible to install the streetlights. The cost of operating and maintaining the streetlights will be the sole responsibility of the HOA.

In established subdivisions, no ornamental streetlights will be allowed to be installed. Only the same type of streetlight poles as are existing will be allowed to be installed.

PEORIA STANDARD STREET CLASSIFICATIONS

Parkways

1. Single pole dual mast arm type lighting shall be installed in the median on all parkways.

2. All streetlights shall be 300 watt, 50,000 lumens.

3. All streetlight poles, mast arms and fixtures shall meet APS and/or SRP standards depending upon the specific service area the project is located in. Streetlight locations shall be in accordance with the illumination levels established by the IES RP-8 model.

Arterial Streets

1. Continuous streetlighting shall be installed on both sides of streets using an average spacing of 200 feet and staggering the lights. However, the spacing may deviate from the average if power poles exist, the overhead utilities are less than 69KVA and will not be buried and the existing poles are to be used for street lighting.

2. All separate streetlight installations will be on metal poles except as approved by the Engineering Department and Public Works Streets Division.

3. All streetlights shall be 250 watt, 30,000 lumens

4. All streetlight poles, mast arms and fixtures shall meet APS and/or SRP standards depending upon the service area the project is located in.

5. Streetlight locations shall be in accordance with the illumination levels established by the IES RP-8 model.

Collector Streets

1. One side continuous lighting shall be installed on each collector street at a spacing of 200-feet.

2. All streetlight poles, mast arms and fixtures shall meet APS and/or SRP standards depending upon the service area the project is located in.

3. All streetlights shall be 150 watt, 16,000 lumens.

4. Streetlight locations shall be in accordance with the illumination levels established by the IES RP-8 model.

Local Streets

1. In new subdivisions and developments, developers are responsible for providing all streetlights at no cost to the City, which are to be installed concurrently with the other required off-site improvements.

2. All new subdivisions are subject to the formation of a Street Light Improvement District.

3. All streetlight poles, mast arms and fixtures shall meet APS and/or SRP standards depending upon the service area the project is located in.

4. Streetlight locations shall be in accordance with the illumination levels established by the IES RP-8 model.

5. All streetlights shall be 100 watt, 9,500 lumens.

6. Residential mid-block lighting may be installed in existing subdivisions by the City of Peoria, if funds are available, upon the petition of a majority of property owners within a distance of approximately 100-feet.

RURAL STANDARDS

A reduced level of lighting may be installed on collector and local streets in residential areas of two or less residences per acre as approved by the City of Peoria General Plan.

Collector Streets

At least two streetlights shall be installed at each collector/collector and collector/local street intersections. Few mid-block streetlights will be installed. Where commercial zoning is vested, one-sided continuous lighting shall be provided along the commercial frontage. The streetlights shall be 150 watt, 16,000 lumen and meet APS and/or SRP standards.

Local Streets

At least two streetlights shall be installed at each local/local intersections. Few mid-block streetlights will be installed. The mid-block streetlights shall be installed, when in the judgement of the Engineering Department Director, such additional streetlighting is necessary for the safety of vehicular and pedestrian traffic or for the general public. The streetlights shall be 100 watt, 9,500 lumen and meet APS and/or SRP standards.

NEW DEVELOPMENT

A developer desiring a reduced level of lighting for a proposed development must file a letter with the Engineering Department Director at the time of subdivision review.

Streetlights shall be installed at developer expense at the time of other required off-site improvements being constructed. Conduits and junction boxes shall also be installed at developer expense for any future additional non-intersection streetlights.

As a condition of development, the developer is required to state in all advertising material that a reduced level of streetlighting will be provided in the development and a Streetlighting Disclosure Letter stating same shall be given to each buying. A note on the recorded final plat is required stating that the subdivision has reduced streetlighting. The note shall state:

This subdivision has a reduced level of streetlighting. Any future additional streetlighting will be at the expense of the abutting property owners, not at City expense.

Under covenants or deed restrictions of the development, a statement shall be required that reduced level of streetlighting is in effect in the development and that intersection only streetlighting is provided. This statement is included to inform succeeding buyers of residences of the reduced level of streetlighting.

HILLSIDE DEVELOPMENT

All streetlights in the hillside area shall be fully shielded.

Streetlights on arterial and collector streets shall comply with City standards illumination and spacing requirements. Streetlights may be installed on median islands where available, or at back of sidewalk or curbs where medians do not exist.

Streetlights on local streets shall be placed at intersections and at the end of cul-de-sacs that are more than 200-feet long. On straight sections of roadway 400-feet spacing between lights may be used; however, other factors must also be evaluated, e.g. horizontal and vertical alignment. Topographical conditions may require additional lighting.

City of Peoria, Arizona
Street Lighting Warranty Agreement

We, the undersigned_____("Developer") and _____("Contractor") (collectively "Development Team") hereby expressly agree to undertake the following responsibilities related to the installation of street lighting for the project known as "_____" ("Project") generally described as _____ and located in _____, Arizona.

I. Warranty

A. For 365 calendar days after a streetlight is energized ("Warranty Term") Development Team warrants that all street light units will be free from defects in materials or workmanship as defined in the Construction Quality Standards (Section VI) and Equipment Standards (Section V) set forth below.

II. Development Team Requirements and Obligations

A. If a covered defect occurs during the Warranty Term, outside the specifics of II B and II C, the Development Team shall repair and replace the defective item at the Developers sole cost and expense. Any repair or replacement shall be completed within ten business days following notification of the defect to Development Team.

B. New construction that has passed APS' inspection will thereafter be maintained by APS. Maintenance to replace eyes, lamps, starters, ballast's, heads, hand-hole covers or j-boxes during the Warranty Term will be performed by APS and will be billed to the Developer, by APS payable to APS, 30-days from invoice, for labor at $50.00 per worker per hour, plus materials.

C. Any identified defects that, in APS' judgment, pose a potential safety hazard to the general public will be indicated and repairs shall be completed by Developer immediately. The urgent contact, for the Developer will be (name)_____and can be contacted at (phone) ___-_____ and/or (phone or e-mail) ___-_____. Developer will complete repairs within one working day and contact the Project Inspector by fax 602-371-7473 and phone at 602-371-7262. A second inspection will be performed following notification from Developer, at no charge, unless the potential hazard has not been satisfactorily eliminated. If this condition exists, the Developer will be charged an inspection fee of $150 and APS reserves the right to authorize and obtain such repairs and to bill the Developer for all costs associated with the repair or replacements to correct the defect. If APS determines that an immediate hazard exists APS has the option of securing a guard (who will remain on site until the hazard is eliminated and APS will invoice Developer for all costs associated with the guarding) and notify Developer to eliminate the hazard or APS may perform the corrective actions to eliminate the hazard and bill Developer.

D. Immediately upon Development Team resolution of the defect(s), Developer shall complete the applicable portion of the Notice of Repair form and shall send copies of the completed form to the following:

FAX APS Outdoor Lighting	(602) 371 7473
With a copy to:	Arizona Public Service P O Box 53933, Station 3532 Project Inspector Phoenix, AZ 85072 3933
With a copy to:	City of Peoria Engineering Department 9875 N. 85th Avenue Peoria, AZ 85345 Attn: Traci Varland

III. Inspection by APS

A. The City of Peoria ("City") has designated APS as its municipal lighting warranty representative for street light construction within APS' service territory. All inspections and warranty claim evaluations will be performed by an APS designated inspector. If APS discovers what appears to be a covered defect, APS will issue the developer a Notice of Repair in the form attached hereto with a clear and specific written description of the defect to the Development Team. If the Developer does not correct identified defects and notify the APS Project Inspector accordingly within ten business days, APS reserves the right to authorize and obtain such repairs and to bill the Developer for all actual costs associated with the repair or replacement of the defects.

B. A second inspection will be conducted by APS following notification from the Development Team that defects have been resolved. A fee will not be charged by APS for a second inspection by APS that occurs within ten business days and notification process as outlined in this Agreement unless:

3.B.1. The second inspection results is an additional notice of repair where repairs were incomplete or unsatisfactory; or
3.B.2. The completion of repairs falls outside the ten business day repair period.

C. If the conditions in Section B1 or B2 occur, a charge of $150.00 will be billed by APS to the Developer for inspection fees, this charge will be invoiced by and payable to APS.

IV. APS Compliance Inspection Process.

APS shall confirm and verify the following items related to installation of streetlights.

A. APS shall complete an initial inspection to ensure that the following on-site conditions are satisfied:

4.A.1. Correct number and type poles installed
4.A.2. Correct number and type lumens installed
4.A.3. Photo eye working
4.A.4. J-box and hand-hole wiring complete and safe
4.A.5. J-box installed at grade level and undamaged
4.A.6. Application installed to APS specifications

B. If any of the above on-site conditions are not satisfied, APS will prepare and send a Notice of Repair to Development Team.

C. Following the sending of a Notice of Repair, APS shall complete a second inspection to ensure that the following conditions are satisfied:

4.C.1. Repairs are completed within ten business days by Development Team

4.C.2. If repairs are not completed within ten business days, APS will issue an invoice to Development Team for the second inspection in the amount of $150.

V. Equipment Standards

The Developer warrants against loss caused by equipment defects. The common street lighting elements covered are:

5.1 Photo eyes
5.2 Poles
5.3 Arms
5.4 Luminaries
5.5 Lamps (i.e. installation of correct lamp size)
5.6 Wiring from hand hole to fixture
5.7 J-box at grade level and undamaged
5.8 Proper fusing

VI. Construction Quality Standards

The following quality standards have been developed and accepted by the City and APS for municipal street lighting. Where a specific construction quality standard has not been specified, the standard practice of the utility industry within Peoria (city), Arizona shall apply.

The following construction quality standards are expressed in terms of required standards that the Development Team shall satisfy (Attachment A). The Development Teams failure to comply with these standards shall require repairs or replacement as appropriate by the Development Team.

6.1 Excavating & Back Filling
No settling of ground around pole or poles out of plum

6.2 Wiring
Wire size and type, number of conductors, grounding, connectors, fixture wired for proper voltage

6.3 Luminaries
Proper lumen size, meets APS standards, correct lamp and photo eye

6.4 Poles and Arms
Meet APS standards, proper height and length

6.5 J-Boxes and Conduit
Meet all APS specifications, J-box size, conduit proper schedule thickness, sweeps proper radius, etc.

VII. General Conditions

7.1 Indemnification
Developer and Contractor shall indemnify, defend and hold harmless, the City and APS, any of its departments, agencies, officers or employees from all damages, claims or liabilities and expenses (including attorneys' fees) arising out of or resulting in any way from the performance, or lack of performance, of this Agreement or for any work by Developer in the public right-of-way related to the street lighting.

7.2 Licensed Contractors
All work and repairs by Development Team shall be performed by an Arizona licensed contractor.

7.3 Permits
Development Team shall obtain, at their sole cost and expense, all federal, state and city approvals and permits to conduct repairs and replacement of defective items.

This agreement has been entered into this_____ day of _____, 20___ and has been executed by the duly authorized representatives of the Developer.

CONTRACTOR

Signature:_____
Name: _____
Title: _____
Date
Signed: _____
Mailing
Address: _____
City/State/
Zip: _____
Telephone:_____

DEVELOPER REPRESENTATIVE

Signature:_____
Name: _____
Title: _____
Date
Signed: _____
Mailing
Address: _____
City/State/
Zip: _____
Telephone:_____

APS PROJECT LEADER

Signature:_____
Name: _____
Title: _____
Date
Signed: _____
Mailing
Address: _____
City/State/
Zip: _____
Telephone:_____

CITY OF PEORIA

Signature:_____
Name: _____
Title: _____
Date
Signed: _____
Mailing
Address: _____
City/State/
Zip: _____
Telephone:_____

STREET LIGHT WARRANTY AGREEMENT
ATTACHMENT A

See APS Standards and Approved Manufacturers for Streetlights

SUBMITTAL APPLICATION

ENGINEERING DEPARTMENT

Project No._____

PARCEL NUMBER(S):	**EXISTING ZONING:**
GROSS AREA (ACRE/SQ. FT.):	**TOWNSHIP-RANGE-SECTION:**
DEVELOPMENT/PROJECT NAME:	
ADDRESS/LOCATION:	
PROPERTY OWNER:	
ADDRESS:	
CITY:	**STATE:** **ZIP CODE:**
PHONE NUMBER:	**FAX NUMBER:**
CONTACT PERSON:	**E-MAIL:**
APPLICANT:	
ADDRESS:	
CITY:	**STATE:** **ZIP CODE:**
PHONE NUMBER:	**FAX NUMBER:**
CONTACT PERSON:	**E-MAIL:**
Are you a first-time/occasional applicant?	**Yes** **No**
ARCHITECT/ENGINEER:	
ADDRESS:	
CITY:	**STATE:** **ZIP CODE:**
PHONE NUMBER:	**FAX NUMBER:**
CONTACT PERSON:	**E-MAIL:**
SUBDIVISION ONLY	
NUMBER OF LOTS:	**NUMBER OF TRACTS:**
LINEAR FEET OF STREETS:	**MINIMUM LOT AREA:**
AVERAGE LOT AREA:	**MINIMUM LOT WIDTH:**
OWNER'S SIGNATURE:	**DATE:**

I:\Guide\Guide-CIP-Direct\Submittal Application.doc
Revised: 10/18/06, 07/29/08, 04/01/09

APPLICATION CONTACT

I hereby request that ALL verbal and written communication regarding the attached application be provided to:

_____

_____

_____

TELEPHONE: _____

FAX NUMBER: _____

E-MAIL: _____

Additionally, I understand that it is the above listed person's responsibility to communicate any verbal or written communications on said application to other members of the development team, including, but not limited to plan pick-ups, application comments, staff reports, action letters (to include Plan Approval letters, Final Letters of Approval, and Warranty Release letters), and meeting times, etc.

_____ _____

Applicant's Signature Date

OWNERSHIP VERIFICATION

It is requested that a _____ application be accepted by the Development Engineering Department for property generally located:

_____

Said property is owned by:

AND

_____ _____

_____ _____

_____ _____

Telephone Number: _____ Telephone Number: _____

The subject property is legally described as:_____

_____

_____

_____

_____ (or see attached).

The subject property contains _____ gross acres (includes right-of-way to the centerline of adjacent street or alley)

AND

_____ net acres (excludes adjacent perimeter right-of-way).

Tax Parcel Number: _____

Attached is a map/survey which accurately portrays the parcel configuration and property dimensions, as reflected in the legal description.

I hereby certify that the above information and information submitted as part of the requested application is correct, and that I am authorized to file an application on said property, being either the owner of record or authorized to file on behalf of the owner. (If not owner of record, attach written authorization from owner.)

_____ _____

Applicant's Signature Date

I:\Guide\Guide-CIP-Direct\Submittal Application.doc
Revised: 10/18/06, 07/29/08, 04/01/09

04/01/09

STORM WATER POLLUTION PREVENTION

ENGINEERING DEPARTMENT

PARCEL NUMBER(S): _____	**EXISTING ZONING:** _____
GROSS AREA (ACRE/SQ. FT.): _____	**NET AREA (ACRE/SQ. FT.):** _____
DEVELOPMENT/PROJECT NAME: _____	
ADDRESS/LOCATION: _____	
ENGINEERING REVIEW: _____	

The City of Peoria is requiring all development that disturbs one acre or more to submit the required Storm Water Pollution Prevention Plan (SWPPP), including the Notice of Intent (NOI). The owner/developer is still required to submit all required documents to the Arizona Department of Environmental Quality (ADEQ) as required by law. In addition, the SWPPP shall include all requirements of Maricopa County Rule 310. Copies of all requirements, forms and guidance are available in the Drainage Design Manual for Maricopa County Volume III Erosion Control available at the Flood Control District, 2801 West Durango, Phoenix, Arizona 85009, Phone No (602) 506-1501.

This checklist serves to minimize redline comments on the check prints and to maintain consistency among plan reviewers on plans for Storm Water and Dust Control Management. Plan approval, issuing permits, and certain grading clearances depend on compliance with the comments made on the check prints and this checklist. The engineer of record shall satisfy themselves of the completeness and accuracy of the design. This review shall serve as a courtesy review only. The Owner is ultimately responsible to ensure that all of the requirements outlined under AZPDES are followed.

Please return this checklist and the check prints with your next submittal. Discussion of redline-comments on plans or this checklist should be directed to the City Project Manager.

GENERAL REQUIREMENTS:

- ❑ Sheets to be 24" X 36"; submit two sets of plans.
- ❑ Separate Storm Water Management Plans shall be submitted with grading and drainage plan at time of First review.
- ❑ Cover sheet is required on plans of more than two sheets.

- ❑ **Site Information** – to be included on the First/Cover sheet:
  - ❑ Project title block with name and address of project.
  - ❑ Address and legal description of project location.
  - ❑ Total site area.
  - ❑ Vicinity map with north arrow.
  - ❑ Index of plan sheets if more than one plan sheet.
  - ❑ Owner's/Developer's name, address, and telephone number.
  - ❑ Engineer's name, address, and telephone number.
  - ❑ Contractor's name, address and telephone number. If contractor is not known, leave this area blank for future completion.

- ❑ The following notes shall be located on the cover sheet:

1. A copy of the approved grading and drainage plan for this project and this Storm Water Pollution Prevention Plan SWPPP shall be maintained on the site and available for review. Those elements of the grading and drainage plan pertinent to or referenced on the SWPPP shall be considered a part of the SWPPP.

2. The City of Peoria Engineering Department Inspection Division shall be notified 48-hours before any on-site and/or off-site construction begins, telephone (623) 773-8445.

3. The Notice of Intent (NOI) shall be completed and submitted to the Arizona Department of Environmental Quality (ADEQ) and the City of Peoria 48-hours prior to any construction activity.

4. The SWPPP and related records must be made available upon request to ADEQ and the City of Peoria.

5. The Prime Contractor or Owner shall obtain a Dust Control Permit from Maricopa County Environmental Services and perform measures as required by the permit to prevent excess dust (and as incorporated in this SWPPP).

6. The Prime Contractor or Owner shall perform, at a minimum, a visual inspection of the construction site once every seven days and within 24-hours of rainfall greater than or equal to a half of inch (½ Inch). The operator shall prepare a report documenting his/her findings on the conditions of the SWPPP controls and note any erosion problem areas. The operator's report is to be submitted to the Engineering Inspector for review and approval and shall be maintained on site by the operator. Facilities shall be maintained as necessary to ensure their continued functioning. In addition, all temporary siltation controls shall be maintained in a satisfactory condition until such time that construction is completed, permanent drainage facilities are operational, and the potential for erosion has passed as determined by the Engineering Director or his designee.

7. The Prime Contractor or Owner shall amend this plan as necessary during the course of construction to resolve any problem areas, which become evident during the construction and/or during rainfalls.

8. The implementation of these plans and the construction, maintenance, replacement, and upgrading of these facilities is the responsibility of the permittee/contractor until all construction is approved and a Notice of Termination (NOT) has been submitted.

9. The facilities shown on this plan must be constructed in conjunction with all clearing and grading activities in such a manner as to ensure that sediment-laden water does not enter the drainage system or violate applicable water standards. Additionally, they must be installed and in operation prior to any grading or land clearing. Wherever possible, maintain natural vegetation for silt control.

10. The contractor to whom the "at-risk"/final G&D permit will be issued must have the approved SWPPP issued in their name.

11. The owner (operator)/contractor of the site must also maintain records with the following information:
    - The dates when major grading activities occur in a particular area;
    - The dates when construction activities cease in an area, temporarily or permanently; and
    - The dates when an area is stabilized, temporarily or permanently; and
    - The dates when any maintenance/replacement or removal of required BMPs.

12. Construction sites are dynamic in nature. The site operator is required to maintain full compliance with the general construction permit, as issued by ADEQ, to maintain an effective SWPPP. As such, this plan must be updated to accurately reflect site features and operations. The plan must also be amended if it is determined by the Engineering Director as not effective at minimizing pollutant discharges from the site.

13. Once the construction activities have been completed and the site has met the final stabilization requirements of the permit, the authorized site representative may file a Notice of Termination (NOT) with ADEQ, with a copy submitted to the City of Peoria Engineering Division, to terminate coverage under the permit.

❑ **SWPPP Certification** – The site owner (operator) or his authorized representative shall sign and certify the plan. In signing, the person certifies that the information is true and assumes liability for the plan. The registrant preparing the plan may be liable to the site operator/owner. However, ultimate responsibility – for purposes of violations, and fines shall lie with the site operator/owner and site contractor.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage this system, or those persons directly responsible for gathering the information, I believe the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. In addition I certify that the permittee will comply with all terms and conditions stipulated in General Permit No. AZG2008-001 issued by the Director.

_____ _____
Printed Name Job Title

_____ _____
Signature Company Name

❑ **Contractor Certification** – ADEQ also requires that the contractors and subcontractors responsible for implementing measures in the SWPPP be listed in the plan with the measures for which they are responsible, and that they sign a certification statement that they understand the permit requirements as reflected on the SWPPP.

I *(Printed Individual's Name)* acting as *(Job Title)* for the (c*ontractor/subcontractor's name),* an authorized representative, having reviewed this Storm Water Management Plan (SWPPP) and all of the relevant documents, do hereby certify that I understand all components of this plan and will perform all required inspections and maintenance activities as required.; and that I will maintain all necessary and required records at the job site and up to date.

_____
Signature

- ❑ Provide a legend identifying grades, symbols, and lines, etc.
- ❑ Maricopa County Rule 310 permit #_____
- ❑ ADEQ tracking number AZCON_____
- ❑ Include appropriate City of Peoria Plan review numbers from Engineering Division.
- ❑ Original plan sheets shall be sufficiently clear to allow legible prints to be reproduced. The size of lettering and symbols shall be 1/8-inch minimum.
- ❑ All sheets shall have the qualified Arizona registrants seal and original signature prior to plan submittal.

The following is a checklist of information that is to be included in the SWPPP. Additional information regarding the data to be included in the SWPPP is provided in the Construction General Permit issued by ADEQ. The Construction General Permit can be downloaded off the internet from http://www.adeq.state.az.us/environ/water/permits/download/constgp.pdf

- ❑ **Construction Activity Description** - the SWPPP must contain description of the purpose or goal(s) of the construction project (e.g. a single-family residential, commercial development, etc.). Additionally, the SWPPP must list all soil-disturbing activities necessary to complete the project (e.g. clearing, excavating, and stockpiling).
- ❑ **Final Slope Grades** - Location and steepness of slopes after grading.
- ❑ **Final Drainage Patterns** – Drainage patterns of the site after major grading activities and the location of the points where storm water will discharge from the site.
- ❑ **Disturbed Areas** - Location and areas of soil disturbing activities or the total area of the site where soil will be disturbed. (This must be identified on the map and area called-out).
- ❑ **Undisturbed Areas** – The SWPPP shall reflect all areas designated as being undisturbed. This would include Natural open space, jurisdictional washes (Per section 404 of the CWA), etc. All designated areas must be delineated/ and fenced-off in the field.
- ❑ **Drainage Patterns** – Show on the plans post construction drainage patterns including concentration points and discharge points.
- ❑ **Offsite Flows** – Show location of offsite flows including quantities. If offsite flows are being rerouted through the site, a note should be added to reflect the no disturbance zone.
- ❑ **Erosion and Sediment Controls** – The SWPPP must describe the erosion and sediment controls to be used during construction. Such controls include stabilization measures for disturbed areas and structural controls to divert runoff and remove sediments. Selected controls must be per the Best Management Practices (BMP) outlined in the Drainage Design Manual for Maricopa County Volume III Erosion Control (ECM).
- ❑ **Best Management Practices (BMPs)** – Structural devices or non-structural practices that are designated to prevent pollutants from entering into storm water flows, to direct flows of storm water or to treat polluted storm water flows. The emphases should be placed on eliminating the source of pollutant(s). All selected BMPs details must be shown on the plan sheets or included as part of the Storm Water Management Plan.
- ❑ **Sediment Basins -** Show location of all temporary or permanent sediment basins to be installed. Temporary basins may be substituted for permanent basins during grading phase only. These basins must provide at least 3,600 cubic feet of storage for every acre of contributing land.
- ❑ **Other Controls –** The SWPPP must also include controls that address other potential sources of storm water pollution, such as:
    - ❑ Construction site waste material storage.
    - ❑ Preventing offsite tracking of sediments and generation of dust
    - ❑ Hazardous material storage (e.g. fuel, equipment oil, etc.)
    - ❑ Equipment maintenance/ parking areas.
- ❑ **Post-Construction** – The SWPPP must include a description of storm water management controls that will be installed to control pollutants after construction completion.
- ❑ **Future Activities** – The SWPPP shall address all grading activities to be performed on any site that is part of the "greater common plan or development" (e.g. construction of individual lot(s) within a subdivision).
- ❑ **Location of Controls** – the BMPs selected for the site must be shown on the SWPPP, including the location of each measure used for erosion and sediment control, storm water management, and other pollution controls.

- ❑ **Inspection and maintenance Plan** – The SWPPP must contain description of the procedures that will be used to maintain the BMP's on site. The plan shall include an inspection and maintenance checklist for each control measure. The checklist must address specific items to inspect for and evaluation criteria.
- ❑ **Description of Controls** – The SWPPP shall include a list of the BMPs to be used at the site, describing each control, its purpose. Many of the BMPs selected from the ECM already contains the descriptions and purpose.
- ❑ **Sequence of Major Activities –** The SWPPP shall contain a sequence of major activities. The sequence should address the installation of all controls, earth disturbing activities, and stabilization activities, and the maintenance required for the controls. The sequence should indicate, clearly, the order in which these activities will take place along with a proposed timeline associated with each activity.

  In developing a sequence of major activities, the following general principals should be followed:
  1. Install down slope and side slope perimeter controls before the land disturbing activity occurs.
  2. Cover or stabilize disturbed areas as soon as possible. *(Under ADEQ's general permit, disturbed areas of the construction site that will not be re-disturbed must be stabilized within 14 days of the most recent land disturbance.*
  3. Time construction activities to limit impact from seasonal climate changes or weather events.
  4. Delay construction of infiltration measures until the end of the construction project, if possible. Otherwise, provide proper Storm Water Management Controls to eliminate potential sources of pollution.
  5. Do not remove temporary perimeter controls until after all upstream areas are finally stabilized.
- ❑ **Additional Comments** - The following are additional comments specific to this site:

CITY OF PEORIA
ENGINEERING DEPARTMENT
MEMORANDUM

DATE: April 01, 2009

TO: Utilities/Contractors/Subcontractors Requesting to Work in the City of Peoria Right-of-way

FROM: Andy Granger, Engineering Director

SUBJECT: Utility Permits – Guidelines for Working in the City of Peoria

Notice:

Failure to follow the guidelines and procedures outlined in this letter may result in the Utility Inspector halting work for an undetermined length of time. Repeated failure of a contractor or subcontractor to follow these guidelines and procedures may result in that contractor or subcontractor being "banned" from working in the City of Peoria.

Construction Schedule

Requests to work in (or adjacent to) an arterial or collector street (work in right-of-way or Public Utility Easements) must be accompanied by a construction schedule. Construction schedules shall be approved by the Engineering Inspection Supervisor (prior to the start of construction). Schedules must include dates for all phases of construction (splicing, plating, etc.) through permanent pavement replacement. Any variance from the approved schedule shall be approved by the Engineering Inspection Supervisor.

General Guidelines

1. Contractors/subcontractors must be "approved" to work under utility permits. The City of Peoria will maintain a list of approved contractors and subcontractors.
2. Non-emergency work in or adjacent to, an arterial or collector street (in the right-of-way) requires an individual permit. This work is not covered under the blanket permit.
3. You must have an active permit.
4. You must comply with Blue Stake Laws.
5. All contractors working within the City of Peoria rights-of-ways must comply with Ordinance 01-181.
6. Proper notification must be made to all effected residents. This includes notifications/information signs required by the City of Peoria Infrastructure Design Guidelines, and the hanging of door notices. Door notices shall be hung prior to blue staking and commencing work (non-emergency work). Lack of proper notification will result in the City halting all work for the day.
   Hangers shall include the following information:
   - Names of contractors, sub-contractors and local utility company contacts
   - Contact phone numbers (office and cell phones)
   - Dates/times of scheduled work
   - Area impacted
   - Scope of work

7. All work in the right-of-way or Public Utility Easements (P.U.E.'s) shall conform to applicable M.A.G. Specifications and Details except as amended by the City of Peoria Infrastructure Design Guidelines and City of Peoria Standard Details.
8. Open pits (not in the street) are allowed to remain open for two weeks only.
9. Open pits are to be properly secured (to the satisfaction of the City's Engineering Inspector)
10. All project areas must be cleaned up and barricades removed within three days of the completion of work.

Work Allowed Under Blanket Permits

1. Emergency work.
2. Non-emergency work that **IS NOT** in, or adjacent to, an arterial or collector street.
3. Window cuts are restricted to one-foot by one-foot under the blanket permit.
4. Boring: Only "directional boring" will be allowed under the blanket permit.

Work Hours/Notification of Work

1. You must comply with Peoria Ordinance #98-11 restricting outdoor construction hours as listed below:

CONSTRUCTION TYPE	APRIL 2 – SEPTEMBER 29	SEPTEMBER 30 – APRIL 1
Concrete Work	5:00 a.m. to 7:00 p.m.	6:00 a.m. to 7:00 p.m.
Other Construction (within 500 feet of residential area)	6:00 a.m. to 7:00 p.m.	7:00 a.m. to 7:00 p.m.
Construction Work (more than 500 feet of residential area)	5:00 a.m. to 7:00 p.m.	5:00 a.m. to 7:00 p.m.

2. Daily work locations must be submitted on the standard City form. This form must be submitted to the City by 6:30 a.m., and 24-hours in advance of the work scheduled. There will be a limit of six work locations within the City (per utility company) per day. Work location sheets should be faxed to the City's Engineering Inspector, Jim Fournier at (623) 825-0325. Jim's cell phone # is (602) 918-7668.
3. Weekend/holiday or "off-hour" work is not permitted without the prior approval of the Engineering Inspection Supervisor.

Work Hours within Public Rights-of-Way

No interference with traffic flow on arterial streets shall be permitted during the hours of 7:00 a.m. to 9:00 a.m. or from 4:00 p.m. to 6:00 p.m., unless prior authorization is obtained in writing from the City of Peoria Traffic Engineer or their designee.

Pre-Job Meeting/City Requirements

1. The contractor (or utility company) shall arrange a "pre-job" meeting with the City Engineering Inspector and the utility company representative. To discuss the following City requirements (there may be others):

    - Possible conflicts with other utilities
    - No boring to be done within three feet of water or sewer mains without pot-holing
    - Pot-holing shall not be greater than one square foot
    - Accurate construction schedule
    - Identify responsible sub-contractor foreman who will remain on job site.
    - Foreman must be able to communicate with Utility Inspector and have a cell phone.
    - Identify responsible field representative for utility company (Qwest, SWG, etc.) Utility Company must have one point of contact available to the Utility Inspector.
    - Landscaping, irrigation systems that may be disturbed
    - Contact homeowners before entering backyards (P.U.E.s)
    - Complete work and repair damaged pavement, curb, gutter, sidewalk, landscape and irrigation systems within 15 calendar days.
    - Provide restroom facilities as needed.

Trench Backfill and Pavement Replacement

1. All backfill under existing pavement and concrete shall be ½ sack ABC slurry. This slurry backfill may be required in other incidences at the discretion of the Utility Inspector.
2. The AC mix design shall be "City of Phoenix C-3/4 inch mix". Use of "bagged" or "canned" mix for permanent pavement replacement is prohibited.
3. Pavement thickness shall be 1.5 times the existing thickness. Pavement shall be replaced per M.A.G. Standard Detail 200 ("T-top") with the exception that all backfill shall be ½ sack ABC slurry.
4. Materials testing may be required (paid for by the utility company) at the discretion of the Utility Inspector.
5. Trench backfill and permanent AC pavement replacement must be completed within seven calendar days of excavation (unless requirement is waived by the Engineering Inspection Supervisor).
6. Must follow City of Peoria Standard Detail PE-211 for recessed plating. Plates must always be "pinned" and "cold-patched". Plates must be recessed if existing speed limit is over 25 mph. If plates are not recessed (existing speed limits is 25 mph or less) bump signs must be appropriately placed.

Traffic Control/Barricading

1. Shall comply with City Ordinance #01-181, and the City of Peoria Infrastructure Design Guidelines.

2. All work in or adjacent to arterial or collector streets shall require the submittal of a Traffic Control Plan (TCP). This plan shall be faxed to Felix Miranda at (623) 825-0325. TCP's may be required in other incidences at the discretion of the Engineering Inspection Supervisor.
3. All utility companies or their contractors must have an accepted TCP returned to them prior to start of work. The on-site utility/contractor's representative must have a copy of the permit and the accepted TCP available for the Engineering Inspector's review.
4. If any part of the barricading (per an accepted TCP) falls within 300' of a signalized intersection a police officer will be required. Police officers may be required in other incidences at the discretion of the Engineering Inspection Supervisor.

CHAPTER 1

SECTION A

INTRODUCTION, PURPOSE AND AUTHORIZATION, GENERAL INFORMATION and DEFINITIONS

A-1 INTRODUCTION

This section of the City of Peoria Infrastructure Design Guidelines provides standards, specifications and guidelines that compliment and support the Peoria Subdivision Ordinance. The manual is designed to provide process and definition to the subdivision approval process mandated by state law.

A-2 PURPOSE AND AUTHORIZATION

The purpose of this section of the City of Peoria Infrastructure Design Guidelines is to satisfy the requirements of ARS Section 9-463.01, which grants authority to and directs Arizona municipalities to regulate the subdivision of all lands. This manual is adopted as an Appendix to the Peoria City Code and has been carefully crafted to clearly outline methods, procedures and requirements for the use of property owners and subdividers in subdividing land within the City of Peoria.

A-3 GENERAL INFORMATION AND DEFINITIONS

A. Subdivision Approval Process.

The process that the City of Peoria uses to approve a subdivision is as follows:

1. *Pre-application Conference*. The applicant/subdivider shall schedule and attend a pre-application conference. The purpose of the conference is to provide the venue for the applicant/subdivider to present the proposed project. Representatives from the City shall provide a cursory review at that meeting and explain the remaining steps in the process.

2. *Preliminary Plat Application*. The applicant/subdivider shall submit a Preliminary Plat application together with preliminary street and engineering drawings and a phasing plan, if applicable.

3. *Preliminary Plat Approval*. The preliminary plat is submitted to the Subdivision Committee for approval after all comments and review notes have been satisfied.

4. *Final Plat Application*. The applicant/subdivider shall submit a Final Plat Application together with the final draft of street and engineering drawings and a phasing plan, if applicable. The Final Plat shall be submitted in substantially the same form as the approved preliminary plat. If there are any changes from the approved pre-plat, a memorandum listing those changes shall be included with the Final Plat submittal.

5. *Final Plat Approval*. The Final Plat, including all seals and certifications, shall be submitted for approval by the City Council after final review by the Engineering Director and final approval of engineering drawings and the phasing plan, if applicable.

6. *Plat Recording.* The City Clerk shall record the Final Plat after City Council approval and gathering of signatures. Preliminary Plats and phasing plans are approved by the Subdivision Committee for the City. Final Plats are approved by the City Council. The Engineering Director approves all street designs and engineering drawings associated with right-of-way and drainage improvements proposed for construction in the subdivision.

B. Use of Professional Surveyors and Engineers.

Drawings and maps required for the pre-application conference and Preliminary Plat submittals need not be prepared by registered land surveyor or engineering professionals. A licensed Land Surveyor registered in the State of Arizona shall prepare the Final Plat Map. All other drawings, engineering drawings and final maps submitted for Final Plat approval shall by prepared by a licensed Professional Engineer registered in the State of Arizona.

C. Hillside Development Areas.

This manual also provides guidance in the development of lands in sensitive Hillside Development Areas. The Peoria Zoning Ordinance specifically addresses lands for development that contain slopes greater than 10%. Additional submittals and design criteria are included to assist the subdivider in addressing these issues and mitigating impacts from development in these areas.

D. Request for Waiver.

Technical provisions of this Subdivision Design Manual may be waived or modified through a Request for Waiver as provided in Sec. 24-58 of the Peoria City Code. The Subdivision Committee may approve an application for Request for Waiver upon recommendation from the Department and/or Engineering Director.

E. Phasing Plans.

Preparation of phasing plans shall be required when phasing of lot sales or public improvements is proposed. The Subdivision Committee may approve preliminary and final phasing plans. Phasing plans shall be considered when performance bonds or other final assurances are accepted for proposed improvements.

F. Certificate of Correction or Change.

Administrative changes to a plat may be approved through a Certificate of Correction or Change. An application for a Certificate of Correction or Change may be considered and approved by the Engineering Director. Changes that can be approved administratively must be minor and not substantive. Substantive changes shall be approved by re-platting the subdivision.

G. Definitions.

All words in this Ordinance shall be first defined as provided herein and, if not defined herein, shall be defined as in the Peoria Zoning Ordinance or according to the customary dictionary definition. Words used in the present tense include the future tense; words used in singular include plural, and words used in plural include the singular; the word “shall” is always mandatory; the word “person” includes a firm, association, organization, partnership, trust, corporation or company, and an individual.

1. *Abandonment by Plat.* The procedure whereby the owner of land may abandon temporary or permanent easements, including easements, by identifying those easements on a subdivision plat. Such easements are abandoned, removing any City interest therein, upon approval of the plat by City Council and recording of the plat in the Office of the County Recorder. A "street", as defined in Chapter 23 of the Peoria City Code, or easement for roadway purposes accepted by the City of Peoria for dedication can be abandoned by plat only if processing of the plat complies with the requirements of Chapter 23 of the Peoria City Code.

2. *Approved Lending Institution.* Any person or company currently approved by the Federal Housing Administration to act as a mortgagee, qualified to transact business in the State of Arizona and having a business office within the Phoenix metropolitan area and any other lending institution approved by City of Peoria.

3. *Area of Special Flood Hazard.* Land within a flood plain, which is subject to inundation by the base flood.

4. *Base Flood.* The flood having a one- percent chance of being equaled or exceeded in any given year i.e., the 100-year flood.

5. *Block.* A piece or parcel of land or group of lots entirely surrounded by public streets, cemeteries, streams, railroads, or parks, or combination thereof.

6. *Building.* Any structure having a roof and used or built for the shelter or enclosure of persons, animals, chattels or property of any kind, including, but not limited to, tents, awnings, carports, ramadas, mobile homes or vehicles situated on private property and used for purposes of a building.

   (a) *Principal building* means a building, or where the context so indicates, a group of buildings, within which is conducted the principal use of the lot on which the building is situated.

   (b) *Accessory building* means a subordinate building on the same lot with a principal building or use, the use of which is customarily accessory and incidental to the main use of the principal building or use. When attached to the principal building, such accessory building shall be considered as part of the principal building for purposes of setback and yard regulations.

7. *Building Setback.* The minimum horizontal distance between a lot line and nearest point of a building, structure or use, as the context indicates, located on a lot.

8. *Building Site.* That portion of the lot or parcel upon which a building and appurtenances are to be placed or are already existing, including adequate areas for parking, sewage disposal, clearance, proper drainage, the safest and most convenient means of access and which conform to the requirements of the provisions in this and other chapters of the Peoria City Code.

9. *Certificate of Correction or Change.* Procedure for amending recorded plats that are administrative and do not change any real property description.

10. *Certificate of Occupancy Hold.* Procedure for using the Certificate of Occupancy of a building as a guarantee for installation of required off-site construction, improvements and dedications.

11. *City.* City of Peoria, Arizona, a municipal corporation.

12. *City Engineer*. The person identified as the chief engineer for the City, engineering director, or a deputy duly appointed to act in his stead.

13. *Code*. The municipal code and ordinances adopted by the City Council of the City of Peoria.

14. *Conditional Approval.* An affirmative action by the Engineering Director indicating that approval will be forthcoming upon satisfaction of certain specified stipulations.

15. *Conservation.* Retention or acquisition of land for the purposes of preservation and public use.

16. *Conservation Easement.* A right granted to a governmental body over privately owned land, to prohibit development of property, including roads and utilities, and to use the land for public open space purposes.

17. *Context Plan.* The principal document showing the relationship of the project site to adjacent setting as specified in the Community Development Subdivision Design Review Manual.

18. *Council.* The City Council of the City of Peoria.

19. *Cut.* The land surface that is shaped through the removal of soil, rock or other materials.

20. *Department.* An organizational subdivision of the City of Peoria directly responsible for review and approval of applications or submittals associated with this chapter.

21. *Development.* Utilization of land. Development shall include any man made changes to improve or alter real estate, including but not limited to establishment of uses, buildings or other structures, mining, dredging, filling, grading, paving, or excavations.

22. *Design Review.* Required review of architectural and landscape features of any development except for detached single family developments containing less than 20 dwelling units.

23. *Design Review Appeals Board (DRAB).* A board appointed by the City Council of the City of Peoria to hear appeals of recommendations, stipulations or conditions proposed for a project or subdivision and based on the City of Peoria Infrastructure Design Guidelines.

24. *Easement.* A right granted to a governmental body, public, or persons over privately owned land for specific uses and purposes as so designated.

25. *Easement, Drainage*. An area designated and used for conveyance, retention or detention of runoff in which nothing can be placed, which will impede, divert or cause runoff to have an adverse affect on adjoining property.

26. *Easement, Public Utility.* An easement for the installation of facilities underground or overhead, furnished for the use of the public; including electricity, gas, steam,

communication, water, storm drainage, sewage, sidewalks, landscaping, traffic signals, street lights, flood control, etc. Owned and operated by any person, firm, corporation, municipal department, board duly authorized by State or municipal regulations. Utility or utilities as used herein may also refer to such persons, firms, corporations, departments, or boards.

27. *Easement, Non-Vehicular Access*. An easement prohibiting vehicular access from a street, or between inappropriate uses.

28. *Engineering Plans*. Plans, profiles, cross-sections, and other required details for the construction of public improvements, prepared by an Arizona registered engineer of appropriate discipline in accordance with the approved preliminary plat and in compliance with standards of design and construction approved by the Council.

29. *Exception*. Any parcel of land which is within or adjacent to the boundaries of the subdivision, which is not owned by the subdivider and not part of the platted area.

30. *Fill*. The deposit of soil, rock or other materials placed by mankind.

31. *Final Approval*. Conditional approval of the final plat by the Council as evidenced by certification on the plat by the Engineering Director, Mayor, and City Clerk of the City of Peoria, constitutes authorization to record a plat.

32. *Finish Grade*. The final grade or elevation of the ground surface after grading is completed.

33. *First Flush.* The City of Peoria defines first flush as 1" of rainfall.

34. *Flood Plain*. The 100-year flood established by the Federal Emergency Management Agency (FEMA) or other City floodplain management approved area adjoining the channel of a water course, or areas where drainage is or may be restricted by natural or man made structures which may have been or may be covered partially or wholly by floodwater from a base flood. See Flood Plain Ordinance Chapter 20, Peoria City Code.

35. *General Plan*. A comprehensive plan, or parts thereof, providing for the future development, growth and improvement of the City of Peoria and for the general location and coordination of streets and highways, schools and recreation areas, public building sites, specific neighborhood elements; and other physical development, which shall have been duly adopted by the City Council pursuant to ARS 9-461.

36. *Grading*. Any excavating or filling or combination thereof, including (A) the conditions resulting from any excavation or fill, (B) any alteration of the natural drainage pattern or (C) the removal or rearrangement of surface soil.

37. *Hillside Development Area*. All land, in all zoning districts, which has a natural terrain with a slope of ten percent or greater (vertical rise of ten feet in a horizontal distance of one hundred feet), computed in accordance with the method set forth in the Zoning Ordinance, Chapter 14 of the Peoria City Code.

38. *Infrastructure Development Guidelines.* Policies and procedures developed and approved by the Engineering Director, that provide the detail development standards of the City of Peoria.

39. *Irrigation Facilities.* Includes canals, laterals, ditches, conduits, gates, pumps and allied equipment necessary for the supply, delivery, and drainage of irrigation water and the construction, operation, and maintenance of such.

40. *Legal Access.* Access provided to real property connecting the property to the public street system. Access may include a public or private street or access easement as approved by the Engineering Director.

41. *Lot.* A piece, tract, or parcel of land separated from other pieces or parcels by description, as in a subdivision or on a record survey map, or by metes and bounds, for purposes of sale, lease, or separate use and abutting or having legal access to a public street.

    a. *Corner lot.* A lot abutting on two or more intersecting streets where the interior angle of intersection does not exceed one hundred thirty-five degrees. A corner lot shall be considered to be in that block in which the lot fronts.

    b. *Interior lot.* A lot having but only one side abutting on a street.

    c. *Key lot.* An interior lot, one side of which abuts the rear lot (line) of a corner lot, or is separated there from, by an alley.

    d. *Panhandled Lot.* A lot which does not directly abut a public or private street except through a driveway "handle" that connects the lot and the street.

    e. *Through Lot (Double Frontage Lot).* A lot abutting on two more or less parallel streets.

42. *Lot Width.* The distance between side lot lines measured at the minimum front setback line on a parallel line to the street or street chord for a lot abutting on the outside of a street curve, or the distance measured between lot lines measured at the rear of the dwelling for lots abutting the inside of a street curve. Lot width is measured 30-feet behind the minimum front setback line for lots with no buildings.

43. *Map of Dedication*. Form of subdivision plat that dedicates right-of-way, and/or easements and is processed as a minor subdivision.

44. *Master Plan*. A plan for the development of a larger or complicated land area, the platting of which is expected in progressive stages, not necessarily by a single owner or developer. A Master Plan may be designed by the subdivider or by the Department. It shall be subject to Department approval and may be in the form of a Specific Area Plan or Planned Community District in accordance with State Law and City ordinances.

45. *Minor Land Division*. The division of one parcel of land, into three or less parcels.

46. *Minor Subdivision.* A subdivision of property that contains 10 or fewer lots.

47. *Natural Terrain.* The existing grade of the land at the time of application submittal unless the original grade has been altered by other than natural events and

engineering proof of the original grade such as original topographic maps or aerial photos with topography shown and certified as to date by a recognized competent official or other evidence of similar validity acceptable to the head of the Department of Public Works and Engineering is submitted.

48. *Pedestrian Way*. A public walk dedicated entirely through a block from street to street and/or providing access to a school, park, recreation area, or shopping center.

49. *Plat*. A map of a subdivision.

    a. *Preliminary Plat.* A preliminary map, including supporting data, describing a proposed subdivision development, prepared in accordance with Article III of this ordinance.

    b. *Final Plat.* The final map of all or part of a subdivision shown on an approved preliminary plat, prepared by a registered Arizona land surveyor in accordance with Article IV of this ordinance, and formally approved by the City.

    c. *Recorded Plat.* A final plat bearing all of the certificates of approval required in Article V of this ordinance and duly recorded in the Maricopa County Recorder's office.

    d. *Amended Plat*. A final plat that changes a portion of a previously recorded plat.

50. *Preliminary Plat Approval.* Approval of the preliminary plat by Subdivision Committee. Preliminary approval authorizes the subdivider to proceed with final engineering plans and final plat preparation.

51. *Private Access Way.* Any private street or private way of access to one or more lots, which is owned and maintained by an individual or group of individuals and has been improved in accordance with City standards for private access ways and plans approved by the Engineering Department. A private access way is intended to apply where its use is logically consistent with a desire for neighborhood identification and control of access, and where special design concepts may be involved, such as within planned area developments, mobile home developments, and hillside areas.

52. *Public Improvement Standards.* A set of regulations (City of Peoria Infrastructure Design Guidelines) setting forth the details, specifications, and instructions to be followed in the planning, design and construction of certain public improvements in the City of Peoria, formulated by the Utilities, Public Works Director and the County Health Department.

53. *Request for Waiver*. A request submitted on a form supplied by the City by the subdivider for waiver from specified development standards found in the *Subdivision Design Manual*.

54. *Slope.* The vertical rise in feet measured over a horizontal distance of 100-feet, expressed as a percentage, measured generally at right angles to contour lines but which shall not extend across significant changes in grade. A portion of the 100-foot line shall extend across property lines if necessary to obtain the 100-foot measurement at a property line so long as not more than 50-feet shall so extend.

55. *Street*. Any thoroughfare, avenue, boulevard, road, lane, parkway, place, viaduct, easement for access, or other way that is an existing state, county, or municipal

roadway; or a street or way shown in a plat heretofore approved pursuant to law or approved by official action; or a street or way in a plat duly filed and recorded in the County Recorder's office. A street includes the land between the right-of-way lines whether improved or unimproved and may comprise pavement, shoulders, curbs, gutters, sidewalks, parking areas, landscaping, and above and below ground utilities.

a. Arterial Street. A general term including freeways, expressways, and major or minor arterial streets; and interstate, state, or county highways having regional continuity.

b. Collector Street. A public thoroughfare that provides for traffic movement within neighborhoods and between major streets and local streets with direct access to abutting property.

c. Local Street. A public thoroughfare that provides direct access to residential, commercial industrial, or other abutting land. It provides for local traffic movements and connects to collector and/or major streets.

d. Marginal Access Street or Frontage Road. A minor street parallel and adjacent to an arterial route, which provides access to abutting property and intercepts local streets and controls, access to an arterial route.

e. Cul-de-sac. A short local street having one end permanently terminated in a vehicular turnaround.

f. Alley. A public service way used to provide secondary vehicular access to properties otherwise abutting upon a street.

56. *Street Classification System*. A part of the Transportation Element of the Peoria General Plan that provides a system for identification of the hierarchy of major streets and highways, including the location and alignment of existing and proposed thoroughfares. The system is the City's guide for right-of-way and dedication requirements for individual streets.

57. *Structure.* That which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

58. *Subdivider.* The individual, firm, corporation, partnership, association, syndication, trust, or other legal entity that files the application and initiates proceedings for the subdivision of land in accordance with the provisions of this ordinance. The subdivider need not be the owner of the property as defined by this ordinance.

59. *Subdivision.* Subdivision means:

    a. The division of lands into four or more lots, tracts or parcels of land for the purpose of sale or lease; or,

    b. If a new street or private roadway easement is involved, any property which is divided into two or more lots, tracts or parcels of land; or,

    c. Any property, the boundaries of which have been fixed by a recorded plat, which is divided into more than two parts.

60. *Subdivision Committee*. A committee of City professional staff persons appointed by the City Manager, and ratified by the City Council, to review and approve preliminary plat applications and Requests for Waiver.

61. *Supplemental Standard Details*. The City of Peoria Supplement to MAG Uniform Standard Details have been prepared and adopted by City of Peoria, as a supplement to the 1998 Edition of the Uniform Standard Details for Public Works Construction (MAG Standards) as Sponsored and Distributed by the Maricopa Association of Governments.

62. *Tract*. (1) A parcel of land or area of land appropriate for subdivision, or (2) a parcel of land included within a subdivision for a specified purpose other than that proposed for the lots in the subdivision.

63. *Usable Lot Area*. That portion of a lot usable for or adaptable to normal uses of residential property, excluding any areas which may be covered by water, excessively steep, or included in certain types of easements.

64. *Utilities*. Underground or overhead facilities used for provision of public electricity, gas, steam, communications, water, drainage, sewage disposal, or flood control, owned and operated by any person, firm, corporation, municipal department, or board, duly authorized by state or municipal regulations. Utility or utilities as used herein may also refer to such persons, firms, corporations, departments, or boards involved in supplying these services.

SECTION B

SUBDIVISION DESIGN AND SUBMITTAL STANDARDS FOR PRELIMINARY AND FINAL PLATS

Section B contains standards for design and submittal of required documents and maps associated with the Preliminary Plat application and Final Plat application.

B-1 INFORMATION REQUIRED FOR PRELIMINARY PLAT SUBMITTAL

Preliminary Plat submittals shall be made to the Planning Department. Preliminary Plats shall be in conformance with the Subdivision Ordinance and the Residential Design Review Manual.

B–2 INFORMATION REQUIRED FOR FINAL PLAT SUBMITTAL

A. Review Submittal Requirements

The following items must be submitted to the Engineering Department in order to accommodate a timely review of the Final Plat/Map of Dedication:

1. A fully completed Submittal Application Form.
2. Final Plat/Map of Dedication Review Fee.
3. A fully completed Application Contact Form.
4. A fully completed Ownership Verification Form.
5. An 8 ½" × 11" copy of the legal description of the Final Plat/Map of Dedication boundary lines.
6. A copy of the computer closure for the subdivision boundary and individual lots properly stamped and signed showing registration number.
7. Approved copy of the Preliminary Plat.
8. Copy of the Approved Preliminary Plat conditions/comments.
9. The Final Plat/Map of Dedication shall be prepared according to the Maricopa County Recorder "Map Recordation Criteria".
10. 12 folded copies of the Final Plat/Map of Dedication, 24" x 36".
11. Phase I Environmental Site Assessment (as required).
12. Copy of current Title Report (within 30-days).
13. Copy of current ALTA Survey (within six-months).

B. Recording Requirements

The subdivider shall make all required corrections to the Final Plat/Map of Dedication (MOD), prior to submitting for Council action. The submittal shall include:

1. Three Mylar copies of the Final Plat/MOD shall be submitted to the City for recording. Following recordation the copies are to be distributed as follows:

    - One copy – City of Peoria
    - One copy – Maricopa County Recorders Office
    - One Copy - Owner

3. One check payable to the City of Peoria:

    - The check will include courier fees and recording fees.

4. All type and signatures must be in black ink. No ball point pens.

5. All stamps/seals must be clearly legible and not smeared. If the stamps/seals are smeared or illegible, the Final Plat/MOD will be returned to the engineer/developer for correction.

6. One 8 ½" x 11" of all sheets (all sheets of Final Plat/MOD and vicinity map).

7. Electronic file of the approved version of the Final Plat.

8. The Final Assurance and Agreement to Install for construction of the infrastructure improvements off-site and on-site, including but not limited to water, sewer, street lights, grading and drainage, paving, curb, gutter, sidewalk, drainage features, and signing and striping, must be posted with the City in accordance with the City of Peoria Subdivision Regulations, prior to recordation of the Final Plat.

C. Final Plat Format.

1. The recorded plat shall be drawn on a Mylar sheet of 24-inches by 36-inches dimensions.

2. Copies of the recorded plat shall be reproduced in the form of blue line or black line prints on a white background.

3. The plat shall be drawn to an accurate scale having not more than 100-feet to an inch.

4. The plat shall be prepared and sealed by a land surveyor registered to practice in the State of Arizona.

5. All necessary rights-of-way and easements (public water, public sewer etc.) shall be dedicated on a Final Plat or MOD. Deviations from this policy are required in writing from the Engineering Department.

D. Identification Data Required.

Basic identification data shall be provided regarding the subdivision and land surveyor.

1. The Final Plat shall contain a title block that includes the name and location of the subdivision and its legal description by number of section, township, range, and county.

2. The title block shall also contain the name, address and registration number of seal of the registered land surveyor preparing the plat.

3. The plat map shall contain a scale, north arrow, and date of plat preparation.

E. Survey Data Required.

Data from a survey of the area to be subdivided shall be required as part of the Final Plat submittal.

1. Boundaries of the tract to be subdivided shall be fully balanced and closed, showing all bearings and distances, determined by an accurate survey in the field. All dimensions shall be expressed in feet and decimals of feet.

2. Any excepted parcels within the plat boundaries shall be located showing all bearings and distances, determined by an accurate survey in the field. All dimensions shall be expressed in feet and decimals of feet.

3. Location and description of cardinal points to which all dimensions, angles, bearings, and similar data on the plat shall be referenced; each of two corners of the subdivision traverse shall be tied by bearing and distance to two separate section corners or quarter-section corners.

4. All existing adjacent plats shall be referenced to the location of monument corners.

5. Location of all physical encroachments upon the boundaries of the tract shall be identified.

6. A sealed copy of a computer printout or all material involved in a hand calculated boundary traverse survey of the tract shall be included with the plat submittal.

7. A copy of a current title report (dated within 30 days of the submittal).

8. Copy of a current ALTA Survey (within six months).

F. Descriptive Data Required.

Data depicting physical attributes and parcel dimensions of land being subdivided shall be part of the Final Plat submittal.

1. The name, right-of-way lines, courses, length, width of all public streets, alleys, crosswalks and utility easements radii, points of tangency, and central angles of all curvilinear streets and alleys, radii of all rounded street line intersections shall be included on the map.

2. All drainageways shall be shown on the plat. The right-of-way of all major drainageways, flood plains, floodways, probable maximum flood boundaries, etc., as approved by the City of Peoria Engineering Department, shall be shown as dedicated.

3. All unobstructed view easements and sight distance triangles shall be shown at all intersections on all Final Plats.

4. The location and dimensions of all residential lots shall be shown on the map. Proposed subdivisions for single family dwellings shall provide a table identifying the lot area in square feet for each lot.

5. All residential lots shall be individually numbered by consecutive numbers throughout the plat. "Exceptions," "tracts," "common areas," and "private parks" shall be so designated, lettered, or named and clearly dimensioned.

6. The location, dimensions, bearings, radii, arcs, and central angles of all sites to be dedicated to the public shall be shown on the map with the use clearly indicated.

7. The location of all adjoining subdivisions with date, book, and page number of recordation noted, or if unrecorded, so marked and noted on the map.

8. Any proposed private deed restrictions to be imposed upon the plat or any part or parts thereof pertaining to the intended use of the land shall be typewritten and attached to the plat and to each copy submitted.

G. <u>Dedication and Acknowledgment.</u>

1. A statement of dedication of all streets, alleys, drainageways, pedestrian ways, and other tracts and/or easements for public use by the person holding title of record, by persons holding title as venders under land contract and by spouses of said parties shall be required as part of the Final Plat submittal. Mortgaged land to be dedicated shall require the signature of the mortgagee. Dedication shall include a verbal legal description including the section, township, and range in which the tract is located.

2. Private streets contained in the plat shall have the right reserved to public utilities to install and maintain facilities within the street boundaries. Private streets shall be dedicated as tracts.

   A provision shall be included in the Dedications Statement for private streets/access which reads: "A public utilities easement, public water easement, public sewer easement, ingress and egress for refuse collection, emergency and service type access are hereby dedicated over Tract (insert tract letter)."

3. A provision shall be included in the Dedication Statement for private streets/access which reads: "Tract(s) (insert tract letter(s)) are hereby dedicated to and owned by the Homeowners Association (HOA) for the purpose of private streets/access. The homeowners association is responsible for maintenance of the private streets/access."

4. Landscaped areas within the boundaries of private streets to be maintained by a Homeowners Association and tracts in common ownership or owned and maintained by a Homeowners Association shall be contained within an easement. The easement(s) are required as part of the formation of the Maintenance Improvement District (MID).

As such, the dedication statement shall include a provisions that reads: "The City of Peoria is hereby given an easement for maintenance of landscaping, retention and drainage facilities on Tract(s) (insert tract letters). This easement may be exercised by the City of Peoria at such time that the HOA fails to exist and provide the required maintenance and operation of the landscaping, retention and drainage facilities. As long as the HOA is in existence, it will be responsible for providing all maintenance of landscaping, retention and drainage facilities, regardless of the dedication of the easement."

5. Temporary easements, landscaped easements and/or utility easements to be abandoned shall be shown on the plat and labeled "Abandoned." A roadway right-of-way or easement may be placed on the plat for abandonment in accordance with state law and City approval. Verbiage for abandonment shall be included in the dedication statement.

6. A provision shall be included in the dedication statement for dedication of water and sewer easements which reads, "(Insert name of corporation, partnership or owner), Grantor, do hereby grant to the City of Peoria, an Arizona Municipal Corporation, in Maricopa County, Arizona, its successors, and assigns a permanent and perpetual easement for the following purposes, namely: The right to enter upon for construction, maintenance, operation and replacement of a (sewer line/water line) over, under, and across the easement area designated on the Final Plat. The said easement also includes the right for the City of Peoria to cut back and trim such portion of branches and tops of the trees now growing or that may hereafter grow upon the designated easement area, as may extend over said easement, so as to prevent the same from interfering with the efficient maintenance an operation of said (sewer line/water line). The City of Peoria shall not be responsible for replacing any landscaping or any improvement placed within the easement by Grantor or its successors or assigns. The City of Peoria will make reasonable efforts to promptly restore asphaltic concrete pavement surfaces.

   The Grantor, its successors or assigns at its sole cost, shall be responsible for promptly replacing any asphalt, landscaping or any improvement placed within the easement by Grantor or its successors or assigns.

   Execution of dedication shall be acknowledged and certified by a notary public.

H. Required Certifications.

1. The registered land surveyor who prepared the Final Plat map shall provide certification on the Final Plat map that the plat is correct and accurate, and that the monuments described in it have been either set or located as described. All maps shall contain the seal of a registered land surveyor, as per Arizona Revised Statutes (ARS).

2. The subdivider shall certify that rules as may be established by the state department of transportation relating to provisions for the safety of entrance upon and departure from abutting state primary highways have been followed as applicable.

3. The subdivider shall certify that rules as may be established by the Flood Control District of Maricopa County relating to the construction or prevention of construction of streets in land established as being subject to periodic inundation have been followed as applicable.

4. The subdivider shall certify that rules as may be established by the Maricopa County Department of Environmental Services relating to the provision of domestic water supply and sanitary sewer disposal have been followed as applicable.

5. The subdivider shall certify that the requirements of the Peoria Zoning Ordinance and the City of Peoria Infrastructure Design Guidelines have been addressed and followed as applicable.

6. A development located within the service are of a private water service provider shall provide to the City prior to recordation of the Final Plat the following information; a copy of the 100-year assured water supply certification, certification number and date of approval.

I. <u>Required Notes.</u>

The following notes, 1 through 6, shall be placed on each Final Plat.

Notes 7 and 8 shall be included on each Final Plat provided the subdivision is located within the City of Peoria Water and Sewer Service Area.

Senate Bill 1062 became effective July 13, 1995 and was passed to protect military airports from encroachment of urban development. Provisions of Senate Bill 1062 require public disclosure for residential resale, new subdivision and bulk property sales. As such any subdivision located within the vicinity of a military airport shall include note 9.

Note 10 is required if the subdivision is located in the vicinity of a City of Peoria Designated Truck Route. The specific streets designated as a truck route shall be listed. Note 11 is required if the subdivision is located within the vicinity of a rock quarry or a gravel operation.

1. The subdivision is subject to a Maintenance Improvement District (MID) _____ and Street Light Improvement District (SLID) _____, and a Fire Improvement District (FID) _____, as required.

2. No construction of any kind shall be constructed or placed within the utility easements, except utilities, wood, wire, or removable section type fencing, and/or paving, nor any planting except grass. It shall be further understood that the City of Peoria shall not be required to, replace any obstruction or planting that must be removed during the course of maintenance, construction or reconstruction.

3. All new and existing utility, electrical facilities less than 69 KVA, cable T.V., telecommunications fiber optics, cellular, gas, etc shall be installed underground as part of the street improvements.

4. Maintenance of surface and underground drainage facilities within all tracts, easements and rights-of-way shall be the responsibility of the Homeowners Association.

5. All lot corners shall be monumented with ½" rebar and capped or tagged bearing the registration number of the surveyor responsible for their placement.

6. Signs, fences, walls, utility boxes, structures, shrubs, hedges or other plants, but excluding trees over 30-inches in height shall not be permitted within view easements or the sight distance triangles. No limbs, leaves, needles or other foliage above 30-inches in height or below 84-inches are permitted. Trees are to be planted so as not to obstruct 20% of the visibility when combined with other obstructions.

7. This subdivision is located within the City of Peoria Water Service Area and has been designated as having a 100-year assured water supply. In cases of private water

companies, the note shall read: This subdivision is located within the (insert private company name) Water Service Area and has been designated as having a 100-year assured water supply. (Insert Certification # and date of approval by Arizona Department of Water Resources).

8. This subdivision is located within the City of Peoria Sewer Service Area.

9. This subdivision is located within the vicinity of a military airport.

10. This subdivision is located in the vicinity of a designated truck route. (Insert the name of the street(s)) is/are designated as a Truck Route by the City of Peoria.

11. This subdivision is located in the vicinity of a Rock Quarry (Gravel Operation).

12. No structure of any kind be constructed or any vegetation be planted, nor be allowed to grow within the drainage easement or tract, which would impede the flow of water over, under, or through the easement or tract.

13. An association, including all property owners in the development, will be formed and have the responsibility for maintaining all common areas to be noted as “Tracts” or easements (including landscaped areas and drainage facilities) in accordance with approved plans.

14. Maximum building envelope on each lot is _____.

15. Hillside lots will require individual hillside development review by the City’s planning department prior to the issuance of a building permit.

J. Signature Block.

A signature block for the signatures of the City Engineer, Mayor, and Owner shall be included.

K. Legibility.

Any seal, detail, note or other item required for inclusion on the final plat shall be clearly legible. Failure to provide legible details on a final plat shall be considered an incomplete submittal.

SECTION C

GENERAL DESIGN PRINCIPLES AND DEVELOPMENT STANDARDS

C-1 CONFORMANCE WITH CITY POLICY

Subdivisions and street and engineering design shall conform to the goals, objectives and provisions as stated in adopted City policy. City policies are found in the Peoria General Plan, the Peoria Zoning Ordinance, the City of Peoria Design Review Manual, City of Peoria Infrastructure Design Guidelines, and other ordinances and regulations of the City, and to the Arizona Revised Statutes.

Subdivision design is dependent on the character of the subdivision, topography and other physical and density factors. In general, urban density of three or more lots per gross acre must have urban street and utility improvements. "Urban improvements" is interpreted to mean paved streets with curbs and gutters, sidewalks, landscaping, local storm drainage system, underground utilities, streetlights, public sanitary sewage systems and public water systems.

C-2 SUBDIVISION POLICIES

A. Public Sites.

A subdivision containing all or any part of the site of a park, school, flood control facility, or other public area as identified in the City's General Plan, shall provide for dedication of such site(s) to the public or reserved for acquisition by the public for the period of time specified under state law.

B. Lands Subject to Flooding.

Land that is subject to periodic flooding, land that cannot be properly drained or other land which, in the opinion of the Engineering Director is unsuitable for the proposed use shall not be subdivided. The Engineering Director may approve subdivision of such land upon receipt of evidence from the Maricopa County Flood Control District that the construction of specific improvements can be expected to render the land suitable. Construction upon such land thereafter shall be prohibited until the specified improvements have been planned and construction guaranteed.

C-3 STREET POLICIES

A. Conformance with Street Classification System.

Any part of a street alignment or design in a subdivision shall conform to the Street Classification System adopted by the City of Peoria.

B. Continuation of Streets.

The street layout shall provide for the continuation or discontinuation of streets in furtherance of City policy with respect to neighborhood traffic circulation design. Street continuation design is subject to review and approval by the Department.

C. Conformance with Neighborhood Plans and Specific Plans.

The street layout plan for a subdivision shall include the application of circulation elements of neighborhood plans or specific plans of which the area to be subdivided is a part.

D. Connection with Future Streets.

The Subdivision Committee may designate certain street alignments to be extended to the tract boundary to provide future connection with adjoining unplatted lands.

E. Through Traffic Mitigation.

Public and private local streets shall be designed to encourage local traffic and discourage through traffic by incorporating design strategies included in the City of Peoria Design Review Manual or as approved by the Engineering Director.

F. Frontage Roads.

Where a proposed subdivision abuts or contains an existing or proposed arterial route, the Subdivision Committee may require frontage roads or reverse frontage with non-access easements along the arterial route, or such other treatment as may be justified for protection of residential properties from the nuisance and hazard of high volume traffic, and to preserve the traffic function of the arterial route.

G. Sound Study Required.

A sound study shall be required where a proposed subdivision abuts a parkway, arterial or abuts and/or contains an existing or proposed truck route. Specifications and scope of the study shall be prepared in accordance with Arizona Department of Transportation, Noise Abatement Policy. The study shall analyze 2040 noise levels along the adjacent roadways.

Any subsequent sound wall recommendations shall be designed and included on the engineering drawings and installed. The minimum standard height shall be 8-feet; however, the actual height shall be determined by the results of the sound study. The measurement of the wall height shall be from the top of curb of the parkway or arterial.

H. Traffic Study Required.

A traffic study shall be required where a proposed subdivision abuts an existing or proposed arterial street or for any proposed development that is anticipated to generate 100 or more trips per day. The traffic study shall be prepared in accordance with the Traffic Impact Study (TIS) Criteria specification published by the Engineering Director.

I. Street Design for Subdivisions Located Adjacent to Impediments.

Where a subdivision abuts or contains the right-of-way of a railroad, a limited access highway, an irrigation canal or other physical impediment, or abuts a commercial or industrial land use, the Subdivision Committee may recommend location of a street approximately parallel to and on each side of such right-of-way at a distance suitable for appropriate use of the intervening land. Such distance shall be determined with due regard for approach grades, drainage, bridges, or future grade separations.

J. Street Design in Relation to Topography.

Streets shall be so arranged in relation to existing topography as to produce desirable lots of maximum utility, streets of reasonable gradient and facilitation of efficient drainage patterns.

K. Alleys.

Alleys may be included but shall not be required in residential, commercial, or industrial subdivisions, except that alleys shall be required in all subdivisions where:

1. The subdivision abuts an existing, partially dedicated alley(s).

2. Extension of an alley(s) from an adjoining subdivision is required to complete the established circulation pattern.

L. Streets Connecting Adjoining Neighborhoods.

Local streets shall be extended to provide access between adjoining neighborhoods at appropriate intervals. Half streets at subdivision boundaries shall be discouraged except where necessary for continuation of existing patterns. Platted half-streets abutting the tract to be subdivided and furnishing the sole access to residential lots shall be platted within the tract.

C-4 LOT PLANNING AND DESIGN

A. Lot and Block Dimensions.

1. Lot width, depth, area, and building setbacks shall comply with the minimum requirements of the Peoria Zoning Ordinance and shall be appropriate for the location and character of the proposed development, and for the type and extent of street and utility improvements being installed.

2. Maximum length of blocks, measured along the centerline of the street, and between intersecting street centerlines shall be 900-feet. The length can be extended to a maximum of 1500-feet with curvilinear design. These maximum lengths may be exceeded by up to 500-feet with approval of a Request for Waiver. Cul-de-sacs shall not exceed 400-feet in length.

B. Relationship of Lots to Streets.

1. Side lot lines shall be substantially at right angles or radial to street lines.

2. Every lot shall abut upon a public street or private street or access way designed and appropriate for providing vehicular access.

3. Lot lines for private streets constructed to less than City street standards shall be extended to the center of the street. Net lot area, for conformance with the minimum required lot area for the zoning district, shall not include the street easement or tract area.

4. Single-family residential lots extending through the block and having frontage on two parallel streets shall not be permitted except where the second street is designated as a collector or arterial street. The rear lot line of through lots shall be buffered as provided in Section 24-123 (b)(7) of the Peoria City Code.

C. Utility Easement Planning.

1. Where alleys are provided, four-foot aerial overhead easements on each side of alley shall be provided by dedication.

2. Guy and anchor easements shall be one-foot wide on each side of a lot line and approximately 35-feet in length measured from the rear lot line.

3. An eight-foot Public Utility Easement (PUE) shall be dedicated along both sides of all streets, including arterial streets, adjacent to the right-of- way or private street/access way.

4. The Lake Pleasant Parkway Corridor Land Use Plan requires the dedication of a scenic corridor buffer along the right-of-way line of 15-feet within the Urban Section, 30-feet in the Suburban Section, and 50-feet in the Rural Section. Refer to the Lake Pleasant Parkway Corridor Land Use Plan for further details.

5. For lots facing on curvilinear streets, utility easements may consist of a series of straight lines with points of deflection not less than 120-feet apart. Points of deflection should always occur at the junction of side and rear lot lines on the side of the exterior angle. Curvilinear designs for easements and alleys may be provided and shall be designed with a minimum radius for the easement or alley of not less than 800-feet.

6. A public drainage easement shall be required for streams, basins, lakes, golf courses, significant surface drainage courses or other watercourses that abut or cross the tract and accept drainage from public areas. Dedication of an easement with sufficient width to permit widening, deepening, relocating, or protecting the watercourse shall be required. The minimum dimension of the width of a public drainage easement is 50-feet.

7. Land within a public street or drainage easement or land within a utility easement for major power transmission lines or pipelines shall not be considered a part of the minimum required lot area. This shall not be construed as applicable to land involved in utility easements for distribution or service purposes.

8. Lots arranged with the rear property line adjacent to major streets, railroads, canals, or non-residential districts shall have, the rear one foot of which shall be recorded as a vehicular non-access easement.

9. Tracts with park or open space use designations shall contain a one-foot Vehicular Non Access Easement (VNAE) along the borders of the tract. The VNAE shall be written so as to allow access only to maintenance vehicles.

10. Trees shall not be located within water and sewer easements.

SECTION D

SUBDIVISION AND STREET DESIGN AND SUBMITTAL STANDARDS IN HILLSIDE DEVELOPMENT AREAS

D-1 PRELIMINARY PLAT DESIGN AND SUBMITTAL STANDARDS IN HILLSIDE DEVELOPMENT AREAS

Hillside Development Areas contain slopes in excess of 10% and special requirements for development in these areas are found in the City's Hillside Development Ordinance. Additional submittals shall be required for preliminary plat applications located in these sensitive areas. Where possible and appropriate the combining of submittals and maps may be acceptable on less complex lots and site conditions. The maximum number of lots allowed in a Hillside Development Area shall be as provided in Article 14-22A of the Peoria City Code.

A. Topography.

A topographic map of the existing terrain overlaid by the proposed subdivision lot arrangement shall be submitted with the application package containing contour intervals as follows.

1. Two-foot intervals for grades less than 20%.

2. Five-foot intervals for grades greater than 20%.

3. Elevations of critical spots, rock outcrops and special characteristics.

B. Excavation, Grading and Drainage.

An overall excavation, grading and drainage plan shall be prepared and submitted in accordance with good, sound professional engineering practices, Section 20-250 et seq. of the Peoria City Code and the International Building Code as adopted by the City of Peoria. Said plans shall be prepared and certified by a professional engineer registered in the State of Arizona. Peak flow calculations for a 100-year storm event shall be provided for all drainage structures or culverts. Storm water diverted from its original drainage pattern shall be returned to its natural course before leaving the property. The plan shall also contain the location and details of proposed retaining walls.

C. Excavation, Grading and Drainage Maps for Individual Lots.

A topographic map of each lot that contains slopes greater than 10% shall be prepared and submitted with the application. The map shall be at an appropriate scale on a 24" x 36" sheet presenting the total lot and a 20-foot area beyond the property line. This map shall show existing and proposed finished contours at two-foot intervals within a 20-foot perimeter from any proposed building, 10-foot intervals elsewhere. Existing contours shall be shown with dashed lines. The plan shall conform to the requirements of the Residential Design Review Manual, Section 20-250 et seq. of the Peoria City Code and the Uniform Building Code as adopted by the City. This map shall identify:

1. Limits of excavation and fill

2. Slope of cut and fill

3. Total cubic yards of excavation and fill

4. The location and area of proposed sewage disposal systems, if public sewers are not provided.

D. Site Plans for Individual Lots.

A detailed site plan of individual lots using the same mapping format as specified in *C* above, and in compliance with Article 14-22A of the Peoria Zoning Ordinance, shall also be submitted with the application and shall show, but not limited to, the following:

1. Grade and slope in percent at all proposed disturbed areas

2. Dimensions and calculations of all cut and fill for the disturbed areas, building site, roads, and drives

3. The proposed methods of concealment for each fill or exposed cut

4. The proposed location and grade of all drainage channels, swales, drain pipes, etc.

5. Cross sections at 1:1 scale, at two or more locations perpendicular to the contours through the building site. Location of the cross-sections shall be clearly shown on the topographic map. Properties impacting ridge lines shall provide additional cross-sections indicating relation and impact on such ridgelines as established in Section 14-22A-11.

E. Conservation Easements, Open Spaces, Or Public Dedications.

The location of existing and proposed conservation easements, open spaces, or public dedications shall be shown on the plat.

F. Geological Report.

A report by a licensed geologist or engineer to determine and document any geological hazard and soil bearing quality may be required by the Subdivision Committee.

D-2 FINAL PLAT DESIGN AND SUBMITTAL STANDARDS IN HILLSIDE DEVELOPMENT AREAS

Final Plats located in Hillside Development Areas shall be in compliance with the provisions of Article 14-22A of the Peoria Zoning Ordinance. Preliminary maps and submittals included as part of the preliminary plat application shall be prepared in final form and submitted as part of the Final Plat application. Where possible and appropriate the combining of final maps may be acceptable on less complex lots and site conditions. Disturbed areas shall be shown for each lot on the plat.

Custom Lots which will be developed individually after the proposed subdivision infrastructure is complete shall require an individual grading and drainage plan prepared by an Arizona Registered Professional Engineer.

A. Final Topographic Map.

A detailed topographic map shall be submitted containing final locations of proposed streets, driveways, buildings, utility, or grading construction with appropriate cross sections or profiles.

B. Final Excavation, Grading and Drainage Plan.

A final excavation, grading and drainage plan approved by the Subdivision Committee and the Department shall be submitted with the Final Plat application.

C. Final Excavation, Grading and Drainage Plans for Individual Lots.

A final grading and drainage plan for each lot approved by the Subdivision Committee shall be submitted as part of the Final Plat application.

D. Final Site Plan for Each Individual Lot.

A final Site Plan for each lot, in compliance with Article 14-22A of the Peoria Zoning Ordinance and approved by the Subdivision Committee, shall be submitted as part of the Final Plat application and shall contain the following approved components:

1. final dimensions of disturbed areas,

2. final dimensions and calculations of all cuts and fills for the disturbed areas, building site, roads, and drives,

3. the approved methods of concealment for each fill or exposed cut.

4. final locations and grades of all drainage channels, swales, drain pipes, etc., and

5. final approved cross sections and cross section locations.

D-3 SPECIAL STREET AND LOT DESIGN STANDARDS IN HILLSIDE DEVELOPMENT AREAS

Each Preliminary Plat application shall be accompanied by preliminary engineering drawings. The drawings shall be prepared by a civil engineer registered to practice in the state of Arizona. Subdivisions proposed for Hillside Development Areas shall include engineering drawings that address special design needs for sloped areas. The drawings shall be reviewed and approved by the Engineering Director prior to approval of the Final Plat.

A. Miscellaneous Specifications.

1. Vision obstructions above a height of three feet above the grade of either street at intersections shall not be allowed within the vision triangle area, an area formed by the right-of-way lines of each street and a line joining points 33-feet from the point of intersection of the right-of-way lines.

2. ”Flag", double frontage, and other unorthodox lots shall be permitted so long as it can be adequately demonstrated that this design will eliminate excessive cuts and fills and that no lot will be adversely affected by any other lot so arranged. The access area on “Flag” lots on which driveways are located shall not be included in the calculations of the required lot area.

3. Private access ways may be permitted to provide access to lots in lieu of the required street frontage. Each private access way serving one lot shall be a minimum of 20-feet wide with a minimum paved surface of 12-feet in width, and each private access way serving more than one lot shall have a minimum paved surface of 24-feet in width. Where needed, additional easements for draining or utilities shall be provided.

4. Building sites shall be located in accordance with recommendations of any required soils or geologic report and shall be free of any geological hazards or unsuitable soil conditions.

5. Retaining walls shall not be higher than six-feet as measured from the grade of the natural ground at the bottom of the wall; any additional retaining walls shall be set back from the first wall a minimum of four feet horizontally. Retaining walls over four feet in height shall be set back an additional one foot horizontal for every one foot vertical. The area between the retaining wall shall be landscaped with screening plant material and an appropriate watering system.

6. Residential Design Review Standards (refer to City of Peoria Design Review Manual) shall be incorporated into the overall subdivision design as well as the individual lot design for subdivisions with more than 20 lots.

7. All utilities, including electric lines with less than 69kv rating and telephone and cable TV service lines shall be installed underground in the streets and/or private access ways.

D-4 GRADING AND DRAINAGE STANDARDS IN HILLSIDE DEVELOPMENT AREAS

A. Approved Grading and Drainage Plan Required.

A grading and drainage plan shall be approved by the Department prior to any clearing, grubbing or grading activity within a Hillside Development Area as defined in section 14-24A of the Zoning Ordinance. The area identified on the plan as approved for grading shall contain the following note: "Grading shall occur within the specified Disturbed Area only. The Disturbed Area shall be identified with a red or yellow plastic tape barrier installed at the site."

B. Limitation on Area Allowed for Grading.

The total area of all lot grading in a Hillside Development Area, including all areas required for driveways, swimming pools and decking, recreation course and patios shall not exceed the ratios provided in Section 14-22A –5 of the Peoria Zoning Ordinance.

C. Management of Excavated Material Blended Coloration, or Landscape Treatment Required.

1. All excavated material shall be removed from the premises, maintained behind retaining walls, or placed onsite.

2. All excavated material placed onsite shall be graded and landscaped so that the slopes of any fill material shall not be visible from any public street or private access way. All cut slopes shall be chemically color treated to blend with the adjacent rock or desert.

D. Management of Retaining Walls.

Retaining walls shall be shown on the grading and drainage plans.

1. The landscaped areas between the retaining walls shall not be included in the calculation of the maximum total disturbed area allowed under 14-22A of the Peoria Zoning Ordinance when the walls, and areas between the walls, are located in the right-of-way and used to minimize cut or fill slopes.

2. Retaining walls shall be used for the purpose of containing fill material or for minimizing cut or fill slopes. They shall not be used to terrace or otherwise alter natural terrain.

E. Limitation on Location of Roadway Cut and Fill Slopes.

All roadway cut and fill slopes shall be located within the right-of-way, roadway easement, or slope easement. The Engineering Director may require slope maintenance easements for roadway cuts and fills.

SECTION E

STREET AND UTILITY IMPROVEMENT REQUIREMENTS

It is the purpose of this section to establish in outline the minimum acceptable standards for improvement of public streets and utilities; to define the responsibility of the subdivider in the planning, construction, and financing of public improvements; and to establish procedures for review and approval of engineering plans.

E-1 ENGINEERED PLANS

The subdivider shall prepare a complete set of engineering drawings for construction of streets, public water and sanitary sewer facilities, drainage, and for construction of all other required improvements.

A. Engineering Plan Preparation.

1. Preliminary plans shall be prepared in conjunction with the Preliminary Plat submittal and final draft plans submitted with the Final Plat submittal.

2. The plans shall be prepared by a civil engineer registered in the state of Arizona and reviewed for approval by the Engineering Director.

3. All engineering plans shall be approved by the City Engineer prior to approval of the Final Plat by the City Council. A certification approving engineering plans signed by the Engineering Director shall be filed with the City Clerk.

B. National Flood Insurance Program.

Engineering plans for drainage facilities in areas of special flood hazard, or which alter areas of special flood hazard shall be approved by the Engineering Director for general conformance to the National Flood Insurance Program and related regulations.

E-2 STREET IMPROVEMENTS

A. Subdivider's Responsibility of the Required Improvements.

1. All improvements required in streets, alleys, or easements that are required as a condition to plat approval shall be the responsibility of the subdivider; provided, however, that he may be allowed to meet the requirement by participation in an improvement district approved by the Engineering Director.

2. The subdivider shall repair damages to any existing improvements adjacent to the proposed development caused by the project.

B. Improvements on Abutting Streets.

1. Where all properties abutting an existing public street within any given block are not under the control of the subdivider, and the street abutting such properties is not fully improved in accordance with the city standards, the subdivider shall construct the required improvements and obtain a "scallop street" or pay back agreement with the City for the improvements.

2. The subdivision shall have as its primary access, a paved public road between its boundary and an existing, public, paved road that has been constructed to City standards.

SECTION F

PHASING PLANS

A subdivision that will be constructed in phases shall have an approved phasing plan.

F-1 INFORMATION REQUIRED FOR PHASING PLAN SUBMITTAL

A. Phasing Map

A map of the entire proposed subdivision shall be submitted containing all information included on the preliminary plat map.

B. Phasing Description

A narrative shall be submitted with the phasing plan application describing each phase with specific identification of the following.

1. All lots, tracts, easements, common areas and other land within each phase.

2. All streets, private streets, alleys and other rights-of-way within each phase, and

3. All utilities, including water, sewer and drainage within each phase.

4. A description of schedule and sequencing of the proposed phases and how significant delays in completion of the subdivision and its public improvements will be mitigated.

C. Abandonment Contingency Plan

The phasing plan submittal shall contain narrative describing plans for completing critical improvements should there be a termination of subdivision work or improvements for a period of six months.

F-2 PHASING PLAN APPROVAL

A. Preliminary Approval

The Subdivision Committee shall consider the preliminary phasing plan as part of the review and consideration of the preliminary plat.

B. Final Approval

1. The final phasing plan shall be submitted in substantially the same form as the form receiving preliminary approval.

2. The final phasing plan shall be approved by the Subdivision Committee prior to submittal of the Final Plat to the City Council.

F-3 IMPLEMENTATION OF THE FINAL PHASING PLAN

A. Installation of Improvements

All improvements shall be installed in accordance with the time and sequencing schedule included in the phasing plan for each phase of the subdivision.

B. Phasing Plan Modifications

Major modifications to the Final Phasing Plan shall be proposed as a Request for Waiver.

C. Installation of Ultimate Street Improvements upon Abandonment

Termination of lot development or public improvements for a period of six months shall be considered abandonment of the project. The owner or developer shall be required to install the improvements identified in the abandonment contingency plan. The City may complete the required improvements if the owner or developer is unable.

D. Subdivision Committee Approval for Re-starting a Subdivision Abandoned for Six Months

The owner or developer of a subdivision abandoned for a period of six months shall receive approval of a Request for Waiver approving modifications to the Final Phasing Plan schedule and sequencing prior to re-starting the project.

SECTION G

ADMINISTRATIVE CHANGES TO A RECORDED PLAT

Minor changes may be accomplished without re-recording the subdivision plat through the Certificate of Correction administrative process. Allowable changes under this process are engineering errors and name changes, typographical errors, misspellings, etc. Administration changes to the recorded plat must be reviewed by the Engineering Department, prior to recording.

A. Engineering Error Classification.

1. The proposed change is an obvious engineering error and not a design error; and

2. The correction does not change or relocate any parcel or easement boundary or line, or change the legal description or the land area included in the subdivision.

B. Procedure.

1. The subdivider shall file an application for Certificate of Correction or Change with all necessary back-up information and application fee.

2. The application shall contain a form with the following information:

   a. The corrections and/or changes requested

   b. The date that the plat was recorded

   c. The docket and/or page number of the plat that is to be modified

   d. Written consent to the correction or change by the current owners of record of all of the property affected by the correction or change (as shown by a title report furnished by the owner and prepared within thirty days prior to the filing of the Certificate of Correction or change)

   e. Signature line for approval by the Engineering Director

3. The City Engineer shall review and approve the application as appropriate. The subdivider shall have the Certificate recorded in the Office of the Maricopa County Recorder with copies of the recorded Certificate forwarded to the Office of the City Clerk and the City Engineer.

SECTION H

MINOR LAND DIVISION PROCESS

The Minor Land Division map process generally is an administrative process with map approval granted by the Engineering Department staff. The review/approval process is generally intended to ensure that the proposed division or future division of land will result in lots which meet minimum area and width requirements of the Zoning Ordinance, produce legally recognized land division (into less than four parcels), and that the required right-of-way dedications are made. A land division of four or more parcels requires the preparation of a plat map.

All rights-of-way and/or easement dedications shall be in accordance with Section 9.5 of the Infrastructure Development Guidelines.

The preparation, submittal, review and approval of all Minor Land Divisions located inside the limits of the City of Peoria shall proceed through the following progressive stages. See the Minor Land Division Process Guide in the appendix.

Stage I. Pre-Application Conference

Stage II. Submittal of Minor Land Division Application

Stage III. Staff review of the application will take four weeks after which comments, if any, will be forwarded to the applicant.

Stage IV. Applicant revision of the map, if necessary and re-submit for review/approval. Staff review of the re-submittal will take approximately three weeks.

Stage V. After all comments on the application have been addressed and if any right-of-way and/or easement dedication instruments have been executed and recorded, staff may approve the map for recording. The rights-of-way and/or easement dedication forms shall be accompanied by a check to Maricopa County to pay for the recording fees and a check to the City of Peoria to pay for the courier fees. Please call (623)-773-7600 for the current amounts.

Stage VI. Upon map approval, a minimum of two Mylar copies of the approved map with original signatures shall be provided for recording. The Mylar's shall be accompanied by a check to the City of Peoria to pay for recording fees and courier fees. Please call (623) 773-7600 for the current amounts.

SECTION I

SUBDIVISION DESIGN PRINCIPLES AND STANDARDS

I-1 PURPOSE

The purpose of the sections of this chapter and the following chapters of the City of Peoria Infrastructure Design Guidelines is to aid owners and developers and their designers, engineers, consultants, and contractors in the planning and design of public and private infrastructure. Design concepts and specific technical data are outlined, however, are not intended to supersede sound engineering and professional judgement. All plans are to be prepared with these concepts in mind and will be reviewed accordingly.

Sections 9, 10, 11, 12, 13, 14 and 15 of this chapter cover general elements of the design, plan review process, construction permits, substantial completion and final acceptance of development projects.

The proceeding chapters of the City of Peoria Infrastructure Design Guidelines cover more specific elements of the design process. It begins with general information, followed by specific technical details. Updates will be published and made available periodically.

The City of Peoria Infrastructure Design Guidelines is intended to be used in conjunction with and is subordinate to the provisions and specifications of the Zoning, Subdivision, Floodplain Management, Building Regulations, Streets and Sidewalk, Traffic, Street Light, Water and Sewage Disposal, Landscape Codes and Ordinances, and other appropriate ordinances of the City of Peoria, and the laws and regulations of such other agencies as may have jurisdiction. Where this City of Peoria Infrastructure Design Guidelines conflicts with these references, the references shall prevail.

Where this City of Peoria Infrastructure Design Guidelines fails to address an item or issues encountered during the pursuit of the design of improvements and construction of the development, the Applicant shall provide written request, addressed to the appropriate Department of the City for consideration, review, comment, and the City shall acknowledge by written approval, before proceeding.

I-2 GENERAL INFORMATION

A. Codes and Standards

All development within the City of Peoria shall comply with all requirements of the Peoria City Code and Ordinances. Copies of these documents, with revisions, are on file in the Office of the Clerk at the City of Peoria. Preliminary and final design plans shall be prepared in accordance with these guidelines unless specific variances have been approved by the City.

All construction shall be in accordance with the City of Peoria Details, Uniform Standard Specifications and Details for Public Works Construction sponsored and published by the Maricopa Association of Governments (MAG) as may be amended by the City herein. Private on-site water and sewer lines shall be constructed in accordance with the Uniform Plumbing Code as adopted by the City, and these provisions.

Private Water Company improvements located within City right-of-way will be inspected by the City in relation to the following items; pipe bedding, trench backfill and results of pressure testing.

B. Plan Review

Once the plans and necessary reports for a development have been prepared, they shall be submitted to the City of Peoria Engineering Department. The Engineering Department will distribute the plans to the appropriate City departments for review and comment. These comments will be compiled, consolidated, and returned to the applicant. All such comments shall be incorporated into the plans and reports by the applicant prior to resubmittal.

C. Right-of-Way/Easements

When required, the acquisition and dedication of new rights-of-way and/or easements shall be coordinated with the Engineering Department. Deeds and other necessary documents for the dedications of rights-of-way, easements and/or parcels shall be prepared by the developer and submitted to the Engineering Department. See the Right-of-Way/Easement Dedications Policy.

D. Street Lights

Streetlights are required on all streets within or adjacent to any proposed development. Street light layout plans for these facilities must be included in the overall submittal, in accordance with the City of Peoria Street Lighting Requirements Ordinance, the IES RP8 model, the Arizona Public Service Company (APS) and Salt River Project (SRP), Standards and Approved Manufacturers for Street Lights. All streetlights must be installed by SRP or APS. The developer is required to hire a professional electrical engineer to prepare the street light layout plans. The plans will be reviewed by the City and once approved copies will be forwarded to APS and/or SRP. The Streetlight Policy will provide more detailed information.

E. Street Light Improvement District (SLID)

Each subdivision is subject to the formation of the Street Light Improvement District for operation and maintenance of the streetlights. The only subdivisions excepted from the formation of a SLID are those dedicating private streets. The Homeowners Association for any subdivision with private streets is responsible to pay all installation, electrical and operation costs associated with the streetlights. See the SLID Policy for more detailed information regarding the formation of a street light improvement district.

F. Maintenance Improvement District (MID)

Each subdivision is subject to the formation of a Maintenance Improvement District for the maintenance of the landscape, irrigation system and drainage facilities located within the rights-of-way, tracts and easements dedicated as part of the Final Plat. The developer is required to submit all information required to form the maintenance improvement prior to recordation of the Final Plat. More detailed information regarding the formation of a Maintenance Improvement District is available in the appendix.

G. Striping and Signage

Each developer is required to install striping and signage on all streets. Striping and signage plans must be included in the overall submittal package. More detailed information regarding striping and signage is available in Chapter 2.

H. Construction

Off-site Construction/Improvement Permits are required for all improvements in accordance with City of Peoria ordinances whether or not they are referenced or stated in this manual. Any contractor found working on a project without an official set of approved plans or a valid permit will be required to discontinue work on Peoria rights-of-way and public utility easements, including development of private property. It is the responsibility of the permit applicant to obtain and fulfill any and all other requirements.

Prior to the issuance of a permit the developer shall provide an acceptable assurance or other guarantee for the off-site improvements as required by the Subdivision Regulations and this Infrastructure Guide.

All construction shall be in accordance with the approved plans, City of Peoria Details, the Uniform Standard Details and Specifications for Public Works Construction, published by the Maricopa Association of Governments (MAG) and this Infrastructure Development Guide, as amended herein by the City.

I. Plan Review Fees

Plan review fees are currently charged on a per sheet basis for first, third and subsequent reviews. All sheets will be reviewed with the initial submittal and the developer will be charged accordingly. The developer will be charged for the actual number of sheets reviewed by the City with third and subsequent submittals. All plan review fees must be paid at the time of submittals. Please call (623) 773-7600 for a listing of current fees.

SECTION J

GENERAL IMPROVEMENT POLICIES

The following sections outline the City's policies related to various improvements associated with the development process. They are by nature general in scope. Reference should be made to the appropriate Chapters within the balance of these guidelines for specific details.

J-1 PLAN SUBMITTAL

A complete set of civil engineering construction plans (water, sewer, storm drain, grading and drainage, paving, etc) for each development (residential, commercial, and industrial) must be submitted to the Engineering Department for review and approval. Improvement plans shall comply with the requirements of Section K. Deficiencies will be noted and the submittal will be returned to the applicant. Incomplete submittals will not be accepted.

The first submittal shall include the following:

- Completed checklist (completed submittal application, contact, ownership verification, 404, etc.). If ownership changes during the approval or construction process, a change in Ownership Verification Form will need to be completed and submitted.
- Check for review fees.
- One copy of the site plan approved by the Planning and Zoning Commission and any P & Z stipulations.
- Twelve copies 12 (24" x 36" folded to 8 ½" x 11") and 1 (8 ½" x 11") of the Final Plat for distribution to City departments. The Final Plat shall match the approved Preliminary Plat. If any changes have been made, the changes shall be noted on a memorandum attached to the each copy of the Final Plat.
- Four sets of Civil Improvement plans to include; 2 full-size (24" x 36"), 1 (11" x 17"), and 1 additional set (11" X 17") of the Water and Sewer plans.
- Three sets of the Striping and Signage Plans.
- Two copies of the preliminary Drainage Report.
- Two copies of the Water Analysis Report, One copy of the Sewer Analysis report, and original Maricopa County Environmental Services Department (MCESD) documents, along with an 8 ½ x 11 vicinity map.
- Two copies of the Traffic Impact Analysis (if not previously approved).
- Two copies of the Soils Report.
- Two copies of the Landscape/Irrigation plans (if required).
- Three copies of the Retaining Wall Plans and Structural Calculations (if applicable) – two (24" x 36") and one (11" x 17").

Second and subsequent submittals shall include:

- Final Plat redline comments from first review.
- Revised Final Plat – two (24" x 36").
- Civil drawing redline comments from first review.
- A comprehensive list of changes made, that are not a direct result of City comments. If requested, the reason for the change shall be provided.
- Three sets of the revised civil drawings – two (24" x 36") and one (11" x 17").
- Fire Department redline comments from first review.
- Drainage Report redline comments from first review.
- Two copies of the revised Drainage Report.
- Four sets of the Street Light Layout Plans prepared by a professional Electrical Engineer.
- Street Light Improvement District documents (See SLID Policy, if applicable).
- Maintenance Improvement District documents (See MID Policy).
- Local Street Signing Plans (as applicable) for Local Streets (Public and/or Private) – two (24" x 36") and one (11" x 17").

NOTE: If the time elapsed between submittals exceeds nine months, a re-review of the plans may be necessary. The Engineering Department will determine if the plan review status provided during the previous review will be void and if additional Engineering review fees will be assessed.

J-2 STREET IMPROVEMENT POLICY

All developments within the City shall provide an interior street system adequate to insure that all parcels and/or facilities within the development shall have access to the public street system. Further, they shall provide access into the development for public service and/or emergency operations. Such facilities, whether public or private streets, shall be of such width and structural strength as to provide safe and unrestricted access. Street Improvements include and are defined as per Chapters 2 and 3.

In single-family developments it is the intent of the City of Peoria that the street system be designed in conformance with the classifications outlined in Chapter 3. There shall be minimal direct access to the collectors, and extremely limited access to major and minor arterial streets.

When the development occurs adjacent to a street, it is the City's policy that it shall be the responsibility of the developer to install improvements along the development's frontage to the ultimate grade and alignment for the street. This may include removal and replacement of the existing street surface to the centerline if that structure is inadequate to meet the current design standards.

J-3 HILLSIDE STREETS

The purpose of these standards is to minimize hillside disturbance and encourage preservation of the natural character and aesthetic value of the desert within the hillside area by allowing the flexibility necessary to produce unique, environmentally sensitive projects.

All City design standards may not be applicable to the hillside areas. However all streets and driveways shall meet fire access and turnaround requirements. See Chapter 3 for design standards related to hillside development.

J-4 UNPAVED STREETS

When unpaved streets are encountered to provide access to and/or adjacent to any development, provisions for paving or dust control per Ordinance 23-75 shall apply. Maricopa County has been designated by the U.S. Environmental Protection Agency as being a Non-Attainment Area for Air Quality. Ordinance 23-75 has been adopted which addresses the City's compliance with the federal regulation. All streets and driveways shall meet fire access and turnaround requirements.

J-5 PRIVATE STREET POLICY

Private streets shall not be permitted unless specifically approved by the City Council. See private streets policy.

Where private streets are approved, statements shall be contained on the plat and in both the deed restrictions and the HOA by-laws that those streets are declared private subject to an easement authorizing use by emergency and public service vehicles, and remain the permanent responsibility of the HOA. In addition, the developer will be responsible for providing signage stating that the streets are privately maintained and shall provide guard, gates, or other means of denying access to the general public. Private streets shall not be maintained by City forces.

Private streets shall conform to City standards and shall include an easement for utility and public safety access at least equal to the City standard right-of-way for local, residential streets. All streets and driveways shall meet fire access and turnaround requirements. Where site conditions necessitate unique design solutions or the developer requests such unique design solutions, modifications may be approved by the City Engineer or their designee.

J-6 APPLICATION FOR CONVERSION OF PRIVATE STREET TO PUBLIC STREETS

As stated above, City Council approval is required to create any new private streets in accordance with Policy 11. Many private streets were created prior to the adoption of Policy 11 and the HOA's often inquire about the possibility of the City of Peoria accepting dedication of the private streets. As such, a procedure for the City of Peoria to consider applications for the acceptance of private streets was developed. The procedure is summarized below.

Step 1

The Homeowners Association (HOA) must submit a written request to the Public Works Director for acceptance of the private streets located within a specific subdivision along with a $400 application fee.

Step 2

The Engineering and Streets Departments conduct an evaluation of the private streets and prepares a written report outlining the finding and recommendations. The report is forwarded to the HOA for review. The report will identify the following:

a. Deficiencies of the conditions of the asphalt and concrete street improvements.

b. Recommend repairs to be performed by the HOA.

c. The HOA shall be responsible to pay the City to install all necessary street signs required to convert the streets to public.

d. The HOA shall be responsible to pay the City to stripe the streets, if needed.

e. If as-built drawings are not available the HOA shall pay for the core sampling of the asphalt.

f. The HOA shall hire a professional engineer registered in the State of Arizona to prepare an Amended Final Plat changing the private streets to public streets.

g. The HOA shall provide a redline copy of landscape/irrigation plans to the City.

h. The HOA shall execute a copy of the Blue Stake Agreement. This agreement requires the HOA to blue stake any irrigation improvements located within the right-of-way.

i. The HOA shall agree to the formation of a SLID and MID. See the SLID and MID Policies for details.

j. The HOA shall agree to replace any existing street lights to meet City standards and required to form the SLID

k. Notify the HOA of their responsibility to hire an engineer to prepare an amended final plat is final acceptance is approved by Council.

l. Identify any costs the HOA will have to pay the City for upgrading the existing streets to City standards.

m. The HOA will be responsible to pay any recording fees.

Should the HOA desire not to take on the repairs they may pay the City to perform the repairs.

Staff will schedule a meeting to discuss the report with the homeowners association. If the homeowners association accepts the report staff will move forward to step 3.

Step 3

Engineering Department submits the report to City Council and recommends approval or denial of the application for preliminary acceptance of the private streets. If the application is denied the HOA will be notified in writing and no further action will be taken. If the application is accepted staff will move forward to step 4.

Step 4

The HOA hires a professional engineer to prepare an Amended Final Plat and the plat is submitted to the Engineering Department for review and comments.

Step 5

Engineering Department will forward the final recommendations and Amended Final Plat to City Council for approval. If the application is denied the HOA will be notified in writing and no further action will be taken. If the application is approved the Amended Final Plat will be recorded; the HOA will pay all fees to the City and the streets become public.

J- 7 STORM DRAINAGE POLICY (See Chapter 4)

It is the City's policy that all developments shall provide sufficient retention so as to minimize the adverse impact of that development on its downstream neighbors. To that end, all development shall provide sufficient on-site retention to contain, at the least, the runoff generated by 100-year, two-hour storm falling on that property. Such retention facilities shall be separate and distinct parcels within the development and shall be planned for accordingly.

Further, it is the City's policy that all developments shall provide adequate drainage facilities so as to convey runoff generated both on and off the project, around or through the project in such a manner as to insure that the structures will be free from flooding and that there is reasonable access for emergency and public service vehicles. The developer shall install storm drains, channels and/or other physical improvements necessary to achieve this result.

AZDES permit – The contractor shall comply with the Arizona pollution Discharge Elimination System (AZDES) Stormwater Requirements for construction sites under Arizona Department of Environmental Quality (ADEQ).

Storm Water Pollution Prevention Plan (SWPPP) – The design engineer will be required to prepare a SWPPP with each construction project. The SWPPP shall be submitted with the civil drawings. The contractor will be required to comply with the SWPPP during construction. The contractor will also be required to update and revise the SWPPP as necessary throughout the construction of the project to assure compliance with ADEQ requirements.

J-8 WATER EXTENSION POLICY (See Chapter 5)

It is the City's policy that all development within the City shall have an adequate and secure source of potable water. Therefore, unless specifically excepted, all developments within the City shall be serviced by the City's potable water system or private Water Company system. Further, the developer shall extend said system to and through the development as necessary to ensure adequate supply to the development. The developer shall extend the water distribution system to the extremities of the project so as to ensure that more distant potential users shall have reasonable access to the City's water system.

Water to meet fire flow needs, shall be provided to all developments per the Fire Department requirements. This provision shall apply to all development within the City regardless of the water purveyor, and location within the City.

J-9 SEWER LINE EXTENSION POLICY (See Chapter 6)

It is the City's policy that, unless specifically excepted, all development shall provide for the discharge of domestic and other approved liquid waste into the municipal sewerage system. All developers shall be required to extend to and through their project a sewage collection system of a size sufficient to dispose of these wastes to the public system. The developer shall extend the

main trunk and/or collector lines to the upstream extremities of the project so as to provide reasonable access for potential upstream users to the City system.

J-10 SITE DEVELOPMENT POLICY

It is the City's policy that all development within the City shall be designed and constructed in such a manner as to provide a safe and pleasant environment for the citizens of Peoria. To that end, the appropriate standards have been established for site development to include: public and/or private access for general and special uses, public and private water and sewage systems, on-site and off-site drainage, undergrounding of utilities, sanitation, landscaping, stormwater retention/detention, safety, convenience, lighting and public utilities as may be required. The structures themselves are to be constructed in accordance with the Zoning, Subdivision, Floodplain Management, Building Regulations, Streets and Sidewalk, Traffic, Streetlight, Water and Sewage Disposal, Landscape Codes and Ordinances, and these guidelines, as appropriate.

J-11 TRASH ENCLOSURE POLICY

It is the City's policy that all development within the City shall be designed and constructed to accommodate safe and sanitary trash collection that complements the site aesthetics. To accomplish this all developments shall be incompliance with City of Peoria Standard Details PE146-1 through PE146-4.

J-12 UNDERGROUNDING OF OVERHEAD UTILITIES

It is the City's policy that all development with the City shall underground overhead facilities with a rating of less than 69 kV. This includes electrical, alarm, and communication facilities. This may require the undergrounding beyond the site boundary to the next convenient power pole or junction element.

J-13 REPAYMENT AND REIMBURSEMENT POLICY

The City has a repayment and reimbursement mechanism for public improvements, which may exist and may be imposed, by agreement, on benefiting properties. The authorization for the public improvement repayments in the Peoria City Code, Chapter 23, Section 32 through 39. Construction of the special public improvements as determined by the construction contract price or the actual costs, such construction to include, but shall not be limited to construction and installation of water pipes and lines, sanitary irrigation and storm sewer lines and systems, asphaltic and concrete paving, curb, gutter and sidewalks, streetlights, traffic signals and public landscaping. Application shall be provided by specific written request submitted to the Engineering Director.

If approved by the Engineering Director and prior to permits being issued for construction of special public improvements, for which repayment is being requested, the following requirements shall be met:

1. A diagram shall be submitted and approved by the Engineering Director their designee describing all property which will be benefited by any special public improvements to be installed.

    a. The diagram is required to have ½" margins at the top, bottom and sides suitable for recording.

    b. The diagram shall be prepared by a registered professional engineer in the State of Arizona.

c. The diagram shall identify all construction, inspection, testing and permit fees, engineering and design fees and administrative costs.

d. The diagram shall identify the per acre or front footage costs assigned to each lot and/or parcel.

e. The diagram shall contain a signature block for the Engineering Director and the developer.

2. The owner/developer shall provide a copy of the approved construction plans.

3. The project shall be bid in accordance with the provisions pertaining to Public Works projects contained in Title 34, Arizona Revised Statutes. Bids shall be opened by the City on a pre-determined date agreeable to the owner and the City. The City and the owner reserve the right to reject any and all bids. Construction costs shall be determined prior to the commencement of construction and shall be approved by the City. In the event that the agreed upon construction costs increase, the repayment agreement may be amended upon approval of the additional construction costs by the City.

4. The City shall perform the inspection during construction and shall charge the owner/developer for the inspection of the special public improvements. The costs of such inspections may be included in any repayment agreement.

5. The repayment diagram will be recorded by the City of Peoria with the Maricopa County Recorders Office. All costs associated with the recording of the repayment diagram must be paid by the owner/developer.

6. The owner/developer shall provide the City with a current list of owners impacted by the specific repayment zone. The City will notify in writing all owners of the property located within the repayment boundary prior to recording of the document.

7. An annual charge will be assessed by the City for administration of each repayment agreement. The annual charge shall be calculated on actual construction costs incurred by the City for the administration of the agreement; however, the annual charge shall be less than $500 per year.

8. The repayment obligation under Section 23-37 of the City Code shall terminate ten years or when the total amount provided for by Section 23-37 is repaid, whichever is sooner.

9. At such time as the total amount of the repayment zone is repaid the City will record a project close-out letter. This letter will be prepared by the City Attorney.

J-14 WATER RAMP POLICY

When the water supply source for the construction project is located on the opposite side of the street, the City does not allow the placement of the supply hose and ramp across arterial or collector streets.

The contractor/developer may submit an application to the Engineering Director or their designee for permission to place the hose and ramp across any local street. The application shall include the manufacturer's specifications, materials used, dimensions of the ramp, proposed location of the ramp and proposed barricading and signage.

J-15 RIGHT-OF-WAY/EASEMENT – DEDICATION AND ABANDONMENT BY SEPARATE INSTRUMENT POLICY

Rights-of-way and/or easements, which are not included on recorded Final Plats or Maps of Dedication, shall be dedicated by a separate instrument with written approval from the Engineering Department. Abandonments shall be accomplished by a separate instrument. All other right-of-way/easements shall be dedicated or abandoned as part of the recordation of a Final Plat or Map of Dedication. The items listed below shall be provided by the City and the developer, respectively. Please call (623) 773-7600 for current fee information.

A. Commercial Development – Dedication

City responsibility:

1. Engineering Department shall provide the appropriate Dedication form.
2. The City Attorney's Office will review all documents.
3. The Engineering Department will prepare the Council Communication and Resolutions necessary for Council approval.

Developer responsibility:

1. Provide a fully executed Ownership Verification Form
2. Provide a fully executed Application Contact Form
3. Provide a Warranty Deed. Quit-Claim Deeds are not acceptable.
4. Provide a current copy of the Title Report. The Title Report shall be dated within 30 days of the submittal to the Engineering Department
5. Provide an 8 ½" x 11" copy of the Legal Description with ½" margins at the top, bottom and sides suitable for recording. The legal description shall be sealed by a registered land surveyor or engineer.
6. Provide an 8 1/2" x 11" Exhibit with ½" margins at the top, bottom and sides suitable for recording. The exhibit shall be sealed by a registered land surveyor or engineer.
7. Provide a copy of the Phase 1 Environmental Site Assessment.
8. Provide a check made payable to the City of Peoria to cover the cost of processing the application.

B. Residential Development – Dedication

City responsibility:

1. The Engineering Department shall provide the appropriate Dedication form.
2. The City Attorneys Office will review all documents.
3. The Engineering Department shall prepare the Council Communication and Resolutions necessary for Council approval.

Developer responsibility:

1. Provide a fully executed Ownership Verification Form.

2. Provide a fully executed Application Contact Form.

3. Provide a current copy of the Title Report. The Title Report must be dated within 30 days of the submittal to the Engineering Department.

4. Provide an 8 ½ " x 11" copy of the Legal Description with ½" margins at the top, bottom and sides suitable for recording.

5. Provide an 8 ½" x 11" Exhibit with ½" margins at the top, bottom, and sides suitable for recording.

6. Provide a Warranty Deed. Quit Claim Deeds are not acceptable.

7. Provide a fully executed copy of the Check List of Environmental Considerations for Right-of-Way Dedication.

8. Provide a check made payable to the City of Peoria to cover the cost of processing the application.

C. <u>Commercial, Residential Development - Abandonment</u>

City responsibility:

1. The Engineering Department shall prepare the Council Communication, Ordinance or Resolution necessary for council approval.

2. The City Attorney's shall review all documents prior to Council approval.

Developer **responsibility:**

1. Provide a fully executed Ownership Verification Form.

2. Provide a fully executed Contact Form.

3. Provide a current copy of the Title report. The title report must be dated within 30 days of the submittal to the Engineering Department.

4. Provide an 8 ½" x 11" Legal Description with ½" margins at the top, bottom and sides suitable for recording. The Legal Description shall be sealed by a registered land surveyor or engineer.

5. Provide an 8 1/2" x 11" Exhibit with ½" margins at the top, bottom and sides. The exhibit shall be sealed by a registered land surveyor or engineer.

6. Copies of No Conflict Letters from each of the utility companies stating that they agree with the proposed abandonment.

7. Provide a check made payable to the City of Peoria to cover the cost of processing the abandonment.

J-16 INSPECTION POLICY

All above ground and underground facilities and equipment placed in the public rights-of-way and all construction work done in the rights-of-way shall be subject to periodic and final inspection by the City of Peoria for compliance with all permit requirements, as well as applicable City, state and federal laws. Permittee must notify the City of Peoria Engineering Department Inspection Division at (623) 773-8445 at least 48-hours prior to beginning permitted construction work in the right-of-way. Requests for City inspections must be made 24-hours in advance of required inspections.

J-17 PAVEMENT CUT POLICY

As outlined in Chapter 23 of the Peoria City Code, if the City finds and determines that pavement cuts cause early deterioration of newly paved, resurfaced or sealed public streets less than 36-months old, the permittee will be assessed street cut surcharge fees.

J-18 STREET BORING POLICY

All utilities or other facilities crossing existing street must be bored or punched unless permission is given to open cut has been given in writing by the Engineering Director or their designee on a case by case basis. The burden of proof will lie with the permittee to show that boring is not a feasible requirement. Boring methods shall be specified on the construction plans, along with the anticipated impact on and restoration of existing facilities. The proposed method must be approved by the City on a case by case basis during plan review. If field conditions are such that boring has been demonstrated to the Engineering Inspector to be infeasible, then the permittee may be permitted to open cut.

Backfill and pavement restoration must meet the following requirements:

a. Backfilling of the bore pits and trenches shall be ½ sack ABC slurry.

b. The asphalt patch shall be a thickness of 1 and ½ times the thickness of the existing asphalt, i.e. a local street with 3” of asphalt shall be replaced with 4.5” of asphalt.

c. The patch shall be permanently placed per MAG specification and City standards. The City of Peoria Engineering Inspectors shall approve the asphalt mix design.

J-19 POTHOLING (VACUUM EXCAVATION) POLICY

A permit is required for all potholing activities within the City of Peoria right-of-way. The following requirements must be met:

a. A permit is required for all utility location work.

b. A 1’ X 1’ window cut will be allowed over each utility located within the pavement section.

c. Backfilling of the pothole shall be ½ sack ABC slurry.

d. The asphalt patch shall be a thickness of 1 and ½ times the thickness of the existing asphalt, i.e., a local street with 3” of asphalt shall be replaced with 4.5” of asphalt.

e. The patch shall be permanently placed per MAG specifications and City Standards. The Inspector shall approve the asphalt mix design.

f. A Traffic Control Plan (TCP) shall be submitted to the Engineering Department and approved for each pothole location.

J-20 TRAFFIC CONTROL PLAN POLICY

The purpose of the TCP is to proactively plan for, coordinate, and minimize the impacts of encroachment and construction in the right-of-way to the traveling public, i.e.,

- divert multi-lane traffic at signalized intersections
- divert traffic across the yellow center line
- divert traffic from a paved surface
- require roads to be closed

A TCP shall be submitted by the permittee prior to (with permittee plans) or submitted with the permit application for all proposed work in or on arterial or collector streets.

The TCP will be reviewed and approved by the Engineering Department prior to commencement of construction. The plan shall indicate the construction duration and schedule and the hours of operation for the project. The plan shall show the proposed work location area in detail and describe the traffic routing, traffic control devices, signage and construction traffic routing proposed. Additional information and stipulations may be required by the City of Peoria Engineering Department on a case by case basis. This requirement is in addition to the submission of a TCP prior to the start of construction.

a. A TCP shall be submitted to the City of Peoria Engineering Department a minimum of 72-hours (three working days) prior to any proposed partial or complete street or alley closure. TCP's shall be faxed to (623) 773-7211. The Engineering Department will review all TCP's prior to TCP approval and commencement of work by the permittee. Work shall not commence on the portion of the project requiring street barricading until approval has been obtained in writing from the Engineering Department.

b. Work in/on residential streets typically does not need a separate TCP, unless requested by the Engineering Department. All signs, barricades and other necessary traffic control devices shall be placed in accordance with the Manual on Uniform Traffic Control Devices.

c. Design and implementation of the TCP shall be performed by a well trained and knowledgeable individual assigned the responsibility for traffic control devices at work sites. This individual must be ATSSA (American Traffic Safety Services Association) certified.

d. The TCP shall include the identification and location of all barricades and signs, the hours of operation for the project, the construction duration and schedule, location of Variable Message Signs or arrow boards, bus stop signs, advisory signs for relocation of bus stops, detour plans, relocated traffic control signs and the project identification signs. Construction project signage shall be posted by the permittee.

e. A copy of the approved TCP shall be available at the job site at all times for the duration of the project.

It is unlawful for any person or entity to install on any street or sidewalk on any City street a traffic control device, barricade or any other item interfering with the movement of vehicular or pedestrian traffic without first having obtained an individual permit or approved construction plans and approved TCP issued by the Engineering Director or their designee.

The Engineering Director or their designee may remove summarily without notice from any street or sidewalk any traffic control device, barricade or other item interfering with the movement of vehicular or pedestrian traffic that has been placed in such a location without an individual permit or approved construction plans.

a. Any item summarily removed may be removed and notice provided to the owner by first class mail or telephone.

b. The owner of such traffic control device, barricade or other item interfering with the movement of vehicular or pedestrian traffic shall be charged a storage fee of $5/day/item. In the event of a conviction for violation of this section, the Court shall impose all current due and pending storage charges as restitution to the City.

c. Violation of this section shall be subject to a minimum fine of $250 for an individual and $1,000 for an enterprise. The Court may order the revocation of any right-of-way, construction or barricade permit, TCP or direct that the approval of the construction plans be revoked.

d. Traffic lanes shall normally be 12-feet in width and have safe operating speed of 25-miles per hour. When traffic control plans call for an asphalt or oil paved detour, the contractor shall provide and maintain it in a safe driveable condition. When traffic is diverted from the pavement, the contractor shall provide a suitable graded surface with proper dust control.

e. Except under emergency conditions, streets shall not be closed for construction activity unless prior approval is obtained from the Public Works Director or their designee.

J-21 WORK HOURS IN THE PUBLIC RIGHTS-OF WAY POLICY

No interference with traffic flow on arterial streets shall be permitted during the hours of 6:00 a.m. to 8:30 a.m. or from 4:00 p.m. to 7:00 p.m., unless prior authorization is obtained in writing by the City of Peoria Traffic Engineer or their designee. Specific work hours may be stipulated by the City on the project's barricade plan.

During off peak traffic hours, the minimum number of lanes shall be two lanes (one in each direction) on streets with four lanes or less and four lanes on streets with five or more lanes.

Night work must have prior authorization from the City. In addition, certain areas of the City may have seasonal or special event restrictions for construction work as designated by the City on a case by case basis.

J-22 CONSTRUCTION HOURS POLICY

The City of Peoria Ordinance No. 98-04 establishes construction work hours as follows:

Construction Type	April 2 – Sept. 29	Sept. 30 – April 1
a. Concrete Work	5:00 a.m. to 7:00 p.m.	6:00 a.m. to 7:00 p.m.
b. Other Construction (within 500 feet of residential Area)	6:00 a.m. to 7:00 p.m.	7:00 a.m. to 7:00 p.m.
c. Construction Work (more than 500 feet of residential area)	5:00 a.m. to 7:00 p.m.	5:00 a.m. to 7:00 p.m.

J-23 USE OF OFF-DUTY OFFICER POLICY

The permittee shall provide a uniformed off-duty officer to assist with traffic control when the construction zone extends within 300' of a signalized intersection or when ever traffic in any one direction is restricted. An off-duty officer may be required at other times if construction conditions dictate or by direction of the Engineering Director or their designee.

J-24 CONSTRUCTION SIGN POLICY

The permittee shall post information signs on construction vehicles and at the work site identifying the name of the utility authorizing the work. The purpose of the sign is to identify the permittee authorizing the work and the contractor performing the work. The sign information shall include a phone number where a person can call and receive information about the job and leave a message. The permittee must respond to all phone messages within 24-hours. In addition, all permittees must return regular traffic control signs back to their original place and replace any signs damaged during construction. General signage requirements are listed below. Specific project signs may be required on a case by case basis.

A. Arterial Streets

1. Projects on arterial streets, as identified by the City of Peoria Street Classification Map, that are either; a) greater than one mile in length or b) have a construction timeframe of 30 calendar days or longer, must utilize the following signage:

    a. Variable Message Board (VMB) or Portable Arrow Panel type sign at each end of the project that indicates the following:

        (1) Location of construction, including cross street names.
        (2) Direction of travel restricted.
        (3) Dates and duration of construction.
        (4) Alternate route suggested.

    b. Stationary Signs at end of the project that indicate the following:

        (1) Names of authorizing company and permittee.
        (2) Phone number for job information and to leave a message.
        (3) Estimated start and completion dates for the project.
        (4) Project description.

B. All Collector Streets

All projects on streets not classified as arterial streets must post the following information:

1. Names of authorizing company and permittee.
2. Phone number for job information and to leave a message.
3. Estimated start and completion dates for project.
4. Project description.

J-25 STRIPING AND MARKING FACILITY POLICY

All striping and markings removed during construction by the permittee shall be replaced by the permittee. The City of Peoria Public Works Field Operations Division shall approval all obliteration, layout of markings to be replaced and type of material used to replace the striping and marking.

J-26 ORDER OF PRECEDENCE

It is not intended by these guidelines to repeal, abrogate, annul, or in any way impair or interfere with existing provisions of other laws or ordinances except those specifically repealed with private agreement, restrictive covenants running with the land to which the City is a party. Where these guidelines impose a greater restriction on land, buildings, or structures than is imposed or required by such existing provision law, contract, ordinance, or deed, the provisions of these guidelines shall prevail.

J-27 DEFINITIONS AND ABBREVIATIONS

The words, abbreviations, or phrases used in these guidelines may be found in the Uniform Standard Specifications and Details for Public Works Construction Manual as published by MAG. All other words or phrases shall be according to the generally accepted meaning in the English language.

SECTION K

IMPROVEMENT PLAN PREPARATION

A. General Intent

This section describes the City's requirements pertaining to the preparation of improvement plans, which are to be submitted to the City for approval. These requirements apply to plans prepared for the following purposes:

- Street Construction (Public or Private)
- Grading of Land (Public or Private)
- Storm Drain System
- Drainage Management Facility Construction (AZPDES Requirements)
- Water System Construction
- Wastewater System Construction
- Street Lighting
- Striping and Signage
- Traffic Signal
- Site development other than building plans (i.e., driveways, deceleration lanes, etc.)
- Landscaping and/or Irrigation System Installation
- Any construction in Public Rights-of-way and Easements not listed above

B. Plan Size, Scale, Materials and Information

1. *Plan Quality*. Plans shall be of a quality to allow microfilming.

2. *Master Utility Plan*. A master utility plan at 1" = 100 ft. shall be submitted with the final construction plans for each individual development project.

3. *Plan Size*. All improvement plans submitted to the City for approval must be on 24" x 36" sheets. Larger plan sheets create handling and storage problems and may produce unsatisfactory records when they are microfilmed.

4. *Drawing Scale*. The scale chosen for drawings on plans submitted to the City must be such that existing features, proposed construction, and any other information to be provided will be depicted in a clear, uncluttered, understandable manner. Water system, wastewater system and street paving improvements shall be drawn at a horizontal scale of 1 in = 20 ft. and a vertical scale of 1 in = 2 ft., unless the Engineering Director approves the use of another set of scales for a particular project. Plans for other purposes (grading, landscaping, land surveys, streetlights, etc.) may require the use of larger or smaller scales.

5. *Materials*. Improvement plans submitted to the City for review shall be bond copies, but all improvements plans submitted for receipt of City signatures shall be Mylar copies of the approved drawings.

6. *Boundary Lines*. All property, right-of-way and easement lines are to be shown on the drawings and the ownership of the property is to be indicted.

7. *Monument lines and Monuments*. Township and range lines, section lines, and mid-sections lines must be clearly identified. If a roadway centerline does not coincide with, for example, a section line, each line must be shown. Where necessary, paving plans must indicate the need to set, replace or adjust monuments at street intersections, points

of curvature and points of tangency. It should be noted that a registered land surveyor must set, replace or adjust the monuments. All documentation related to the setting, replacement or adjusting of the monuments must be submitted to the City.

8. *Legends*. Every set of plans shall have a legend, which describes each symbol used on the drawing.

9. *North Arrows and Scales*. Each plan sheet shall have a north arrow and a bar scale indicating the scale(s) to which the proposed improvements have been drawn. The drawing shall be oriented such that the North arrow points to the top or the right side of the sheet, unless required by another plan standard (e.g. stationing for sanitary and storm sewers).

10. *Elevations and Benchmarks*. All elevations shown on improvement plans shall be based on City of Peoria datum. Benchmark identification, location and elevation shall be shown so that construction can be tied into the benchmark on which plans are based.

11. *Depicting Elevations*. When contour lines are needed, they should be used to depict both existing and proposed conditions. High and low points should be identified with spot elevations. The contour interval chosen for particular plan should be small enough to ensure that pre- and post- construction ground slopes and configurations are clearly shown.

12. *Dimensions*. Dimensions must be provided to show the size and location of the facilities to be constructed and of the existing features, which will affect the construction or will be affected by it.

13. *Clarity*. Plans must be prepared so there is clear differentiation between new and existing facilities.

C. Plan Cover Sheet

The description of the requirements for a particular improvement can be so simple that only one sheet is required, or the scope of work may be so large or complex that many sheets are required. When several sheets are required to describe the scope of work, a cover sheet is needed for the plan set. The following subparagraphs describe the requirements of a cover sheet. A single sheet plan shall have the same kind of information as that described in the following subparagraphs, but the replacement of the information on the sheet may differ from that required for a cover sheet. The project review staff will be flexible regarding the need for and the preparation of a cover sheet as long as the improvements to be provided are presented in a clear, uncluttered, understandable manner, along with the information described below.

1. *Title*. Provide a title, which describes the content of the plan set and the name of the development, for example: “Water System Plans for Alta Loma Subdivision”. The title shall be printed in large letters and placed in the upper middle of the sheet. Orient the sheet so that the 36-inch edges are along the top and bottom of the sheet.

2. *City Name*. Immediately below the Title, the words “Peoria, Arizona” shall be printed in letters somewhat smaller than those used for the title.

3. *Vicinity Map*. Provide a small vicinity map showing the location of the improvements with respect to the nearest arterial and major collector streets. This map does not need to be drawn to a particular scale, but it shall be oriented so that north is at the top of the map.

4. *Key Map*. A key map showing the project's location within a section and a graphic sheet index (this may be shown on a detail sheet instead of the cover sheet).

5. *Names and Addresses*. At the bottom of the sheet, place the names, addresses and telephone numbers of both the owners of the development and the engineering, architectural, or survey firm, which prepared the improvements plans.

6. *Approval Blocks*. The block for the City approval signatures shall be placed on the lower right side of the sheet. See Figure 1.1 for examples of the City's approval signature blocks and re-approval signature block. Since re-approvals of the plans may be needed, space shall be provided adjacent to the approval signature block for a re-approval signature block. The re-approval block shall not be placed on the sheet until a re-approval is needed.

Figure 1.1

Released for Permitting:

This set of plans has been reviewed for compliance with City requirements prior to issuance of construction permits. The City neither accepts nor assumes any liability for errors or omissions. This compliance approval shall not prevent the City Engineer from requiring correction of errors or omissions in plans found to be in violation of any law or ordinance.

Review	Reviewer	Date	Review	Reviewer	Date
Paving			Traffic		
G & D			Fire		
Ret. Walls					
Water					
Sewer					

_____

City Engineer Date

7. *The Professional's Seal*. The Civil Engineer's, Landscape Architect's or Land Surveyor's seal shall be stamped in the lower right portion of the sheet. Plans for improvements to water and wastewater systems and for paving and grading and drainage shall have a registered civil engineer's seal; plans for landscaping in the public right-of-way shall have a landscape architect's seal; and plans depicting land measurements, identifying boundaries, etc., shall have a land surveyor's seal. The engineer, architect or surveyor shall place his/her signature on the stamped seal along with the date of his/her signature.

8. *As-Built Drawings of Completed Work in the Right-of-Way*. As-built drawings indicating any changes to the approved plans of the constructed or revised facilities permitted in the right-of-way or on-site shall be provided to the City of Peoria Engineering Department within 30 days of completion of the project and shall be maintained by the permittee in accordance with State Statutes. The preferred format for the as-builts is digital format in AutoCAD format. The digital as-builts must conform to the Maricopa Association of Governments Computer Aided Drafting (CAD) standards.

9. *"As-Built" Drawing Certificate*. When the construction of improvements that will become the City's property has been completed, the City requires the developer to provide a set of drawings that accurately reflect the nature, locations and dimensions of those improvements. The civil engineer who makes the measurements to verify or correct the information shown on the plans must provide an "as-built" drawing certification statement on the plans. The certification statement (unsigned) shall be placed on the cover sheet prior to the time the plans are submitted for approval. The certification statement shall be placed on the lower half of the cover sheet near the approval block.

10. *Information on the Right Edge of the Sheet*. Along the right edge of the cover sheet, provide the following information:

    - The title of the plan
    - The engineer's, architects, or surveyor's name, fax and telephone number for contact by the City staff
    - The City of Peoria Review number

    This information along the right edge of the cover sheet will expedite handling by the City staff since plans won't have to be unrolled to find this information.

11. *Other Information on the Cover Sheet*. Some information, in addition to that described above, such as the names of the utility system owners, plan sheet index, or Maricopa County Environmental Services Department approvals may also be placed on the cover sheet. However, the construction notes (or general notes) and construction detail drawings shall be placed on a second or third sheet rather than attempting to include all of this information on the cover sheet.

12. *"Blue Stake" Note*. Provide the note: "Call the Blue Stake Center ((602) 263-1100) 48-hours before you dig for location of all utilities."

13. *Estimate of Quantities*. A thorough and completely itemized quantity list is required which includes the following:

    - Cut and fill
    - S.Y. of paving
    - L.F. of curb and gutter
    - S.F. sidewalk
    - L.F. waterline, number of hydrants and valves
    - Number of hydrant markers
    - Number of services
    - L.F. wastewater line, number of manholes, number of services

D. Detail Sheet

A separate detail sheet shall be provided at the discretion of the consultant or when required by the City.

1. Following information is required:

   (a) A typical cross section shall be shown for each street included on the street construction plans. The information required on a typical section is:

       - Dimensions and slopes
       - Street center line, right-of-way, and public utility easement
       - City of Peoria Details
       - Pavement structural design per MAG Standard Details and Specifications
       - Trim and match to existing street
       - Existing and proposed utilities
       - Landscape areas, wall locations

(b) Special construction details as required shall be provided. Typically included are:

- Modification or relocation detail for existing irrigation facilities
- Special construction where utility conflicts exist
- Other determined by the consultant or the City

E. Plan View Sheets

Plan view sheets are allowed only for the following:

1. Grading and drainage plans

2. On-site Commercial water and sewer plans

3. Street light layout plans

F. Plan/Profile Sheets

Plan and profile sheets are required for each of the following plans:

1. All parkway, arterial, collector and residential streets
2. Water line plans for construction within the right-of-way
3. All sewer line plans
4. All storm drain plans for main lines and connector pipes

G. Presentation of Design Information

A separate plan set shall be prepared for each type of improvement, or a plan set may be prepared combining improvements (such as water and sewer). Off-site Improvements shall be submitted under separate cover, unless approved in writing by the Engineering Director or their designee.

1. *Water and Wastewater Plans*. There are certain requirements in addition to those listed in this chapter, which apply to the preparation of water and wastewater plans. The additional requirements are listed in Chapters 5 and 6 of this booklet.

2. *Striping and Signage and Traffic Signal Plans*. There are certain requirements in addition to those listed in this chapter, which apply to the preparation of striping and signage and traffic signal plans. The additional requirements are listed in Chapter 2 of this booklet.

3. *Paving Improvements*. There are certain requirements in addition to those listed in this chapter, which apply to the preparation of paving improvement plans. The additional requirements are listed in Chapter 3.

4. *Grading and Drainage Improvements*. There are certain requirements in addition to those listed in this chapter, which apply to the preparation of the Grading and Drainage plans and Drainage Report. The additional requirements are listed in Chapter 4.

5. *Relocation of Facilities*. If a plan calls for the relocation of a structure or facility in order to allow for construction of the desired improvements, the location to which the structure or facility is to be moved shall be shown on the plan. If a structure or facility is to be removed or taken away from the job site, a note shall state this clearly. The agency responsible for a relocation shall be indicated by a note.

6. *Plan and Profile Views for Street Improvements*. Street improvements shall be shown in both plan and profile views. The plans must show sufficient information to clearly indicate the scope of work. In cases involving significant amounts of grading, contour lines will be required on the plan views.

7. *Portrayal of Features in Project Area*. Existing features and conditions surrounding the area where construction and/or grading is proposed shall be shown on the plans with sufficient detail and data to ensure drainage problems, or any other problem, will not be created by the construction work or will not exist when the work is completed. Normally, this requirement can be met by showing the features and conditions within 200 feet of the proposed work, but it is the engineer's responsibility to provide sufficient information to show that problems will not be created, regardless of how far from the edge of the proposed construction or grading features and conditions must be shown to achieve this goal.

8. *Landscaping in Drainage Ways*. Any landscaping proposed for a channel or for a drainage management facility shall be shown on the grading and drainage plans where he designs for the drainage facilities are shown. The engineer's analysis of the capacity and capability of the drainage facilities must take the proposed landscaping into consideration.

9. *Retention of Trees*. Any requirement for the retention of trees or other plant material in a drainage way must be shown on the grading and drainage plans where the designs for the drainage facilities are shown. The type and diameter of each tree must be indicated.

10. *Landscape and Irrigation Plans*. The following requirements apply to plans for the installation of plants, landscaping materials and irrigation systems.

    Plant Material List

    - Key symbols for plants
    - Botanical and common plant means
    - Quantities of each plant type
    - Plant sizes
    - Planting details and instructions

    All landscape and irrigation plans shall be submitted to the Community Development Department for review, approval, permitting, inspection and final acceptance.

11. *Notes Concerning Existing Plants*. Notes are required which describe the size and type of existing plants and which indicate whether the plants are to remain, to be removed, or to be transplanted.

12. *Maintenance Responsibility*. Notes must be provided on the final plat, landscape and grading and drainage plans which indicate who will be responsible for the maintenance of the landscaped areas.

13. *Sprinkler Systems*. All plants shall be watered by automatic sprinkler systems. Detailed plans of the systems must be provided. Drip systems may be used.

14. *Sight-Distance Requirements*. The following requirement identified on City of Peoria Details PE-090 and PE-091, which pertain to sight distance requirements that must be observed in the preparation of plans for the construction of any structure, wall or fence and for the installation of trees, shrubs, and materials that could block a driver's vision of hazards.

15. *Areas Adjacent to Curved Streets*. Do not propose any structures, walls, fences, signs, berms, etc. or any landscaping or planting in the area between the curb on the inside of a street curve and the line of sight which will be higher than 18-inches above the adjacent curb. This restriction applies regardless of whether the land within the area is public right-of-way or private property.

16. *Utility Notification Letters*. The design engineer will be responsible to provide the City of Peoria an executed copy of a conflict letter from each specific utility company. A copy of the City of Peoria Conflict letter can be found in the Appendix.

H. General Notes

Certain general notes are required with each set of improvement plans, depending upon the kind of improvements depicted on the plans. The required notes are briefly described in the following subparagraphs and each of the six types of notes is presented in the Appendix. Please keep in mind that these notes shall be on every set of improvement plans, regardless of the type of improvements depicted on the plans.

1. *All Construction in the City of Peoria Public Rights-of-Way and Easements*. This set of notes shall be placed on every set of plans, which involves construction of any kind in the public rights-of-way or easements.

2. *Grading Work in the City of Peoria Public Rights-of-Way and Easements and Certain On-Site Grading and Drainage Requirements*. This set of notes applies to all grading work.

3. *Construction on the City of Peoria Water System*. This set of notes applies to all work on the City's water system.

4. *Construction on the City of Peoria Wastewater System*. This set of notes applies to all work on the City's wastewater system.

5. *Paving Improvements in the City of Peoria Public Rights-of-Way and Easements*. This set of notes applies to paving work in the rights-of-way.

6. *Striping and Signage Plans*. This set of notes applies to striping and signage work in the public street.

I. Plan Revisions

If an approved set of plans must be revised, the following items must be provided:

- Cover letter addressing the revised items and reasons for revisions.
- Re-approval signature line added to the original Mylar cover sheet.
- Engineer's seal for the revisions added to the original Mylar cover sheet.
- All changes on the plan set must have clouds and deltas to indicate revisions.

After the revised plan set has been approved, and re-signed by the Engineering Director or their designee, a new permit must be pulled for the revised plans, and additional permit sets must be provided to the Engineering Department.

J. Approved Plans

Approved plans shall be used as the permit set. Any changes to the plans that occur after the Mylar is signed shall be submitted for review and approval prior to permitting.

SECTION L

MANAGEMENT OF CONSTRUCTION IN RIGHTS-OF -WAY

This section outlines the requirements for securing an Engineering Construction Permit for encroaching into the City of Peoria's public rights-of-way and public easements. It is the responsibility of the permit applicant to obtain and fulfill any and all other requirements found in the City of Peoria Ordinances and City Code whether or not they are referenced or stated in this manual.

L-1 GENERAL INFORMATION AND OVERVIEW OF PROCESS

A. Permit Requirement

The City of Peoria requires an Engineering construction permit to encroach within the City of Peoria public rights-of-way and easements. The City of Peoria administers the plan review, permitting and construction processes in accordance with the following documents:

1. City of Peoria Standard Details.
2. Maricopa Association of Governments (MAG) Uniform Specifications.
3. City of Peoria Infrastructure Design Guidelines.
4. Arizona Utility Coordinating Committee (AUCC) Public Improvement Project Guide.
5. City of Phoenix Barricade Manual and the Manual on Uniform Traffic Control Devices.

B. Purpose of a Permit

Permits are necessary to assure that all work in the right-of-way is completed in the proper location with adequate spacing; built with acceptable materials and in accordance with current specifications; installed in a safe and expeditious manner; that final completion is assured and acceptable; that all infrastructure is protected; that unnecessary traffic delays or congestion to the traveling public is limited; that all landscaping is restored; and that liability issues are properly addressed.

Engineered construction drawings (plans) must be submitted for review. The objective is to make optimal utilization of the space available in the public rights-of-way and public utility easements; to assure compliance with all City of Peoria ordinances, policies and standards; to assure coordination with other right-of-way users, agencies, and City of Peoria project activities; and to reduce risk and/or inconvenience to the traveling public.

Permits are reviewed in scope by the City of Peoria Engineering Department and these permits do not relieve a permittee from any of the stated standards in the Permit Requirement section above, and/or any federal, state, City or industry accepted practice. It is the permittee's responsibility to ensure compliance with all of the above stated requirements. Permittee plans that have been reviewed by the City do not relieve a permittee of this requirement unless the deviation from these standards is clearly specified on the plans and permit, and the permittee has received an additional approval granted in writing by the City of Peoria, in addition to the standard City permit approval. This additional approval does not waive any other stated requirements on the plans or stipulations to the plans.

C. Development Permit Process

The appropriate Engineering construction permit for development related construction shall be obtained from the City of Peoria Engineering Department counter, located on the first floor of the Development Community Services Building, 9875 N. 85th Avenue. Permits for off-site construction are issued following plan approval by the Engineering Department.

An owner's At-Risk Grading and Drainage permit may be issued following at least one plan review provided plans are in general compliance with the City's codes and standards. Such a permit requires a set of redlined grading and drainage plans and a disclaimer attached to the permit to be signed by a principal of the firm requesting the permit.

Prior to obtaining an Engineering construction permit for any development project the owner/developer shall provide the following information:

1. Proof of a recorded Final Plat or approved Site Plan.

2. Submit a fully executed copy of the Agreement to Install Improvements, INSTALL- A or INSTALL-B. The document must be filed with the Engineering Department.

   (a) The Agreement to Install Improvements, INSTALL-B, is an alternate form of assurance that may be available to the owner/developer. With this form of assurance, the owner/developer gives the City the right to withhold Certificates of Occupancy in the development until all improvements have been constructed and accepted. A letter must be provided by the owner/developer stating they have done work within the City for a minimum of three years, a list of successfully completed projects, and a list of City employee contact names and numbers.

   (b) The Agreement to Install Improvements, INSTALL-A, must be accompanied by some form of assurance. The acceptable form of assurances are: Performance Bond from a Surety Bonding Company authorized to do business in the State of Arizona, Letter of Credit, cash, cashiers check, negotiable bonds, or an escrow account. The cost of the assurances shall be in the amount equal to 100% of the contract cost or 110% of the engineer's estimate or an amount determined by the Engineering Director or their designee.

3. Developer responsible to pay all development related fees.

4. Five sets of approved construction plans, one 24x36, four 11x17.

5. Traffic Control Plan (TCP).

6. Project schedule.

7. All contractors, subcontractors, and developers must provide a Certificate of Insurance naming the City of Peoria as "Additionally Insured", including Liability, Auto, and Worker's Compensation.

8. A copy of the signed construction contract showing quantities. The permit fee for water, sewer, trenching, conduit, gas or other pipelines, drywells, curb, gutter, sidewalks, driveways, flood irrigation, landscape, landscape irrigation, well abandonment and utility lines, is 3.5% of the contract price plus a $15 administration fee, for each permit.

9. A copy of the signed grading and drainage construction contract showing total cubic yards (cut and fill). The fee calculation is based on the total cubic yards. A $100 permit fee will be charged for custom homes.

10. All contractors, subcontractors, and developers must obtain a license to operate in the City of Peoria. Contact the City of Peoria Sales Tax Office at (623) 773-7160.

11. Each development is subject to certain fees as identified below. Such fees must be paid prior to the issuance of an Engineering construction permit.

Although all appropriate Engineering construction permits may be issued simultaneously subject to the provisions listed above, the City of Peoria will not allow construction of above ground street improvements (curb, gutter, sidewalk, paving, etc.) until the water and sewer lines, trench bedding and backfill have been installed, tested, videoed, inspected and accepted by the City of Peoria and the Substantial Letter of Completion has been issued. Upon the issuance of the Substantial Letter of Completion the City will allow the construction of the curb, gutter, sidewalk and paving construction to commence.

D. Utility Company Permit Process

Prior to the issuance of an Engineering construction permit for any Utility Company the specific utility company shall submit a permit application together with four sets of plans.

Upon receiving the appropriate drawings, details and notes, etc., the City of Peoria will log the request into the City's automated permit system and route the documents to the appropriate departments for technical review. The review includes, but is not limited to, checking for compliance with construction standards, approving alignments, verifying that work is in the public rights-of-way or easements, determining if other work is occurring at the same time or at the same site, verifying that all joint trench opportunities have been incorporated to the design, checking for conflicts, reviewing traffic impacts, and verifying that all City requirements have been met and been incorporated into the plans. In addition, the Public Works Department will check to see if the utility company has obtained a Franchise Agreement with the City. If the utility company does not have a Franchise Agreement with the City, up to five Revocable permits may be issued by the City. The utility company will be required to obtain a Franchise Agreement if more than five Revocable permits are requested.

Upon completion of the review, the permit request will either be issued to the applicant or denied and returned to the applicant for further modifications. Permits are issued for 90 working days. Special conditions or stipulations may have been added to the permit by the City after submission by the applicant. It is important that these conditions be carefully reviewed by the applicant for compliance upon issuance by the City of Peoria. If additions or corrections are required to the plans, the applicant will be notified and asked to make the corrections and resubmit to the City.

Fees for all permits will be charged as set forth by City Code. Permittees must demonstrate proof of insurance as required by City Code.

E. License and Other Requirements

1. *Telecommunications Facilities*. All telecommunications providers who desire to construct, install, operate, or maintain telecommunications facilities in the City of Peoria public rights-of-way must first obtain a Telecommunication License from the City of Peoria except in cases where state law forbids establishment of a license agreement.

2. *Cable TV*. All cable television providers and telecommunication providers who desire to provide cable television services, programs, or signals in the City of Peoria public rights-of-way or easements must first obtain a Cable TV License from the City of Peoria.

3. *Wireless Communications*. All providers who wish to provide wireless communications infrastructure in the City of Peoria public rights-of-way and easements must first obtain a Revocable Permit from the City of Peoria.

4. *All Other Above Ground Improvements*. Anyone wishing to install any above ground improvements may require a Revocable Permit from the City of Peoria.

F. Permit Types

1. *General Right-of-Way Encroachment Permit***.** A permit is required for any encroachment in, on above, over, under, or through the City's public rights-of-way or public easements.

2. *Emergency Encroachment Permit*. For emergency repairs involving loss of service, the permittee shall call the Engineering Department Inspection Division at (623) 773-8434 to state the type of emergency, the location, the number of lanes closed, a contact name, estimated time to complete repairs, and a cell phone number. A TCP shall be faxed to the Engineering Inspection Division (623) 825-0325 within 24-hours. Note: the installation of new service is not an emergency. The appropriate construction signage shall be posted by the permittee.

3. *Annual Maintenance Encroachment Permit (Blanket Permit)***.** A permittee who owns an improvement in the City's public rights-of-way may apply for an annual maintenance encroachment permit (Blanket Permit). The annual encroachment permit must be renewed every year. Permitted activities include entering manholes, cabinets, or other above/below ground improvements but do not include any pavement cutting.

   Permit fees and other construction costs are collected upon issuance of each individual permit in accordance with the Peoria City Code except as superceded by a franchise or license agreement. On joint trench projects, the surcharge fee will be apportioned to the participating agencies.

4. *Grading At Owner's Risk Permit*. The Engineering Department will issue a "Grading at Owner's Risk" permit which is effective for 60 calendar days provided that the developer/owner/contractor agree to complete the items listed below. No other permits such a water, sewer, concrete, dry utilities or paving will be issued until such time as all civil construction drawings are approved by the Engineering Department, the Grading and Drainage Permit is obtained, all fees identified by the plan approval letter have been paid to the City, all documents; SLID, MID, Street Light Warranty Agreement, Agreement to Install, etc., have been executed by the developer and accepted by the City, the City of Peoria Sales Tax license is obtained and proof of insurance is submitted to the City.

   If the above items are not completed within 60 calendar days, the "Grading at Owner's Risk" permit will be withdrawn and the contractor will be required to return the property to its original condition.

   ITEMS REQUIRED TO OBTAIN A "GRADING AT OWNER'S RISK" PERMIT

   (a) Application shall be completed by the applicant. The application shall contain the following information:

      (1) Identify and describe work to be covered by the permit.

      (2) Indicate intended use for which the site is being prepared.

      (3) Permit application is to be signed by the authorizing agent.

   (b) City must complete first review of Grading and Drainage plans for the proposed development and find that the plans are substantially acceptable.

   (c) City must approve the SWPPP for the proposed development.

(d) Developer must provide to the Engineering Department three copies of the red lined Grading and Drainage Plans and approved SWPPP. The red lined plans will alert the Engineering Inspector that the project has not been approved, but has been reviewed at least one time and also make them aware of the possible changes.

(e) Contractor shall provide to the Engineering Department a copy of the Dust Control Permit per Maricopa County Rule 310.

(f) Developer/Engineer/Contractor must provide to the Engineering Department copies of the cut/fill quantities.

(g) Contractor shall obtain a "Grading at Owner's Risk" permit at a cost of 150% of the actual grading and drainage permit cost up front, which has a one time "life" of 60 calendar days. The 150% fee will be applied to towards the actual grading and drainage permit.

(h) Developer/Contractor must provide the following information when applying for a "Grading at Owner's Risk" permit:

(i) A haul route permit must be obtained if 100-cubic yards of material or more will be brought onto or exported from the site.

(j) Letter of Authorization from property owner in which material is being removed or hauled onto.

(k) Contractor shall provide to the Engineering Department a list of 24-hour emergency telephone numbers.

(l) The Developer/Contractor must provide a letter to the City guaranteeing the repair of any street or other improvements that may be damaged during the hauling of the material.

(m) The Contractor must provide the necessary Traffic Control Plan and Traffic Control devices including Off-duty Police Officers in accordance with City of Peoria, MUTCD and Phoenix Barricade Manual standards.

5. *Haul Route Permit*. In accordance with Section 20-258 of the Peoria City Code a haul route permit is required for each site in order to move 100-cubic yards, or more of material off-site or bring material on site. To obtain a haul route permit, an applicant shall submit in writing on a form provided by the Public Works Department, an application and a diagram showing the specified route. The application shall contain the following:

(a) Identify and describe the work covered by the permit.

(b) Describe the land on which the proposed work is to be done by lot, block, tract, or similar description that will identify readily and definitely locate the proposed work and give name and address of property owner.

(c) Indicate the intended use for which the site is being prepared.

(d) Give proposed location of deposit area and name and address of person who will receive excavated material and evidence that he/she is willing to receive material (if offsite).

(e) Be accompanied by plans, specifications and a soil and drainage report and a SWPPP.

(f) When the proposed Haul Route impacts another jurisdiction, the Engineering Department requires approval in writing from the affected jurisdiction. The written approval(s) shall be submitted with the Haul Permit application.

(g) State the estimated quantities of earthwork involved.

(h) Be signed by the permittee, or his agent, who may require to submit evidence to indicate such authority.

(i) Locate all retaining walls (and state height) planned in the project.

(j) Provide typical cross sections of retaining and privacy walls at all locations where a change in grade occurs along the perimeter of the entire site.

(k) Obtain all applicable Maricopa County Air Quality Control permits and submit/incorporate it as part of the overall grading permit.

(l) Give such other information as reasonably may be required by the Public Works Director or his designee, i.e. proper insurance information, 24-hour emergency telephone numbers, traffic control plan, provide off-duty police officers.

(m) Payment of the application fee currently established by the Peoria City Code.

6. *Over Dimensional Load Permit*. Under Section 14-72 of the Peoria City Code, the Chief of Police or his designee, upon written application and with good cause being shown, may issue an oversized or overweight permit, authorizing the applicant to operate or move a vehicle, or a combination of vehicles, of a size, weight, or load exceeding the maximum set forth in Arizona Revised Statutes, Sections 28-1008, 28-1009 and 28-1009.01, the provisions which are adopted by reference as though fully contained in the Peoria City Code.

   The Chief of Police or his designee may establish seasonal or other time limitations on such permits which the vehicles described may be operated on the streets indicated, or otherwise limit and prescribe conditions of operation of the vehicles when necessary, to ensure against undue damage on the road infrastructure and/or surfaces, and may require other security as he deems necessary to compensate for any damage to a roadway or road structure. The person for whom the permit is issued is liable for any damage caused by his/her actions, and for the actions of parties carrying out the work covered under the permit.

   A fee shall be issued for each permit. The fee shall be assessed in the amount provided in Section 2-222.B of the Peoria City Code for each 30-day period.

   A 30-day permit may be issued for the movement of over dimensional and/or overweight loads as long as any load to be carried within the 30-day period does not exceed the specifications listed on the permit.

   A single trip permit may be issued under the same premise as is a 30-day permit, but is valid for only three days from the date of issuance. A fee for this permit shall also be assessed in accordance with Section 2-222.B of the Peoria City Code.

Applications for Over Dimensional or Over Sized Load permits along with a map showing the proposed route must be submitted to the Police Department not less than five working days prior to the time that work, described on the permit, is to commence.

At the discretion of the Chief of Police or his designee, a permit holder may be required to have escorts and/or direction and control by permit holder and shall utilize vehicle markings that are visible from a minimum distance of 200-feet in daylight.

Loads with widths wider than 25-feet and/or heights greater than 15-feet will require review of the Public Works Director, or their designee, before a permit can be issued.

The Chief of Police, Engineering Director, or their designees, may suspend permits for reasons of public safety concerns and/or negligence.

G. Permit Fees

Engineering Construction Permits – Inspection and testing fees: Fees are payable at the time permits are issued and are based upon construction quantities. The Engineer/Contractor/Developer is responsible to provide quantities through the submittal of a copy of the construction contract or a certified engineer's estimate. Water, sewer, paving, concrete and dry utility permits are based on 3.5% of the contract amount or certified engineer's estimate.

The sequence of permits and construction is at the discretion of the developer with the following exceptions:

1. The storm drain system must be installed and accepted by the City prior to commencement of the concrete and paving phase.

2. The water system must be pressure tested and pass the bac-t test prior to commencement of the concrete and paving phase.

3. The sewer system must be pressure tested, lamped, mandreled and videoed prior to commencement of the concrete and paving phase.

4. The dry utilities must be installed prior to commencement of the concrete and paving phase.

5. Bedding and backfill compaction test results must be submitted, review and accepted by the City prior to commencement of the concrete and paving phase.

In addition, all fees identified on the plan approval letter must be paid in full prior to the issuance of any Engineering construction permit. A summary of possible engineering fees are provided below. The developer is responsible to contact all other City Departments to obtain a listing of any applicable fees.

1. The project may be located within the boundaries of a water and/or sewer buy-in fee zone. The owner/developer will be notified during the review process of the specific zone and the associated charge per acre or per lineal footage.

2. The project may be located within the boundaries of an improvement district. The owner/developer will be notified during the review process and must determine whether an assessment modification will be required. If an assessment modification is required the owner/developer is responsible to reimburse the City the $500 Assessment Modification fee and the proposal fee from the Improvement District Engineer.

3. The City will fog seal the streets for each new development approximately one-year following the final acceptance. The owner/developer will be charged $.21/S.Y. for the total square yardage of asphalt. The asphalt quantity listed on the cover sheet will be used to calculate the total fog seal fee.

4. Application fees of $15 per lot for the formation of Streetlight Improvement Districts (SLID) and the $15 per lot fee for the formation of the Maintenance Improvement Districts (MID).

5. Provide payment of the $25 per lot addressing fee.

6. Provide payment of $360 per sheet for first and second plan review and $250 per sheet for third plan review and each review thereafter.

7. The Owner/Developer is responsible to pay all applicable City Expansion fees.

8. The Owner/Developer is responsible to pay all street cut surcharge fees.

9. Any right-of-way or easement dedication fees.

H. Permit Duration

The Engineering construction permit for any development project will be valid from the date of issuance for an approved timeframe of nine months. The permit shall be activated by contacting the Engineering Automated Inspection Request line at (623) 773-8445.

The permit request by the utility companies shall state the anticipated length of construction in calendar days and/or weeks and state the anticipated start date for construction. The City may require additional construction scheduling information on a case by case basis. The permit will be valid from the date of issuance for an approved timeframe of 90-days.

The permit shall be activated by calling the Engineering Automated Inspection Request line at (623) 773-8445 a minimum of 48-hours prior to start of construction and obtaining approval of a barricade plan (if needed) prior to commencing work. Failure to expeditiously complete the current project within the permitted timeframe may result in denial of future permits until the currently permitted project(s) is completed to the City's satisfaction.

SECTION M

INSURANCE REQUIREMENTS

A. Permittee Liability

The permittee shall be responsible for all liability imposed by law for damages arising out of or related to work performed, or failed to be performed, by the permittee, permittee's agents, contractors and all tiers of subcontractors under the permit. If any claim of such liability is made against the City, its officers or employees, permittee shall defend, indemnify and hold the City harmless from any such claim.

B. Insurance Limits

No applicant shall be entitled to an Engineering construction permit unless they have filed and maintain on file with the City a current Certificate of Insurance certifying that the permittee carries public liability and property damage insurance issued by an insurance carrier authorized to do business in the State of Arizona, insuring the applicant and the City and its agents, against loss by reason of injuries, to, or death of persons, or damages to property arising out of or related to work performed by the applicant, its agents or employees while performing work under the permit. Such insurance shall be primary and provide coverage for liability assumed by the applicant under this agreement, and shall be provided by the permittee in the amounts established by the City.

C. Effective Timeframe of Insurance

Failure of the applicant to provide the City with such a certificate, and a failure by the City to demand the filing by permittee of such a certificate before such a permit is issued shall not be deemed to waive the permittee's obligation to provide the insurance. Such insurance certificate shall remain in effect and be kept on file with the City until all work being performed by the permittee has been completed. Where an encroachment involves a permanent obstruction, such insurance certificate requirements shall remain in effect until such construction is removed. The insurance certificate shall provide that coverage cannot be canceled or expire without providing ten days written notice of such action to the City.

D. Insurance of Permittee's Agents, Contractors, and Subcontractors

Prior to permit issuance, permittee must identify and list all agents, contractors and all tiers of subcontractors who will perform work for permittee under subject permit. All such agents, contractors and subcontractors must comply with all of the above provisions, including but not limited to, providing a Certificate of Insurance to the City of Peoria containing all of the insurance requirements set forth in this section. If permittee engages any other agents, contractors or any tier of subcontractor not initially scheduled, prior to work commencing, permittee must notify the City of Peoria of such agent, contractor or subcontractor and such agent, contractor and subcontractor shall submit the appropriate Certificate of Insurance in compliance with this section.

SECTION N

FINAL LETTER OF ACCEPTANCE FOR CONSTRUCTION PROJECTS

The Final Letter of Acceptance (FLOA) will be granted when the entire project is completed. To obtain the FLOA, the following items must be approved:

1. All work shown on the approved plans completed and installed.

2. Mix design approval.

3. Compaction reports approved.

4. All concrete work (curb, sidewalk) is accepted, or if cracked, replaced if a hazard (tripping, etc.).

5. Bench marks (new and existing) installed and survey roles establishing the x, y, and z data approved.

6. Completed maintenance, streetlight and fire improvement district documents received and approved.

7. Reproducible non-washoff Mylar “as-built” drawings (no inking or sticky back permitted), certified by a registered land surveyor and professional civil engineer registered in the State of Arizona for:

   (a) Grading and Drainage including certificates of pad elevations or finished floor elevations, drywell rim elevations, retention/detention basin elevations and flood zone determinations.

   (b) Sanitary sewer system, including dimension between manholes, actual location of services and length of services installed, rim and flowline elevations and type of pipe, etc.

   (c) Water system, including valve locations, depth of water line, type of pipe, actual location of services, actual location of vertical alignment(s), dimension to hydrant locations, dimensions to tees and crosses.

   (d) Paving, curb, gutter and sidewalk, including locations and widths of driveways, elevations, streetlight locations.

   (e) Storm Drain, including type of pipe, dimension of pipe to monument line, location of catch basins, inlets and NPDES markers, manhole rim and flowline elevations, dimensions to vertical or horizontal realignments.

   (f) Bank stabilization.

   (g) Traffic signal/striping and signage.

   (h) Flood irrigation (public and private).

   (i) Copies of drywell drilling logs and ADEQ certification/registration.

   (j) Copies of drywell percolation tests.

(k) Provide CAD drawings, compatible with City software of the water, sewer, stormdrain system base maps with as-built locations of the mains.

8. All fees must be paid.

9. All streetlight installation costs have been paid.

The FLOA will constitute the beginning of the one-year warranty.

CHAPTER 2

TRAFFIC ENGINEERING

2-1 STREET STANDARDS AND GEOMETRICS

A. Parkway

The Parkway is required to move large volumes of traffic. Access to the Parkway will be limited. Service to abutting land is subordinate to provision of travel. Fully controlled access is required. The Parkway location is shown on the Street Classification Map.

B. Parkway Section

City of Peoria Standard Detail PE-010-1 is intended for use on the parkway with standard lane configuration (3-M-3) with the addition of right and left turn lanes as required. Limited access with three right-in, right-out access points per mile per direction. Major signalized intersection locations will be at the mile points and potential half-mile points. Vertical curb, gutter and median curbs are required. The Urban Section of the Parkway shall have a scenic corridor buffer of 15-feet from the right-of-way line, the Suburban Section of the Parkway requires a scenic corridor buffer of 30-feet from the right-of-way and the Rural Section shall have a scenic corridor of 50-feet from the right-of-way. A 10-foot pedestrian path is required on the west and north side of the parkway and a 6-foot path is required on the east and south side.

C. Arterial Streets

Arterial streets are the backbone of the City of Peoria's transportation infrastructure. Arterials handle high traffic volumes at moderate traffic speeds. The City of Peoria classifies arterials as major arterials or minor arterials, further defined in Section 3-1.

Right-of-Way and Street Section requirements for each Arterial Street are shown on the Street Classification Map. Section details are per City of Peoria Standard Details PE-010-2 and PE-010-3.

2-2 TRAFFIC CONTROL DEVICES

A. General

Traffic control, sign, barricades and pavement markings shall be in accordance with the Federal Manual on Uniform Traffic Control Devices (MUTCD) as revised. Street and lane closures shall be accordance with the Phoenix Traffic Barricade Manual and the MUTCD as revised. When any existing traffic control signs, barricades, guard rails, traffic signal facilities and equipment is called to be removed or replaced care shall be taken to salvage such facilities and equipment and deliver to the Maintenance Operations Center (M.O.C.), Public Services Yard at 8850 North 79th Avenue.

B. Traffic Signs and Pavement Markings

1. All new developments shall provide the required traffic control signs, street name signs, sign posts and pavement markings on all streets and intersections. The Developer is responsible to furnish and install the signs, posts and markings. Final Certificate of Completion and Construction bonds will not be released and streets will not be opened to the public until all signs and markings have been installed.

2. A Signing and Pavement Striping Plan shall be submitted to the Engineering Department and approved through the plan review process. All required signage will be shown on the plans (i.e., call out required stop sign and sign pole base upon entry to an existing arterial and/or collector street). It is the Design Engineers' responsibility to include all signing and striping to complete a safe design.

3. A local street signing plan is required for all residential subdivisions. This plan shall show all required signing and markings for internal and local roadways.

4. All signs and sign posts shall conform to the City of Peoria Standards and be installed per City of Peoria Standard Detail PE-032.

5. All striping shall conform to the City of Peoria Standards and be installed per City of Peoria Standard Details PE-011 through PE-020.

6. The Pavement Signing and Striping Plan shall include specifications and locations of Raised Pavement Markers (RPM's).

C. Traffic Signals

1. *Signal Modifications.* Signal modifications that are a result of street widening or recommended in the Traffic Impact Analysis (TIA) related to the development are the responsibility of the Developer.

3. *Signal Conduit.* Signal conduit with pull boxes shall be provided at all major arterial, minor arterial and collector street intersections as shown in City of Peoria Standard Details PE-033 through PE-035.

4. *Specifications and Details.* Traffic signals shall be designed in accordance with the Arizona Department of Transportation, Traffic Signals and Lighting, Specification and Standard Drawings.

   A. Traffic signal poles and hardware shall conform to the Arizona Department of Transportation standards and shall be approved through the Electrical Equipment Submittal process.

   B. Traffic signal cabinets and controller/electronic equipment shall be selected from the City of Peoria approved Traffic signal cabinets and controller/electronic equipment list. Traffic signal cabinets and controller/electronic equipment shall be approved through the Electrical Equipment Submittal process.

C. Internally Lighted Street Name Signs (ISNS) / Metros shall conform to the City of Peoria Standards. The design of the ISNS shall be approved through the Electrical Equipment Submittal process. The installation of the ISNS shall be coordinated with the Traffic Operations Supervisor.

D. Barricades

1. All new developments shall provide a typical end of road marker at all dead ends and incomplete streets. The end of road markers shall be nine red reflectors, each with a minimum dimension of three-inches, mounted symmetrically on an 18 diamond back panel. Five or more markers shall be used at the end of the roadway. The minimum height of the marker shall be four-feet.

2. If an existing barricade is removed, it shall be salvaged and delivered by the contractor to the Maintenance Operations Center (M.O.C.), Public Services Yard at 8850 North 79th Avenue.

3. With approval by the City, barricades installed by phased construction may be relocated within the same development if the condition of the barricades is restored.

4. Barricades shall be set one-foot inside the subdivision being developed. The pavement should stop short of the barricade.

E. Guard Rails

Guard rails when required shall be per the Maricopa County Department of Transportation, Roadway Design manual, Section 5.30.

F. Transition Tapers

Transition tapers when required shall be per Figure 3-4.

G. Street and Lane Closure

A request submitted in written form to the City is required at least 48-hours in advance for any lane or street closure. A Traffic Control Plan (TCP) must be submitted, approved by the City and acknowledged a minimum of 48-hours prior to any work proposed to be undertaken within the street right-of-way. All construction zone signing shall be installed and maintained per the Phoenix Barricade Manual and the Federal Manual of Uniform Traffic Control Devices at the developer's expense. TCP's shall be faxed to the Engineering Inspector Supervisor at (623) 825-0325.

2-3 PARKING AND ACCESS

Parking is prohibited on parkway and arterial streets. Where permitted on local streets, parking shall be parallel to the flow of traffic, unless a designated parking area is provided which allows angled or perpendicular parking.

Any parking backing into the main drive aisles of a commercial development will be prohibited.

The minimum throat length of all accesses/driveways will be 50-feet. Longer throat lengths may be required based on the TIA.

2-4 DRIVEWAYS

A. General

Driveway access will be granted upon due consideration of pedestrian and vehicle safety, the resulting interference with the movement of vehicular traffic, interference with existing public improvements, unreasonable interference with the rights of the public in the adjacent street and alley and whether other access exists to the private property.

All driveways serving property abutting public streets in the City shall conform to the following guidelines. Driveways shall be constructed per City of Peoria Standard Details PE-251-1, PE-251-2, and PE-251-3.

B. Width

The width of a driveway shall be measured as the width at the throat of the driveway projected to the curb line, exclusive of wings or return radii. Driveway widths shall be in accordance with City of Peoria Standard Detail PE-251-3.

C. Distance Between Driveways

The distance between driveways shall be measured as the distance between inside edges of the driveways. See City of Peoria Standard Detail PE-251-3 and the Access Management Guidelines for minimum separation distance requirements.

D. Construction

Construction shall be per City of Peoria Standard Details PE-251-1, 251-2, and 251-3.

E. Number of Driveways

1. Residential lots shall be permitted a single driveway where lot size is less than 18,000 square feet. No more than two driveways are permitted for lots larger than 18,000 square feet in area with up to a maximum width of 24-feet allowed for the primary driveway, and up to a maximum width of 12-feet for the secondary driveway. Exceptions of these guidelines may be approved when appropriate justification can be demonstrated and approved by the Engineering Director.

2. Commercial, industrial and Multi-family residential properties are to minimize the number of driveways. Site plans shall be arranged to minimize number of driveways, by providing shared access and cross-access. Maximum number of driveways shall be per City of Peoria Standard Detail PE-251-3.

3. Notwithstanding the provision of these standards, where ample justification exists, the City may approve driveways up to a maximum width of 40-feet.

2-5 TRAFFIC IMPACT ANALYSIS

1. A TIA shall be submitted with new development plans. The TIA must be in accordance with the Circulation Study Assessment (dated March 2008), TIA

criteria (dated January 2002), and revised Deceleration Lane criteria (dated March 31, 2003).

2. The Traffic Impact Study (TIS) for a school has additional requirements. See Appendices School TIS Criteria.

2-6 15 MPH SCHOOL CROSSINGS

1. Requests for 15 mph School Crossings from Public Schools in the Peoria Unified School District shall be submitted to the Peoria School District Superintendent. Submit 15 mph School Crossing requests to:

   Peoria Unified School District
   Support Services Complex
   10721 North 95th Avenue
   Peoria, AZ 85345

2. Requests for School Crossings from Public Schools in the Deer Valley Unified School District shall be submitted to the Deer Valley School District Superintendent. Submit school crossing requests to:

   Deer Valley Unified School District
   20402 North 15th Avenue
   Phoenix, AZ 85027

3. Requests for School Crossings from Private/Charter Schools in the City of Peoria jurisdiction shall be submitted to the City Traffic Engineer. Submit School Crossing request to:

   City of Peoria
   Traffic Engineering
   9875 North 85th Avenue
   Peoria, Arizona 85345

CHAPTER 3

STREET DESIGN AND CONSTRUCTION

3-1 GENERAL INFORMATION

A. Street Definition and Purpose

A Street is defined as a dedicated public way primarily used to provide access, pedestrian, vehicular or otherwise, to all legitimate divisions of abutting property. Streets are intended to accommodate varying needs which are consistent with the use, maintenance, operation, construction, repair of such street and ancillary permitted facilities such as utilities, street lighting, landscaping, irrigation, signing, striping, traffic control, drainage and parking improvements. Street improvements include, but are not limited to pavement, shoulders, curb, gutter, sidewalk, parking space, street lighting, fire hydrants, landscaping, irrigation, signing, striping, traffic control, bike ways, safety facilities, utilities and appurtenances. Streets include bridges, culverts, slopes and embankments.

B. Street Basis and Types

The City street system has two bases. The primary basis is a grid layout intending to provide public access to all legitimate land parcels. The second, less predominant basis, is the conformance to topographic features and constraints in concert with land division boundaries intending to provide public access to legitimate land parcels, which are typically larger. Access within the larger parcels may be provided via private access with specific written request submitted to the Engineering Director and written acknowledgment of approval by the City.

1. *Rural Street Type*. Rural streets are public streets intended to encourage and preserve the rural nature of the area. Certain improvements such as sidewalk, profile curb, gutter and provision of parking are optional. Street lighting and landscape standards and/or requirements may be modified with specific written request submitted to the Engineering Director and written acknowledgment of approval by the City. Parkway and arterial streets are not considered rural.

2. *Urban Street Type*. Urban streets are intended to accommodate all aspects of public street purposes defined herein. Classification, standards, and required improvements shall be per the City of Peoria Infrastructure Design Guidelines.

3. *Private Street Type*. Private streets are intended to encourage and preserve development of neighborhoods. The City does not own and is not responsible to maintain private streets. Private Streets are required to be in accordance with the City Council Policy # 11 and Administrative Regulation A.R. 90-1. Public access is discouraged by controlling through traffic, traffic volume and speed. Street maintenance, street lighting, landscape standards, pavement section and design, street width, pedestrian access and/or other requirements may be modified with specific written request submitted to the Engineering Director and written acknowledgment of approval by the City.

C. Street Classifications

The following classifications are based on street development policies and are determined by location, intended use and/or other factors. See the Peoria Street Classification Map and Section 3-1 of these guidelines for additional information.

1. *Parkway*. The Parkway is required to move large volumes of moderate speed (45 mph or less) traffic. The Parkway would be designated as a limited access road with major intersection locations at the mile points, potential half-mile signalized intersections, if sufficient cross street demand exists. As many as three right-in/right-out access points per mile per direction can be accommodated. The Lake Pleasant Parkway is to begin at 83rd Avenue and Union Hills Drive and run west and north toward Lake Pleasant to State Route 74.

2. *Major Arterial*. Major arterials move large volumes of moderate speed traffic to and from freeways and serve some metropolitan-wide trips. They connect areas that are major accesses for commercial uses along major arterials, and residential areas are served from side streets.

3. *Minor Arterial*. Minor arterial streets move large volumes of traffic from one part of Peoria to another. Spacing of arterials is a function of land use density, not distance. Direct property access is a secondary concern to the movement of through traffic. Minor arterials are used to primarily connect neighborhoods to local commercial uses.

4. *Collector*.

    a. Generally, a Collector Street allows neighborhood traffic to travel from local to arterial streets. Direct property access is a secondary concern to the movement of neighborhood traffic. Collectors serve internal neighborhood traffic movements, but not as connections for non-neighborhood through traffic movement.
    b. Major Collector Streets provide two lanes of travel in both directions restrict street side parking and provide a center left turn lane.
    c. Minor Collector Streets provide one lane of travel in each direction and provide a center left turn lane.
    d. Widening of a collector street, right-of-way and pavement section, at the intersection with the parkway, arterial or another collector street may be necessary, based on provisions in Section 3-1.
    e. Bicycle routes are typically located on collector streets and may require additional right-of-way and street width.

5. *Local*. Local streets provide direct property access. They bring local neighborhood traffic to collectors which then feed into arterials. Local streets are designed to preserve privacy and encourage livable residential neighborhoods.

6. *Private Streets*. Private streets shall be designated in accordance with City of Peoria Roadway Details. Entrances into private subdivisions shall be designed to accommodate City of Peoria Standard Detail PE-100 for Gate Entrances (i.e. adjacent tracts).

7. *Alleys*. The creation of new alleys is not permitted unless otherwise authorized by the Engineering Director. The design of parcels in areas with existing alleys shall provide for continuation of the alley to a street or to an intersecting alley providing at least two access points to streets. All alleys must be improved to City standards by the developer.

D. Unpaved Streets Policy

When unpaved streets are encountered which may provide access to and/or are adjacent to any development, provisions for paving or dust control per Ordinance 98-20 shall apply. Maricopa County has been designated by the U.S. Environmental Protection Agency (EPA) as being a Non-Attainment Area for Air Quality. Ordinance 98-20 has been adopted which addresses the City's compliance with the federal regulation. The City is mandated to not permit any new

unpaved streets and to eliminate any current unpaved streets within the City, whether public or private.

E. "Half-Street" Minimum Requirements

In cases where no adjacent street improvements exist, a developer is, at a minimum, responsible for installing half of the full street improvements. The minimum paving width for residential "half streets" shall be 25-feet, to permit two-way traffic. The width of the street shall be in accordance with the standard cross-section of the specific street. Minimum pavement widths for other types of streets shall be established on a case-by-case basis. In most cases, the developer shall be required to install all required improvements of the half street and a thickened edge on the unfinished side, within the required right-of-way for the half street. If these minimum improvements will require additional right-of-way, it will be the developer's responsibility to obtain the required right-of-way. Additionally, the City may require improvements in excess of the minimum required half-street, if it is deemed necessary to support the proposed development and surrounding areas.

F. Intersections with Arterial Streets

Interior streets shall not intersect major arterial or minor arterial streets at other than the 1/4 or 1/2 mile points of an arterial, except with specific written request submitted to the Engineering Director and acknowledgment of approval by the City. Widening of a collector street, right-of-way and pavement section, at the intersection with the parkway, arterial or another collector street may be necessary, based on provisions in Section 3-1. Refer to Section 3-4.I for intersection detailed design criteria.

G. Street and Lot Layout and Easement Planning

Streets, lots, tracts and easements planning and layout shall be in accordance with the Subdivision Regulations, Zoning Stipulations and Approved Site Plan.

H. Pavement Transitions

When development causes the widening of a portion of the pavement of an existing road, pavement transitions are required at each end of the widened portion. Design of the various features of the transition between pavements of different widths should be consistent with the design standards of the superior facility. The transitions should be made on a tangent section whenever possible. Locations with horizontal and vertical sight distance restrictions should be avoided. Whenever feasible, the entire transition should be visible to the driver of a vehicle approaching the narrower section. Intersections at grade within the transition area should be avoided. Refer to Figure 3-4 (see Appendix) for transition equations.

3-2 GENERAL TECHNICAL INFORMATION

A. Bridges, Retaining Walls, and Structural Clearances

1. *Bridges*

a. *Bridge Roadway Width.* The clear roadway width of all bridges, including grade separation structures, shall equal the full width of the approach roadway including the proposed physical improvements consisting of the street pavement, median, bike lane, and curb and gutter.

b. *Approach guardrail*. If a vehicular railing or safety-shaped barrier is provided which is within

10 feet of a traveled way with or without a sidewalk, approach guardrails shall be installed on all approach ends in accordance with AASHTO guidelines and paragraph e.4 below.

c. *Cross Slope*. The crown is normally centered on the bridge, except for one-way bridges, where a straight cross slope in one direction shall be used. The cross slope shall match the approach pavement.

d. *Median*. On multi-lane divided highways, a bridge median that is 26-feet wide or less shall be decked.

e. *Railings*. The railings to be used are the State of Arizona Department of Transportation standard railing designs. There are four types of railings, which are described below:

(1) Vehicular Barrier Railings. The primary function of these railings is to retain and redirect errant vehicles.

(2) Combination Vehicular and Pedestrian Railings. These railings perform the dual function of retaining both vehicles and pedestrians on the bridge. They consist of two parts: 1) a concrete barrier railing with a sidewalk, and 2) a metal hand railing or fence-type railing.

(3) Pedestrian Railings. These railings prevent pedestrians from accidentally falling from the structure and, in the case of the fence-type railing, prevent objects from being thrown to the roadway below the bridge.

(4) Bridge Approach Railings.

(a) Approach railings are required at the ends of bridge railings exposed to approach traffic. On divided highways, with separate one-way structures, they shall be placed to the left and right of approach traffic.

(b) On two-way roadways with a clear width less than 60-feet across the structure, approach railings shall be placed on both sides of the structure.

(c) When the clear width is 60-feet or more, approach railings shall be placed only to the right of approach traffic.

(d) Several types of approach railings are available, including Metal beam Guardrail, Bridge Approach Guardrail (Types I and II), and Safety-Shape Barriers. The type of approach railing selected should match the rail used on the bridge. When long runs of guardrail (such as embankment guardrail) precede the bridge, the guardrail should connect to the bridge railing and thus serve the approach railing function.

(e) Approach railings shall be flared at their exposed end. The greatest flare offset possible should be used commensurate with the approach roadway. For detailed information, refer to the AASHTO publication, Roadside Design Guide.

2. *Retaining Walls*

a. Types and Uses. Recommended types of retaining walls include reinforced concrete and structural masonry. Refer to City of Peoria Standard Details PE-121-1, PE-121-2 and PE-121-3. Heavy timber construction is not encouraged, except when approved by the Engineering Director. Retaining walls shall include integral attachments for handrails and

weep holes for drainage, where applicable.

b. Aesthetic Considerations. In general, the materials and design of retaining walls shall match or blend with the adjacent natural features, landscaping, and/or buildings. The surface of the retaining wall should have low light reflectance. Suggested surface treatments include exposed aggregate, stucco or mortar wash, and native stone, or other surfaces as approved by the Community Development Department.

The height of retaining walls shall not exceed 6-feet except when approved by the Engineering Director. If approved to retain above 6-feet, terracing is encouraged and the length of the alignment of the retaining walls should be foreshortened by vertical grooves, periodic offsets, and height changes, or other configurations as approved by the Community Development Department.

c. Retaining Walls may be constructed per the City of Peoria Standard Details PE121-1 to PE121-3 or per a structural engineered design.

d. Submittal requirements for structural engineered designs are as follows:
- Plans must be signed and sealed by an AZ registered engineer. Plans shall be submitted with the grading and drainage plans.
- Provide wall elevations and cross-sections including the structural details, ground slope, method of drainage, and need for safety railing
- Specifications for the construction materials and backfill material and compaction requirements.
- Two copies of the signed and sealed design calculations. Calculations shall address the effect of any surcharges on the wall and shall use the minimum factor of safety of 1.5 for both sliding and overturning.
- One copy of the Geotechnical Report used for soil pressure or excessive slopes.

3. *Safety Railings*

Safety railings are required on or adjacent to vertical faces such as retaining walls, culvert headwalls, bridge wing-walls, etc. where the vertical drop is 30-inches or more. In areas of pedestrian activity a safety railing may be required where the vertical drop is 12-inches or more. The safety railing shall be constructed per the City of Peoria Standard Detail PE-119.

4. Structural Clearances

a. Horizontal Clearance

(1) A fixed object other than street lights, signal poles and utility poles will not be allowed within 10-feet of the traveled way unless approved by the Engineering Director and a safety barrier is provided. A lesser clearance may only be allowed when other controls make the desired clearance unreasonable and appropriate traffic barriers are installed. In no case shall a fixed object be allowed within 2-feet of a traveled way.

(2) The horizontal clearance to bridge piers, abutments, and retaining walls on all streets shall not be less than 10-feet from the edge of the traveled way.

b. Vertical Clearance

The minimum vertical clearance shall be 16.5-feet over the entire width of the traveled

way of an arterial street or major collector street. On other streets, the minimum shall be 14.5- feet. Exceptions must be submitted to the Engineering Director for review and approval.

B. Side Slopes

1. *Side Slope Standards*. Side slopes should be designed for functional effectiveness, ease of maintenance, and pleasing appearance. For areas greater than 10- feet back of curb, slopes of 4:1 or flatter shall be provided. Steeper slopes may be approved in areas more than 30-feet back of curb when soils are not highly susceptible to erosion, or when a cut is not more than 4-feet. Consult the AASHTO publication, Roadside Design Guide for further details.

2. *Slope Rounding.* The top of all cut slopes shall be rounded where the material is other than solid rock. A layer of earth overlaying a rock cut also shall be rounded. The top and bottoms of all fill slopes for, or adjacent to a traveled way, sidewalk, or bicycle path shall also be rounded.

C. Driveway Spacing and Location

Driveway Spacing and Location shall be in accordance with Section 2-4, City of Peoria Standard Detail PE-251-3, and the Access Management Guidelines.

D. Sidewalk and Pedestrian Areas

1. *General*. Placement of sidewalks and pedestrian ways shall promote and enhance pedestrian safety and the visual quality of the roadway by creating a boulevard landscaped area between the street, fence, wall, railing and the detached sidewalk. Sidewalks and pedestrian ways shall be constructed to a width, line and grade in accordance with ADA requirements and as approved by the City. Construction shall conform to the MAG Standard Detail 230.

2. *Sidewalks*. Sidewalks are required along both sides of the pavement section on all public streets. Sidewalks shall be a minimum of eight-feet in width and detached from the back of curb on all arterial streets. Sidewalks shall be six-feet in width and detached on all collector streets. Sidewalks shall be five-feet in width on all local streets.

3. *Pedestrian Ways*. Pedestrian ways shall be constructed to connect sidewalks with public and private facilities not located in the public street right-of-way. Public pedestrian ways shall be within a tract or easement for such purposes. The minimum width shall be 5-feet or a width consistent with adjacent trails, and may be used for additional purposes as approved by the City. If additional uses are approved, the minimum required width may be increased depending specific use.

E. Curb Returns and Ramps

All urban street intersections shall be constructed with concrete vertical curb returns. All street intersections with arterial and collector to collector intersections shall provide a dual sidewalk ramp at the P.T. and P.C. of each return. All other street intersections shall provide at least one sidewalk ramp at the mid point of the return.

For non-arterial and non-collector to collector intersections with a face of curb radius 30-feet and greater, use MCDOT Standard Detail 2031, Type A. For non-arterial and non-collector to collector intersections with a face of curb radius less than 30-feet use MCDOT Standard Detail 2031, Type B. For mid-block sidewalk ramps use MCDOT Standard Detail 2032, Type B.

Truncated domes are required at all locations where pedestrians are being directed to cross traffic (including new or reconstructed ramps at curb returns, mid block crossings, and commercial driveways). Truncated domes must be specified as CASTinTACT, StrongGo, or approved equal. Truncated domes on public streets shall be yellow; domes on private streets may be any color, so long as it meets the requirements of the federal ADA Accessibility Guidelines.

The radius to face of curb for the return shall be:

Street Classification	Major Arterial	Minor Arterial	Collector	Local
Major Arterial	35'	35'	30'	20'
Minor Arterial	35'	35'	30'	20'
Collector	30'	30'	30'	20'
Local	20'	20'	20'	20'

F. Valley Gutter

Concrete valley gutters per MAG Standard Detail 240, shall be constructed at all intersections where the drainage pattern requires them. Concrete for valley gutters shall comply with MAG Standard Specification 725 for Class 'A' concrete. Valley gutters are not allowed to cross major arterial and minor arterial streets. Valley gutters are not allowed where storm drain facilities are existing. Valley gutters crossing collector or residential street intersections with major arterial or minor arterial streets shall be six-feet wide, minimum. Valley gutters not at intersections shall be six-feet wide, minimum. Asphalt valley gutters are not allowed on public streets.

G. Designated Tracts

Vertical curbs shall be constructed along the street frontage of all designated tracts.

H. Street Drainage Facilities

Street drainage facilities shall be in accordance with Section 4-2.

I. Street Lighting

Street Lighting shall be in accordance with the Street Lighting Policy in the Appendix.

J. Fire Hydrants

Fire hydrants shall be installed and located in accordance with Chapter 5.

K. Irrigation Facilities (Flood Irrigation)

All new developments shall provide for continued and undiminished service of affected irrigation systems.

The developer is responsible for coordinating with S.R.P. the design and construction of S.R.P. facilities. An S.R.P. license may be required for construction and entry onto S.R.P rights-of-way. New S.R.P. irrigation tile may be located within the public right-of-way provided the appropriate authorization. The exact location shall be coordinated with S.R.P. and the City of Peoria.

Private irrigation facilities shall be Concrete or PVC (minimum SDR 35) irrigation pipe and shall be located on private property, within a private irrigation easement, and sized to carry at least the same flow as the existing or replaced facilities, or as may otherwise be directed by the City. The Engineer shall submit appropriate data to support the design.

Where there is a need for irrigation facilities to cross the public right-of-way, it shall be done at approximately 90 degrees and must be tiled with Rubber-Gasket Reinforced Concrete Pipe (RGRCP) Class V (minimum) in accordance with the criteria outlined in ASTM Specifications Section C 76. Any private irrigation pipe proposed to be constructed in City right-of-way shall be constructed with RGRCP as above. Work outside of the limits of the development may be required to effect such irrigation.

It is not intended that the above material requirements be applied to existing tiled irrigation facilities where minor roadway improvements (as determined by the Engineering Director), such as a driveway, are proposed and investigation by the owner of the irrigation facilities shows the existing tile to be functionally and structurally adequate.

L. Power, Communication and Gas Utilities

1. All new and existing utility, electrical facilities less than 69 KVA, cable T.V., telecommunications, fiber optics, etc. shall be installed underground as part of the street improvements. Gas facilities shall be installed underground, except where geological conditions prohibit such undergrounding and with specific written request submitted to the Engineering Director and acknowledgment of approval by the City. Work outside of the limits of the development may be required to effect such undergrounding.

   If new facilities are proposed in an area that has existing overhead lines, the new facilities shall be undergrounded along with any existing overhead facilities. There may be an opportunity to delay installation of facilities underground until such time as the developer may participate in reinstalling these facilities underground when a joint trench opportunity is provided. When major upgrades are planned by utilities and telecommunications providers to their networks, the providers may underground existing facilities that are currently on existing poles.

2. Installation of new facilities or major enhancements to existing facilities shall be installed underground unless it can be demonstrated that the public's general health, safety and welfare are affected by the underground installation. The fact that an underground installation is more costly than an overhead installation shall not, in and of itself, constitute a health or safety issue.

3. All above ground appurtenances that are required to provide services shall be designated and installed with attention to minimizing the number of appurtenances, joint location, combined use with existing boxes, and shared facilities where ever possible. All locations will meet industry standards for sight distance locations, all industry safety requirements and the aesthetic requirements of the City. A permit shall be issued for the installation or conversion of any overhead to underground facilities. The issuance of a permit in violation of any requirements will not void the permitee's responsibility unless the standard installation is clearly noticed and approved separately from normal permit requirements.

M. Survey Monuments

All developments shall provide survey monuments at section corners, street centerline intersections, street centerline alignment changes (P.C.'s, P.T.'s, or P.I. if it is within street pavement), and subdivision corners.

All section corners, 1/4 corners, and center of section shall be a brass cap in a hand hole per MAG Standard Detail 120-1-A. All other required survey monuments shall be a brass cap on the surface per MAG Standard Detail 120-1-B. All existing monumentation shall be preserved both horizontally and vertically.

Any survey monuments disturbed by construction must be reset and certified at the contractor's or Developer's expense. Any disturbed monument in the City's 2002 Vertical Survey Datum list shall be reset and a new vertical datum established and certified. At least two other monuments on the City's survey list shall be referenced as a check. The survey notes showing these reference monuments and the elevation certification will be required before any project will be accepted as complete.

N. Street Names

Wherever a plan indicates a public or private street, the street name shall be shown. Street names shall be consistent with the natural alignment and extension of existing streets and the "MAG Address and Street Assignment Policy". New street names shall not duplicate in whole or in part, or be confusing with existing street names. The City reserves the right to modify street names to conform to City standards at the technical review stage. Aisles or drives shall not be named or numbered. The site shall receive a single address based on the public street on which it fronts. Lots, homes, units and spaces, within the project will be assigned sub-addresses by the City staff for mail or delivery, emergency or other service needs.

O. Street Name Signs

Street name signs shall be located at all street intersections. The subdivider/developer shall be responsible for submitting the necessary plans to the Engineering Department for review and approval. The contractor shall ensure the landscape area behind the curb/sidewalk is level and prepared prior to installation of the sign posts. The subdivider/developer shall be responsible for the fabrication and installation of all signs, in accordance with the City standards.

For public streets, street name signs shall be a black on white, or white on brown. For private streets, the street name signs may be black on white, or white on brown, with a 1-inch color band of the same color as the lettering. All street name signs shall be retro-reflective. Private street name signs are considered non-standard and shall be maintained by the Homeowner's Association. Refer to City of Peoria Standard Details PE-030, PE-031 and PE-032.

P. Mailbox Standards

Mailbox facilities shall be in accordance with the U.S. Postal Service standards and requirements and as approved by the City. Mailboxes shall not be located within 3-feet of a fire hydrant. A streetlight shall be located such that the clustered mailbox locations are illuminated in the same manner as the street.

3-3 TECHNICAL REPORTS

A. General Information

Developers are responsible for submitting a Design Study Report to validate the design shown on the construction plans. The Design Study Report is a compilation of the following as applicable to the development. The Design Study Report should not be excessively long or complex. Rather it is to briefly describe the basis of the design and the assumptions made and explain "special" solutions to problems encountered as detailed below. All reports must be sealed by an Arizona registered engineer. The following sections shall be contained in the report:

1. *Soils Investigation Report*. A "Soils Investigation Report" shall be submitted with new street construction plans indicating "R" value, sieve analysis, and plasticity index of the sub-grade.

2. *Drainage/Hydrology Report*. A "Drainage Report" shall be submitted with new street construction plans and/or the grading plans. This report shall be prepared per Chapter 4 herein.

3. *Pavement Evaluation and Design Report*.

   A "Pavement Evaluation and Design Report" shall be submitted with new street construction plans. When the design is proposed to match existing pavement, the report shall evaluate if the existing pavement condition and structure meet current structural requirements. The design engineer is responsible to provide the Soils Investigation Report, Traffic Impact Study and Pavement Core sampling which are required to determine the condition and structure and for investigating and evaluating the existing pavement structure.

   If the existing pavement does not meet the structural requirements, it must be removed and new pavement constructed to the monument line.

   Existing pavement to remain may be matched by trimming a minimum of 1-foot for a longitudinal match, or 2-feet for a perpendicular match. Exact point of matching and sawcut shall be determined in the field by the City.

   If an existing pavement section is less than five years old, and it can be demonstrated by a comprehensive pavement analysis that it meets or exceeds the current guidelines for an appropriate pavement structure, the subdivider/developer may request a waiver from removing the existing pavement to monument line and new pavement constructed. The Engineering Department will consider the application, review the pavement analysis and grant or deny the application.

   Such pavement analysis shall include the following at minimum:

   - Identify the average thickness of the existing AC.
   - Identify the base course thickness, density, gradation, PI
   - Identify the density of native subgrade
   - Identify the extraction and viscosity of the existing AC

   The location and number of test locations required shall be recommended by a geotechnical engineer, reviewed, and confirmed by the Engineering Department.

The pavement design method shall be approved by the City of Peoria Engineering Department. Soils tests required to perform the design are not provided by the City. The flowing tests are the minimum required for pavement design purposes:

a. Samples shall be taken to a minimum of 18-inches below proposed grade elevation. Depths up to three-feet on arterial streets may be required in certain instances.

b. One test per 800 lineal feet with at least one test per proposed street. Additional tests may be required in certain instances.

c. Each sample shall have a sieve analysis per AASHTO T27 with results reported as percent passing #200 sieve, plus a plasticity index per AASHTO T90.

d. Test results shall be forwarded to the City of Peoria Engineering Department.

e. Subgrade, Base Course and Surface Course. The report also is intended to provide the design of the new pavement subgrade, base course and surface course for compliance with these guidelines. The components shall be in accordance with MAG Specifications. The design shall recommend the minimum structure composition and thicknesses.

f. Pavement Mix Design. A pavement mix design for concrete, asphaltic concrete and admixtures to base and subgrade components of the pavement structure in accordance with MAG Specification Parts 300 and 700, are required for review and approval by the City.

4. *Supplemental Sketches, Details, Calculations, and Design Rational*. Provide any support sketches, details, calculations and design rational used and pertaining to the design of required improvements.

5. *Traffic Impact Analysis (TIA)*. A "Traffic Impact Analysis" in accordance with *Traffic Impact Study Criteria* in the appendix shall be submitted with new street improvement plans.

6. *Visibility/Sight Line Study*. A "Visibility/Sight Line Study" to verify and preserve the visibility and/or sight line in accordance with AASHTO Guidelines, City of Peoria Standard Details PE-090 and PE-091 and generally accepted engineering practices, shall be submitted with new street improvement plans. Sight lines and dimension and shall be provided on the paving plans. Easements or tracts shall be dedicated on the plat or by separate instrument, to provide the perpetual sight line clearances.

3-4 TECHNICAL DESIGN REQUIREMENTS

A. General

Technical design requirements for geometrics, layout and planning for all street classifications are provided herein. Figure 3-4 (see Appendix) provides specific geometric requirements.

B. Street Layout and Planning

1. *Arterial Streets*. Arterial streets design requirements shall be as determined by the City or other responsible agency.

2. *Street Classification Map*. Whenever the development embraces any part of a street designed in the adopted Streets Classification Map, such street shall be platted in conformity therewith.

3. *Neighborhood Street Plan*. Whenever the tract is located within the area for which a Neighborhood Street Plan has been approved by the Engineering Director, the street arrangement shall conform substantially to that approved plan.

4. *Continuation*. Street layouts shall provide for the continuation of existing collector streets in adjacent areas, and such other streets as the Engineering Director may designate.

5. *Future Street Extensions*. Certain proposed streets, as designated by the Engineering Director or an approved Neighborhood Street Plan shall be extended to the development boundary to provide future connection with adjoining unplatted lands. In general, these extensions should not be farther apart than the maximum permitted length of a block, as specified herein.

6. *Local Street Arrangement*. Local streets shall be so arranged as to discourage their use by traffic originating outside the immediate neighborhood. Local streets shall be discontinuous and generally should be interrupted with jogs and offsets. Refer to City of Peoria Standard Detail PE-270. Four-way intersections of local streets should be avoided.

7. *Marginal Access and Reverse Frontage Streets*. Lots intended for single-family residential use shall not front or have access from arterial streets. When a proposed development abuts or contains an existing or proposed arterial street, the arrangement of interior streets and lots shall prohibit marginal access streets and minimize reverse frontage streets, and shall provide non-access easements along the arterial street, or such other treatment as may be justified for protection of properties from the nuisance and hazard of high volume traffic and for preservation of the traffic function of the arterial street.

8. *Access Provisions for Development Boundary Constraint*. When a residential subdivision abuts the right-of-way of a railroad or limited access highway or abuts a commercial or industrial land use, the Engineering Director may require location of a street approximately parallel to such right-of-way or use at a distance suitable for appropriate use of intervening land, such distance being determined with due regard for approach grades, drainage, embankments, bridges, and future grade separations.

9. *Dead End Streets*. Dead End Streets shall be prohibited except in locations approved by the Engineering Director for future street connection to adjacent unplatted lands.

10. *Maximum Lengths for Blocks and Cul-de-sacs*.

    a. Maximum length of blocks, measured along the centerline of the street, and between intersecting street center lines, shall not exceed 1500-feet; except that in development with lot areas averaging one-half acre or larger or where extreme topographic conditions warrant, this maximum may be exceeded by up to 500-feet. Blocks shall be as long as reasonably possible under the circumstances within the above maximums in order to achieve depth and possible street economy and to reduce the expense and safety hazard arising from excessive street intersections.

    b. The maximum length of cul-de-sac streets shall not exceed 400-feet, measured from the intersection of right-of-way lines to the extreme depth of the turning circle along the cul-de-sac street center line, unless specifically approved by the Engineering Director. An

exception may be made where topography constrains the number of adjacent lots served, and shall not be made merely because the tract has restrictive boundary dimensions. In such cases, provision should be made for extension of the street pattern to the adjoining unplatted parcel and a temporary turnaround installed, or to alter the street pattern to eliminate the constraint. Cul-de-sac streets shall terminate in a circular right-of-way 50-feet in radius with an improved unobstructed traffic turning circle of at least forty-five feet in radius. Refer to City of Peoria Standard Detail PE-110.

11. *Non-Vehicular Access*. Access to the parkway arterial and major collector streets shall be restricted by use of a one-foot, Non-Vehicular Access Easement (NVAE) at locations other than street intersections and legitimate driveways.

12. *Topography*: Streets shall be arranged in relation to topography as to produce desirable lots of maximum utility and streets of reasonable gradient, safe ingress-egress and to facilitate adequate surface drainage.

C. Design Standards

Figure 3-4 lists most of the design standards data necessary for the design of streets within the City of Peoria. Subsequent paragraphs herein discuss this data and provide other standards that could not be included in Figure 3-4 (see Appendix).

1. *Street Right of Way Requirements*. The right-of-way requirements in Figure 3-4 are based on the space needed for the street when it is constructed to meet ultimate development requirements. The right of way must also provide space for utilities, cut or fill slopes, sidewalks, bicycle paths, trails, traffic control devices and information signs, fire hydrants, landscaping, transit facilities, and other public facilities that must be located adjacent to street pavements.

   Right-of-way widths in excess of the standard widths may be required in special circumstances such as when:

   a. Cut or fill slopes cannot be confined within the standard width
   b. Minimum sight distance lines on horizontal curves are not within the standards
   c. Minimum sight distances at intersections are not within the standards
   d. Auxiliary lanes are to be provided

2. *Pavement Cross-Section slopes*

   a. *Typical Street Cross-Sections.* Undivided streets should have a normal crown that is a two-way cross-slope with the cross-section high point on the street centerline. Divided streets should have cross-slope on each pavement section. The high point of each slope on each pavement section shall occur on the edge of the pavement nearest to the median. Unusual conditions may cause cross-slope requirements to vary, but normally the desirable cross-slope is two percent, with a maximum cross-slope of 3 percent. Any deviation from the desirable cross-slope is subject to review by the Engineering Department.

   b. Cross-*Sections in Street Dip Sections.* While dip sections are discouraged, where storm drainage runoff flows must cross the street, dip sections are needed. The pavement through the dip section should have a one-way slope (no crown), curbing and medians must not be raised, and cut-off walls shall be installed in accordance with MAG Standard Details. Transitions back to normal street cross-slopes will be needed at both ends of the dip section.

c. Inverted crown cross-sections will not be allowed for any project. This applies to public streets, private streets, private driveways, and access aisles for commercial or multi-family developments.

3. *Medians*

a. *Median Widths*. The width of a median is measured from back of median curb to back of median curb. If a median has no curb, the width is measured between the centers of the continuous painted median stripes. Median widths are specified in Figure 3-4. In special circumstances, the Engineering Director may approve widths other than those listed, but in no case shall a median be constructed with a width less than three-feet.

b. *Paved Medians.* A median less than five- feet wide should be paved. The paved surface should be crowned and have the same cross-slope as the street pavement. Acceptable paving materials are Portland cement concrete or concrete pavers.

c. *Unpaved and Landscaped Medians*. Medians that are greater than five-feet in width are normally not paved. Landscaping and other median features shall not restrict sight distance for left turning vehicles on the through street. Median landscaping shall not restrict sight distance in the vicinity of intersections for side street traffic; refer to City of Peoria Standard Details PE-090 and PE-091.

4. *Curbs*. All curbs except for mountable curbs shall conform to the appropriate MAG Standard Detail and MAG Standard Specifications, except that concrete for curbs shall be Class 'A' concrete, per MAG Standard Specification 725. For mountable curbs refer to MAG Standard Detail 220-2, Type E.

a. *Vertical Curbs*. Vertical curbs are required for all streets except local residential streets. Vertical curbs may be used where roll curbs are specified if drainage considerations make such use desirable. Vertical curbs with gutter are to be constructed in accordance with MAG Standard Detail 220-1, Type 'A'. Vertical curb and gutter shall match the adjacent pavement slope to the gutter cross section direction. The curb height shown on the Standard Detail is six-inches, but where fire lane or public maintenance vehicle access to abutting property must be provided over the curb, use mountable curb, per MAG Standard Detail 220-2, Type E.

b. *Roll Curb, Ribbon Curb, Maricopa Edge.* Roll curb is preferred for local residential streets except where vertical curb is required, and is to be constructed in accordance with MAG Standard Details. Ribbon curb may be used in lieu of roll curb for local residential streets. When ribbon curb is used, drainage runoff from the road shall not drain with the road but shall be directed to roadside ditches. See Chapter 4 for additional details. For local rural roads, a Type 'A' Maricopa Edge per MAG Standard Detail 201 may be used. The pavement width of the local road shall be 24-feet. When a Maricopa edge is used, drainage runoff from the road shall not drain with the road but shall be directed to roadside ditches.

c. *Cut-Off Walls*. In locations where dip sections are permitted to allow drainage flows to cross roadways, cut-off walls conforming to MAG Standard Detail 552 shall be installed. Cut-off walls shall be at least three-feet deep and have a top that is flush with the pavement surface. The exposed portion of the cut-off wall shall have the appearance of ribbon curb, with the same width as the street's regular curb and gutter. The cut-off walls shall extend across the flow path in the dip section to protect the pavement structure during runoff flows from a 100-year storm event. Transitions will be needed between the

regular curbs and the cut-off walls at each end of the dip section.

d. *Curb Returns*. Vertical curb shall be used through the curb return from PC to PT regardless of whether the tangent curb sections are vertical or roll curb. All curb returns shall be provided with sidewalk from PC to PT of the same width as that provided for the sidewalk behind the tangent curb sections. If no sidewalk is provided behind the tangent curb sections, the curb return sidewalk shall be at least five-feet wide.

D. Selection of a Design Speed

The design of geometric features such as horizontal and vertical curves will depend on the design speed selected for the street. The choice of the design speed is primarily determined by street classification. The design speed is the maximum speed for the safe operation of a vehicle that can be maintained over a specific section of a street when conditions are so favorable that the design features of the street govern. Design speeds for the various classifications of streets may be found in Figure 3-4 (see Appendix). The use of speeds other than those shown in Figure 3-4 (see Appendix) must be approved by the Engineering Director. Posted speed limit for a street is generally the Design speed less than 10 miles per hour, unless otherwise determined by the Engineering Director.

E. Superelevation in Curves

Superelevation is discouraged on horizontal curves in the urbanized area of the city.

1. *0.02 ft/ft Superelevation.* Superelevation of 0.02 ft/ft may be used, with approval of the Engineering Director, when the standard radius cannot be provided due to circumstances beyond the control of the Design Engineer and the general alignment cannot be changed due to physical topographical constraints.

2. *Superelevation Greater than 0.02 ft/ft.* Superelevation greater than 0.02 ft/ft may not be used except when approved by the Engineering Director. In no case shall a superelevation exceed 0.06 ft/ft.

3. *Transition for Superelevation*

   a. The length of superelevation transition shall be based on the superelevation rate and the width of rotation. The axis of rotation shall generally be about the pavement centerline. The transition lengths for a superelevation of 0.02 ft/ft are provided in Figure 3-4 (see Appendix) for other superelevation rates; refer to the AASHTO publication, A Policy on Geometric Design of Highways and Streets.

   b. With respect to the beginning or ending of a horizontal curve, one-third of the transition should be on the curve, and two-thirds of the transition should be on the tangent pavement section.

4. *Drainage on Superelevated Curves.* Whenever superelevation is allowed on a divided street, a storm drainage system to collect the runoff along the median curb shall be provided. In no case shall nuisance water from the higher traveled way be allowed to cross the lower traveled way.

F. Horizontal Curves

Horizontal alignments should provide for safe and continuous operation of motor vehicles at a uniform design speed for substantial lengths of street. A horizontal curve is required when the

angle of change in horizontal alignment is equal to or greater than five degrees. The nature of the surrounding development and topography, and the street classification will establish the factors that determine the radius of curve.

1. *Minimum Radii of Curvature*. The minimum radius of curvature will be determined by the design speed or by the stopping sight distance.

   a. *Minimum Radii Based on Design Speed*. Figure 3-4 (see Appendix) contains the minimum radius of curvature for each street classification with and without superelevation of 0.02 ft/ft. Whenever possible, the radii used in design should be larger. If stopping sight distance conditions require a larger radius than that shown in Figure 3-4 (see Appendix), then that larger radius becomes the minimum radius for the curve.

   b. *Consideration of Stopping Sight Distance.* When wall, buildings, bridge piers, cut slopes, vegetation, or other obstructions are near the roadway on the inside of a curve, they can block a driver's view of the road ahead. If they are too close, the driver will not have sufficient distance along the curved roadway to stop when a hazardous condition comes into view. For design, the drivers eye is 3.5-feet above the center of the inside lane (the driving lane closest to the inside of the curve) and that the hazardous condition is an object 0.5 feet high in the center of the inside lane. The clear distance "M" is measured from the center of the inside lane to the view obstruction.

2. *Reduced Design Speed on Curves*. The reduction of a street design speed on a curve should be avoided. However, where physical restrictions prohibit increasing the radius of the curve or the clear distance, "M", the design speed for the curved section may be reduced. In such circumstances, signing in accordance with the MUTCD is required. The difference between the design speed for the roadway approaching the curve and the design speed for the curve shall not be greater than 10 miles per hour. The design speed for a curved roadway section must not be reduced if the reduction would occur at the end of a long tangent or at any location where high approach speeds may be expected.

3. *Compound Curves.* Compound curves should be avoided. However, if site conditions make the use of a compound curve unavoidable, the minimum lengths for tangents between two curves curving in the same direction are listed in Figure 3-4 (see Appendix). The shorter radius shall be at least two-thirds the length of the long radius when the shorter radius is 1,000 feet or less. Compound curves are not permitted when design speeds require the shorter radius to be greater than 1,000 feet.

4. *Tangent Sections between Curves in the Same Direction*. On two-lane roads, tangent sections are needed between two curves in the same direction. If the pavement cross-sections through, the curves do not have superelevation. (The minimum lengths for tangent sections are listed in Figure 3-4) (see Appendix). If superelevation is provided in the curved portions of the roadway, then the tangent lengths will be determined by the superelevation transition lengths indicated in Figure 3-4 (see Appendix).

5. *Tangent Sections between Reverse Curves and Approaching Intersections*. A tangent section must be provided between two curves that curve in opposite direction. A tangent section must also be provided between an intersection and a curve. Minimum lengths for tangent sections between reverse curves without superelevation are provided in Figure 3-4 (see Appendix). If the curve radii are at least 50% greater than the radii required by the design speed, the tangent sections may not be required depending on the grades, topography, and vegetation. If superelevation is provided for the curves, then the superelevation transition lengths indicated in Figure 3-4 (see Appendix) will determine the minimum length of tangent sections between reverse curves.

G. Vertical Alignment

A vertical curve is required when grade changes are equal to or greater than 1.5%. All sections of a street's vertical alignment must meet passing and stopping sight distance requirements for the design speed established for the street. For further details, see the AASHTO Publication, A Policy on Geometric Design of Highways and Streets.

1. *Longitudinal Street Grades*. For parkways, expressways, and arterial streets, the maximum grade is 6%; for collector and local streets the maximum grade is 9%. The minimum longitudinal street grade for all streets is 0.4%. Wherever possible, longitudinal street grades greater than or equal to the minimum grade shall be provided. Where necessary, grades less than 0.4% may be used with approval by the Engineering Director.

2. *Vertical Curves*. Properly designed vertical curves should provide adequate sight distance, safety, and effective drainage.
   a. *Type of Curve.* A parabolic vertical curve is to be used. Figure 3-4 (see Appendix) provides all necessary mathematical relations for computing a vertical curve, either crests or sags.

   b. *Sight Distance Requirements.* Sight distance is the continuous length of street ahead visible to the driver. For vertical alignment design, two sight distances are considered: passing sight distance and stopping sight distance. Stopping sight distance is the minimum sight distance to be provided at all points on multi-lane streets and on two-lane streets when passing sight distance is not economically obtainable. Stopping sight distance shall also be provided in the vicinity of intersections. Figure 3-4 (see Appendix) lists the minimum passing and stopping sight distances for the various street classifications and design speeds.

      (1) Stopping Sight Distance. The minimum stopping sight distance is the distance required by the driver of a vehicle, traveling at a given speed, to bring the vehicle to a stop after an object on the road becomes visible. Stopping sight distance is measured from the driver's eyes, 3.5-feet above the pavement surface, to an object 2-feet high on the roadway, or currently accepted AASHTO standards.

      (2) Passing Sight Distance. Passing sight distance is the minimum sight distance that must be available to enable the driver of one vehicle to pass another vehicle safely, without interfering with the speed of an on coming vehicle traveling at the design speed should it come into view after the overtaking maneuver is started. The sight distance available for passing at any one place is the distance at which a driver whose eyes are 3.5-feet above the roadway surface can see the top of an object 3.5-feet high on the road, or currently accepted AASHTO standards.

   c. *Minimum Vertical Curve Lengths*. Minimum vertical curve lengths are determined by sight distance requirements for a given design speed.

      (1) Crest Vertical Curve Lengths. Minimum crest vertical curve lengths are determined by either the stopping sight distance or the passing sight distance, whichever provides the greatest curve length.

         (a) The minimum crest vertical curve lengths must only meet stopping sight distance requirements on streets with two or more through travel lanes per direction.

(b) Two-Lane Streets. Passing sight distance requirements should be met on streets with one through travel lane per direction. When crest curve construction in accordance with passing sight distance requirements would result in the creation of drainage problems or excessive cuts or fills, the curve length may be reduced with the installation of appropriate traffic control measures.

(c) Minimum Crest Vertical Curve Length Determined by Stopping Sight Distance. The following equations are to be used to determine the minimum crest vertical curve lengths based upon stopping sight distance requirements:

When $S_s < L$, $L = (AS_s^2)/2158$

When $S_s > L$, $L = (2S_s) – (2158/A)$

Where:

S_s = Stopping Sight Distance in feet for a given design speed
L = Length of Curve in feet
A = Algebraic grade difference in percent

(d) Minimum Crest Vertical Curve Length Determined by Passing Sight Distance

The following equations are to be used to determine the minimum crest vertical curve lengths based upon passing sight distance requirements:

When $S_p < L$, $L = (AS_p^2)/2800$

When $S_p > L$, $L = (2S_p) – (2800/A)$

Where:

S_p = Passing Sight Distance in feet for a given design speed
L = Length of Curve in feet
A = Algebraic grade difference in percent

(2) Sag Vertical Curve Lengths. Minimum sag vertical curve lengths are determined by either the stopping sight distance or comfort factors. The longer of the two possible minimum curve lengths will be used.

(a) Minimum Sag Vertical Curve Length Determined by Stopping Sight Distance. The following equations are to be used to determine the minimum sag vertical curve lengths based upon stopping sight distance requirements:

When $S_s < L$, $L = (AS_s^2)/(400+3.5S_s)$

When $S_s > L$, $L = (2S_s) – ((400+3.5S_s)/A)$

Where:

S_s = Stopping Sight Distance in feet for a given design speed
L = Length of Curve in feet
A = Algebraic grade difference in percent

b. Minimum Sag Vertical Curve Length Determined by Comfort Factors

The following equation is to be used to determine the minimum sag vertical curve lengths based upon comfort factors:

$L = (AV^2)/46.5$

Where:

L = Length of Curve in feet
A = Algebraic grade difference in percent
V = Design Speed in Miles per Hour

H. Combined Horizontal and Vertical Curves

When horizontal and vertical curves are combined, the horizontal curve shall lead and follow the vertical curve. For additional information on this topic, refer to the AASHTO publication, A Policy on Geometric Design of Highways and Streets.

I. Intersections

Although all intersections share certain common elements, they are not subject to generalized treatment. To minimize conflicts and provide for anticipated traffic movements each intersection must be evaluated with regard to its individual characteristics and designed based on the following factors:

- Traffic factors such as capacities, turning movements, vehicle size and operating characteristics, vehicle speed, pedestrian and bicycle movements, transit operations, and accident history.

- Physical factors such as topography, existing conditions, channelization requirements, and available sight distance.

- Human Factors such as driving habits, reaction to surprises, decision and reaction time, and natural paths of movement.

1. *Angle of Intersection.* A right angle intersection provides the shortest crossing distance for intersecting traffic streams. It also provides the most favorable condition for drivers to judge the relative position and speed of intersecting vehicles. Where special conditions exist, intersection angles may diverge from a right-angle by a maximum of 2 degrees (4 degrees with approval of the Engineering Director) on parkways, expressways, arterial streets and major collector streets; and by a maximum of 4 degrees (15 degrees with special approval of the Engineering Director) on minor and local collector streets and local streets.

2. *Alignment and Profile.* Intersections occurring on horizontal or crest vertical curves are undesirable. When there is latitude in the selection of intersection locations, vertical or horizontal curvature should be avoided. A line or grade change is frequently warranted when major intersections are involved. If a curve is unavoidable, it should be as flat as site conditions permit. Where the grade of the through roadway is steep, flattening through the intersection is desirable as a safety measure.

3. *Intersection Sight Distance.* In order to provide the opportunity for vehicles at an intersection to safely cross or make left or right turns onto a through street, adequate sight distance must be provided. Sight lines are to be drawn on roadway and landscaping plans to represent the

areas that must be free of all objects and topography in excess of 24-inch above the roadway surface. City of Peoria Standard Detail PE-090 depicts the technique used to determine driver's eye locations; a line is then drawn to connect these two points. Continuous unobstructed line of sight must be provided along this line and throughout the approach to the intersection, providing an unobstructed sight triangle to the side street driver. Vegetation placed within the sight triangle shall be of a low variety that remains below 24-inch when mature. Trees can be considered within the triangle as long as the canopy is above 7-feet and if it is a single trunk variety.

a. *Right Angle Intersection*. If the street intersection legs meet at an angle of 88 to 90 degrees, the sight distances shown in Figure 3-4 are to be used with City of Peoria Detail PE-090 to calculate the sight triangle. The intersection sight distance shown on Figure 3-4 for all street classifications, except local industrial was determined assuming passenger car traffic. If high volumes of truck traffic are anticipated on other than local industrial street, the procedures in the AASHTO publication, A Policy on Geometric Design of Highway and Streets should be consulted to determine the necessary sight distances.

b. *Skewed Intersections*. For skewed intersections where the intersection angles are less than 88 degrees, sight distances must be calculated in accordance with the procedures described in Chapter 9 of the AASHTO publication A Policy on Geometric Design of Highways and Streets.

c. *Intersections within or near a curve*. Distances 'A' and 'B' shown in City of Peoria Standard Detail PE-090 shall follow the street alignment when the intersection is within or near a horizontal curve.

d. *Traffic Safety Triangles*. Traffic Safety Triangles should be used as a means to limit the height of structures, vegetation, and other improvements on corner properties immediately adjacent to intersections. Safety triangles are not to be used as a substitute for intersection sight distance. Safety triangles provide additional visibility around corners for all intersection approaches, and should be applied to the design of perimeter walls and landscape features. Items within the safety triangle shall be no higher than 24-inch measured from the roadway surface. City of Peoria Standard Detail PE-091 depicts the method used to determine the safety triangle location.

4. *Intersections with an unpaved leg.* If an intersection has a leg that is unpaved, the paving to be placed in the intersection shall extend to the end of the normal curb return location on the unpaved leg at a minimum.

5. *Valley Gutters at Street Locations*

a. *Locations of Valley Gutters.* Valley gutters may only be used across minor and local collector streets, and local residential streets. Exceptions must be approved by the Engineering Director.

b. *Valley Gutter Widths.* Valley gutters should be constructed in accordance with MAG Standard Detail 240, except that concrete for valley gutters shall conform to MAG Standard Specification 725, Type 'A' with a minimum 28-day compressive strength of 3,000 psi.

6. *Turning Lanes.* A separate turning lane permits separation of conflicting traffic movements and removes turning vehicles for the intersection area. Right turn lanes shall be provided on streets classified as Major Arterial or higher, at all street intersections and at driveways where warranted. For left turn lanes at signalized intersections, dual turn lanes should be considered

when the turn volume exceeds 200 vehicles per hour, the opposing through volume exceeds 1,000 vehicles per hour, or the delay to left turning vehicles exceeds 45 seconds. Abrupt reduction of alignment and sight distance standards should be avoided. The length of these lanes depends on several factors and must be determined on a case-by-case basis and approved by the Engineering Director.

7. *Median Design*. Raised medians are required on parkways, expressways, and arterial streets to separate traffic flows, channelize left turns, and reduce conflicts. On collector streets, flush or painted medians provide space between the through traffic lanes for left turning vehicles. Required median widths are listed for each street classification in Figure 3-4 (see Appendix).

   a. *Raised Medians.* Raised medians, where required, must be provided in accordance with the applicable City of Peoria Standard Details, with the appropriate median width, as noted above.

      (1) Spacing and Location of Median openings. If a street has a raised median, it is not possible to provide an opening in the median for every street intersection or driveway. Full median openings should occur at not less than ¼-mile intervals on parkways, expressways, and major arterial streets. Partial median openings, which allow only left turns off the major street, are acceptable at 1/8-mile spacing. On minor arterials, full median breaks should be no closer than1/8-mile intervals. In built up areas, where reasonable alternate access is not available, median openings may be provided at smaller intervals with the approval of the Engineering Director.

      (2) Configuration of Median Openings. The median opening configuration shall be determined to the satisfaction of the Engineering Director.

      (3) Cross Slope. The cross-slope in the median opening shall be limited to 0.02 ft/ft. Median openings on curves with superelevation exceeding 0.02 ft/ft will not be permitted.

   d. Flush Medians. Flush painted medians are required on major, minor and local collector streets. Median widths for these streets are listed in Figure 3-4 (see Appendix).

3-5 CONSTRUCTION

A. Standard Details and Specifications

All construction shall conform to the latest City of Peoria Supplement to MAG Uniform Standard Details, MAG Uniform Standard Specifications and Details for Public Works Construction, as revised herein.

1. *Asphalt Concrete Pavement Application***.** Asphalt concrete pavement shall be placed in lift thicknesses per the following requirements:

Mix Design	Min. Compacted Lift Thickness	Max. Compacted Lift Thickness	Use
D ½	1”	1.5”	Surface or leveling course (required on all street classifications except residential)
C ¾	1.5”	3”	Base course (surface course for residential and parking lots only)
A 1-½	3”	4”	Base course only.

***NOTE**: An asphalt concrete preservative seal, in accordance with City specifications. This seal shall be paid for by the developer.

B. Permits

An Engineering construction permit is required for any and all work within the public right-of-way and public easement(s). The consultant, developer, and/or contractor shall obtain any and all permits required by other agencies or jurisdictions for access and construction of improvements governed by such agency or jurisdiction.

C. Assurance

Assurance in accordance with the Subdivision Regulations of the City Code is required for all work within the public right-of-way and public easements.

D. Insurance

All engineers, consultants, developers, contractors and subcontractors working within the public right-of-way and/or public easements shall provide the City with proof of insurance in a form and with limits of coverage acceptable to the City. Insurance forms are required to identify the City of Peoria as additionally insured.

E. Inspections

All work within the public right-of-way and public easements shall be inspected and approved by the appropriate City Department, public utility company or franchised utility company.

F. Access During Construction

All newly constructed public ways shall be kept barricaded and access denied to the public until such public way is accepted by the City and all traffic control devices are installed to the approval of the City.

G. Pavement Matching

Pavement matching and surfacing replacement shall conform to MAG Standard Specifications, Section 336. Sidewalk removal may be made either to the nearest joint, score line or five foot interval.

All testing required by the City of Peoria shall be performed under the supervision of a civil engineer registered in the State of Arizona. All test reports shall be submitted to the City of Peoria Engineering Department and are to be sealed by a professional civil engineer. Each report shall identify the location of the test, type and source of material tested, test designation being used and the name of the person and company performing the test.

The following are practical guidelines for some required tests. This listing is not all inclusive. Additional tests may be required, or different procedures call for by the Engineering Director or his designee.

1. *Sand Cone Correlations*. Sand cone correlations are required wherever a nuclear compaction testing device is used. These correlations shall be provided for every tenth compaction test (per nuclear compaction testing device). If possible, that the correlation be run on the City of Peoria project being tested at the time of the nuclear density testing. As an alternative, a documented correlation test will be accepted from another project (test being in proper documented correlation test will be accepted from another project being in proper sequence). All correlation test results shall reference the serial number of the comparitive nuclear device and the technician performing the test. Correlation test results shall be submitted with the related compaction tests.

2. *Rock Correction Procedure*. A rock correction procedure shall be required unless:

    a. Either ASTM D-1557 procedure C or ASTM D-698 procedure C is used.

    b. Tests are waived by the Engineering Inspection Supervisor (in writing). An assumed value of 2.6 shall be used for the bulk specific gravity of rock unless a higher value is determined by the testing agency.

3. *Test Results*. Written results (file copy) shall be submitted to the City of Peoria Engineering Inspection Supervisor in a timely manner. Verbal results are unacceptable. All test results shall be submitted to the Engineering Inspection Supervisor for his review (prior to commencing the next phase of construction).

4. *Trench Bedding*. In addition to normally required denisty testing, density tests shall be performed at the bottom of the trench (prior to placement of AB). An additional test may be required after placement of AB if AB thickness exceeds four-inches or at the descretion of the Engineering Inspection Supervisor.

5. *Materials Testing Prior to Paving*. The following tests shall be performed and the test results submitted to the Engineering Inspection Supervisor prior to paving:

    - Plasticity Index on AB
    - Gradation on AB
    - All Density on Subgrade
    - AC Mix Design

    Unless otherwise specified, the mix design for all asphaltic concrete shall be City of Phoenix Standard C-3/4 inch mix. Copies of the mix design and product codes are available in the City of Peoria Engineering Department.

H. Site Cleanup

Clean up of the construction area must be performed daily utilizing a broom sweeper.

I. Disposal

A location for the disposal of waste materials generated in the pursuit of the work shall be identified and approved by the owner of the site and the City.

J. Arizona Pollutant Discharge Elimination System (AZPDES)

A NPDES permit is required in accordance with the Federal and State Regulations, including a Notice of Intent (NOI), Notice of Termination (NOT), and Storm Water Pollution Prevention Plan (SWPPP). A copy of the SWPPP and the NOI shall be submitted and reviewed by the City of Peoria. Refer to Section 4-5 Pollutant Discharge Elimination System.

CHAPTER 4

STORM DRAINAGE FACILITIES - DESIGN AND CONSTRUCTION

4-1 GENERAL INFORMATION

A. Intent

The guidelines contained in this section are intended to expand upon and supplement information contained in legally adopted Chapters of the Peoria City Code. All designers should familiarize themselves with the provisions of the City of Peoria Flood Control Ordinance, and any code or ordinance, which may have been adopted prior to undertaking projects within the City. In case of conflict between these provisions and those of the Code, the more restrictive shall govern.

B. Requirement for Storm Drainage

All developments within the City shall provide such storm drainage facilities as are necessary to ensure that all improvements, structures and properties, both within the subject development and those located upstream and downstream of the development, shall be protected from the adverse impact of storm water due to the proposed development.

A Stormwater Pollution Prevention Plan shall be required of all development/construction projects unless determined to be non-applicable by the Engineering Director. Each development shall comply, as a minimum, with NPDES notification to the EPA and implementation of SWPPP control measures, as defined and required by the “Best Management Practices” of the Drainage Design Manual for Maricopa County.

C. System Classification

1. *The "Minor System"* (10-year) shall consist of those collection and/or retention/detention facilities necessary to collect, convey, retain and/or detain storm water runoff from the more frequent rainfalls. The "Minor System" shall be designed to accommodate storms up to and including a "10-year storm" and shall be used only when specifically approved by the Engineering Director.

2. *The "Major System"* (100-year storm of duration as defined by the Drainage Design Manual for Maricopa County) shall consist of those facilities necessary to convey storm water runoff from storms up to and including a "100-year storm." It consists primarily of the planning and/or analysis of the overall drainage system to insure: that there is always positive drainage from all areas, that the "100-year" flows can safely pass through the project, and that all structures are above the 100-year water elevation in areas where temporary and/or long duration ponding may occur as well as those areas lying within the FEMA floodplain.

D. Drainage Facilities Components

1. *Collection System*. This portion of the system is intended to collect and convey runoff to retention/detention, trunk line storm drain facilities and/or outfall into natural and man-made drainage *channel* facilities.

2. *Retention/Detention Facilities*. This portion of the system is intended to retain/detain sufficient volumes of runoff to minimize the adverse impact of new developments on downstream areas. All developments must provide retention/detention facilities, except as noted below, which consist of one or both of the following:

a. "On-Site" facilities, for private property to be maintained by the property owner or owners association are required for any or all of the following types of developments.

(1) Apartment complexes

(2) Town homes, Condos, Patio Homes and/or locations where a Homeowners Association will maintain the common area and drainage facilities.

(3) Large lot Single Family parcels, where the lot is at least one acre or larger. (Note: this is an option in lieu of "off-site or public facilities").

(4) “Hillside lots”, as defined by the subdivision regulations, require an individual drainage review regardless of the lot size or the means of retention/detention.

(5) Industrial Developments including Subdivisions (Note: this is an option in lieu of "off-site or public facilities").

(6) Commercial Developments including Commercial Subdivisions

b. "Off-Site" facilities, for projects in a separate tract dedicated, as “Public Drainage Easements”, to the City and to be maintained by an association of owners, are required of the following types of development:

(1) Single-Family lots (regardless of acreage) that are part of a subdivision.

(2) Planned Area Developments (PAD) or other large master planned developments.

c. Retention/detention basins shall be protected from further development by a recorded drainage easement and must be fully improved with landscaping, irrigation systems, lighting and such other aesthetic improvements as may be required by the City. Any basin, which is accepted by the City for maintenance, shall deemed public property and shall be dedicated to the City in fee simple title. If the City does not accept a basin for maintenance, the developer shall be responsible for establishing some satisfactory means to maintain the area.

3. *Open Channels*. Natural Channels: Except as specifically approved by the Engineering Director, it is the City's preference that existing drainage channels be left in a natural state. When this is the case, a drainage easement or right-of-way shall be dedicated over, at a minimum, the 100-year floodway zone of the natural drainageway. Design shall be in accordance with the Drainage Design Manual for Maricopa County, Arizona Department of Water Resources; Delineation of Riverine Floodplains and Floodways in Arizona, State Standard Attachment SSA 2-96; the State Standard for Detention/Retention, SSA8-99; and the Watercourse Bank Stabilization, SSA 7-98; or the current version of the aforementioned. The developer is required to coordinate compliance with any requirements of the Army Corps of Engineers Section 404 Certification. The developer is required to coordinate all revisions to the FEMA flood insurance rate maps resulting from construction of bank protection.

a. *Man-made Channels*. When man-made channels are required, the emphasis will be placed on a "natural" appearance and *on* safety. Grass lining will be allowed, with side slopes 6:1 or flatter, with specific City approval only. Full channel lining will be considered only on a case by case basis.

b. *Maximum Velocities/Erosion Protection*: In general the maximum velocity shall not exceed the scouring velocity of the soil (with natural cover). When the scour velocity is exceeded, additional erosion protection shall be provided. Bank/channel protection may consist of one or more of the following:

(1) Concrete or gunnite lining, reinforced with 4 inch x 4 inch WWF-12GA.

(2) Natural stone grouted riprap 4-inch to 12-inch diameter stones - leave a minimum 1/4 diameter exposed.

(3) Gabion Baskets/Gabion Mattresses.

(4) Soil Cement.

4. *Conveyance Systems*. Conveyance systems are storm drains, channels, washes, rivers and retention/detention basins designed to provide regional storm drainage protection in accordance with approved Master Drainage Studies and Drainage Master Plans. Conveyance systems shall carry off-site drainage around and/or through the development, and/or the discharge of on-site storm water generated by the development, in accordance with the requirements herein. Streets shall not be considered as a facility for conveyance of off-site flows other than those impacting the development from upstream street right-of-ways.

5. *Direct Discharge*. If a development has access to a major drainageway, and discharge of drainage from the development to the major drainageway can be demonstrated not to adversely affect other properties nor the intended parameters of the major drainageway, and the Flood Control District of Maricopa County acknowledges and approves of such discharge, a minor system retention/detention basin may be allowed for desiltation, with approval of the Engineering Director and the County Flood Control Director. The developer will be required to request such intent in writing. The developer will be required to obtain any approvals necessary from the agency having jurisdiction over the drainageway. The requirements to provide appropriate sediment control in conformance with the NPDES are in full force and effect. Such provisions are in addition to the City/County retention/detention requirements. The developer will be required to coordinate compliance with any requirements of the Army Corps of Engineers Section 404 Certification.

E. Reports

1. *Preliminary Drainage Report*. A preliminary drainage report must be submitted at the time of the preliminary plat review, use application or site plan application. The preliminary plat review will not be scheduled without this report. The preliminary drainage report shall delineate the 100-year floodplain and floodway limits for drainage ways that serve areas of more than 1/4 square miles or which generate an estimated flow rate of more than 500 CFS for the 100-year event, per State Standard Attachment SSA 2-96. A preliminary report may be used to present drainage values, impacting or generated by the subject property, to allow a determination by the Engineering Director, for reducing the report requirement to that of “Hydrology Report” (see Section 4-6 of this chapter).

2. *Final Drainage Report*. A final drainage report must be submitted as part of the Civil Plan submittal. Civil Plans review will not be accepted without the report. The final approval of the Civil Improvement Plans will not be considered complete without approval of this report. Approval of the Grading Plan providing drainage facilities does not constitute approval of the Report. An individual grading and drainage plan is required for each lot of a “hillside development area”. (See Section 4-6)

3. *To Be Considered Valid*: The design Engineer shall submit a specific written request for the review of the Preliminary Drainage Report and the Final Drainage/Hydrology Report. To be considered valid, the City must acknowledge the acceptance of this report in writing.

F. Hydrology

1. *Study Requirements*. A hydrology study shall be performed for each development within the City. The study shall define the overall and sub-drainage areas. The basic study format for urban areas lying within areas of “gradual slope” shall also determine appropriate hydrologic data for the following:

a. *Off-Project Areas*. The peak flows, times of concentration, and other hydrologic data, for each off-project drainage area tributary to the project shall be computed and submitted in summary form. Data from an approved Area Drainage Master Plan may be provided in lieu of a new study.

b. *Project Sub-Basins*. The project shall be divided into sub-basins tributary to appropriate design points. The pertinent hydrologic data shall be computed for each and submitted in summary form.

c. *"Appropriate Design Points"* (concentration points) are those points wherein the peak flow rates, or other pertinent data, are needed to determine flow capacity requirements, inflow-outflow relationships, etc. These "points" would include, but not necessarily be limited to, the following: inflow-outflow points of retention/detention basins; up and/or downstream ends of culverts; intake points for storm drains (i.e. inlets, catch basins, scuppers, etc.); points immediately upstream and downstream of channel junctions and/or street intersections; others as may be necessary to give a complete hydrologic picture and allow a thorough hydraulic evaluation and/or design of the drainage system.

d. *Floodplain delineation* of the 100-year floodplain and floodway for drainage ways which serve areas of more than 1/4 square miles or which generate an estimated flow rate of more than 500 CFS for the 100-year event, per State Standard Attachment SSA 2-96 (or current revision).

e. Calculation of the appropriate Time of Concentration (TC).

f. HEC-1 (or approved surface hydrology computer modeling program) using the Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology.

When site conditions are considered by the Engineering Director to be “rural” in nature and/or influenced by hillside slope runoff, the requirement for a detention scheme may be necessary. The detention system Drainage Report format will be required. (See Section 4-6 of this chapter)

2. <u>*Basis of Design*</u>. The basis of design shall be in accordance with the flood control policies of the City of Peoria. The "Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology”, as prepared and published by the Flood Control District of Maricopa County shall determine the minimum standards of design for flood control, or unless otherwise specified herein. As determined by the Engineering Director, a project may be required to use appropriate standards developed by the Arizona Department of Water Resources: “Delineation of Riverine Floodplains and Floodways in Arizona”, State Standard Attachment (SSA) 2-96; etc., as made available to the regulatory and design community.

3. <u>*Compliance with Master Plans and Studies*</u>. The hydrology shall be in accordance with any approved Area Drainage Master Studies (ADMS), Area Drainage Master Plans (ADMP) and Studies, which involve the Agua Fria, New River, Skunk Creek, ACDC or other washes as may be relevant.

4. <u>*Floodplain Administration*</u>. The Developer/Engineer shall comply with the Federal Emergency Management Agency (FEMA), U.S. Environmental Protection Agency (EPA) and Army Corps of Engineers (COE) requirements encountered in the pursuit of the hydrology. CLOMR, LOMR, COE 404 and EPA 401 applications and/or permits may be required by these other agencies. The City shall be apprised of agency notifications, applications, reports, and resulting agency decisions by reference and correspondence copy inclusion in the appendix of the project report. (See Section 4-6 of this chapter)

G. <u>Hydraulics</u>

1. <u>*Basis of Design*</u>. The basis of design shall be the "Drainage Design Manual, Volume II, Hydraulics”, as prepared and published by the Flood Control District of Maricopa County. The Design Engineer is responsible for evaluating the specific design conditions to determine the appropriate design criteria in evaluating the hydraulic design and anticipated operation and maintenance conditions. The following

provisions shall not relieve the Design Engineer, Consultant, Developer or Owner of the responsibility to apply generally accepted, standard design practices and professional conduct:

a. Storm drainage pipes and open channels shall be designed using "Manning's Formula".

b. Values of the "n" for "non-typical" materials shall be noted and justified in the report.

c. The Step Backwater Method is the preferred method for hydraulic calculations on open channels.

d. Street capacities shall be computed for each street section and slope.

e. Inlet capacity shall be computed for each inlet of the system. Design aids in accordance with the "Drainage Design Manual, for Maricopa County, Volume II, Hydraulics".

f. Topography contours and/or grades up to a 500-foot perimeter of the development at a minimum. The Design Engineer shall be responsible to determine whether certain topography and/or drainage features outside of this perimeter, which may effect the hydraulics, shall be considered. These provisions shall be required for review of the Preliminary Drainage Report, when offsite flows are diverted or routed around or through the development.

g. HEC-2 or HEC-RAS for step backwater.

2. *Calculations Format*.

a. All hydraulic calculations submitted for review shall be submitted in tabular summary form only. Voluminous reports containing numerous pages of routine detailed calculations (computer print-out) may result in a time consuming review and the review of the construction plans may be delayed until these calculations are resubmitted in summary form. (Remember, most hydrologic and hydraulic analyses consist of a repetitious series of standard routine calculations. The City does not intend to check the designer's arithmetic. (Exhibits showing quantifying results from these calculations are required.) Summary forms for hydrologic or hydraulic calculations as published by the City of Phoenix or by the City of Mesa, or as found in various technical publications (such as the ASCE Manual Number 37), are to be used until such time as the City publishes such a form. (See Section 4-6 of this chapter for format requirements of reports containing calculation exhibits.)

b. Occasionally, circumstances will warrant or require special solutions, which do not fall within the routine forms and formula, prescribed above. In such cases the design engineer shall use the formulas appropriate for the solution. The report should reference the formulas used and their source. If necessary, a single typical calculation may be shown in detail to clarify the logic of the solution. The balance of similar calculations is to be presented in tabular summary form.

c. Summary forms should provide space for each of the critical variables used in the set of calculations. For example, a hydrologic summary table for a study based on the "Rational Method" would include spaces to itemize the variables such as: A, C, CA, $\sum$CA, t_c, i, etc., providing the information necessary to check the summary table.

3. *Retention/Detention Areas*.

a. The design engineer shall determine and present calculations on each retention/detention facility required for their project. The retention/detention volume for the 100-year, two/six hour event, actually achieved shall be provided. Basin volumes, which exceed the contribution from the sub-area(s) it serves, will not be considered as "volume provided".

b. All retention/detention basins and basin systems are required to provide sufficient volume to retain 100 percent of the 100 year, 2-hour storm for the sub-basin that it serves. The routing of storm drainage for the development shall be through the retention/detention facilities.

Detention facilities shall be designed for the volumes and discharge rates as defined by the Flood Control District of Maricopa County for purposes other than retention. Design of the facilities meet the criteria of the appropriate recommended procedure level defined by the ADWR "State Standard for Stormwater Detention/Retention", SSA8-99 (or current version).

c. A drainage easement shall be recorded over each retention/detention area within the project for both "public" and "private" basins. The drainage easement shall include a 20-foot access easement from a paved surface.

d. For the complete half right-of-way area of adjacent *streets* and parkways, a retention/detention basin located outside of the right-of-way, is required to provide the equivalent calculated volume required to retain one hundred per cent of the 100-year, 2-hour storm for that area. The basin is not required to intercept that right-of-way flow.

e. Retention/Detention basins shall not be located within public rights-of-way, water easements or sewer easements.

4-2 TECHNICAL DESIGN REQUIREMENTS - STORM DRAINS

A. Drainage

1. *Street Drainage.*

a. The basis of design for local streets shall be designed to carry the 10-year storm being contained within the pavement section with a maximum depth of 6-inches.

b. Streets shall be designed to carry the following minimum flows:

(1) Major and minor arterial streets to carry a ten-year flow between the curbs and maintain a 12-foot dry lane in each direction; and carry the 100-year flow within the right-of-way with a maximum depth of 6-inches over the crown of the street, for emergency vehicles and evacuation purposes. (Determine the current City Code concerning emergency access.)

(2) Collectors and local streets shall be designed to carry 10-year flows between the curbs, the fifty year flows between the property lines, and the 100-year flow within the right-of-way. The grading plans must substantiate the flow containment capability.

(3) Underground storm drains are required when the above street capacity or maximum depth is exceeded. Open Channels may only be used as the supplemental drainage conveyance with specific written request to the Engineering Director and written acknowledgment by the City.

(4) 7-inch high curb may be used along streets where parking is prohibited.

(5) Streets shall have a crowned section with a maximum cross-slope of 3% for drainage. Exceptions may be submitted with specific written request to the Engineering Director and written acknowledgment by the City.

c. Streets and street rights-of-way shall not be used for channels. Channels must be located outside of the right-of-way. Drainage incidental to the adjacent street may be located in the right-of-way.

d. The street right-of-way shall be designed to carry a maximum 100 cfs. Storm Drains are required per Section 4-2.A.3 when that capacity is exceeded.

e. In general, dip crossings of open channels shall be avoided. Such designs are subject to special review.

f. All storm drains and channels shall be constructed in public rights-of-way or dedicated Public Drainage Easements. The minimum width of the right-of-way or easement shall be adequate to allow a minimum continuous 12-foot wide maintenance road, but in no case shall the easement be less than 20-feet wide.

g. Where access to a new development requires crossing of a channel or wash, a minimum of one access point accessible during a 100-year storm must be provided. (Determine the current City Code concerning emergency access.) Additional 100-year accesses may be required by the City.

2. *Commercial/Multifamily access drive aisles*

a. Inverted crown sections are not allowed for drive aisles within commercial/multifamily developments.

b. Valley gutters are not allowed to run parallel within the drive aisles for commercial/multifamily developments. Valley gutters may cross the drive aisle as necessary to convey flows.

3. *Drainage Between Lots.*

a. Routing of drainage ways between lots or buildings is discouraged and will be allowed only with written request from the developer and written approval of the Engineering Director.

b. When allowed, the channel shall be designed to convey the one hundred-year flow without flooding adjacent properties. Depth of flow within drainage easements shall not exceed 12-inches, outside of and excluding the area of the channel structure.

c. When allowed, the channel shall be constructed in a dedicated drainage right-of-way or easement leading to a positive outfall point. The minimum width of the right-of-way shall be top width of the channel plus twelve feet for a maintenance roadway but in no case less than 20-feet wide. Maintenance access shall be provided to the drainage way.

d. The ends of the right-of-way or easement shall be treated in such a manner as to prevent non-maintenance vehicular access without diminishing the hydraulic capacity of the channel. Removable bollards, railings or barricades or gates shall be installed.

e. A minimum of 25% of the up-stream opening shall be assumed to be clogged with debris, when considering design capacity.

f. Fencing or railing may be required by the Engineering Director if an open channel is used.

g. Headwalls, wing walls, retaining walls, grates and trash racks are required in the design of channels and storm drains. Refer to Chapter 3, Section 3-2 A.3 for required Safety Railings.

h. Depth of flow within drainage easements shall not exceed 12-inches, outside of and excluding the area of the channel structure consistent with the FIRM Zone designation for the area in which the project lies.

4. *Underground Storm Drains.*

a. Underground storm drains shall be provided whenever the capacity of the pavement section or maximum depth is exceeded, per section 4-2.A.1.a. and b., by the design storm event. Additionally, storm drains are required when the flow in the right-of-way exceeds 100 CFS (4-2.A.1.d.).

b. Pipes shall be sized using "Manning's Formula". Values of Manning's "n" shall be from appropriate technical literature and shall be referenced.

c. Velocities shall range from 3-feet per second to 9-feet per second in order to prevent sedimentation and abrasion damage.

d. The minimum pipe size shall be 15-inch ID, RGRCP class IV minimum in the right-of-way or easement maintained by the City. A minimum of 2-feet of cover is required over all storm drain pipes. Calculations shall be provided for special conditions.

e. The hydraulic grade line (HGL) for the design storm may be above the pipe, provided that it remains at least one foot below the ground elevation at all manholes, catch basins, inlets, etc., the pipe shall be designed to operate with the calculated head pressure provided the HGL does not compromise the operation of the storm drain system. The HGL shall be provided on the profile portion of the storm drain plan and profile.

f. When the pipe changes direction more than 30 degrees there shall be manhole installed with a drop, between match points, of at least 0.1 feet. In no case shall the deflection angle be greater than 90 degrees.

5. *Pipe Bedding Requirements*.

Pipe and culverts installed in City of Peoria easements and rights-of-way shall be bedded from bottom of excavation to one foot above the pipe with granular bedding material in accordance with the requirements of Section 601.4.6 of MAG Uniform Standard Specifications, or the manufacturers' recommendations, whichever is more restrictive. Bedding compaction densities shall be per MAG Specification Table 601-2. The initial 4" bedding under the pipe is required for pipe having an inside diameter of 12" or larger, and in all cases where rock larger than 1.5" is encountered in the trench bottom, the requirements of MAG Standard Specification 601.2.5 shall apply. Specially designed and alternate bedding will be approved on a case by case basis.

6. *Trench Backfill Requirements*.

a. Minimum trench backfill requirements shall be per MAG Specification 601.4, with compaction densities per MAG Specification Table 601-2. Backfill requirements provided by the Engineer shall apply, when such provisions are more restrictive than MAG Specification.

b. Within the existing pavement section of public streets, the backfill shall be ½ sack Controlled Low Strength Material (CLSM) per MAG Specification 728.

c. Use of CLSM. Anyone using Controlled Low Strength Material (CLSM) for back-filling a trench shall protect all water service lines with sand shading to prohibit contact with metallic water line fittings, metallic joint restraint, valves and valve bonnets, copper and bronze fittings.

B. Materials

1. *Pipes*.

a. See the Materials List for allowable materials, City of Peoria Standard Detail PE-101.

b. The Design Engineer shall be prepared to justify the pipe class and material specified.

2. *Manholes/Junction Boxes*.

a. *Materials* - all manholes shall be per MAG Standard Details 520, 521,522 and/or 523 and Specifications 735 and 738.

b. *Locations* - manholes and/or junction boxes are required at all the following:

(1) Junctions of two or more pipes
(2) Changes in grade
(3) Changes in alignment
(4) Changes in pipe sizes
(5) PC's and PT's, when permitted

c. *Spacing* - The maximum spacing for manholes shall be:

(1) 400-feet on lines 15-inch to 36-inch diameter
(2) 550-feet on lines over 36-inch in diameter

3. *Catch Basins.*

Catch basins are to be curb opening inlets. Drywells and catch basins, within vehicular traffic areas, with grates shall provide a heavy duty H-20 bicycle safe grate. Curb opening catch basins shall be constructed per City of Phoenix Detail P-1569. Other catch basins and storm drain location shall be indicated by the use of markers conforming to NPDES requirements/details. In addition, construction of all catch basins shall include installation of inlet markers per City of Peoria Standard Details PE-559-1 thru 3.

4-3 TECHNICAL DESIGN REQUIREMENTS - RETENTION/DETENTION FACILITIES

A. Sizing

1. *Basis of Design.*

a. All retention/detention facilities shall be sized to retain 100% of the 100-year, 2-hour storm falling over the entire project site including the total adjacent right(s)-of-way. For the purpose of determining the volume required, the project shall be considered to extend to the centerline of all existing and future streets on the exterior boundaries and to include all interior streets and other rights-of-way within the project.

b. *Freeboard*. There shall be a 1-foot *(12-inch)* freeboard from the basin overflow water surface elevation to the lowest adjacent building elevation and/or equal to the gutter of the upstream streets. The freeboard for all project building floor elevations shall be a minimum of fourteen inches (14-inch) above the project outfall water surface elevation. The project site outfall elevations must be considered to be lower than an individual on-site basin overflow elevation or the effective depth of the basin is measured to the outfall elevation.

4. *Volume*. The following data shall be provided for each retention/detention basin:

a. *Volume Required*. The volume required in cubic feet shall be computed using the methods of the "Drainage Design Manual for Maricopa County, Arizona, Volume II Hydraulics" published and sponsored by the Flood Control District of Maricopa County. With few exceptions, the City's developments should be considered urban with respect to percentage of impervious cover.

b. *Volume Provided*. The volume provided shall be submitted in a table noting the stage-capacity relationships.

5. Retention/Detention basins shall be located such that they can intercept the flows from the entire site. If the basin is located other than at the lowest point of the project, the Design Engineer shall denote on the master drainage map the actual or effective drainage area. If portions of the project cannot drain to the primary basin, additional basins shall be added to retain/detain runoff from these areas. The Engineering Director may make exceptions on a case by case basis.

6. The sub-drainage areas for each basin shall be denoted on the plans and the calculations for each sub-basin retention/detention required, shall be provided. Overflow from any sub-basin may be safely routed to another sub-basin, to ultimately be contained in the compilation of retention/detention provided. The retention/detention provided shall contain 100% of the 100-year, 2-hour storm event, as actually routed through the development. Over sizing (having a capacity greater than the possible capture volume) of intermediate basins will not be considered for the provision of retention/detention required beyond the volume of the contributing area.

7. Underground or concealed retention/detention facilities may be considered on a case by case basis. Installation of approved underground facilities shall conform to Section 4-2.A.6 and City of Peoria Standard Detail PE-402.

    a. The High Water Level (HWL) shall be denoted on the plans for each basin or ponding area. The basin depth (overall average depth) shall be measured from the lowest point to the elevation of the basin overflow. This is not to be considered the water surface elevation of the basin's retention depth (HWL) for the period storm event. The HWL elevation shall be designed to prevent damage of public improvements and minimize damage of site improvements, such as paving, structures, utilities, walls, landscape, signs and light standards.

    b. The Outfall elevation and each basin Overflow elevation shall be shown on the plans.

    c. Retention/Detention storage facilities located within a drainway, channelway, or floodway are prohibited.

B. Grading

1. *Depths.*

    a. The overall average depth shall not exceed 3-feet without authorization of the City. If granted, the side slopes shall be flattened (See 4-3.B.2.(b)). At the City's option, the basin may be fenced to allow steeper side slopes or greater depths.

    b. In no case shall the depth exceed 1.0 foot without a positive means (not relying on evaporation) of disposing of accumulated runoff.

2. *Slopes, Side and Bottom.*

    a. The bottom of all basins shall be sloped towards the discharge points. The minimum bottom slope shall be 0.1%.

    b. *Side Slopes.*

        (1) Side slopes adjacent to public rights-of-way, or when there is pedestrian type access to that portion of the basin, shall have a side slope of 6:1 or flatter. There shall be at least 2-feet of level ground between the back of the sidewalk and the beginning of the side slope grading.

        (2) When a basin is adjacent to walls, fences, and hedges, etc. (i.e., no or limited pedestrian type access in that area) the side slopes may have slopes up to 4:1 if *adjacent* to public right-of-way or easement and 3:1 if adjacent to private property. There shall be at least two feet of level ground adjacent from any wall or vertical obstruction to the top of the side slope grading.

        (3) Greater water depths will require flatter side slopes and approval of the City. The following depth/side slope criteria shall be used:

Depth (feet)	Side Slope
< 4	4:1
4-6	6:1
6-9	10:1
> 9	14:1

(4) Retaining walls (i.e., vertical slopes) may be used in areas adjacent to permanent walls, fences, etc., with specific written request to the Engineering Director and written acknowledgment by the City. The horizontal separation of a retaining wall from a building, wall or fence shall be at least equal to the height of the retaining wall but in no case less than 4-feet. There shall be at least 2-feet of level ground adjacent to any building, wall, fence or vertical obstruction to the top of the side slope grading between the retaining wall and such building, wall, fence or vertical obstruction. The grade of the balance of the slope between such retaining wall and a building, wall, fence or vertical obstruction shall not exceed 4:1.

(5) Concrete or grouted rip rap slope erosion protection and splash pad, a minimum of 9-inches in thickness, shall be provided when street runoff is collected and conveyed to the basin(s) via a storm drain, scupper, weir or spillway. The width of the slope protection shall be at least the width of the scupper or weir, but have a minimum width of ten feet. The slope protection shall be channelized to contain the calculated flows and shall terminate at a level concrete splash pad or grouted rip rap within the basin, a minimum of 10-feet beyond the termination of the spillway and 5-feet beyond each side of the spillway. The City may reduce these criteria when flow quantities and velocities may warrant.

(6) Side slopes adjacent to public right-of-way or easement where pedestrian access is permitted via sidewalks, trails or paths shall not exceed 6:1.

(7) Refer to Chapter 3, Section 3-2 A.3. for required Safety Railings.

3. *Basin Access*. Access shall be provided for each retention/detention basin to be maintained by the City. Provide a driveway entrance, 10-feet of level ground, and a 10:1 ramp, 10-feet (min.) *in* width. The basin access shall be a minimum of 2-inches compacted decomposed granite over 6-inches of compacted ABC. The ramp shall be concrete, 9-inch in thickness with a surface that provides appropriate traction.

4. *Grading and Landscaping*. Retention/detention basins shall be landscaped in accordance to Article 14-34 of the Peoria Zoning Ordinance. Also see Chapter 8 of this manual. Basins maintained by the City shall incorporate the use of drought tolerant plant material with the ground surfaces being covered with decomposed granite, river rock or other type of decorative rock. Basins may incorporate the use of other planting including turf. Turf areas shall be kept to a minimum and will be reviewed with respect to promote water conservation. The maximum side slope for turf areas shall be 6:1. The use of turf shall be in compliance with the percent of site area criteria for allowable turf area.

5. *Retention/Detention in Parking Lots*.

   a. Retention/detention in parking lots of multi-family developments is not allowed. All retention/detention of such developments shall be in landscaped areas.

   b. Retention/detention of runoff in parking lots of industrial/commercial developments is allowed subject to the following guidelines:

(1) No more than 25% of the volume required may be retained/detained in parking lots. The balance shall be provided in landscaped areas. The tributary areas to each "basin" shall be noted on the master drainage map.

(2) Parking spaces shall provide one dry access with no point of the space to exceed 0.67 feet deep, nor 0.25 feet at the midpoint. If paved areas of the parking lot are designed to store water at a depth greater than 0.67 feet, the developer shall post conspicuous warning signs in these areas advising that flooding may occur and vehicles may be subject to inundation.

(3) A continuous vehicle access lane shall be provided throughout the development, and it shall be free of ponded water from the retention/detention areas. This access lane should typically coincide with a fire lane and be *of a* 20-foot minimum width.

(4) ADA accessible parking and loading spaces shall be free from ponding.

6. *Outfall.*

a. Each project shall be designed such that the "ultimate" outfall for all drainage is a public street, storm drain, drainage channel or natural watercourse. The outfall shall be accessible without draining over private property. Design engineers must evaluate cases where project outfall conditions occur and take necessary actions to prevent flooding or damage to properties located downstream of the outfall. When the prescribed method of storm water management is detention, the engineer must insure that the "post development flow" does not exceed flow that would result had no development taken place. Additionally, all project site finished floors must be a minimum of fourteen inches (14-inches) above the outfall water surface elevation.

b. If such an outfall does not exist, the project must provide conveyance to an outfall.

c. Overflow/Conveyance

(1) Upon written request, off-project flows, which historically flowed through the project, may be routed through the retention/detention facilities. The applicant shall provide specific written request submitted to the Engineering Director and receive written acknowledgment of approval by the City.

(2) Runoff volumes in excess of those required to be retained/detained (currently the 100-year, 2-hour storm) may be routed through the outfall, although they must be routed via the retention/detention facilities.

7. *Location/Conflicts with Existing Utilities.*

a. Retention/detention facilities shall not encroach into existing easements for private utilities without written approval of the encroachment from all utilities that have interest in the easement.

b. Retention/detention facilities shall not encroach into public rights-of-way or into public easements. If necessary the developer shall relocate conflicting utilities into a new dedicated easement.

c. The top of the retention/detention facilities (i.e., freeboard elevation) shall be at least four horizontal feet from any building.

d. Retention/detention facilities shall not be located within 20-feet of an active septic system or within 100-feet of an active water well or within any landfill, known or otherwise.

e. A minimum 4-feet of cover (from the bottom of the basin to the top of the pipe) shall be maintained over water, private sewer and storm drain lines. Additional protection may be required for water lines in conflict with a basin, specifically concrete encasements per MAG Standard Detail 404. Public Utilities are to avoid locations within the area of basin facilities.

f. Manholes adjacent to retention/detention facilities shall be provided a level area a minimum of 12-feet in diameter from the center of the manhole, and a 12-foot, level vehicular maintenance access way to the manhole from a public vehicular easement or right-of-way. The access way shall be structured and surfaced to be capable of support *for* maintenance vehicles. The manhole shall be watertight and have a water tight manhole lid.

8. *Disposal/Discharge*.

a. All retention/detention facilities shall have a positive method of disposing of retained or detained runoff waters. 100% of the 100-year, 2-hour storm being retained/detained shall be disposed of within 36-hours. Public streets are not considered to be an acceptable outlet for disposal of retained or detained runoff. However, streets are considered an acceptable outlet for basin overflow or project outfall.

b. Acceptable methods of disposal of accumulated storm water runoff are:

(1) A bleed-off discharge to an existing storm drain or drainage channel of sufficient capacity to convey the anticipated flows from the tributary drainage area after the storm.

(2) The maximum bleed-off discharge rate shall be 1 cfs. This rate can be achieved by the addition of a 6-inch diameter hole in a plate mounted on the discharge structure. Use a 15-inch minimum diameter discharge pipe within the public right-of-way or public easement. Use a 12-inch minimum diameter discharge pipe for other locations.

(3) Percolation wells (drywells) are considered an acceptable method of disposing of the retained runoff when there is no other reasonably accessible discharge method, subject to the following:

(a) Drywells shall penetrate a minimum or 10-feet into permeable soil, defined as mostly cobbles and gravel with no material passing a no. 40 sieve.
(b) An actual well test shall be performed, and the resultant design disposal rate shall not exceed 50% of the rate determined by the test, in order to compensate for deterioration of percolation rates over time. Only one test will be required if all Drywells in the area have similar soil boring logs. Copies of any percolation tests must be submitted to the City.
(c) Precolation tests shall conform to ASTM D3385-94 or D5093-90.
(d) The minimum number of wells per retention/detention basin shall be computed, and noted in the drainage report.
(d) Drywell drilling log(s) and a copy of the completed Drywell registration(s) will be required before project can be accepted.
(e) All Drywells are to be equipped with a secured grate to prevent unauthorized removal.

(4) Runoff generated from washing vehicles and equipment shall conform to “Arizona Department of Environmental Quality – NOI supplement for Type 3.03 General Aquifer Protection Permit for Vehicles and Equipment Washes” (A.A.C R18-9-D303).

(5) Drywells that drain areas at motor fuel dispensing facilities where motor fuels are stored

or loaded, shall conform to "Arizona Department of Environmental Quality – NOI supplement for type 2.04 General Permit. Protection Permit for Vehicles and Equipment Washes" (A.A.C R18-9-D303) and Arizona Administrative Code R18-9-C301. In addition, the design of the system shall be fully automated (human intervention not required) and shall not depend on a power source.

(6) Drywells that drain areas where hazardous substances are used, stored, loaded or treated, shall conform to "Arizona Department of Environmental Quality – NOI supplement for Type 2.01 General Permit and Arizona Administrative Code R18-9-C301. In addition, the design of the system shall be fully automated (human intervention not required) and shall not depend on a power source.

9. *Nuisance Water*. Each basin, particularly those used as a park, shall be graded such that there is one or more "sump" areas wherein runoff from the more "frequent" storms and nuisance runoff may be retained/detained without flooding the balance of the basin. Positive methods of disposal shall be provided for each sump.

4-4 CONSTRUCTION DETAILS

All construction shall be per MAG Standard Details and Specifications subject to City of Peoria modifications.

4-5 POLICIES, PROCEDURES, AND FORMATS FOR DRAINAGE REPORTS, HYDROLOGY REPORTS, AND DRAINAGE STATEMENTS

The purpose of this chapter is to present criteria for submittals of drainage reports, hydrology reports, and drainage statements to the City *of* Peoria, including the necessary information that should be included as part of such submittals. The basic purpose for preparing and submitting any of these studies is to adequately determine the finished floor elevations (FFE's or FF's) of proposed improvements. In addition to this purpose, a hydrology study should specifically identify existing runoff patterns and floodplain areas, identify existing flood hazards, and determine the effect of proposed construction upon existing flows and water-surface elevations. In addition, drainage reports should specify stormwater detention/retention requirements, as well as identify required drainage improvements and structures.

Before preparing a drainage report, hydrology report, or drainage statement, the consulting engineer is strongly encouraged, to discuss the proposed drainage design with the Floodplain Engineer, or his designated representative, and obtain specific hydrologic, hydraulic, and design requirements for developing the subject parcel. Additional planning information can also be obtained as a result of this meeting, including City drainage policies found in documents with limited distribution, such as the Area Comprehensive Plan, Basin-Management Plans, Neighborhood Plans, and Specific Plans.

A. Reports

1. *Drainage Report*. A drainage report is a report that is required for any site greater than one acre in size or for any site subject to retention/detention requirements. The drainage report shall contain all elements of a hydrology report, as well as descriptive data of the appropriate components for the required detention facility design. In addition, a drainage report shall be required for any site where extensive structural improvements for mitigating drainage impacts are required.

2. *Hydrology Report*. A hydrology report is a report required for developments which are not subject to detention requirements, nor which require extensive structural improvements for handling drainage; but which are impacted by flows from significant watercourses and/or affected by 100-year flows of 500 cfs, or more. The objective of a hydrology report is to establish finished-

floor elevations, which assure that all structures are free from flooding during a regulatory flood. Additional objectives of a hydrology report are to establish the size and configuration of flow-through wall openings and other minor drainage features; and, if required by the Engineering Director, to develop a grading plan which demonstrates adequate site drainage with no resulting impact to upstream or downstream properties.

3. *Drainage Statement*. A drainage statement is a brief description of drainage conditions applicable for a site which is not affected by 100-year flows of 500 cfs, or more, and is neither subject to detention requirements nor impacted by flows from a significant watercourse. The objective is to demonstrate adequate site drainage retention according to the methods established by the Drainage Design Manual for Maricopa County, and to establish finished-floor elevations, which assure that all structures are free from flooding during a 100-year flood.

B. Conditions Requiring a Report or Data Submittal

The review and approval of drainage reports, hydrology reports, and drainage statements by staff in the Floodplain Section of the Engineering Director's Office are typically in response to reports and statements submitted in order to satisfy one of the following: (1) a requirement of rezoning; (2) a specific requirement for approval of a subdivision plat or a development plan; (3) approval of a disclosure statement prepared in conjunction with a condominium conversion; (4) the request for a floodplain, building, or grading permit for a parcel located within either a regulatory floodplain, an erosion/building-setback zone, or an identified flood-hazard area; or (5) application for a Letter of Map Amendment (LOMA) or a Letter of Map Revision (LOMR) from the Federal Emergency Management Agency (FEMA).

The complexities of drainage reports, hydrology reports, and drainage statements depend upon many factors, such as development size, severity of existing drainage problems, extent of drainage improvements needed to satisfy Floodplain Regulations and development standards, and the need to provide detention/retention basins. A brief description of the amount of drainage information that will be required for various development settings is provided below.

C. Report Content and Format

1. *Drainage Reports and Hydrology Reports*. Whenever a drainage report or a hydrology report is required, its presentation and format should be as brief and as succinct as possible. Unless otherwise noted herein, they should contain the following engineering information, at a minimum, presented in approximately the specified format indicated below:

   a. *Cover Sheet*

      (1) Submittal number (i.e., first submittal, second submittal, first addendum, etc.).

      (2) Name and address of the parcel, project, or development for which the report is being submitted; the Proposed Zoning of the development (i.e. R1-36); the Planning Case Number (e.g.: PR01-00, et. al.); the approximate location of the project site relative to Township, Range, and Section; and the Floodplain FIRM Map Panel Number.

      (3) Name, address, and telephone number of the client for whom the report was prepared.

      (4) Name, address and telephone number of the engineering firm responsible for the report.

      (5) Submittal date

      (6) Seal and signature of the Arizona Registered Professional Civil Engineer responsible for preparation of the report.

(7) Table of Contents. All report pages shall be numbered sequentially, including any appendices.

b. *Introduction*

(1) Site Location and Project Description

(a) When writing the report introduction, very briefly describe the general location of the parcel relative to nearby streets, drainageways, and washes.

(b) Submit a site-location map, at a minimum scale of three inches equal to one mile, which shows the geographical relationship of the project to nearby properties, streets, and watercourses.

(c) Provide a legal description of the specific parcel or parcels in question (if the description is lengthy, the information may be placed in an Appendix).

(d) Briefly describe the type, and approximate size, of the project to be constructed. It must be clear to the reviewer, for detention and/or retention considerations, whether or not the parcel (or parcels) being developed is greater than, or less than, one standard acre (i.e., 43,560 square feet) in size. Any lot subdivided from a parcel greater than or equal to one standard acre in size on or after August 26, 1998 (Ord. No. 98-95) is subject to stormwater (detention/retention) requirements, regardless of lot size. A drainage report will be required under such conditions.

(e) In order for the reviewer to understand whether or not additional information will be forthcoming, identify those drainageways and roadways for which improvement plans will be prepared.

2. *Purpose and Objectives for Submitting a Drainage Report or Hydrology Report.*

a. Give the purpose for submitting the report (i.e., Tentative Plat/ Development Plan approval, Building Permit application, Floodplain Use Permit application, condition of rezoning, etc.).

b. Briefly enumerate the report objectives.

3. *Known Development Requirements.*

a. Repeat, for the benefit of the reviewer, those drainage and land-use policies given in the Area Comprehensive Plan, Basin Management Plans, Neighborhood Plans, or Specific Plans that apply to the project site, or its immediate vicinity. Specify how these policies have been satisfactorily addressed during the design of the development. (NOTE: For many projects, this information may not be required. Consult the Engineering Director's office.)

b. As may be appropriate, list any rezoning requirements that relate to drainage and grading, and describe how these specific requirements have been satisfied.

c. Summarize the preliminary requirements given by the Engineering Director's staff during any Pre-Submittal Conference. Include a dated copy of the Pre-Submittal Conference Summary, if required, as prepared by the Developer or the Consulting Engineer.

4. *Previous Studies*. Identify all known drainage studies for the subject parcel, and for adjacent parcels that share drainageways and/or storm runoff. Mention previous submittals of the subject report, if any; and reference earlier staff correspondence, as appropriate.

5. *Long-term Maintenance Responsibility*. Specify the name, address, and telephone number of the person(s), firm(s), agency or agencies responsible for the ownership, operation, scheduled and unscheduled maintenance, and liability of drainage improvements (i.e., roads, parking areas, washes, drainageways, detention/retention basins, common areas, etc.) described in the drainage report. List other documents where these responsibilities are documented (i.e., CC&R's, Final Plats, Development Plans, etc.).

6. *Required Permits*. Submit a comprehensive list of permits which either have been or will shortly be obtained from those governmental agencies when approval is required by Federal or State Law, including, but not necessarily limited to: a US Army Corps of Engineers administered Section 404 (of the Clean Water Act) Permit; a Section 401 Certification; an EPA National Pollution Discharge Elimination System (NPDES) Permit; etc. Provide document copies of the appropriate permits/applications for permits, correspondence to and from the regulatory agencies regarding the need for such permits, and assurance to the City that the Owner/Developer is in compliance with all necessary permit procedures from all such regulatory agencies. Note that, according to current Floodplain Regulations, it is the City's responsibility to make sure that the owner/developer obtains all necessary permits prior to granting final approval of the project construction.

D. Hydrology

1. *Offsite Drainage.*

   a. In order to help staff locate the development relative to future drainage improvements, give the name of the Major or Minor Wash, or the Regional Watercourse into which the project site drains.

   b. Describe the size, location, and hydrologic characteristics of upstream and adjoining watersheds that may potentially affect the site.

   c. Provide either a topographic map at a scale of one inch equal to 200-feet, or larger, or (preferably) a photo-topo which shows:

      (1) The parcel boundaries, major streets, drainageways, and nearby storm-drain systems (if they are considered in the analyses);

      (2) Boundaries of the offsite watersheds affecting the site;

      (3) Principal points of drainage concentration; and,

      (4) Flowlines and grade breaks used to compute basin lengths and average watercourse slopes.

      Note that U.S. Geological Survey 7.5-minute or 15-minute Topographic Quadrangle Maps, as well as City of Drainage Base Maps, are generally not acceptable for delineating offsite and onsite watershed boundaries, but may be used to show large drainage basins, if the actual basin boundaries are determined from larger-scale maps. The larger-scale maps should also be included within the report.

d. Identify and describe both the existing natural and/or man-made impacts and the proposed major developments to be located within the contributing watershed, which may impact the subject development, relative to flooding and erosion or sedimentation.

e. Identify and describe, as appropriate, the effects that nearby impending City/County drainageway and/or roadway-improvement projects may have on site drainage or site design. Also, specify the time frame within which these improvements are planned.

f. Submit Hydrologic Data Sheets for each significant onsite point of drainage concentration. If they are different, calculations are to be presented for both pre-development and post-development conditions. If there are many sheets, put them in an Appendix, and summarize the watershed characteristics and flood peaks in a table placed, within the text of the report. Indicate, as appropriate, whether the flood-peak estimates are for existing or future watershed conditions, or both.

2. *Onsite Drainage.*

a. Describe the size, location, and hydrologic characteristics of the onsite watersheds.

b. Unless an alternative size has been approved by the Engineering Director's staff, show onsite drainage conditions on topo maps having a minimum scale of one inch equal to 40-feet with one-foot contour intervals, as stipulated in Chapter 10 of this Guideline. A Grading Plan, Tentative Plat, or Site Plan may be modified for this purpose. Show on this map:

(1) Watershed boundaries;

(2) All points of drainage concentration, and;

(3) Flowlines and grade breaks used to compute basin lengths and average watercourse slopes.

c. Submit Hydrologic Data Sheets for each point of drainage concentration. Calculations are to be presented for both pre-development and post-development conditions. If there are numerous sheets that are difficult to organize comprehensively, place them in an Appendix, and summarize the watershed characteristics and flood peaks in a table exhibited within the text of the report. Indicate whether the flood-peak estimates are for existing or future watershed conditions, or both.

E. Floodplain Analyses and Results

It is intended that the particular section of a drainage report or a hydrology report that addresses Floodplain Analyses be reserved for describing the existing and future floodplains affecting the proposed development. Either normal-depth computations or backwater computations should be used to describe the existing (pre-development) and the future (post-development) flow depths, widths, and velocities.

The format of this chapter will vary, depending upon the, complexity of the prevalent drainage patterns. Therefore, the consulting engineer may exercise his or her own judgement in writing this portion of the report. However, the analyses and results must be clearly presented and organized; the calculations and design elements should be clearly cross-referenced to other appropriate sections of the report.

The following list contains the major technical items that must be included, or considered:

1. Describe the hydraulic analyses used to evaluate floodplains and floodways located in, and adjacent to, the proposed development. This description shall include a brief discussion of the theory and/or the numerical/computer model(s) used for the study, the source of input data, and any simplifying assumptions made.

2. Describe the results of the hydraulic analyses in terms of site design.

3. The following items should be shown by appropriate symbols and labels on the Site Plan, Tentative Plat, or Development Plan, if located on or within at least 200-feet of the subject development:

   (a) Unless entirely contained within a street section or constructed drainageway, all 100-year floodplain limits and areas of sheet flooding resulting from 100-year flood peaks of 100 cfs or greater shall be clearly shown and labeled, and shall also include spot water-surface elevations.

   (b) Those areas subject to flooding from flows less than 100 cfs shall also be identified and labeled with flow arrows.

   (c) Each significant concentration point, along with its 100-year peak discharge and contributing drainage area, shall be labeled.

   (d) All applicable floodplain and floodway limits and erosion/building setback lines shall be shown in a surveyable manner on the final plat. All boundaries of FEMA Special Flood Hazard Areas shall be indicated and labeled with the applicable Zone designation on all Final Plats and Preliminary Plats.

   (e) Any Regulatory Flood Plain shall be clearly labeled as "Regulatory Flood Plain".

   (f) All floodways shall be labeled in one of the following ways: 'To be left natural," "To be channelized," "Public (or Private) Flowage Easement," "Public (or Private) Drainage Easement," or "Public (or Private) Right-Of-Way". Prior approval from the Engineering Director shall be required for the dedication of any Public Easement.

   (g) 100-year floodplain limits, which are entirely contained within a street section or constructed drainageway, shall be labeled as such on the plan/plat, or a general note shall be included on the plan/plat that states the same.

4. The Hydraulic Calculation Sheets used in conjunction with the delineation of offsite and onsite flood plains, as well as those used for evaluating flow depths, velocities and flow durations, should be presented in a clearly understandable manner. Note that if computer input/output is submitted it must be well documented and described.

5. All hydraulic cross sections are to be clearly identified on a map of suitable scale so that they may be easily cross-referenced to the Hydraulic Calculation Sheets used by the consulting engineer. The cross sections are to be plotted to scale, and accompanied by pertinent hydraulic information, such as the ground profile, design discharge and return period, computed water-surface elevation and depth of flow, channel and overbank velocities, effective and ineffective flow areas, Manning's roughness coefficients, wetted perimeter, energy slope and/or ground slope, Froude number, and critical depth.

6. The calculations used to assess the hydraulic effects that existing and future structures may have upon the floodplain and floodway should be presented and be clearly described. Encroachment analyses shall be provided whenever significant development is planned within FEMA-recognized floodplains/floodways, major washes, or other washes or floodplains, as designated or determined by the Engineering Director.

7. The floodplain analyses presented in the report being submitted should be compared with those presented in previous reports for the same geographical area. Special emphasis should be given to comparing the current results with those given in Flood Insurance Studies and Flood Insurance Rate Maps, Basin-Management Studies, and studies accompanying drainage or roadway improvement plans. Unless a LOMR is to be requested, the floodplain delineation shall coincide with the FIRM limits.

F. Hydraulic Improvements and Hydraulic Structures (Drainage Report Only)

It is intended that the particular chapter of a drainage report which addresses Hydraulic Improvements and Hydraulic Structures be reserved for describing the design of any drainage improvements which are needed in order to satisfy either the wishes of the owner/developer or governmental regulations and standards, whether Local, State, or Federal.

The format of this chapter of the drainage report will vary, depending upon the complexity of the prevalent drainage patterns. Therefore, the consulting engineer may exercise his or her own judgement in writing this portion of the report, subject to specific requirements imposed by the City Floodplain Engineer.

The following list contains the major technical items that shall be included, or considered:

1. Provide a general description of the proposed drainage design for the entire project. Indicate which portions will be constructed in phases, in conjunction with other major structures.

2. Describe and present Hydraulic Calculation Sheets for each of the hydraulic systems used to collect offsite flow. Examples of these kinds of systems include collector channels, existing drainageways, and flow-through openings in perimeter screen walls. Demonstrate that the collector systems to be employed do not unnecessarily obstruct offsite flows. Encroachment analyses shall be provided, as needed.

3. Describe and present detailed and easily understandable Hydraulic Calculation Sheets for each of the stormwater conveyance systems to be constructed as part of the overall project. These systems include, but are not necessarily limited to, lined and unlined channels, drainage swales, streets and alleys, storm drains, and roadway culverts.

4. If any of the proposed drainage structures and roadways are to be dedicated to the City for ownership and operation/maintenance, Improvement Plans, prepared to City Standards, must be submitted for approval prior to the issuance of a Grading Permit or a Building Permit. When applicable, place a note on the Final Plat, Development Plan, Site Plan, and Grading Plan that indicating the conditions of dedication.

5. If computer input/output data are submitted in conjunction with hydraulic computation sheets, they must be well documented and explained.

6. Describe and present Hydraulic Calculation Sheets for each of the hydraulic systems used to return the flow to either its natural or existing location and magnitude along the downstream property line.

7. If flows are to be concentrated or ponded on the upstream or downstream side of the subject property, either a recorded drainage easement or written permission must be obtained from the appropriate property owner(s) prior to issuance of Grading Permits or Building Permits. When this condition applies, place a note on the Development Plan, Final Plat, Site Plan, and Grading Plan, as appropriate, which indicates the same. If drainage improvements are proposed for offsite areas, written approval from the offsite property owner(s) will be required.

G. Detention Basins and/or Retention Basins

1. *Basin Location and Description.*

   a. Provide calculations needed to demonstrate that detention can be waived in accordance with criteria given in the Maricopa Standards (i.e., the "Drainage Design Manual for Maricopa County" Vol. II). Provide calculations for the required volume of retention of the 100-year, 2-hour storm per the FCD Standards.

   b. Give a general description of the proposed detention/retention scheme for the entire project. Indicate which basins and appurtenant drainage structures will be constructed in proposed phases.

   c. Submit a detailed site plan which clearly shows the dimensions and locations of all proposed detention/retention systems, including:

      (1) The locations, sizes, and types of inflow and outflow structures to be employed. Include dimensions and elevations of critical portions of those structures

      (2) The location and size of access and maintenance access ramps and roadways

      (3) Boundaries of Common Areas and Private Drainage Easements which cover the basin, inlet and outlet structures, inflow and outflow drainage channels, and maintenance routes

      (4) Clearly marked dimensions of all building and/or erosion setback zones (i.e., additional space provided for structural safety considerations). Show the dimensions or distances between building structures and any proposed basins or drainage ways

      (5) Maximum water-surface elevations, and the limits of ponding

      (6) Identified locations and types of all security barriers to be installed around the basins, as appropriate

   d. Provide details and discussions of how the proposed detention/retention scheme will comply with landscaping and grading guidelines required by the City's Development Standards.

2. *Retention Basin Design per Section 4-3 of this Chapter.*

3. *Detention Basin Design Report Requirements Additional to Section 4-3.*

   a. Provide and describe Reservoir-Routing Calculation Sheets for each basin for the 2-year, 10-year, and 100-year design floods, at a minimum. The Reservoir-Routing Calculation Sheets shall, at a minimum, consist of a working-table for each basin, and a routing-table for each flow event. Note that the City may reserve final approval of basin design until its acceptance of the project's drainage control grading.

b. Provide and describe any other Hydraulic Calculation Sheets prepared while evaluating stage-storage and stage-discharge relationships, or any other pertinent data used in the basin analysis and design.

c. Submit plotted inflow and outflow hydrographs (preferably superimposed). Include any lag-time calculations.

4. *Basin and Drainageway Maintenance*.

a. A detailed Drainage way and Detention/Retention Basin Maintenance Checklist and Schedule shall be provided by an Arizona Registered Professional Civil Engineer, which will be followed by anyone performing scheduled and unscheduled maintenance on behalf of the owner(s). Each of the privately owned drainage structures and detention/retention basins to be regularly inspected shall be identified. The identification shall reference specific portions of construction documents of the approved final design. Note the minimum frequency of inspection and indicate the expected range of acceptable performance (i.e., sedimentation levels, scourhole dimensions, etc.). If private drainageways or other water-conveyance structures are proposed, but detention/retention basins are not, a maintenance checklist and schedule shall still be prepared as part of the drainage report. In these cases, the engineer may exercise his or her own judgement as to the location within the report where he or she wishes to place the discussion of maintenance.

b. As part of the checklist, state that the annual inspection report shall contain the following summaries:

(1) A statement saying that either no maintenance work is needed at 'that time, or a list of repairs and work to be done to correct deficiencies, to avoid potential problems, and/or to restore the aesthetics. Also state that this work shall be followed by a Letter of Certification from an Arizona Registered Professional Civil Engineer verifying that the recommended work has been satisfactorily completed. The Engineer shall notify the Engineering Director, in writing, should safety-related maintenance not be completed within a reasonable period of time.

(2) A statement either indicating that watershed conditions have not changed since the previous inspection report, or stating that specific changes have occurred which alter or eliminate some of the design features thereby affecting the level of service of the drainage and detention/retention systems. In addition, the Engineering Director is to be immediately notified, in writing, if watershed conditions have changed to the extent that drainage and detention/retention systems no longer satisfy the requirements of the County Floodplain Regulations.

H. Summary and Conclusions

1. Provide a brief summary of the important analyses and conclusions presented in the report.

2. Certify that the proposed drainage plan, once properly constructed, will adhere to applicable Local, State, and Federal Floodplain Regulations.

I. References

Alphabetically list all of the sources of information and design procedures used in developing the drainage analysis and design.

J. Appendices

Place Hydrologic, Hydraulic, and Reservoir-Routing Calculation Sheets, and other relevant documents, in one or more referenced appendices. Number the pages.

K. Drainage Statement

A drainage statement may be submitted in lieu of a drainage report or hydrology report. Because site conditions vary considerably within the area, each drainage statement may be different in content and format. The Arizona Registered Professional Civil Engineer preparing the report may exercise his or her own judgement in presenting the technical information for review. In all cases, the drainage statement must be clearly written, sealed, and signed by the Engineer; and may contain the following information concerning the proposed project:

1. A brief description of the type and size of the proposed development, including a legal description of the parcel or parcels being developed;

2. A brief description of the amount of runoff expected on, or near, the site;

3. A 200-scale aerial photo-topo, or other acceptable map, showing the subject parcel, the contributing drainage areas and their principal points of drainage concentration, and any other pertinent information related to the site design;

4. Hydrologic Calculation Sheets concentration for each principal point of drainage;

5. The appropriate Hydraulic Calculation Sheets used in designing the proposed method of drainage disposal;

6. A 40-scale Site Plan, for review and approval;

7. Where significant changes to hydraulic structures, detention basins, grades, FFE's, or other development conditions occur on the grading plan submitted for the purpose of a grading permit, a drainage-report addendum, justifying the proposed changes, must be included with the plan.

L. Quality of Submittals

The Arizona Registered Professional Civil Engineer shall be held solely responsible for the correctness and adequacy of all data, drawings, calculations, and reports submitted to the City Of Peoria for review and approval. In addition, the Engineer shall comply with all Local, State, and Federal Floodplain Regulations in the design of the development.

Staff in the Engineering Director's Floodplain Compliance Section will review the technical submittals for completeness and general compliance with all applicable Floodplain Regulations and Drainage Standards. Approval by the City does not necessarily imply that the design is appropriate, or that the development is in strict compliance with all applicable regulations and standards. Review and approval of drainage submittals shall not create liability on the part of the City or its employees for any flood damages that may result from reliance upon any administrative decision made by the City or its employees.

CHAPTER 5

WATER INFRASTRUCTURE DESIGN AND CONSTRUCTION

5-1 GENERAL INFORMATION

A. System Design Criteria

The criteria for development of water infrastructure in the City of Peoria shall be in conformance with:

1. The approved edition of the Peoria Water System Master Plan. All new construction shall comply with the Master Plan. Directions for obtaining a PDF copy of the approved edition of the Water System Master Plan is on the website at http://www.peoriaaz.gov/content2.asp?ID=1443
2. The Arizona Department of Environmental Quality (ADEQ) Engineering Bulletin 10.
3. International Fire Code, approved edition.
4. The design engineer is responsible for evaluating site specific design conditions.
5. All other applicable City, State, County and Federal Codes and Guidelines.

B. Requirement to Connect

All developments, including single-family residences, are required to connect to the City's water system per Peoria City Code, Section 25-20. The connection to the City's water system and the extension of the waterline per City requirements are a condition of issuance of a building permit.

Waivers to this requirement may be granted by the Utilities Director if the connection is determined not to be feasible. A connection may be considered "not feasible" according to the following:

1. Single lot developments if such development is on a major arterial road.
2. The extension of the waterline is greater than 1320-feet from the City water system.
3. The applicant demonstrates the inability to obtain necessary easements upon reasonable pursuit.

Requests for a Temporary Revocable Water or Sewer Connection Waiver shall be applied for in writing at the engineering counter. The application is available on the website at http://www.peoriaaz.gov/content2.asp?ID=1435.

C. Water System Facilities

Water System Facilities include the: wells, recovery wells, booster stations, inline boosters, pressure reducing valves, lift stations, reservoirs, treatment facilities, and all other appurtenances required for proper treatment, conveyance, and service of water within the system.

It is the responsibility of the design engineer to review the approved edition of the Water System Master Plan and determine what additional water infrastructure is necessary to serve the proposed development. The Utilities Department will utilize the approved edition of the Water Master Plan and operational knowledge of the system to determine which facilities or upgrades are the requirements of the new development.

Contact the Utilities Department to discuss project specific design criteria for Water System Facilities including: wells, booster stations, inline boosters, pressure reducing valves, lift stations, and reservoirs.

D. Exceptions to the Design Guidelines

Any exceptions to Chapter 5 of the City of Peoria Infrastructure Design Guidelines must be approved in writing by the director of the Utilities Department or their designees.

5-2 TECHNICAL DESIGN REQUIREMENTS

A. General

1. *Materials* Refer to City of Peoria Standard Detail PE-101 for allowable materials.

2. *Looped System* All water systems must demonstrate redundancy (i.e. connected to two separate waterlines) as approved by the Engineering Department.

3. *Conveyance* Rights-of-way and easements shall be dedicated prior to any construction or with the Final Plat of the development.

4. *Pavement Replacement*. Pavement replacement type and compaction type shall be indicated per MAG Standard Details and Specifications on each sheet or as modified in the City of Peoria General Notes.

B. Classifications of Waterlines

The City of Peoria waterline system is based on a grid system with three basic classifications of waterlines. All development shall provide for water distribution and service lines of appropriate sizes and in standard locations. These are minimum requirements and the City may require larger sizes in unusual circumstances or in order to satisfy fire flow and pressure requirements.

1. *Transmission waterlines*. Larger than 16-inch in diameter. Size and location will be in accordance with the approved edition of the Peoria Water System Master Plan.

2. *Distribution waterlines.*

   a. Along section lines, 16-inch diameter lines.

   b. Along north-south midsection collectors (1/2 mile), 12-inch minimum diameter lines.

   c. Along east-west midsection collectors (1/2 mile), 8-inch minimum diameter lines.

   d. If the waterline deviates from the section line or mid-section line, as in the case of curvilinear roads, the waterline shall be sized as directed in this section.

   e. 8-inch minimum diameter lines shall be the standard in other locations.

3. *Service waterlines.*

   a. For single-family residential developments, standard sizes for metered taps shall be one-inch, 1.5 inches or two-inches. No smaller sizes will be allowed.

b. For all other types of development, service lines shall be sized per the design engineer.

c. Fire services lines shall be a minimum of six-inch. Smaller fire services must obtain written approval from the Fire Department.

d. Service taps are prohibited on any line, which is designed to service fire sprinkler systems or fire hydrants, on transmission waterlines, and on all waterlines larger than 16-inches.

e. Water service lines shall not be located under driveways or under concrete aprons adjacent to driveways.

C. Location of Waterlines

1. *Major Arterial Streets*. Waterline alignment shall be approved by the Utilities and Engineering Departments.

2. *Minor Arterial Streets*. Waterlines shall be offset from street centerline 13-feet north or east.

3. *Collector Streets*. Waterlines shall be offset from street centerline nine-feet north or east.

4. *Local Streets*. Waterlines shall be offset from street centerline six-feet north or east.

5. *Valve Locations*. Generally the intent is to locate the valve lids so that wheel line of normal vehicular traffic does not track over the casting. The location for the valve covers and lids should not be closer than 6-feet from the gutter line where possible.

6. *Alignment*. All waterlines shall be parallel to the street centerlines or property lines, or as close as possible.

7. *Separation.* Vertical and horizontal separation from sewer lines shall be in accordance with MAG Section 610.5 and MAG Standard Detail 404-1.

D. Easements

1. The minimum clear width of the easement for all waterlines shall be 20-feet. The minimum width for a shared easement with sanitary sewer shall be 30-feet. There is a minimum of 10-feet each side of the water facility. Larger easement widths will be required for deeper installations as determined by the Utilities or Engineering Departments.

2. Waterlines shall be centered in easements. No other parallel utilities shall be located within the water or sewer easement.

3. Water easements are to be dedicated for the specific use, maintenance and repair of the waterline, and any associated appurtenances. Water easements are to be dedicated as part of a Final Plat or by separate instrument with written approval from the Engineering Department.

4. Underground retention and above ground retention basins are not permitted to cross or be within designated public water or public sewer easements.

5. Meters, fire hydrants, and valves located on private property shall be contained within a dedicated public water easement, six-feet from the sides and 6-feet behind the appurtenance.

E. Cover and Depth

1. *Cover Requirements*. Minimum cover from finish grade to top of the pipe shall be:

   a. As specified by the design engineer, but no less than 60-inches for waterlines 12-inches in diameter and larger located in arterial streets, and for all waterlines 16-inches in diameter or larger, regardless of the location unless design conditions warrant additional cover.

   b. As specified by the design engineer, but not less than 48-inches for waterlines less than 12-inches in diameter for all locations (except arterial streets) unless design conditions warrant additional cover.

   c. Where cover is less than 4-feet (due to topography or facilities such as canals, washes, rivers, drainage basins etc.) an encasement per MAG Standard Detail 404-3, shall be constructed. This is allowed only with the written request by the design engineer and written approval by the Engineering Department.

2. *Plan Notation*. The proposed depth shall be clearly noted on each plan sheet.

   a. Any changes in depth required to avoid conflicting utilities shall be noted. The design plans shall detail the location and proposed elevation of each bend clearly. This can be done by using a standard detail that depicts the crossings in profile.

   b. All Waterlines in 12-inch and larger must be shown in plan and profile.

   c. To increase clarity, profiles of eight-inch waterlines may be required at the request of the plans reviewer.

3. Encasement or Casing:

   Additional protection per MAG Standard Details 404-1, 404-2, and 404-3 is required:

   a. Where cover is less than 4-feet (due to topography or potential conflicts with facilities such as canals, washes, or rivers).

   b. Where the bottom of pipe of the water line is between 1 to 2 feet above the top of pipe of any irrigation, storm drain, sanitary sewer, force main or other gray water pipe.

   c. Where the top of pipe of the water line is greater than 2-feet below any irrigation, storm drain, sanitary sewer, force main or other gray water pipe. Per MAG, no water lines are allowed to be located less than 2-feet below the bottom of the irrigation, storm drain, sanitary sewer, force main or other gray water pipe.

   d. Where sewerlines pass under a significant structure greater than 10-feet wide such as box culverts, railroads, highways, canals, etc. The sewerline(s) shall be installed inside a pipe casing as approved by the Engineering Department.

   e. As deemed necessary by the plan reviewer.

F. Miscellaneous Design Standards

1. Fire hydrant runs in excess of 100-feet in length require 8-inch diameter waterlines and additional valving.

2. Fire hydrants shall be installed on all dead end lines as close to the end as possible.

3. The maximum length for a dead end waterline is 400-feet unless approved in writing by the Engineering Department.

4. Combination Air/Vacuum release valves shall be installed at high points in the waterline and where the waterline changes slope or as required by the Engineering Department. The valves shall be installed per City of Peoria Standard Detail PE-395.

5. The City of Peoria water testing standards require at least one water sampling station per developed square mile. New residential developments are required to construct the water quality sampling stations per City of Peoria Standard Detail PE-371. Sampling station frequency and location will be coordinated by the Utilities Department during plan review.

6. Tapping Sleeves

   a. Tapping sleeves will not be allowed on Asbestos Cement Pipe sections. Replace the pipe section with ductile iron pipe and fittings as needed.

   b. Tapping sleeves are allowed to be installed on waterlines 12-inch and less in diameter. Tapping sleeves are not allowed to be installed on waterlines 16-inch or larger. Any exceptions must be approved in writing by the Utilities Department.

   c. Size on size connections are not allowed. Any exceptions must be approved in writing by the Utilities Department.

7. Thrust Restraint

   a. Mechanical Thrust Restraint may be provided with a Meg-a-Lug or equivalent mechanical restraint joint, as approved by the Engineering Department.

   b. Thrust Blocks will be concrete only per MAG Standard Details 301 and/or 340 and Class “B” concrete per MAG Specification 725.

8. Pipe Bedding Requirements

   Refer to City of Peoria Standard Detail PE-401. Bedding compaction densities shall be per MAG Specification Table 601-2. Specially designed and alternate beddings may be approved on a case by case basis by the Engineering Department.

9. Trench Backfill Requirements

   Refer to PE-401 Minimum trench backfill requirements shall be Type I per MAG Specification 601.4.3, with compaction densities per MAG Specification Table 601-2. Backfill requirements provided by the design engineer shall apply when such provisions are more restrictive than the MAG specification.

G. Fire Hydrants

1. *Materials and Details.*

   a. Fire hydrants shall be per City of Peoria Standard Details PE-360-1 (residential) or PE-360-2 (non-residential), as applicable.

   b. All of the hydrants that are connected to the City of Peoria distribution system must be public hydrants.

2. *Fire Flow and Number of Hydrants Required*

   a. The minimum required fire flow and minimum required number of fire hydrants are per Table B105.1 and Table C105.1 from the International Fire Code, approved edition.

   b. Reduction of fire flow up to 50% is possible, but not automatic, when the buildings have fire sprinkler systems installed. Formal request in writing shall be made to the Fire Department. Please include information of water availability, water purveyor, total building square footages, proposed usage, construction type of the buildings, sprinkler system information, and water storage information (if applicable). If approved, the Fire Department will issue a Fire Flow Reduction approval letter.

3. *Hydrant Spacing*

   a. Residential: 500-feet maximum in a single-family residential development.

   b. Non-Residential: Average Spacing shall be per Table C105.1 of the 2006 IFC, except for Fire-Flow up to 5000 gpm, the average spacing shall be 300-feet.

      300-feet maximum in a multi-family residential development.
      300-feet maximum in commercial/industrial areas.

   c. Collector Roads: 1000-feet maximum

   d. Arterial streets with 4 or more traffic lanes;
      Roadways with a traffic count of more than 30, 000 vehicles per day; or
      Roadways with median dividers.

      1000-feet maximum spacing on each side of the road in alternating positions, resulting in a hydrant every 500-feet along the roadway.

   e. For higher risk protection, determination shall be made by the Fire Department, regarding fire hydrant spacing, flow and pressure requirements.

4. *Private Hydrants: (owned and maintained by Private Water Companies)*

   a. Hydrants proposed in the service area of a private water company shall adhere to all City of Peoria standards unless otherwise approved by the Fire Department.

5. *Hydrant Markers:*

   a. Markers shall be as specified in City of Peoria Standard Detail PE-362.

   b. Hydrant Markers are required for all public or private hydrants.

H. Fire Flow Tests

Conduct Fire Flow Tests according to the City of Peoria *Fire Flow Testing Procedure* as published by the City of Peoria Fire Department on the City of Peoria website.

1. In order to accurately predict the strength of the distribution system a fire flow test is required. The flow test results are valid for 180-days.

2. Flow tests are not provided by the City. The developer shall be responsible for obtaining a qualified testing agent. Test results must be prepared by a registered engineer in the state of Arizona or by an individual or firm with a level II NICET certification in Fire Sprinklers.

3. It is required that the Fire Department observes the test and acknowledges approval of the flow. Contact the Fire Department to schedule the observation of the flow test.

I. Valves

1. *Materials and Details*.

   a. Refer to the City of Peoria Standard Detail PE-101 for allowable materials.

   b. Gate valves required to control the operation of the water system shall be installed per City of Peoria Standard Detail PE-270 and shall conform to MAG Detail 630. Gate valves shall be used for waterline sizes up to and including 16-inches in diameter.

   c. Butterfly valves shall be required on mains 24-inches in diameter and larger.

   d. Valves installation shall conform to City of Peoria Standard Details PE-270 and PE-398.

2. *Spacing*.

   a. Generally, there shall be two valves per tee and three valves per cross. However, it is preferred to limit the number of unnecessary inline valves. See the following criteria to help define when inline valves are necessary:

      i. Maximum spacing requirements per b. through e. below.
      ii. The maximum number of hydrants to be out of service per closure is two.
      iii. The maximum number of residential units to be out of service per closure is 20.
      iv. The maximum number of valves to isolate a segment of waterline is four.

   b. 500-feet maximum spacing of valves in industrial, commercial and multi-family districts.

   c. 800-feet maximum spacing of valves in single-family residential developments.

d. 1320-feet maximum spacing of valves on transmission mains 16-inch in diameter.

e. 2640-feet maximum spacing on transmission mains larger than 16-inches.

f. Any 8-inch and larger water line that will be extended in the future shall have a valve, along with a 20-foot minimum stub with cap and 2-inch curb stop, at the terminus per MAG Standard Detail 390-type A. (Type B in unimproved areas)

g. For all water lines crossing significant structures greater than 10-feet wide, such as drainage canals, and railroads, one valve shall be placed on each side of the structure as directed by the Engineering Department.

3. *Location*.

a. See City of Peoria Standard Detail PE-398 for valve locations from a tee and cross.

b. Valves shall not be located in valley gutters. The centerline of the valve shall be a minimum of 2-feet from the edge of the valley gutter.

c. All water valves located outside of paved areas shall have a "Curve-Flex" Utility Marker as manufactured by Carsonite (CFRM-400-Blue) or approved equal.

d. Valves shall be at least 3-feet clear of any constructed obstructions and 6-feet clear of any landscaping.

e. Consideration shall be given to the location of driveways, especially residential, adjacent to the valve cover whereby a vehicle or other obstruction may be temporarily located, to perpetually maintain the 6-foot clearance.

4. *Operation*.

a. Representatives of the Utilities Department are the only personnel authorized to operate water valves on the City's existing water system.

b. To request a water system shut down a "*Peoria Distribution System-Shut Down Request Form*" must be submitted. This form must be submitted at least 10-days in advance of any requests to shut down any lines in the City of Peoria's water distribution system and can be downloaded at: http://www.peoriaaz.gov/uploadedFiles/Peoriaaz/Departments/Engineering/Downloads/Water_System_Shutdown_Form.pdf

J. Water Services and Water Meters

1. *General*.

a. The size of the service will be as determined by the design engineer, sized and designed in accordance with requirements of the Uniform Plumbing Code and per the sizes herein.

b. There will be one service per lot and one meter per service line unless specific written request is submitted to the Engineering Department and written approval is acknowledged by the City.

c. A three-foot minimum separation is required between taps and an 18-inch minimum separation is required from any fittings or mainline joints

d. The Developer shall make all service taps.

f. The meter size shall be dictated by the service size. Manifolding is not permitted unless written approval is obtained from the Utilities Director.

2. *Standard Sizes and Fittings*.
Water services, pipe and fittings, whether new or replaced, shall be per City of Peoria Standard Detail PE-363.

3. *Water Meters two-Inch Diameter and Smaller.* Water meters 2-inch and smaller shall be located per City of Peoria Standard Detail PE-363. Water meters will be supplied and installed by the City of Peoria Meters Services Section. Meter shall be sized no more than one-half size smaller than the service size.

4. *Water Meters Larger than three-Inch Diameter*.
Water meters 3-inch and larger shall be installed above grade in accordance with City of Peoria Standard Detail PE-354. Water meters will be supplied by the City of Peoria Meters Services Section. Water Meters shall be installed by the Developer.

A 20-scale detail is required for all large meters (3-inch and larger). The design engineer must provide a detail on the plans which depicts the meter and backflow device including manufacturer and model number, vandal enclosure, fittings, landscape, and easements at the proposed location per City requirements. If there is a change to meter or backflow device, the detail must be modified as a plan revision prior to installation in the field.

5. *Location for Access, Maintenance, and Drainage Control*.

a. Water services installed outside of public right-of-way shall be contained within a dedicated easement for access, maintenance and reading of meters.

b. Water meters shall not be located in parking lots, driveways, or in areas of paving or where traffic may cause damage to the service, meter or meter box. Meters will not be fenced in and must be accessible at all times.

c. In landscape areas, proposed grading shall direct runoff to flow away from the meter installation.

d. Above ground vandal enclosures are required for all meters three-inch and larger.

K. Backflow Prevention

1. Backflow protection will be required on potable water supply lines for commercial facilities to prevent the possibility that the potable water system may become polluted or contaminated. Additional backflow prevention assemblies may be required to isolate potential internal hazards per reviewer request.

2. Containment (or secondary protection) will be installed at the service connection or downstream side of the water meter. The backflow assembly will be installed as close as possible to the water meter for domestic and landscape irrigation services, or as close as possible to the property line or main line tie-in for the fire sprinkler system. It is not permitted to combine the meter and the backflow into one assembly, there should be a minimum of 5-foot separation between the meter and backflow. A Reduced Pressure (RP) Principle Backflow Preventer shall be installed as standard containment protection. Any backflow prevention assembly other than an RP must have written approval from the

Utilities department or Building Safety Division. Installation of secondary backflow protection shall be according to City of Peoria Standard Details PE-351-1&2, PE-352-1 and/or PE-353-1&2.

3. Internal (or primary protection) may be required within the potable water system at the point of use to isolate potential internal hazards. Internal backflow assembly requirements will be determined during the plan review process. Installation of internal backflow assemblies shall be in accordance with City of Peoria Standard Detail PE-352-2.

4. All American Water Works Association classes 1, 2, and 3 fire systems 6-inches in size and larger or any system 3-inches in size and larger constructed of a piping material not approved as a potable water system material per the International Plumbing Code, latest adopted edition, shall have a Double Check Valve (DC). All American Water Works Association classes 4, 5, and 6 shall have a RP. In all other circumstances a RP is required.

5. Proposed fire lines less than 6-inches in size require special approval. If approved, all fire line services less than 6-inches in size and in excess of 150-feet from mainline tie-in to fire riser shall have at a minimum a DC located as close as possible to the property line or mainline tie-in. Fire lines less than 150 from the main line tie-in shall have a DC installed on the fire riser. Fire line backflow prevention assemblies shall be installed according to City of Peoria Standard Details 351-1&2 and/or 353-1&2. The Utilities Department and/or the Fire Community Services Division shall provide final approval for all backflow prevention assemblies and configurations. Fire sprinkler systems must be sized to allow for a minimum 10 psi head loss plus the losses associated with all fittings, valves, elbows, risers and additional appurtenances.

6. All backflow assembly installations shall be in accordance with International Plumbing Code, latest adopted edition, and current City of Peoria Code. Installation shall be completed by a qualified licensed contractor and comply with current City of Peoria Standard Details. Backflow assembly testing may only be conducted by City of Peoria Recognized Testers. The "Recognized Testers List" is available on the website at http://www.peoriaaz.gov/uploadedFiles/TESTER%20LIST(1).pdf
A final inspection will be required by a member of the Environmental/Building Safety Division prior to the issuance of a Certificate of Occupancy.

5-3 WATER RESOURCES AND WATER CONSERVATION

The criteria for guiding management of the essential and finite water resources available to the City of Peoria is *The Principles of Sound Water Management*.

A. Water, Sewer and Water Resources Impact Report (WSWR)

1. This report is required for all proposed developments. A report format is available for download on the website at http://www.peoriaaz.gov/content2.asp?ID=1435.

2. The WSWR report is required at the time of preliminary plat, first site plan submittal, or first submittal of any submittal that may impact the City's water and sewer infrastructure or water resource allocation (i.e. rezoning, conditional use, etc.).

3. After submitting the WSWR, projects identified to have any of the following criteria will be required to have a separate water resources review:

a. Annexation (within COP water service area)
b. Major or minor general plan amendment
c. 41 gross acres and larger in size
d. Excessively high water use (50% over general plan allocation)

4. During the water resources review, and in accordance with the guidelines in the Principles of Sound Water Management, the City will confirm the City's water allocation for the project. In order to approve water use in excess of the aforementioned water allocation, the City will require serious and measurable water conservation initiatives and/or acquisition of new water rights to be dedicated to the City.

B. Water Conservation

1. Serious and measurable water conservation initiatives are defined as initiatives that are enforceable by the City of Peoria that are proven to reduce the overall water use of a given development by utilizing water reduction measures **that are not already required** by current City requirements.

2. The developer may provide a **Water Conservation Plan** to the City of Peoria, which outlines the proposed serious and measurable water conservation initiatives. Prior to submitting the Water Conservation Plan, the developer must schedule a meeting with the City of Peoria- Water Conservation Group.

3. The Water Conservation Plan, at a minimum, must outline the following:

    a. Best management practices to be utilized
    b. Landscape/hardscape requirements
    c. Method of ensuring that these measures can be enforced by the City of Peoria
    d. Calculation of total proposed water use without conservation techniques
    e. Calculation of total proposed water use with conservation techniques
    f. An itemized list of water savings from each of the water saving initiatives proposed (Water reduction efforts already required by the City will not be counted. Only water savings above and beyond the current requirements will be considered.)

5-4 CONSTRUCTION

A. Construction

All construction shall be per the latest MAG Uniform Standard Details and Specifications for Public Works Construction and subject to City of Peoria modifications, latest edition.

B. Tie-ins to Existing System

Construction plans shall indicate that any tie-ins to the existing, active system shall be made only after completion of all new work and written approval of the City Engineering Inspector.

C. Pressure Testing

Pressure testing of new mains shall be by the contractor per MAG Section 610.15 and documented on City forms (available from the Engineering Inspectors), except fire sprinkler lines. Fire sprinkler lines shall be tested per the Uniform Fire Code adopted by the City. Water usage for line filling is to be reported to the Utilities Department on City forms.

D. Chlorination, Flushing and Bacteriological Testing

Chlorination and flushing of new mains shall be performed by the contractor per MAG Section 611 and Part V of ADEQ Engineering Bulletin No. 8, except as stated below.

1. *General.*

   a. Before being placed in service, all newly installed pipe, valves, hydrants, and appurtenances shall be flushed, disinfected, kept clean, and will be sampled for acceptable bacteriological analysis.

   b. Newly installed waterline will have a sample taken from each and every 500-foot interval, and at each end. For each hydrant lateral over 18-feet in length, a sample will be taken at the hydrant end. Hoses for sampling will not be allowed. On new waterline without hydrant, temporary sampling taps shall be provided, and then removed and plugged after acceptable bacteriological results are received. Hydrant used for sampling shall be fitted with an approved sampling tap.

   c. The contractor shall coordinate with the Engineering Department for the location of sampling taps.

2. *Pre-disinfection Flushing*
   a. Pipe shall first be flushed to remove any solid or contaminated material. Flushing velocity shall be at least 2.5 feet per second in the pipe. Flushing period shall be at least five minutes for every 150-feet of new pipe, but in no case less than 30 minutes.

   b. One 2-1/2 inch hydrant opening will, under normal pressure of 40 psi, provide this velocity in pipe sizes up to and including 12-inches.

   c. For pipe sizes exceeding 12-inch diameter, flushing taps size requirements are:

REQUIRED FLOW AND OPENING TO FLUSH WATERLINES

Pipe Diameter (inches)	Flow Required to Produce 2-1/2 feet per second (fps) Velocity in Waterline (gpm)	Number - Size (inch) of Taps Required for a 2-1/2 fps Flush
14	1200	3 – 2-inch, or 1 – 3-inch
16	1600	4 – 2-inch, or 1 – 4-inch
24	3600	4 – 3-inch, or 2 – 4-inch, or 1 – 6-inch
30	5625	4 – 4-inch, or 2 – 6-inch, or 1 – 8-inch
36	8100	2 – 6-inch, or 1 – 8-inch
42	11025	3 – 6-inch, or 1 – 10-inch

3. *Final Flushing and Testing.* Following chlorination, all treated water shall be flushed from the pipe until the replacement water treated throughout its lengths shows an absence of chlorine. If chlorine is normally used in the source of supply, tests shall show a residual not in excess of that carried in the system. Flushing velocity shall be at least 2.5-feet per second in the waterline. Flushing period shall be at least five minutes for every 150-feet of new waterline, but in no case less than 30 minutes. All hydrants on the new waterline shall be flushed to remove excess chlorine from the hydrant and hydrant branch.

4. *Documentation.* Document on City forms (available from the City Engineering Inspectors). Samples will be taken and tested by the City. Water usage for line filling and flushing is to be reported to the Utilities Department on City forms.

E. Protection of Monuments

The Developer is responsible for protecting and restoring if damaged, construction survey stakes and property corner monuments used by the City to locate the water services.

F. Existing Water System Facility Requirements

1. *Water Service Installations*. Requirements for lowering, extending and relocating meters are as follows;

   a. A construction permit is required for any work on the City water system regardless of the location of the facility. Construction permits can be obtained through the Engineering Department.

   b. The contractor or licensed plumber, shall obtain permission from the Meter Services Division to complete all work including meter disconnects and reconnects.

   c. Materials shall be copper and bronze in accordance with City of Peoria Standard Detail PE-363.

   d. The Contractor's representative shall be responsible for water customer notification.

2. *Fire Hydrant Setbacks and Waterline Relocations to Eliminate Conflicts*. All work shall be done by contractor including chlorination and testing requirements that apply to this type of work. Contractor shall not operate valves; Representatives of the Utilities Department are the only personnel authorized to operate water valves on the City's existing water system.

3. *Switch-overs and Abandonments*. Work will be done by contractor after written authorization by the City Utilities Department.

5-5 PLANS PREPARATION AND WATER INFRASTRUCTURE ACCEPTANCE

A. Submittal items

1. Plans shall be prepared per Chapter 1 of the City of Peoria Infrastructure Design Guidelines.

2. Utility Reports:

   Water, Sewer and Water Resources Impact Report (WSWR) - Required at Pre-Plat, first submittal of site plan, or for the first submittal of all rezoning applications. This is used to determine the potential impact that the development would have to the existing water and sewer infrastructure. This report will also be used to verify that the proposed density and water use of the proposed development is consistent with the City's general plan and the City's water allocation for the proposed parcel. Refer to the report template at http://www.peoriaaz.gov/content2.asp?ID=1435

   Final Water Network Analysis- Required for all sites in which watermain is extended/ looped in order to service the proposed development, in areas identified as having problematic or low pressures, or for buildings that have an unusually high water demand. The modeling in this report will be used to verify that adequate service and fire flows can be obtained with the proposed waterline construction. Refer to the report template at http://www.peoriaaz.gov/content2.asp?ID=1435

Master Water and Master Sewer Reports- When required, this report should show the infrastructure required for the utilities in the development to function per City of Peoria standards. Individual Final Water and Final Sewer Reports will be required for each parcel at the time of submittal. Individual phased reports should be consistent with the data, calculations, and assumptions shown in the Master Reports. Refer to Chapter 6 for additional information regarding Sewer Reports. Refer to the guidance memo at http://www.peoriaaz.gov/content2.asp?ID=1435

3. The completed Approval to Construct (ATC) application with signatures should be submitted during plan review. Sign-off from the "public water supply provider" on page 2 of 3 the ATC will be issued by the Uti*lities Department after the ATC* application has been submitted and will not be provided until the utility plans are substantially approved.

4. A copy of the ATC issued by Maricopa County Environmental Services Department (MCESD) and the Mylar cover sheet signed by MCESD must be submitted to Engineering prior to receiving final plan approval from the City.

B. Water Infrastructure Acceptance

Copies of the following documents must be submitted to the Engineering Department prior to acceptance of the waterline(s) by the City. Refer to Chapter 7 of this document for as-built requirements. Final Letter of Acceptance (FLOA) will be released by the City of Peoria Engineering Department after all other items have been completed.

1. "Water Accounting Form" indicating all water quantities used for line fill, flushed quantities and any other water used not recorded by water meters.

2. Waterline Flushing documentation.

3. Waterline Pressure Testing documentation.

4. Residual testing.

5. Waterline Disinfection and Bacteriological Testing documentation certified by a State of Arizona Registered Water Distribution Operator including laboratory analytical results.

6. A copy of the "Engineer's Certification of Completion".

7. A copy of the "Certificate of Approval of Construction" (AOC) issued by MCESD

CHAPTER 6

WASTEWATER INFRASTRUCTURE DESIGN AND CONSTRUCTION

6-1 GENERAL INFORMATION

A. System Design Criteria

The criteria for development of wastewater infrastructure in the City of Peoria shall be in conformance with:

1. The approved edition of the Peoria Water System Master Plan. All new construction shall comply with the Master Plan. Directions for obtaining a PDF copy of the approved edition of the Water System Master Plan is on the website at http://www.peoriaaz.gov/content2.asp?ID=1443
2. The Arizona Department of Environmental Quality (ADEQ) Aquifer Protection Permit regulations.
3. The design engineer is responsible for evaluating site specific design conditions.
4. All other applicable City, State, County and Federal Codes and Guidelines.

B. Requirement to Connect

All developments, including single-family residences, are required to connect to the City's wastewater system per Peoria City Code, Section 25-85. The connection to the City's wastewater system and the extension of the public sanitary sewer are required for all new construction or for modifications to existing disposal systems costing in excess of $100.

Waivers to this requirement may be granted if the public sewer is determined to not be available to the subject property. A public sanitary sewer can be considered "not available" according to the following:

1. The extension of the sanitary sewer is greater than 1320-feet from the City wastewater system.
2. The applicant demonstrates the inability to obtain necessary easements upon reasonable pursuit.
3. There is not adequate capacity or depth in the existing public sanitary sewer.

Requests for a Temporary Revocable Water or Sewer Connection Waiver shall be applied for in writing at the engineering counter. The application is available on the website at http://www.peoriaaz.gov/content2.asp?ID=1435

C. Wastewater System Facilities

Water System Facilities include the: lift stations, forcemains, chlorine flushers, odor control sites, and all other appurtances required for proper treatment, conveyance, and disposal of wastewater within the system.

It is the responsibility of the design engineer to review the approved edition of the Wastewater Master Plan and determine what additional wastewater infrastructure is necessary to serve the proposed development. The Utilities Department will utilize the approved edition of the Wastewater Master Plan and operational knowledge of the system to determine which facilities or upgrades are the requirements of the new development.

Contact the Utilities Department to discuss project specific design criteria for Wastewater System Facilities including: lift stations, forcemains, chlorine flushers, and odor control sites.

D. Exceptions to the Design Guidelines

Any exceptions to Chapter 6 of the City of Peoria Infrastructure Design Guidelines must be approved in writing by the director of the Utilities Department or their designees.

6-2 TECHNICAL DESIGN REQUIREMENTS

A. General

1. *Materials* Refer to City of Peoria Standard Detail PE-101 for allowable materials. The design engineer must specify the exact pipe material in the construction drawings that are in accordance with the City approved pipe materials. Modifications to the pipe material will require a formal plan revision and must be approved by the design engineer and the City of Peoria.

2. *Conveyance* Rights-of-way and easements shall be dedicated prior to any construction or with the Final Plat of the development.

3. *Pavement Replacement*. Pavement replacement type and compaction type shall be indicated per MAG Standard Details and Specifications on each sheet or as modified in the City of Peoria General Notes.

4. *Size*. All developments are required to provide sewer service for the individual development and the ultimate service area of the basin, as deemed necessary by the Utilities Department. Wastewater lines shall be sized to accommodate their ultimate service area. Larger mains may be required dependent upon the maximum flows anticipated with full development of the ultimate service area, with additional consideration given to land use. The minimum size line for any public main is 8-inch diameter.

B. Classification of Sewer Lines

The City's sewer system includes four classifications of sewer lines, which are determined by use or location within the system, identified as follows:

1. *Building Sewer, House Connection, Service.* The extension from the building drain to the public sewer or other place of disposal, also called house connection or service, shall be in accordance with the Uniform Plumbing Code as adopted by the City.

2. *Lateral Sewer, Collector Sewer.* Any sewer that connects one or more building sewers to a main sewer is a lateral sewer.

3. *Main Sewer, Trunk Sewer*. In larger systems, the principal sewers to which laterals are tributary and connected to are interceptor sewers.

4. *Interceptor Sewer*. A pipe that receives flows from a number of transverse sewers, outlets or main sewers, and conducts such wastewater to a point for treatment or disposal.

C. Location of Sewer Lines

1. Major arterial streets - sewer main alignment shall be reviewed individually.

2. Minor arterial streets - sewer mains shall be offset from the street centerline 13-feet south or west.

3. Collector streets - sewer mains shall be offset from the street centerline six-feet south or west.

4. Local streets - sewer mains shall be offset from the street centerline six-feet. For curvilinear streets the offset from the street centerline can range from 6 to 9-feet south or west.

5. Generally, the intent is to avoid locating the manhole covers so that wheel line of normal traffic does not track over the casting. The location for the covers and lids should not be closer than 6-feet from the street drainage flow line or gutter line.

6. All sewers shall be parallel to the centerlines or as close to parallel as possible.

7. In cases where public sewers are authorized outside of public right-of-ways, all such sewers shall be centered and parallel to the property lines or as close to parallel as possible.

8. Vertical and horizontal separation from water lines shall be in accordance with MAG Section 610.5 and MAG Standard Detail 404-1. Minimum horizontal separation from the sewer line to other underground utilities shall be 6-feet.

9. No part of any manhole shall be located any closer horizontally than the depth of cover or six-feet, whichever is greater, from any wall, fence or structure, etc.

10. Public sewer lines will not be permitted within the limits of retention/detention basins.

11. Sewer service lines shall not be located under driveways or under concrete aprons adjacent to driveways.

D. Easements

1. Sewer easements are to be dedicated for the specific use, maintenance and repair of the sewer line, and any associated appurtenances. Sewer easements are to be dedicated as part of a Final Plat or by separate instrument with written approval from the Engineering Department.

2. Sewer lines shall be located within public rights-of-way or centered within a 20-foot wide easement dedicated for sewer line, or within a 30-foot wide easement (minimum width) dedicated for both water and sewer lines. Larger easement widths with a minimum clear width equal to twice the depth of cover will be required for deeper installations as determined by the Utilities or Engineering Department.

3. No other parallel utilities shall be located within the public water or sewer easement.

4. Underground retention and above ground retention basins are not permitted to cross or be within designated public water or public sewer easements.

E. Cover and Depth

1. Maximum depth for sewer lines and manholes shall be 12-feet, unless detailed loading calculations and materials selection is approved with the written request by the Developer's Design Engineer to the Engineering Department and with written approval by the Utilities Department. The proposed design shall be submitted to the Engineering Department for review.

2. When connecting to an existing manhole, verify that there is an existing base and channel to accommodate the new sewer connection. If necessary, construct a new manhole base with channel in the existing manhole.

3. All laterals shall have a minimum of 5-feet of cover measured from finished grade to the invert of the lateral. During construction consideration shall be given to the conditions when depth of cover, which may be less than 5-feet, such as preparation of street sub-grade, foundations, culverts or utilities.

4. All trunks, mains, or branches shall have a sufficient depth to serve the ultimate service area with a minimum cover of 6-feet.

5. Encasement or Casing:

   Additional protection per MAG Standard Details 404-1, 404-2, and 404-3 is required:

   a. Where cover is less than 4-feet (due to topography or potential conflicts with facilities such as canals, washes, or rivers).

   b. Where the bottom of any irrigation, storm drain, sanitary sewer, force main or other gray water pipe is less than 2-feet over the top of the sanitary sewer.

   c. Where a sanitary sewer crosses less than 2-feet above any water line, force main or pressure main.

   d. Where sewerlines pass under a significant structure greater than 10-feet wide such as box culverts, railroads, highways, canals, etc. The sewerline(s) shall be installed inside a pipe casing as approved by the Engineering Department.

   e. As deemed necessary by the plan reviewer.

F. Slopes and Design Flows

1. Pipe slopes are to maintain a minimum mean flow velocity for pipes flowing full of 2.0 feet per second for all diameters except for 8-inch for which the minimum slope is 2.5 feet per second. The maximum mean flow velocity for pipes flowing full is 8-feet per second.

2. The minimum slope for an 8-inch sewer line is 0.50% (0.005 feet per foot).

3. At "end of the line" sewers (the portions of sewer lines between the last two manholes), the slope of sewers serving less than 30 households shall be 0.76%, and that of sewers serving less than 10 households shall be 1.00%.

4. The "n" value of the pipe shall be 0.013 for all new construction.

5. The dry weather peaking factor (PF_{DW}) shall be per the Arizona Administrative Code R18-9-E301-D. Non-residential developments should use a peaking factor of 4.0.

6. Wet Weather peaking factors (PF_{WW}) vary per the location in the City.

   a. Use 1.16 for projects in the Northern planning area (north of Beardsley Road).
   b. Use 1.30 for projects in the Southern planning area (south of Beardsley Road).

7. For d/D pipe sizing criteria refer to Table 5.3 of the 2007 Wastewater Masterplan. (Table is also found in the *Final Sewer Report* template at http://www.peoriaaz.gov/uploadedFiles/Peoriaaz/Departments/Utilities/FINAL_SEWER_REPORT_2009.pdf

G. Miscellaneous Design Standards

1. *Tie-ins to Existing System*. Construction plans shall call for the contractor to tie-in new work to the existing, active system, only after completion of the new work and written approval of the Engineering Inspector to make the tie-in.

2. Force Mains. Force mains shall outfall into a manhole.

3. *Curved Sewers*. Curved sewers are prohibited.

4. Private on-site sewer lines shall be constructed of materials and at slopes as specified in the City of Peoria adopted Plumbing Code.

5. Pavement sawcuts shall be in straight lines parallel to the trench, to a depth which exceeds the pavement thickness. Sawcut lines shall be a minimum of 100-feet in length before a jog in the alignment of the sawcut is permitted.

6. Pipe Bedding Requirements

   Refer to City of Peoria Standard Detail PE-401. Bedding compaction densities shall be per MAG Specification Table 601-2. Specially designed and alternate beddings may be approved on a case by case basis by the Engineering Department.

7. Trench Backfill Requirements

   a. Minimum trench backfill requirements shall be Type I per MAG Specification 601.4.3, with compaction densities per MAG Specification Table 601-2. Backfill requirements provided by the Developer's Design Engineer shall apply, when such provisions are more restrictive than MAG Specification.

   b. Within the existing pavement section of public streets, the backfill shall be ½ sack Controlled Low Strength Material (CLSM) per MAG Specification 728.

8. Odor control systems shall be installed at the cost of the developer in sewer systems when required by the Utilities or Engineering Department. Dedication of property at no cost to the City of Peoria may be required for the odor control system.

H. Manholes

1. *Materials and Details*.

   a. All manholes shall be per MAG Standard Details and Specifications.

b. Lateral pipes shall not enter a manhole at an angle greater than 90 degrees to the sewer trunk line.

c. Manholes with a through line shall have the invert on a continuous slope or a minimum 0.10-foot drop through the manhole.

d. Manholes with a line intersecting the through line: the intersecting line invert shall be a minimum of 0.10 foot above the flow line of the through line. The lines shall intersect at not more than a 90-degree angle.

e. Manholes on boundaries of the subdivision or improvement district shall have stubs with shaped inverts in appropriate directions for future connections.

f. Manholes which exceed 10-feet in depth shall be 5-foot in diameter, without steps.

g. All manholes that have at least one of the following criteria:
   - 10-feet or greater in depth
   - 5-foot in diameter (and larger)
   - located in an Arterial Road
   - as required by the Engineering or Utilities department

   shall be epoxy coated as specified below. The manhole base and adjusting rings in all PVC lined manholes shall be coated with a 100% solid epoxy coating system. The coating system shall have a minimum wet film thickness of 125 mils. The epoxy coating systems shall be one of the following: RLS Raven 405, Joseph Painting Sewer Shield 101, AP/M Permaform COR=GARD, Sauereisen SewerGard No. 210 Neopoxy NPR-5300", or "T-Lock" PVC lined per MAG Specifications 741.

h. All sanitary sewer manholes shall be installed with gasket, joint sealer, or water stop between the base and riser section as approved by the Engineering Department.

i. In all cases the rim elevation shall be a minimum of 0.10 feet above the flow line of the roadway gutter to prevent stormwater infiltration into the sanitary sewers.

j. All Private Sewer Manholes lids shall have "Private Sewer" labeling, and shall not be labeled "City of Peoria".

k. Brick manholes are prohibited.

l. All manholes located outside of roadways shall have locking lids and have a "Curve-Flex" Utility marker manufactured by Carsonite or approved equal.

m. Drop manholes will be allowed only if the pipe slopes exceed maximum slope requirements and if approved by the Engineering Department. Construction of drop manholes shall comply with MAG Standard Detail 426.

2. *Spacing*.

a. Manholes are required at all changes in grade and alignment.

b. Maximum manhole spacing shall be:

400-feet for 8-inch or 10-inch sewers
500-feet for 12-inch or larger

c. A manhole shall be placed on the upstream end of all sewer lines. If sewer system is to be phased, a stub shall be provided. The stub shall be capped and plugged.

d. Clean-outs are prohibited. Existing clean-outs shall be removed and replaced by Developer with a manhole per these guidelines.

I. Taps

1. *Materials and Details*.

a. New sewer taps shall be per MAG Standard Detail 440-1. See the Materials List, City of Peoria Standard Detail PE-101, for allowable materials.

b. Taps are not allowed into manholes unless approved by the Engineering Department.

c. A 3-foot minimum separation between service taps is required. A 5-foot minimum separation between a service tap and the outside diameter of a manhole is required.

d. All taps shall be stationed using the closest downstream manhole as station 0+00.

e. All taps shall be perpendicular to the lateral.

f. Taps are not allowed into existing 12-inch or larger sewers.

g. Provide one single service tap for each residential or commercial building lot. Additional taps are not allowed unless approved by the Engineering Department with written approval by the Utilities Department.

h. A check valve is required on the sewer service line when the finished floor elevation is lower than the rim elevation of the nearest upstream manhole.

2. *Sizes*.

a. Tap sizes for single family residential developments shall be 4-inch minimum. Larger taps shall be sized as determined by the Developer's Design Engineer.

b. Commercial lots with buildings shall have a minimum 6-inch tap.

c. Multi-family developments shall have a minimum 6-inch tap.

d. All 8-inch and larger services shall discharge to a manhole.

3. *Location*. Proposed tap locations shall be shown on all plans. Any changes in the field must be approved by the Engineering Department.

6-3 PRETREATMENT

A. Commercial Developments

1. Interceptor Requirements

a. A grease, oil, lint and/or sand interceptors shall be required for laundries, restaurants, service stations, auto repair shops, car washes and other facilities which the Utilities Department determines are necessary for the proper handling of liquid wastes

containing grease or oil in excessive amounts or any flammable wastes, sand, and other harmful ingredients.

b. Grease and oil interceptors shall be constructed of impervious materials capable of withstanding abrupt and extreme changes in temperature. They shall be of substantial construction, water tight, and equipped with easily removable covers. When bolted covers are required, they shall be gastight and watertight.

c. All internal interceptors shall be required for those facilities that will have minimal fixtures being discharged and require minimal retention time. The minimum internal interceptor shall be no smaller than a device rated at 50-gallon-per-minute flow with a 100-pound grease capacity (50/100). A flow control device must be installed upstream of the interceptor and in accordance to manufacturer's specifications.

d. All external interceptors shall be required for those facilities that will have numerous fixtures being discharged and require extended retention time. The minimum external interceptor shall be no smaller than a two compartment container rated at 500-gallon capacity and no larger than a three compartment container rated at 2500-gallon capacity. All external interceptors shall be installed according to City of Peoria Standard Detail PE-450 and must include a sample vault.

e. Interceptors and sample vaults installed in high traffic areas must be backfilled with ½ sac slurry to the top of the interceptor/sample vault tank. All concrete rings, risers, and manhole covers shall be traffic rated and installed to manufacturer's specifications.

f. Interceptors must be sized using the fixture unit equivalent to gallons per minute table. Final calculations must be verified using the International Plumbing Code, latest adopted edition, Capacity of Grease Interceptors Table 1003.3.4.1. Interceptors which flow-through ratings fall between interceptor sizes must be rounded up to the next largest size.

Fixture Outlet or Trap Size (inches)	Drainage Fixture Unit Value	GPM Equivalent
1 ¼	1	7.5
1 ½	2	15.0
2	3	22.0
2 ½	4	30.0
3	5	37.5
4	6	45.0
Floor Drains – all	2	15
Dishwashers	2X Trap Arm Size	

Sizing Example

Type of Fixture	Fixture Count	Size	Fixture-Unit Value	Total
3-comp. sink	1	2 ½“	4	4
Mop sink	1	3”	5	5
Floor sink	2	2”	3	6
Floor drain	4	N/A	2	8
Total Fixture-Units				23
Multiply by 3 GPM Flow Rate				X3
Total GPM Flow Rate				69
Multiply by either 12 or 17 – without or with garbage disposal unit				X12
Size of interceptor calculated				828
Round up to next available size				1050

g. All interceptors shall be of a type and capacity approved by the Utilities Department and/or the Building Safety Division, and shall be located as to be readily and easily accessible for cleaning and inspection. Where installed, all grease, oil, and sand interceptors shall be maintained by and at the expense of the owner in continuously efficient operation at all times.

h. All interceptor installations shall be completed by a qualified licensed contractor and comply with current City of Peoria Standard Details, latest edition of the International Plumbing Code Chapter 10, and City of Peoria Code Chapter 25. A final inspection will be required by a member of the Industrial Users/Building Safety Division prior to the issuance of a Certificate of Occupancy.

2. Common Interceptor

A letter requesting a variance must be submitted to the Environmental Program Manager from both the property management company and the project engineer for approval. The engineer’s letter must include their stamped seal. The Environmental Program Manager will respond by letter stating if the request for variance had been approved.

The variance letter must address the following:

- The property management company assuming responsibility and liability for the maintenance and service of the interceptor(s). Service and cleaning schedules will be determined and enforced by the Industrial Users Division. Any costs incurred by the City of Peoria as a direct result of improper maintenance of the pretreatment devices will be assessed to the property manager/owner, including monetary penalties accrued as the result of enforcement actions.

- Construction plumbing plans must be submitted showing interceptor size, sizing calculations, location, and must be installed in accordance to City of Peoria Standard Detail PE-450. Grease interceptor sizing criteria must be submitted utilizing an approved method of sizing calculations in accordance to IPC table 1003.3.4.1

- If single or multiple tenants should exceed the interceptor capacity, an additional interceptor would be required and installed at the property manger/owner's expense. A new set of construction plans must be submitted to the department regarding the required improvements for the specified tenant(s). Submitted plans must address and show the grease interceptor size, sizing calculations, location, and City of Peoria Standard Detail PE-450 as stated above.

B. Industrial Developments

1. *Preliminary Treatment Facilities*
   Where necessary, as determined by the Utilities or Engineering Department, any user of the sewer system shall provide at their expense, such preliminary treatment as may be necessary to reduce objectionable characteristics or constituents to within the maximum limits allowable by the Department.

2. *Industrial Wastewater Discharge Survey*
   An Industrial Wastewater Discharge Survey must be completed for all developments which can potentially be classified as a Significant Industrial User by the following qualifying factors:

   a. Any facility that falls under any Industrial Users Category.
   b. Discharges 25,000-gallons-per-day or more of processed water.
   c. Contribute a process waste stream which makes up five percent or more of the average dry weather hydraulic or organic capacity of a treatment plant.
   d. Any facility that has a reasonable potential, in the opinion of the control or approval authority, to adversely affect the Publicly Owned Treatment Works – inhibition, pass-through of pollutants, sludge contamination, or endangerment of the Publicly Owned Treatment Works.

   A copy of the survey can be found at:
   www.peoriaaz.gov/Utilities/Docs/WWDischargeSurvey.pdf

3. *Sample Vaults*

   a. A sample vault shall be installed at the owner's expense on the building sewer to facilitate observation, measurement, and sampling of wastes. The sample vault shall be located as to be readily and easily accessible and be constructed of impervious materials capable of withstanding abrupt and extreme changes in temperature. They shall be of substantial construction, water tight, and equipped with easily removable covers. When bolted covers are required, they shall be gastight and watertight. The sample vault shall be large enough to allow room for sampling and monitoring equipment and include enough working space for City personnel.

   b. When installed, the Parshall Flume size shall be based upon the minimum and maximum flow rates and velocities to insure free-flow conditions. The flume floor elevation should be high enough, relative to downstream conditions, to prevent submerged flow. The flume shall be self-supporting and require no external supporting structure. Parshall Flume size, construction, and location must be approved by the Industrial Users Division prior to installation.

6-4 CONSTRUCTION

A. Standards

All construction shall be per the latest MAG Uniform Standard Details and Specifications for Public Works Construction, as revised and subject to City of Peoria modifications, as revised.

B. Testing and Inspection

1. *Manhole Testing*

All new sanitary sewer manholes installed shall be tested for integrity either by an exfiltration test or by a negative air pressure (vacuum) test.

a. Exfiltration testing shall be performed in accordance with MAG Section 615.11(B) and Arizona Department of Environmental Quality (ADEQ) Engineering Bulletin No. 11, Chapter 4, Section B. When using the exfiltration test method, water loss shall not exceed 0.1 gallons per vertical foot of manhole in a 24-hour period.

b. Negative air pressure (vacuum) testing shall be performed in accordance with ASTM C 1244. Testing shall be performed at the top of the manhole cone for manholes located in paved areas. Manholes outside paved areas shall be vacuum tested at the ring and cover. Apply a negative air pressure of 10-inches of mercury (136-inches water) on the manhole and measure the time in seconds for the vacuum to drop to 9-inches of mercury (122-inches water). The manhole will pass this test if the time for the vacuum to drop the specified amount meets or exceeds the following values:

TEST DURATION (SECONDS)

MANHOLE DEPTH	48" DIAMETER	60" DIAMETER
10-feet or less	*60*	*75*
Greater than 10-feet to 15-feet	Not Applicable	*90*
Greater than 15-feet	Not Applicable	*105*

If manhole joint compound is pulled out during the vacuum test, the manhole shall be disassembled and the joint repaired or replaced as necessary. The vacuum testing shall then be repeated until the manhole passes.

2. *Closed Circuit TV (CCTV) Inspection*. Perform CCTV inspections in accordance with NASSCO's Pipeline Assessment Certification Program. CCTV inspections shall be provided in digital (DVD) format utilizing a measuring device ahead of the camera to identify deflections in the line. Measuring device shall be able to measure water depth from 0-2 inches in ¼ inch increments.

6-5 PLAN PREPARATION

A. Plan Approvals

1. Plans shall be prepared per Chapter 1 of the City of Peoria Infrastructure Design Guidelines.

2. Utility Reports:

Water, Sewer and Water Resources Impact Report (WSWR) - Required at Pre-Plat, first submittal of site plan, or for the first submittal of all rezoning applications. This is used to determine the potential impact that the development would have to the existing water and

sewer infrastructure. This report will also be used to verify that the proposed density and water use of the proposed development is consistent with the City's general plan and the City's water allocation for the proposed parcel. Refer to the report template at http://www.peoriaaz.gov/content2.asp?ID=1435

Final Sewer Report-2009- Required for all sites in which public sewer is extended. The calculations in this report will be used to verify that the proposed public sewer design provides adequate cover, slope, and design velocities. Refer to the report template at http://www.peoriaaz.gov/content2.asp?ID=1435

Master Water and Master Sewer Reports- When required this report should show the infrastructure required for the utilities in the development to function per City of Peoria standards. Individual Final Water and Final Sewer Reports will be required for each parcel at the time of submittal. Individual phased reports should be consistent with the data, calculations, and assumptions shown in the Master Reports. Refer to Chapter 6 for additional information regarding Sewer Reports. Refer to the guidance memo at http://www.peoriaaz.gov/content2.asp?ID=1435

3. The completed Approval to Construct (ATC) application with signatures should be submitted during plan review. The *Sewage Collection System Name* is "City of Peoria". The *Sewage Treatment Facility Name* is one of three current City of Peoria facilities: *Butler WWTP*, *Beardsley WWTP*, and *Jomax WWTP*. Refer to the Wastewater Master Plan to look up which service area the project is within. *The "Sewer Capacity Letter*" will be issued by the Uti*lities Department after the AT*C application has been submitted and will not be provided until the utility plans are substantially approved.

4. A copy of the Approval to Construct (ATC) issued by Maricopa County Environmental Services Department (MCESD) and the Mylar cover sheet signed by MCESD must be submitted to Engineering prior to receiving final plan approval from the City.

B. Wastewater Infrastructure Acceptance

Copies of the following documents must be submitted to the Engineering Department prior to acceptance of the wastewater line(s) by the City. Refer to Chapter 7 of this document for as-built requirements. Final Letter of Acceptance (FLOA) will be released by the City of Peoria Engineering Department after all other items have been completed.

1. A copy of the "Certificate of Approval of Construction" (AOC) issued by MCESD.

2. A copy of the "Engineer's Certification of Completion".

3. Pressure and Vacuum Testing documentation.

4. Deflection Testing documentation.

5. Video C.C.T.V. Inspection Records on DVD.

CHAPTER 7

"AS-BUILT" REQUIREMENTS

7-1 GENERAL

The following “As-Built” Certification Statement meets the City of Peoria requirements:

I HEREBY CERTIFY THAT THE “AS-BUILT” MEASUREMENTS AS SHOWN HEREON WERE MADE UNDER MY SUPERVISION OR AS NOTED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

***NOTICE*:**

CERTIFICATES OF COMPLETION OF IMPROVEMENTS NOR BUILDING CERTIFICATES OF OCCUPANCY WILL BE RELEASED NOR ANY TYPE OF CONSTRUCTION ACCEPTED UNTIL APPLICABLE "AS-BUILT" REQUIREMENTS PER THIS SECTION HAVE BEEN SUBMITTED, REVIEWED AND APPROVED BY THE CITY.

***NOTICE*:**

THE CITY OF PEORIA ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE “AS-BUILT" INFORMATION PROVIDED AS PUBLIC RECORD.

7-2 SUBMITTALS

A. “As-Built” Review Process

A set of blueline plans must be submitted with “as-built” redline markings to the Engineering Department for review. Once the redline as-builts are approved and accepted by the Engineering Inspection Supervisor the mylar as-builts must be submitted per paragraph B below.

Test results, certifications, registrations, and reports, per Section 7-2.D shall be submitted for review and comment prior to approval by the City.

B. “As-Built” Plans

“As-Built” plans will be on reproducible 24" x 36" Mylar with no inking, adhesive or sticky backed medium attached. "As-Built" plans shall be signed and sealed by a Registered Professional Engineer or Registered Land Surveyor as applicable, prior to producing the Mylar. “As-Built” plans shall not have the “City of Peoria Engineering Department Permit Set” stamp.

C. As-Built CAD Data Submittal

The City of Peoria reserves the right to refuse CAD Drawings that are not conforming with the As-built CAD Data Submittal Requirements between the consultant and the City of Peoria.

Compact Disc or DVD
A Disc containing AutoCAD drawing files, through release 2005, will be required. Compact Disc will be labeled with the Project Name and Review Number. No data compression should be utilized.

Disc Folder Structure / CAD Sheet Naming Convention
Create a folder with the Project Name or Review Number. Within the Project folder create subfolder's and label them Water, Sewer, Paving, Grading & Draining, and Storm Drainage and copy the corresponding CAD Dwg files in those sub-folders. Copy all water drawings to the water sub-folder and all sewer drawings into the sewer sub-folder and so on.
Example:

- Project Name & Review Number: (SCA Office Building - R010011)
- Water
- Sewer
- Paving
- Grading & Drainage (use G/D to abbreviate Grading & Drainage sheets)
- Storm Drainage (use S/D abbreviate sheets)
- Xref

Model Space / Paper Space
All CAD as-built line work is to be created in model space.
CAD work in Paper space is for Page Layout, Title Block, Notes, Legend, etc.

Coordinates System
CAD Drawings site/civil base models supplied will be created in relation to its geographic location. Use the Arizona State Plane Coordinate system, FIPSZONE 0202, North American Datum 1983, Units: International Feet (0.3048 Meters) will be used to ensure consistency with the current City of Peoria Projection Model.

Geodetic Ties
All CAD drawings (model space) will be referenced to (at least) two accepted geodetic control points identifiable via the Peoria Geodetic Network - these points may be part of the existing Peoria Bench Mark control project, Maricopa County Geodetic Densification and Control Survey (GDACS) control network (published through MCDOT), or any approved (via Peoria Engineering Department) monumented survey control.

X References
The City of Peoria would prefer that X references **NOT** be used to help expedite the As-built process, If X references are utilized, all X referenced drawings will need to be placed in one common directory (Xrefs) and the subdirectory tree structure will need to be sent accordingly. Further, each drawing will need to be opened prior to sending to verify the X references will load properly.

References Information
Ensure that all non-related cad structures as empty layers, unused blocks, line types, dimension styles, plot styles, text styles, shapes, etc. are purge from the folders. A denied status will be generated for Non-compliances to this standard.

Fonts
The use of standard AutoCAD fonts and shapes is required. Non-standard FONTS and Shapes Must be transmitted with the drawings in the original file format as separate FONTS subdirectory.

Blocks
All Blocks or Symbols will include a single point feature. If BLOCK ATTRIBUTES are used, the

BLOCK ATTRIBUTES STRUCTURES and BLOCK NESTING should be included in the transmittal. Use Microsoft Word to create such list is preferred. ANSI text files are also acceptable.

D. Test Results, Certifications, Registrations and Reports

1. Materials Testing Required for All Types of Construction.
2. Compaction, Density Test Results for Bedding, Backfill, Subgrade, Base Materials and Pavements.
3. Pressure and Leakage Testing
4. Disinfection Testing
5. Drilling Logs, Registration and Certification
6. Closed Circuit Television (CCTV) VHS Tape for the sanitary sewer system
7. Percolation Test Results for Drywells and Basins
8. Certified Pad or Finished Floor Elevations
9. A Certificate of Provision of Required Retention volume
10. Signal Phase Timing Charts
11. Well Abandonment Registration of Certification
12. Acknowledgement of Completion to Satisfaction of other Jurisdiction or Agency Requirements
13. Final Drainage Reports
14. Operation, Service and Maintenance Manuals
15. Warranties
16. Pavement Evaluation Report
17. Survey Monument Replacement

7-3 TECHNICAL REQUIREMENTS

A. Street Plans

1. Station for all grade breaks.
2. Curb offset dimension at all changes in alignment.
3. Top of curb, gutter and pavement centerline elevations at all grade breaks, curb returns,

valley gutters, aprons, plus any other location necessary to adequately show drainage.

4. Survey monuments.

5. Street monument line and if different, centerline bearings, distances, and curve data.

6. Street centerline stationing of the centerline of driveways and width of driveway.

7. Stationing, location and limits of encasements, caps, pipe supports, etc.

8. Location of conduit crossing locations, including type of materials and depth of cover.

B. Irrigation and Storm Drain Plans

1. Street centerline station and offset dimension from street centerline to main at manholes, structures and all changes in alignment.

2. Street centerline station or easement bearing, dimension and offset dimension to the centerline to all manholes, structures and changes in alignment or grade of the pipe or channel.

3. Rim and invert elevations for each manhole, catch basin, stand pipe, turnout structures and miscellaneous drainage structure.

4. Hydraulic Grade Line (HGL) for the pipe mainline, channels, laterals and structures including manholes, catch basins, stand pipes and turnout structures.

5. Calculated slope of the mainline pipe and channel bottom between manholes or drainage structures.

6. The pipe material and diameter that was **actually installed** shall be shown on all plan and/or plan and profile sheets.

7. Stationing, location, limits and dimension of encasements, caps, pipe supports, etc.

8. Stationing, location, limits and dimensions of repairs, including the type of materials used in the repair.

9. Stationing, location, limits and dimensions of facilities which are abandoned in place, including the size, depth and type of materials remaining.

10. Storm drain markers per NPDES requirements.

11. Storm drain inlet protection.

C. Grading and Drainage Plans

1. Elevations at all drainage control points including basin overflow point, tops and bottoms of basins, drywell rims, valley gutters, curbs and lot drainage outfall points.

2. Dimensions of all retention areas/sedimentation basins including depth, high water level (HWL) elevation.

3. Retention/detention/sedimentation basin calculations revised to as-built condition, and certification of compliance.

4. Finished floor or pad elevations

5. Location of all drainage structures and buildings pads.

6. Direction of flow arrows.

7. Pipe, culvert, scupper, catch basin, and channel dimensions, grate and invert elevations. Include head wall, wingwall, sediment traps, splash pads and sump dimensions and elevations.

8. Flood plain delineation.

D. Water Plans

1. Street monument line and if different, centerline, easement line bearings, distances and curve data, with offset dimension to:

   a. All fire hydrants and fittings (i.e. valves, bends, tees.)

   b. Mainline, at all changes in horizontal or vertical alignment.

   c. All horizontal control points (centerline intersects, pc, pt, pcc, prc.)

2. Centerline station and offset to each service tap, size of tap and dimension to nearest side property line. (Note: Front property corners must be visible to verify information for approval.)

3. Centerline stations, offset and elevations to all changes in vertical alignment elements (i.e., dips, bends, etc. required to avoid conflicts with other utilities or facilities).

4. The water pipe material and diameter that was actually installed shall be shown on as-built plan and/or plan and profile sheets.

5. Stationing, location and limits of encasements, caps, pipe supports, etc.

6. Stationing, location, limits and dimensions of repairs, including the type of materials used in the repair.

7. Stationing, location, limits and dimensions of facilities which are abandoned in place, including the size, depth and type of materials remaining.

E. Sewer Plans

1. Street centerline station and offset dimension from street centerline to main at manholes and all changes in alignment.

2. Sewer line station at centerline of each manhole.

3. Street Stationing, and Sewer Line Stationing equation at the offset of the intersection.

4. Rim and invert elevations for each manhole.

5. Calculated slope between manholes.

6. Sewer line stationing at centerline of each service tap at 90 degrees to main. If not installed 90E to main, then station and offset to both the taps on main and the end of each service tap. (Note: Front property corners must be visible to verify information for approval).

7. The sewer pipe material and diameter that was actually installed shall be shown on all plan and/or plan and profile sheets.

8. Closed Circuit Television (CCTV) video tapes and logs.

9. Stationing, location and limits of encasements, caps, pipe supports, etc.

10. Stationing, location, limits and dimensions of repairs, including the type of materials used in the repair.

11. Stationing, location, limits and dimensions of facilities which are abandoned in place, including the size, depth and type of materials remaining.

F. Right-of-way Landscape and Irrigation Plans

1. Plant locations and type, revisions to locations or plant types noted, including approved, substituted plantings.

2. Location of all irrigation elements noted, located and dimensioned to permanent fixed points.

3. Pipe sizes actually installed noted on plan with revisions if other than installed.

4. Irrigation element manufacturers and model numbers if different than specified on drawings.

G. Traffic Signal Plans

1. Foundation location and modifications to the structural details noted.

2. Conduit location, size, alignments, and type noted.

3. Cabinet location, dimensions and type.

4. Pole location and types.

5. Mast Arm type, length and pendant locations.

6. Head locations and types.

7. Loop Detector location, length and type.

8. Changes to items in the schedules.

9. Interconnect conduit location and pull box type and location.

H. Traffic Signing and Pavement Marking Plans

1. Sign base location, size or type changes from the approved plan noted.

2. Striping layout changes from the approved plan noted.

3. Changes to location, spacing and type of raised pavement markers.

I. Survey Monument Replacement

All developments shall provide survey monuments at section corners, street centerline intersections, street centerline alignment changes (P.C.'s, P.T.'s or P.I.'s if it is within the pavement), and subdivision corners.

All section corners, quarter corners, and center of sections shall be a brass cap in hand hole per MAG Standard Detail 120 - 1, Type A. All other required survey monuments shall be a brass cap per MAG Standard Detail 120 - 1, Type B. All existing monumentation shall be preserved both horizontally and vertically.

An Arizona Registered Land Surveyor at the Contractor or Developer's expense must reset any survey monuments disturbed by construction. Disturbed monuments shall be reset to first order accuracy for horizontal location. Any disturbed monuments in the City's Vertical Survey Datum shall be reset to third order accuracy and a new vertical datum established and certified by a Arizona Registered Land Surveyor. At least two other section corner quarter corner monuments on the City's survey list shall be referenced as a check. The survey notes showing these referenced monuments and elevations certifications shall be submitted for approval to the Engineering Director before the project will be accepted as completed or bonds released.

All monumentation information, as referenced above, shall be submitted within 60 days of City acceptance or Certificates of Occupancies will be withheld.

CHAPTER 10

DESIGN AND SUBMITTAL STANDARDS FOR BRIDGE AND STRUCTURE PLANS

10-1 GENERAL INFORMATION AND DEFINITIONS

This section contains general background information and definitions for preparing bridge, culverts and structure plans for submittal to the City of Peoria for Capital Division Projects and Land Development Projects.

A. General Definitions

1. *AASHTO* – American Association of State Highway and Transportation Officials.

2. *ADMP* – Area Drainage Master Plan.

3. *ADOT* – Arizona Department of Transportation.

4. *ASD* – Allowable Stress Design (WSD – Working Stress Design).

5. *Delamination* – Concrete that has lost its bond with the steel reinforcing. It is typically caused by the corrosion of the reinforcing. It has a "hollow" sound when dragging a heavy chain across the surface.

6. *F-shape barrier* – The results of computer and full-scale tests of barriers with various profile configurations that were labeled A through F. The "F" barrier was chosen by ADOT. 32-inch high is the standard. Steep grades or elevated roadways may require the 42-inch high barrier.

7. *Inventory Rating* – The inventory rating is an indicator of a structure's capacity for safely carrying a given live load, including loads in multiple lanes, for an indefinite period of time under normal service conditions.

8. *Load Rating* – The load rating is a measure of a bridge's live load capacity, the two most common categories being Inventory and Operating. When a bridge's load rating falls below legal limits, the bridge is posted for its reduced capacity.

9. *Low Volume Roads* – Streets with an Average Daily Traffic (ADT) volume below 400 vehicles per day.

10. *LFD* – Load Factor Design.

11. *LRFD* – Load and Resistance Factor Design.

12. *NCHRP* - National Cooperative Highway Research Program.

13. *Operating Rating* – The operating rating is an indicator of a structure's capacity for safely carrying the maximum permissible live load, including the same load in multiple lanes, on an occasional and infrequent basis. Allowing unlimited usage at the operating level will reduce the life of the bridge.

14. *Reference Chord* – A straight line from the centerline of bearing of abutment #1 to the centerline of bearing of abutment #2 at the construction centerline of the bridge.

15. *Skew* – This is the angle between the axis of support relative to a line normal to the longitudinal axis of the bridge. A left skew is defined by rotating the axis of support *counter-clockwise* relative to the normal line. A right skew is defined by rotating the axis of support *clockwise* relative to the normal line.

16. *Spalling* – Concrete that has come loose typically from impact damage.

17. *Thalweg* – The low point of a channel where the scour depth is measured from.

18. *Transformed section properties* – A method of calculating the moment of inertia that considers the area of steel when calculating the concrete section properties. In an AASHTO prestressed I-Girder this can result in a more economical section, however designs using transformed section properties may reduce the reserve capacity of the girder if needed in the future.

B. References

Abbreviated Title	Reference
AASHTO Sound Barrier	AASHTO Guide Specification for Structural Design of Sound Barriers, 1st Edition with 2002 Interim Revisions.
AASHTO Pedestrian	AASHTO Guide Specifications for Design of Pedestrian Bridges, 1st Edition, 1997.
AASHTO FRP Pedestrian	AASHTO Guide Specifications for Design of FRP Pedestrian Bridges, 1st Edition, 2008.
AASHTO 17th Ed	AASHTO Standard Specifications for Highway Bridges, 17th Edition, 2002.
AASHTO LRFD	AASHTO LRFD Bridge Design Specifications, 4th Edition with 2008 Interim Revisions.
ADOT BPG	Arizona Department of Transportation Bridge Group Bridge Practice Guidelines. *(old guidelines)*
ADOT BDG	Arizona Department of Transportation Bridge Group Bridge Design Guidelines. *(new guidelines)*
City	City of Peoria
Engineering Department	City of Peoria Engineering Department

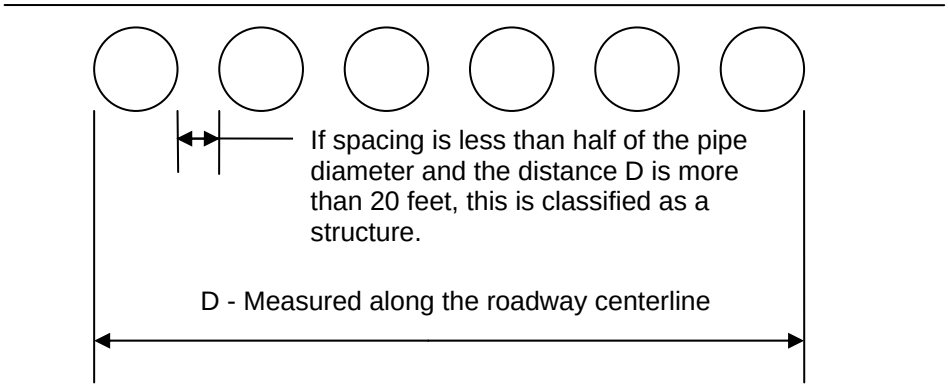
TABLE 10.1

C. Bridge Definition

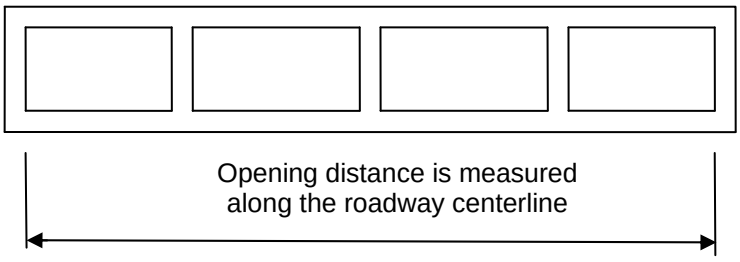
The AASHTO definition of a bridge is:

A structure including supports erected over a depression or an obstruction, such as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of more than 20-feet between under copings of abutments or spring lines of arches, or extreme ends of openings for multiple boxes; it may also include multiple pipes, where the clear distance between openings is less than half of the smaller contiguous opening.

Refer to Figure 10.1 for further explanation on buried structures.



PIPE CROSSING



BOX CULVERT

FIGURE 10.1

Refer to ADOT BDG Section 1 Pages 1-3 and 1-4 for Terms and Descriptions in addition to the ones shown in Table 10.2 below:

TERM	DESCRIPTION
BOX CULVERT	A structure carrying a roadway over various features such as trails or waterways.
PIPE CROSSING	A structure allowing water to pass below a public roadway.
PEDESTRIAN BRIDGE	A structure carrying a pedestrian walkway over a roadway or waterway.

TABLE 10.2

D. **Structure Name**

City structures utilize a naming convention in which the approximate street address of the structure is used to locate it within the city. The structure name is defined by the street address of the roadway, street or object being carried as well as the type of crossing or structure. This convention provides for numerous crossings of the same type located along the same street.

An example of two pipe crossings along Union Hills Drive might be:

8958 West Union Hills Dr - Pipe Crossing
9300 West Union Hills Dr - Pipe Crossing

E. Construction Permit Requirements

1. In accordance with Chapter 1, Section L of the City of Peoria Infrastructure Design Guidelines the City requires an Engineering construction permit to encroach within City public rights-of-way and easements.

2. Prior to approval of any structure plans and the issuance of a permit by the City, confirmation must be provided that the construction plans for structures over waterways have been submitted to, coordinated with, approved and permitted by other agencies as required. Such agencies include, but are not limited to, the Maricopa Flood Control District and the U.S. Army Corps of Engineers.

3. Lighting and electrical plans for structures must be reviewed for approval and permitting by Building Safety.

4. Shop Drawings shall be reviewed and approved by the Engineer of Record. A final copy shall be submitted to the Engineering Department.

5. An Engineering construction permit will not be issued until all of the documents structure and plans have been submitted for review and approved.

F. Utilities on Structures

1. During the preliminary phase of the design process the Engineering Department shall be contacted in order to determine the needs for future City water and wastewater lines, traffic interconnect, and the size and number of conduits needed to accommodate existing and future City facilities.

2. The placement of utility lines for flammable or hazardous materials on bridge structures is not permitted unless specifically approved by the Engineering Department. Attachment and placement shall be subject to review and approval by the Engineering Department.

3. Utility hangers shall be of the manufactured "roller-type" style and require approval by the Engineering Department.

4. Conduits - The size and number of conduits is subject to change pending Engineering Department review. All new bridges shall at a minimum include the following types of conduits:

   a. 1 – 2-inch diameter conduit for bridge lighting.

   b. 4 - 1 ¼-inch diameter conduits carried under the structure for signal interconnect.

   c. Conduit placement as requested by utility companies to accommodate existing and future facilities.

   d. Additional conduits for future use to be determined by the City.

10-2 CITY OF PEORIA SPECIFICATIONS

This section contains the design and construction specifications to be used for bridges and structures in the City. Section 10-3 provides a more detailed listing of design standards of practice required on plans submitted for a permit.

A. Peoria Structure Requirements

1. All new structures shall follow the requirements of Section 10-2.C. The only exceptions to this policy are retaining walls and buried structures (box culverts, concrete pipe, etc.) including those from the ADOT Bridge Group Standard Details. Retaining walls and buried structures are exempt from following the LRFD guidelines until 2010 or as directed by the Engineering Department and shall follow the requirements of Section 10-2.B.

2. Bridge widenings, rehabilitations, and other work on existing structures designed using the AASHTO 17th Edition (or older) may use the AASHTO 17th Edition in conjunction with all other requirements listed under Section 10-2.B and the approval of the Engineering Department.

B. Peoria Design Specifications for New Structures Exempt from Section 10-2.C

1. The City has adopted the use of the most current version of the following design guidelines, listed in governing order:

   a. City of Peoria Design and Submittal Standards for Bridges and Structures.

b. ADOT BPG, ADOT Bridge Group standard details and ADOT Standard Specifications for Road and Bridge Construction.

c. AASHTO 17th Edition using a design vehicle of HS-25.

d. Any deviation from the above guidelines requires the approval of the Engineering Department.

2. Columns and drilled shafts (including abutment shafts) shall be designed using Load Factor Design (LFD) per AASHTO 17th Edition.

3. Abutment stem walls, abutment footings, pier caps, wingwalls and retaining walls shall be designed using Allowable Stress Design (ASD) per AASHTO 17th Edition.

C. Peoria Design Specifications for New Structures

1. The City has adopted the use of the most current version of the following design guidelines, listed in governing order:

a. City of Peoria Design and Submittal Standards for Bridges and Structures.

b. ADOT BDG, ADOT Bridge Group standard details and ADOT Standard Specifications for Road and Bridge Construction.

c. AASHTO LRFD.

d. Any deviation from the above guidelines requires approval from the Engineering Department.

2. When using LRFD, the load factors for permanent loads typically have two values, a maximum value and a minimum value. When analyzing a structure it will often be necessary to use both values. The objective is to envelope the maximum load effects during the design of various elements. A box culvert structure illustrates the use of both values. When determining the moment in the culvert top slab the maximum load factor is applied to vertical earth loads, while the minimum load factor is applied to lateral or horizontal earth loads. The situation is reversed when determining the moments in the culvert walls. A minimum load factor is applied to vertical earth loads and a maximum value is applied to horizontal earth loads.

3. Designers must ensure the structure has been checked for adequacy in carrying all appropriate load combinations at all possible construction stages. For example, a high abutment should be checked for all permissible construction cases in addition to the final condition. The abutment may be completely constructed prior to placement of the beams (a case which maximizes the horizontal earth pressure load with a minimum of vertical load) or the abutment could be constructed such that the superstructure is completed prior to backfilling. This latter case would maximize vertical load without horizontal earth pressure load. Both cases require investigation by the designer.

D. Pre-fabricated Structures

Pre-fabricated (pre-fab) structures shall follow the design and submittal guidelines in this document. It shall be the responsibility of the pre-fab engineer to incorporate the site conditions, bridge geotechnical and bridge hydraulic reports into the design of the structure before submitting to the City for approval.

E. Pedestrian Bridges

The AASHTO Pedestrian bridge guide specification is the only specification devoted to the design of pedestrian bridges using steel, concrete or timber members and shall be used at all times. The specification references all other applicable codes and specifications.

Fiber Reinforced Polymer (FRP) pedestrian bridges are allowed by the City and shall be designed per the AASHTO FRP Pedestrian guide specification.

The specifications listed above are based on Allowable Stress Design (ASD) and/or Load Factor Design (LFD). These specifications shall be used with this guide until AASHTO releases the LRFD versions. Due to conflicting requirements mixing of basic design specifications is highly discouraged.

1. The design shall employ features throughout with long term durability second in importance only to structural considerations. Items that may negatively impact bridge durability include, but are not limited to: corrosion, fatigue, foundation settlement, ultraviolet light exposure and temperature movements. The design shall anticipate the need for water and debris to quickly dissipate from all surfaces of the structure. Special attention shall be directed toward all aspects of proper materials selection and adherence to proper materials application.

2. For vehicle load requirements, refer to AASHTO Pedestrian or AASHTO FRP Pedestrian guide specifications. Where appropriate, additional live loads should be considered. Additional live loads might include: bridge inspection or snooper loads on bridges with large overhangs. If construction equipment or maintenance equipment can or will operate adjacent to retaining walls and abutments, a live load surcharge should be incorporated into the design.

3. All concentrated or wheel loads shall be placed so as to produce the maximum stress in each member being analyzed. Critical stresses shall be calculated assuming there is only one vehicle on the bridge at any given time. Assumptions that vehicles only travel down the center of the bridge or that the vehicle load is a uniform line load will not be allowed. The wheel load shall be placed 1'-0 from the face of the rail or curb.

4. Equestrian structures shall be checked for H-10 loading, or as directed by the Engineering Department.

5. Provide lighting levels as per the recommendations of the latest edition of the Illuminating Engineering Society of North America Lighting Handbook (IES). Use the requirements for pedestrian walkways.

6. For tubular structures, any attachment, including electrical wiring, signs, signals, etc., shall be strapped to the bridge. In no case shall holes be drilled and tapped into the tubular members of the structure to accommodate attachments.

7. See Section D for pre-fabricated structure requirements.

8. Structure numbers shall be assigned to each pedestrian bridge, see Section 10-3.A.6.

F. Sound Barrier Walls (Soundwalls)

The AASHTO Sound Barrier specification shall be used for the design of all sound barrier walls (soundwalls) except as noted otherwise in this Section. Refer to City of Peoria Bridge General Notes Sheet (Sheet S2) for additional information on masonry design parameters.

1. Exposure category for determining wind loading shall be Category “C”.

2. Minimum wind speed based upon 50-year mean recurrence interval (“V”) shall be 80 mph.

G. Construction Standards

The order in which the construction documents govern shall be as follows:

1. Supplemental Agreements.

2. Special Provisions.

3. Project Plans.

4. ADOT Bridge Group Standard Drawings and Details.

5. ADOT Standard Specifications for Road and Bridge Construction and ADOT Stored Specifications.

MAG Specifications shall not be used unless otherwise specified in agreement or special provisions.

10-3 PEORIA DESIGN PRACTICE AND STANDARDS FOR SUBMITTALS

This section outlines the typical design requirements and standards to be addressed on structure plans submitted to the City for a permit.

A. Typical Requirements of Structures within the City of Peoria

1. All structures should be designed with ease of maintenance in mind. For example, deck joints shall be minimized. Integral substructure elements are preferred where practical. Bearings and deck joints shall be specifically designed and manufactured for use on bridge structures; i.e. subject to cyclic traffic loading, thermal movements and outdoor exposure. Drainage features shall be designed to prevent erosion damage around the abutments and approach slabs.

2. Structures shall be designed for a minimum 75 year life. For example, structures shall be designed with self-protection measures such as sloped surfaces to prevent water from ponding and penetrating.

3. All structures shall be designed to meet current City aesthetics requirements, see Section 10-5.

4. All roadway structures shall be designed for a future raised median on designated arterial streets.

5. Utility conduits and lighting shall be required for both vehicular and pedestrian traffic on all structures.

6. Structure Number

    a. In conjunction with the City’s Structures Maintenance and Management Program each structure is assigned an identification number by the ADOT Bridge

Management Section. In the case of twin or parallel structures individual numbers are assigned if there is an open median.

b. All structures submitted for review by the City shall include the Structure Number on the plan sheets. The Structure Number Form is available by contacting the ADOT Bridge Management Section.

c. The consultant shall submit a completed ADOT Structure Number request form to the City Engineering Department for review prior to submittal to ADOT Bridge Group. The completed form shall use the structure naming convention as described in Section 10-1.D above.

d. The assigned structure number of all new structures shall be permanently fastened or embedded on the inside face of the concrete railing near the abutment or on the abutment in a readily visible location. The structure number shall be placed 6-inch from the top or an edge of the concrete railing, end block, or abutment surface. Location and details to be approved by the Engineering Department.

7. Load Ratings

Load ratings shall be performed on a bridge when one of five events has occurred:

a. The bridge is new and has not been previously rated.

b. The bridge has had a significant alteration that may affect the capacity of the bridge.

c. The bridge has incurred damage that affects the capacity.

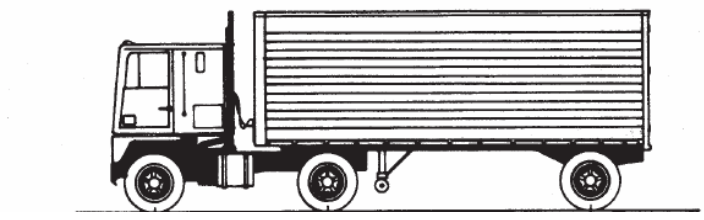
d. A key component of the structure has deteriorated such that the previous load rating is no longer valid.

e. A request has been made to permit an overload vehicle to use the bridge.

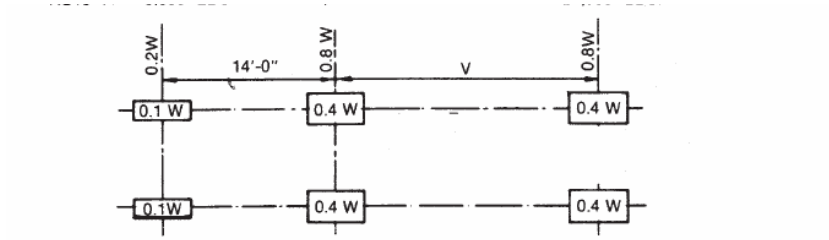
8. All bridges shall have a minimum deck thickness as required per ADOT BDG. Bridges that have girders with no effective span length between flanges (box beams and voided slabs) shall have a minimum reinforced deck thickness of 5-inch. Asphalt overlays placed directly on top of girders or beams with no concrete deck will not be allowed.

B. <u>HS-25 Truck Load</u>

Where HS-25 loading is allowed per Section 10-2.B, the loading shall be as shown in Figure 10.2. For the HS-25 loading, “W” in Figure 10.2 shall be 50,000 pounds.



HS15-44	6,000 LBS.	24,000 LBS.	24,000 LBS.
HS20-44	8,000 LBS.	32,000 LBS.	32,000 LBS.
HS25	10,000 LBS.	40,000 LBS.	40,000 LBS.



W = COMBINED WEIGHT ON THE FIRST TWO AXLES WHICH IS THE SAME AS FOR THE CORRESPONDING H TRUCK.
V = VARIABLE SPACING — 14 FEET TO 30 FEET INCLUSIVE. SPACING TO BE USED IS THAT WHICH PRODUCES MAXIMUM STRESSES.

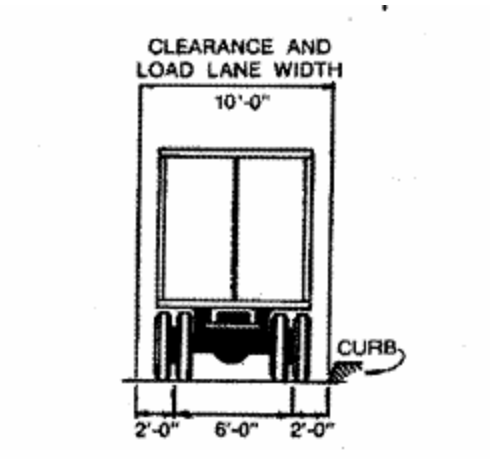


Figure 10.2

C. Lighting

1. Lighting for roadway and pedestrian walkways shall be included and considered in the design of vehicular structures.

2. Lighting for pedestrians and bicycles shall be considered for both on and below the structure where applicable.

3. The type of lighting fixture and luminaire shall be coordinated with the City.

D. Seismic Design

The Seismic Acceleration Map in AASHTO shall not be used. A map developed for Arizona shall be used for design. It is contained in Report Number FHWA-AZ 92-344. This report may be obtained by contacting ADOT Bridge Technical Section. The following minimum requirements apply:

1. The connection between the superstructure and substructure shall be designed to resist a horizontal seismic force in each restrained direction equal to 0.20 times the tributary weight.

2. Structures shall provide minimum bearing seat dimension at the expansion end of girders in accordance with the appropriate AASHTO requirements.

E. Deck Width

The width of a structure shall be determined by traffic and roadway considerations such as the number and width of traffic lanes, the width of shoulders and the type of guardrail to be used. All of the previously mentioned items are not under the influence of the bridge engineer. The bridge width matches the roadway features.

1. For urban locations where MAG or ADOT Type A guardrail and curb is used, the bridge width will equal the width of the approach roadway (Type A guardrail lines up with the edge of the shoulder).

2. For rural locations where MAG or ADOT Type B guardrail is used, the bridge is widened two-feet on each side so the bridge railing will line up with the guardrail (Type B guardrail is offset 2-feet beyond the edge of the shoulder).

F. Length

The bridge length is bound by certain constraints and must be determined by the bridge engineer. Coordination must take place with existing drainage reports and ADMP's, which shall be discussed in the Bridge Hydraulics Report. The Bridge Geotechnical Report shall also be considered.

G. Slope Paving

2.5:1 slope is the maximum slope to be used without slope paving. However, slope paving may be required for 2.5:1 slopes per the Bridge Geotechnical Report. If slope paving is required, ADOT Bridge Group standard detail SD 2.04 and SD 2.05 shall be used as applicable. However, the slope paving required by the City is more than what is shown in the ADOT standard detail. See Figure 10.3 for the required limits of slope paving.

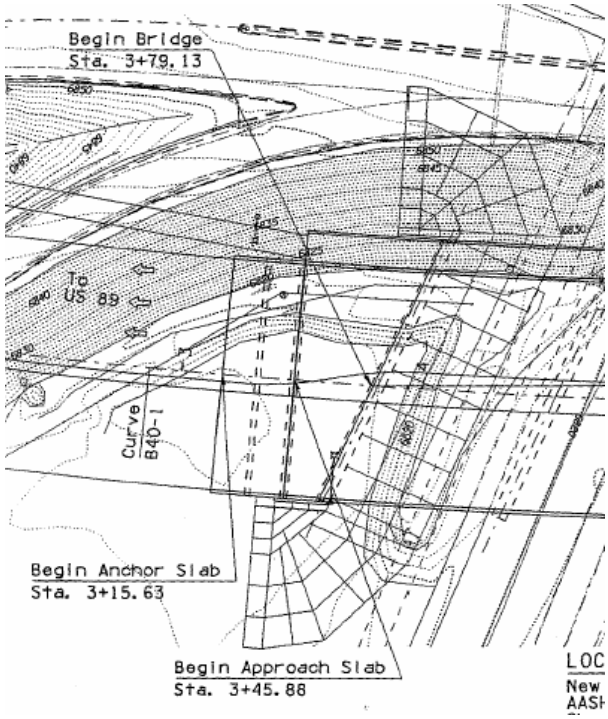


Figure 10.3

H. Wingwalls

Wingwalls shall extend 8’ beyond the theoretical catchpoint where the abutment slope meets the wingwall.

I. Bank Protection

At water crossings, the Bridge Hydraulics Report and Bridge Geotechnical Report shall provide recommendations for scour and bank protection at abutments. The use of concrete aprons (slope paving) should be avoided as bank protection, due to the possibility of undermining of the apron.

J. Separation Barriers

A separation barrier is used to separate a sidewalk from vehicular traffic. A separation barrier shall be provided on structures with posted speeds of 45 mph or greater. The separation barrier shall be designed in accordance with AASHTO LRFD.

Where a separation barrier is used, a raised sidewalk is not required on the structure, the sidewalk elevation shall match the deck elevation and cross slope. In these instances, the sidewalk drainage must be accounted for when transitioning back to a raised sidewalk beyond the structure.

K. Sidewalks and Bike Lanes

The width of sidewalks on the bridge shall match the width of the sidewalks approaching the bridge. The minimum width of sidewalks shall be five-feet as recommended by ADAAG (Americans with Disabilities Act Accessibility Guidelines). The bridge width between face of bridge railings shall be the sum of the roadway width, the sidewalk width and the separation barrier width (if required). Where a separation barrier is not provided between the sidewalk and vehicular traffic, a raised sidewalk shall be provided. The curb height of raised sidewalks on bridges shall be eight-inch. The raised sidewalk shall be sloped toward the bridge gutter line at a one percent grade.

If bike lanes are provided as part of the roadway cross-section approaching a structure, the structure shall provide the same cross-section as the roadway. Any deviations or other measures provided to cross the structure shall be approved by the Engineering Department.

L. Guardrails and Barriers

1. See Section O-1 for Guardrail System requirements.

2. Thrie-beam details shall be used to transition from rigid barrier to flexible barrier.

3. Bridge railings shall terminate at the end of the approach slab (or anchor slab) or at the end of the wingwall – whichever is longer.

4. Approach railing lengths and attenuators shall be in accordance with AASHTO Roadside Design Guide. See Section O-2 for attenuator requirements.

M. Canal Crossings

Consideration shall be given to spanning both the canal and the maintenance roads. The intent is to eliminate hazards (blunt bridge railing ends) created from having the maintenance roads and City roads at the same grade. Design requirements for crossings must be obtained from canal owners with appropriate coordination with the canal owner.

N. Deck Drainage

Bridge decks shall be watertight and all deck drainage shall be conveyed to the ends of the bridge and discharged into appropriate facilities on natural ground. Vertical profiles shall accommodate drainage requirements. For the case of long structures or unusual geometry, the deck drainage method must be evaluated and approved by the Engineering Department.

1. Water flowing toward the bridge in the approach roadway gutter section shall be intercepted and not permitted to flow onto the bridge.

2. Deck drains on vehicular structures that drain into a waterway below shall be avoided. Permitting deck drainage into a waterway below shall only be considered for bridge widenings where previously used and existing conditions limit other options.

3. Where a separation barrier is present, drainage for the roadway and the sidewalk shall be intercepted at the bridge approaches (See N-1). Additionally, drainage from sidewalks on the bridge must be provided for when transitioning back to a raised sidewalk beyond the bridge.

4. Bridge decks shall have a minimum two percent cross slope. In situations where the adjacent roadway cross slope does not match the two percent cross slope of the bridge, the roadway cross slope shall be tapered to match the bridge cross slope.

O. Safety

1. Guardrail systems shall meet NCHRP 350 Test Level III (TL-3) criteria. Low-volume roads shall also use TL-3 end terminals and attenuators.

    a. Approved guardrail end terminals are the ET-PLUS and the SRT-350 by Trinity Industries (TL-3). For the ET-PLUS end terminal, the length of need begins from the third post.

2. Attenuator devices shall be redirecting and meet Test Level III criteria.

    a. The approved attenuator is the TRACC (TL-3) attenuator by Trinity Industries.

    b. Bridge railings shall be designed to a minimum of TL-4 per AASHTO LRFD.

    c. ADIEM attenuators shall be avoided adjacent to pedestrian traffic.

P. Waterproofing

All buried concrete structures shall be waterproofed using Sinak S-102 waterproofing sealer. Prior to placing the asphalt overlay or rubberized asphalt, the existing or new bridge shall be sealed with a high molecular weight methacrylate resin system or Sinak S-102 waterproofing sealer. Type of sealer shall be stated on the bridge plans and/or special provisions and approved by the Engineer of Record during the shop drawing review process.

Q. Deck Joints

When asphalt overlay or rubberized asphalt is placed on an existing or new bridge, the deck joint and concrete closure pour shall be raised to match the elevation of the overlay surface.

The opening width for temperature ranges shall be shown on the plans similar to Table 10.3.

Mean Temperature Correction Table	
Temp (F)	e (inch)
100	1.39
90	1.50
80	1.63
70	1.75
60	1.88
50	2.00
40	2.13
30	2.25

Table 10.3

1. *Strip seals*. Refer to ADOT BDG 14.5.6.7.

2. *Compression seals*. Refer to ADOT BDG 14.5.6.6 except as noted below.

   a. For lengths over 60-feet or phase construction, guard angles and cellular seal may be two pieces butted together at the roadway crown or another location away from drainage.

   b. It has been an issue in the past that contractors have had difficulty installing the seals in openings (e_{min}) that are less than 60% of the nominal seal dimension.

   c. For e_{min} = 60% of nominal seal dimension is easy to install.
      = 50% of the nominal dimension is possible to install

   d. For example: for a 3 x 3 seal, to install the seal for installation widths less than 1 ¾", special equipment is required or it is required that the seal be pre-installed in the guard angles before arriving in the field. The downside of using a greater installation width is that it pushes the compression seal closer to its expansion limits.

   e. Temperature in Table 10.3 refers to the structure temperature and not the air temperature.

   f. Possible solutions for e_{min} < 60%:

      (1). Try a different size seal,

      (2). Install the seal at a temperature for 60% gaps,

      (3). Install a temporary seal in two pieces and replace in the next cool season.

3. *Installation of compression seals.* Table 10.4 is an example of the design steps for a 3 x 3 compression seal for a post-tensioned box girder bridge. The following example uses the current ADOT Bridge Group standard detail SD 3.01 at the time of writing this document and is intended as an aid for compression seal design and acceptance for structures in the City:

COMPRESSION SEAL DESIGN
▪ Find the contributory span length along the bridge construction centerline.
▪ Please note that in a 3 span continuous structure the center of no movement will be closer to the pier with the shorter columns.
▪ Find the total temperature movement (30^0 – 100^0 in Peoria). 30^0 temperature rise and 40^0 temperature fall.
▪ Find the creep and shrinkage movement.
▪ Multiply the Temperature and Shrinkage movement by the COSINE of the skew to find the perpendicular distance.
▪ Look up the compression seal information in the ADOT standards.
▪ Given and always constant for 3 x 3:
• Movement Rating (M_R) = 1 3/8”
• e = 1 7/8”
▪ Minimum width of seal is 1 7/8” – (1 3/8” / 2) = 1.188”. The maximum is 2.563”. The seal will not work outside of this range.
▪ Find the temperature rise: (30^0/70^0) multiply by total temperature movement. Round up – when added to 1.188” this gives the installation width at 70^0.
▪ Subtracting the temperature rise from the installation width will give the minimum gap width and should be above 1.188”. (This does not include the post-tensioning long term shrinkage which has not occurred yet.)
▪ Adding the temperature fall [(40^0/70^0) multiply by the total temperature movement] and the long term post-tensioning shrinkage to the installation width will give the maximum gap width, which should be less than 2.563”. Therefore the seal works.
▪ For further refining, the minimum gap width will be set at 1 ¼” at 100^0 for a 3 x 3 seal.
• Total temperature movement divided by 7 (30^0 – 100^0) will give the change per every 10^0’s.
• Add the change to 1 ¼” to find the gap width for each 10^0 temperature change.
• This sets the seal at the minimum gap end of the compression seal; it ensures that the seal will not get too close to its expansion limit at 30^0’s or less. This is ideal.

Table 10.4

R. Scour, Hydrology and Hydraulics

1. All Bridge crossings over waterways and floodplains shall have a Bridge Hydraulic Report conducted to assist in the early stages of the bridge layout and design.

2. Scour analysis must be completed for “design flood” and “check flood for scour” cases as discussed in the ADOT BDG Section 2.

3. Spread footings are not permitted within a waterway/floodway subject to scour except when they can be anchored and placed on non-erodable rock.

S. Determination of Thalweg Policy

1. Find the approximate slope of the thalweg. See Figure 10.4.

2. For each shaft location (A,B,C,D) find the corresponding elevation along the thalweg slope line by determining where it intersects at a right angle as shown in the diagram.

3. Subtract the given scour depth from the thalweg slope line elevation corresponding to each shaft location. This will give the depth of soil removed from the shaft for the scour design.

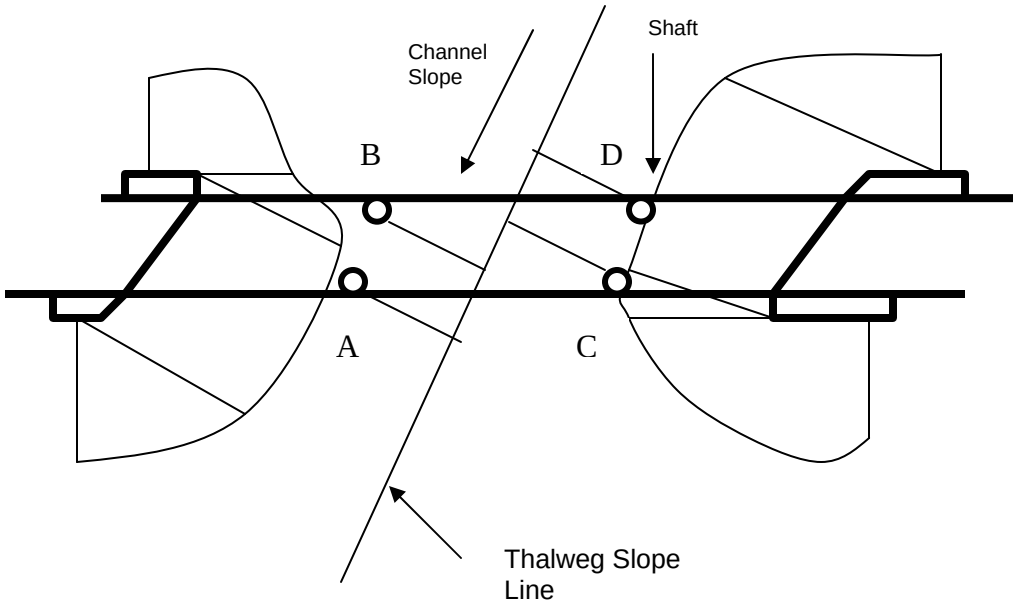


Figure 10.4

10-4 SUBMITTAL CHECKLISTS FOR STRUCTURES

All submitted bridge, culvert and structure plans shall conform to the following:

A. General Submittal Requirements for Development and City projects

Land Development projects shall submit a Bridge Selection Report (BSR) when public funds are involved; otherwise, a BSR is not required. For City projects a BSR must be submitted.

1. Bridge Hydraulic Report – Refer to Section 10-3.R.

2. Geotechnical Report - At least one boring per foundation unit - more as required by AASHTO. Depth and location of borings shall follow requirements of AASHTO. The minimum depth of borings shall be no less than 20-feet below the proposed bottom of the foundation unit.

3. Bridge Selection Report - At least three structures types and/or configurations shall be evaluated in the Bridge Selection Report.

4. Quantity estimates.

5. Survey to establish topographic mapping; locate significant features; define width and profile of canal or channel; and establish ties to section corners, benchmarks, etc.

6. Cross sections, if needed for earthwork volumes calculations.

7. Hard and electronic copies of all non-MAG and non-ADOT standards.

8. Construction Special Provisions.

9. Electronic submittal of plans in City of Peoria format for final submittal.

10. Sealed Design Calculations.

B. Minimum Plan Requirements

In general, the bridge sheets shall be arranged as listed below. The provided list is an example only and shall be modified as needed to accommodate the project size and complexity of the bridge structure.

1. General Cover Sheet

2. General Notes and Approximate Quantities Table Sheet

3. General Plan

4. Location Plan

5. Bank Protection Sheets

6. Foundation Layout

7. Abutments

8. Piers

9. Bearings

10. Girder Layout and Elevation

11. Girder Details

12. Deck and Approach Slab Details

13. Railing Details

14. Pour Sequence and Negative Moment Reinforcing Details

15. Aesthetic Features and Details

16. Screed Elevations at tenth points

17. Foundation Data Sheets

C. Specific Requirements for General Notes and Approximate Quantities Table.

1. For repair work or replacement, a description of the original project and all modifications with construction dates shall be given on this sheet.

2. The City requirements for the first two drawings in any set of bridge drawings are shown on the City of Peoria Cover Sheet (Sheet S1) and General Notes and Quantity Sheet (Sheet S2). These sheets are available for download from the City website.

D. Plan Submittals for Capital Division Projects

Due to the complexity and expense of larger structures, the City shall require that the standard submittal stages of 30%, 60% and 90% be adhered to. This allows time for City to review and comment, as well as finalization of geotechnical and drainage reports and their incorporation into the plans and design.

Typical Submittal Stages

30% Submittal

- General Plan
- Final Bridge Selection Report
- Detailed Cost Estimate
- Final Bridge Geotechnical Report
- Final Bridge Hydraulics Report
- Completed ADOT Structure Number request form (prior to submittal to ADOT)

60% Submittal

- 60% Bridge Plans
- Superstructure completed
- Boring logs completed
- Substructure started
- Draft Bridge Special Provisions
- Detailed Cost Estimate including all bid items and units costs
- 60% Design Calculations

90% Submittal

- 90% Bridge Plans
- Final Special Provisions
- Final Cost Estimate
- Final Design Calculations

100% Submittal

- All project components as listed above, revised per 90% review comments.
- Structural calculations signed and sealed (assumed to be final).

Final Submittal

- Signed and sealed mylars of Project Plans and electronic files of all plans in the City required format.
- Signed and sealed hard copy of construction Special Provisions accompanied by the electronic file in the City accepted format.
- Record of QC review.

E. Plan Submittals for Land Development Projects

This section describes the City's requirements pertaining to the preparation of improvement plans, which are to be submitted to the City for approval. These requirements apply to plans prepared for the following items:

- Traffic Bridges
- Pedestrian Bridges
- Box Culverts
- Pipe Crossings
- All Other Buried Structures
- Retaining Walls
- Sound Barrier Walls

1. All requirements of the City of Peoria Infrastructure Design Guidelines Chapter 1, Section K (Improvement Plan Preparation) shall be satisfied except as noted otherwise in this section.

2. Refer to Sections 10-4.A, 10-4.B and 10-4.C for a general list of items to be included in all structural submittals. The 100% structures submittal shall contain the following:

   - 100% Structure Plans
   - Final Bridge Selection Report (only if public funds are involved)
   - Final Bridge Geotechnical Report
   - Final Bridge Hydraulics Report (if applicable)
   - Final Special Provisions
   - Final Design Calculations

3. In addition to the submittal schedule agreed upon between the City and the Land Developer, the Land Developer shall provide for review to the Engineering Department a conceptual bridge plan package at the 30% stage showing the following:

   - Bridge plan
   - Bridge elevation
   - Typical section
   - Aesthetic treatments

   Also to be included in the 30% submittal package, the Land Developer shall submit a completed ADOT Structure Number request form for review, prior to submitting the form to ADOT Bridge Group.

4. City of Peoria Bridge Cover Sheet and Bridge General Notes Sheet shall be used instead of Plan Cover sheet and General Notes sheet discussed in Chapter 1, Section K. It is assumed; the Plan Cover sheet and the General Notes sheet discussed in Chapter 1, Section K are included in the submittal, and not only as part of the structure drawings.

10-5 AESTHETICS

Structures addressed in this section include the following: bridges, retaining walls, traffic railings, safety and pedestrian rails, lighting and fencing. The design of visible parts of the structures plays an important role in the aesthetic experience of both drivers and pedestrians.

A minimum of two percent of the total structure cost shall be used towards aesthetic treatment to the structure upon review and approval by City Engineering Staff.

The City has adopted the following 10 guidelines:

A. Appearance Standards: Select appearance standards for structures in accordance with the appropriate category below.

Appearance Standards			
Category	**High Standards**	**Moderate Standards**	**Minimal Standards**
Roadway Classification	Parkway	Major Arterial Minor Arterial Major Collector	Minor Collector Local Street
Land Use	Parkland and Conservation Areas	Commercial Mixed Use High Density	Industrial Residential Low Density
Region	Old Town Lake Pleasant Regional Park	Central Peoria Revitalization Area	

Table 10.5 A

B. Aesthetic Integration: Integrate roadway structures with one another, with the adjacent landscape, and with the characteristics of the local area or community in which they are placed.

1. Incorporate local materials, color, landscaping or symbols to make the roadway more responsive to the local community.

2. Consider integrating lighting with adjacent terrain and vegetation.

3. Bridges and retaining walls should retain the existing vegetation and adjacent earthworks.

4. Design roadway structures as an integrated system – reduce the number of elements where possible. Combine wall and safety handrail design. Combine light standard and wall design. Standard Details should be avoided, except for required safety features.

C. Fill-reducing Structures: Locate fill-reducing structures such as bridges or walls where aesthetic impacts of large cut/fill areas are unacceptable.

1. Install bridges rather than culverts when economics allow to maintain an open channel space or to reduce the undesirable appearance of large earthwork.

D. Structure Proportion: Consider the proportion of the structure in relation to the size of the space it is situated in.

1. Avoid structures that would appear too large. (For example, use twin structures rather than one large single structure.)

E. Structural Form: All structures shall be of bold, simple form.

1. Overall shape should be simple.

2. Should give appearance of strength and solid form.

3. Avoid the use of angular, triangular or pointed forms – only when the intent is to attract the attention of the driver. These structures will appear “hard”.

4. Curvilinear or rounded structures will appear “soft” – this is more desirable.

F. Colors: Select the color of the finish to meet the aesthetic objectives of the structure and the corridor.

1. Create a color scheme for a route in its entirety.

2. Blend structures into the background landscape.

3. Alternatively, contrast structural landmarks with background landscapes.

4. Color additives to concrete are preferred over painted concrete.

G. Textures and Finish: Provide a textured finish to visible structures to avoid large blank faces.

1. Provide textured surfaces or finishes to large flat surfaces in the view of motorists and pedestrians.

2. Finish should respond to materials and texture type of local landscape or theme.

3. Be cognizant of the visual “slimming” or “thickening” effects some textures may have on structure proportions.

4. Use City logos or symbols.

H. Coordination and Compatibility: Design structures to be of unified visual character within a local area or route.

1. Design unity is gained from repetitive use of materials, textures and color.

2. Design all custom elements with the same idea of unity.

3. Choose a dominant form and repeat through structure.

4. Use subordinate elements as design accents.

I. Accent Elements: Include accent elements in the design of significant structures.

1. Use accents to contrast the components of a structure to draw the eye of pedestrians.

2. Avoid too many accents. This may lead to confusion or may be a distraction to drivers.

3. Examples include: entrance pillars at bridges, handrail elements, caps on retaining walls.

J. Structure Types and Elements: Design in accordance with the guidelines for each type of structure.

1. Bridges

a. Traffic railings on a bridge should give a visual clue that the driver is on a bridge and should be designed accordingly.

b. Handrails and traffic railings will be the most visual vertical elements for those on the bridge.

c. Separated structures should be designed similar.

d. Bridges crossing roadways and other public spaces require aesthetic features and/or treatment on exposed substructure elements, the sides of the superstructure, and sometimes the underside of the superstructure.

e. Lighting – consider low glare, up-lighting that is integrated with the structure.

f. Design accent features at entrance points and midpoints.

g. Slope paving and landscaping should compliment the overall bridge appearance.

h. Consider constructability, maintenance, and cost of aesthetic features.

2. Retaining walls

a. Integrate walls with adjacent structure(s).

b. Custom design walls to suit the adjacent land, features and vegetation.

c. The location of the wall shall not detract from the visual aesthetics of the roadway. Walls should not dominate the field of vision of a driver.

d. Provide surface offsets to hide potential future structure movements and settlements.

3. Traffic railings

a. Shall meet minimum safety requirements.

b. Consider custom features.

4. Hand rails

a. Consider shapes that are pleasing to touch.

b. Should be an Integral design with each structure – do not use standard detail for all structures (They can appear as though they were an add-on or after-thought – railings should be integral with the structure).

5. Fencing

a. Avoid the use of chain link fence. Do not use a standard.

6. Light Poles

a. Custom shapes should be used. Do not use a standard.

7. Landscaping

a. Landscaping shall consist of low maintenance, low water use, non-invasive plants.

K. Appearance Standards: Design in accordance with the highest applicable appearance standard level per Table 10.5 A above.

1. High Standards

   a. Aesthetic enhancements shall be complimentary to the surrounding area.

   b. Aesthetic enhancements to different structures along the same corridor or within the same region shall have a common theme and a complimentary color palette.

   c. Landscaping should be an integral feature of the aesthetic enhancements. Indigenous vegetation is preferred in park areas.

   d. Consider incorporating public spaces and/or amenities in urban locations.

2. Moderate Standards

   a. Aesthetic enhancements shall be complimentary to the surrounding community and adjacent developments.

   b. Landscaping should be an integral feature of the aesthetic enhancement

   c. Cost of bridge aesthetic enhancements need not exceed ten percent of the total bridge structure cost.

3. Minimal Standards

   a. Cost of bridge aesthetic enhancements need not exceed five percent of the total bridge structure cost.