
PUBLIC WORKS & FACILITIES

This chapter provides requirements for preparing improvement and facilities construction plans and information for developing construction bid documents for submittal to Capital Project Management. It also specifies various building standards for city facilities.

9-1 INFRASTRUCTURE PLAN REQUIREMENTS

9-2 FACILITIES PLAN REQUIREMENTS

9-3 BUILDING STANDARDS - NO CHANGES

9-4 CONSTRUCTION BID DOCUMENTS

DRAFT

INFRASTRUCTURE PLAN REQUIREMENTS

This section specifies the submittal and review process and requirements for public infrastructure projects, including guidance for preparing plan, profile, and detail sheets.

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INFRASTRUCTURE PLAN REQUIREMENTS

Section 9-1

GENERAL INFORMATION

9-1.000

DESIGN STANDARDS AND GUIDES

A. Standard Specifications and Details

The following publications or their current revisions, as adopted by the City of Scottsdale, are to be used in conjunction with the infrastructure design criteria in this manual:

- MAG Uniform Standard Specifications and Details – Maricopa Association of Governments (MAG).
- COS MAG Supplemental Specifications and Details – City of Scottsdale (COS) www.ScottsdaleAZ.gov/design/COSMAGSupp.
- Standard Specifications for Road and Bridge Construction – Arizona Department of Transportation (ADOT).
- ADOT Standard Drawings.
- Other governmental/utility agency specifications and details as specified by city staff.

B. Design Policies and Guidelines

The city's design policies and guidelines are based on the following:

- Project stipulations from the city's Development Review Board.
- A Policy on Geometric Design of Highways and Streets – American Association of State Highway and Transportation Officials (AASHTO).
- Roadside Design Guide – AASHTO.
- Manual on Uniform Traffic Control Devices (MUTCD) – FHWA.
- Public Improvement Project Guide – Arizona Utility Coordination Committee
- ASTM/AASHTO Standard Specifications.
- United States Access Board Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way <http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines>.
- Other design standards, policies and guides as specified by city staff.

SUBMITTAL REQUIREMENTS

9-1.100

Refer to Appendix 9-1A for Capital Projects Plan Review Process. Infrastructure Plan submittals must comply with the following standards:

1. Prepare plans on standard 'ANSI D-size' 22 inch x 34 inch sheets and clearly reproduce them on print paper in a black line format. 24 inch x 36 inch may be used if first approved by Capital Project Management (CPM) staff.
2. The city will furnish, upon request, electronic files in MicroStation or AutoCad base drawings shown in the figures in this section. The consultant shall be responsible for the completion of the drawings as applicable to the project.
3. Place a standard city title block in the lower right-hand corner of each sheet, except the cover sheet. The engineering company's identification should be in the upper right-hand corner of the sheet.

INFRASTRUCTURE PLAN REQUIREMENTS

4. The minimum lettering size is 3/16 inch for manually drafted or 1/8 inch for mechanically produced lettering and is legible when reduced 50 percent. Reproductions of drawings must be legible when microfilmed or reduced to 1/2 scale. Adhesive backed appliqué for lettering and/or shading will not be permitted without approval of CPM Plan Review.
5. On all sheets that have maps or plans, North shall be oriented to the top of the sheet or to the right. Show a North arrow and bar scale on each sheet. Project stationing shall increase from left to right on the sheet.
6. Keynote all construction notes. Group construction keynote referencing to a specific symbol (square symbols designate demolition and removals, diamond symbols designate relocations and circular shapes for construction items). Number notes uniquely such that one number represents a specific note that only occurs on the applicable plan sheets. Each construction note should be circumscribed by the appropriate symbol. Upon request, the city will provide a sample format for the consultant to follow.
7. All projects must comply with Section 404 of the Federal Clean Water Act. Before the city may issue development permits for a project, this 404 Certification Form must be completed and submitted with improvement plans to the CPM Design and Plan Review staff, see www.ScottsdaleAZ.gov/bldgresources/forms. Consultants are advised to apply to the Corps as early as possible for a Section 404 permit and allow for the necessary processing time to prevent delays in obtaining development permits from the city.
8. All projects must comply with the Scottsdale's Archaeological Resources Ordinance, refer to www.ScottsdaleAZ.gov/historiczoning/arch. To help identify, preserve and protect archaeological sites, an archaeological survey and report by a qualified archaeologist is required to be submitted for all public and private developments in Scottsdale. A qualified archaeologist is an individual or firm meeting the Arizona State Museum standards and professional qualifications for an archaeologist. Please contact City Archaeologist, Project Manager or Project Coordinator for more information on archaeology requirements, including which projects may be exempt from requiring the survey and report.
9. All projects submitted for review and/or further processing shall be complete and consist of plans, specifications, structural calculations, geotechnical report, drainage report, native plant information and other documentation as required for that project.
10. The engineer must submit for code review a minimum of 3 full size sets of plans, 2 sets of specifications, 1 set of structural calculations, drainage calculations and Geotechnical report when applicable. In addition, the engineer will provide additional plans, specifications and other documentation as required for internal user group review purposes. All plans and documents are to be submitted to the City of Scottsdale through CPM.
11. The engineer responsible for the design must seal all plans and documents submitted for review and mark them with the following: "For Review Purposes, Not to Be Used for Bidding or Construction". The registrant's signature is required on the plans and documents when the submittal reaches the level of 90 percent or better.
12. Provide an electronic copy of the final drawings and specifications utilizing the MicroStation and Microsoft Word formats, respectively. CAD drawings shall be saved in the version currently in use by the City (v8 as of May '07). At the Project Manager's request, a set of signed and sealed drawings in full-size PDF format on CD shall also be submitted.

13. All re-submittals must include the “Attachment A” or an equivalent form stating what corrective action has been taken on all redline comments, see Appendix 9-1B.
14. After tentative approval of the final review package, the Engineer shall submit a complete set of Mylar originals for City approval and signatures. The drawing set shall have the note “Not for construction or bidding purposes” removed.
15. Any facilities portion of an Infrastructure project must comply with Section 9-2.000.
16. All projects with landscape areas in public rights-of-ways and medians shall have landscape maintenance/signature block (Figure 1.3-7) contained on the coversheet and/or landscape plans.

PLAN SHEET NUMBERING & SEQUENCING

9-1.200

Sheets shall be identified by design discipline as designated below and consecutively whole numbered within each discipline. Additionally, final consecutive numbering of the entire set of plans shall be provided on each sheet.

The sheet numbering prefixes shown in Figure 9.1-1 below are commonly used. The consultant shall review the sheet sequencing and/or intended numbering with the city’s project manager.

PLAN SHEET NUMBERING & SEQUENCING		
Plan Sheet Prefixes:		
G = General	ITS = Intelligent Transportation System	
P = Paving	I = Irrigation	
SD = Storm Drain	L = Landscape	
SS = Sanitary Sewer	S = Structural	
W = Water	M = Miscellaneous Plans By Others	
TS = Traffic Signalization, Signing, Markings	RW = Rights-of-Way	
Plan Sheets shall be sequenced as follows:		
1	G1	City cover sheet
2	G2	Notes, legend and key map sheet
3	G3	Quantity summary sheet
4	P1...	Paving plans, profiles and details
5	SD1...	Storm drain plans, profiles and details
6	SD__ ...	Profiles for catch basins and connecting pipe
7	SS1...	Sanitary sewer plans, profiles and details
8	W1...	Water line plans, profiles and details

INFRASTRUCTURE PLAN REQUIREMENTS

9	TS1...	Traffic signal plans, schedules and details, traffic signing, pavement markings
10	ITS1...	Intelligent Transportation System plans, profiles and details
11	I1...	Irrigation plans, profiles and detail sheets
12	L1...	Landscaping plans, notes, legend, abbreviation and detail sheets
13	S1...	Bridge and structural plans and details
14	M1...	Plan sheets by others: electric, telephone, gas, irrigation, cable television
15	RW1	Rights-of-Way Strip Map

FIGURE 9.1-1 PLAN SHEET NUMBERING & SEQUENCING

DETAILED SHEET INFORMATION COVER SHEET

9-1.300
9-1.301

The city will furnish an electronic drawing file of the cover sheet upon request (refer to Figure 9.1-2 below). The Engineer shall add the following:

- Project title, CPM project number, bid call number.
- Vicinity map with section, township, range and parcel numbers.
- Sheet index.
- Engineering company identification and engineer's seal.
- Other agency approval blocks as applicable.
- City benchmarks for project – a minimum 2 required on NAVD 1988 datum
- City assigned plan review, development review and native plant numbers assigned by Project Review when submitted.

FIGURE 9.1-2 TYPICAL COVER SHEET

NOTES, LEGEND, AND KEY MAP SHEETS

- Key Map - Show all intersections, rights-of-way and key to all plans with stations.
- Legend of symbols used for existing and design elements.
- List of abbreviations used in plan set (other than as shown in the MAG Specifications).
- Include the City of Scottsdale General Construction Notes For Capital Projects, refer to Figure 9.1-3 below and Figure 9.1-4. Additional notes may be added as needed.

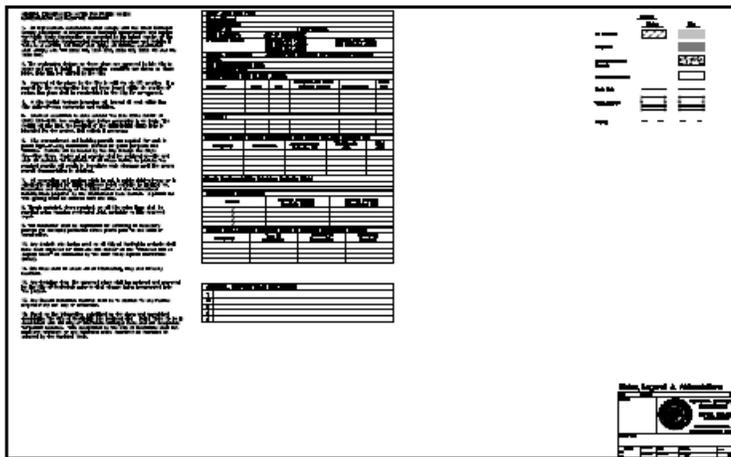


FIGURE 9.1-3 NOTES SHEET

GENERAL CONSTRUCTION NOTES FOR CAPITAL PROJECTS

1. All improvement construction shall comply with the latest Maricopa County Association of Governments Standard Specifications and Details for Public Works Construction as amended by the latest version of the City of Scottsdale Supplemental Standard Specifications and Details and City of Scottsdale's Design Standards & Policies Manual (DS&PM). If there is a conflict, the latter shall apply. All facilities construction shall comply with the 2006 IBC, 2006 IPC, 2006 IMC, 2006 IFC and the 2005 NEC.
2. The engineering designs on these plans are approved by the City in scope and not in detail. If construction quantities are shown on these plans, they are not verified by the City.
3. Based on the information submitted on the plans and associated documents, the City has reviewed and found them to be in accordance with the Scottsdale Required Code and are acceptable for permit issuance. This acceptance by the City does not authorize violations of any applicable code, ordinance or standard as adopted by the Scottsdale Required Code.
4. Approval of the plans by the City is valid for six months. If a permit for the construction has not been issued within six months of review, the plans shall be resubmitted to the City for reapproval.
5. Any deviation from the approved plans shall be reviewed and approved by the City prior to that change being incorporated into the project.
6. A City Capital Projects Inspector will inspect all work within the City rights-of-way, easements and facilities.
7. Any Special Inspection required shall be in addition to any routine inspection by the City.
8. Private improvements in the right of way and building permits are required for work in public rights-of-way, easements granted for public purposes and facilities. Permits will be issued by the City through the City's One Stop Shop. Copies of all permits shall be retained on-site and shall be available for inspection at all times. Failure to produce the required permits will result in immediate work stoppage until the proper permit documentation is obtained.
9. The contractor shall be responsible for obtaining all necessary permits for salvaging protected native plants prior to the start of construction.
10. Wherever excavation is done contact the Blue Stake Center at (602) 263-1100 two working days before excavation is to begin. The Center will see that the location of the underground utility lines is identified for the project.
11. All excavation and grading which is not in public rights-of-way or in easements granted for public purposes must conform to Section 1803 and Appendix J of the 2012 edition of the International Building Code prepared by the International Code Council. A permit for this grading must be secured from the City.
12. Thrust restraint, where required, on all City water lines shall be provided using Megalug mechanical joint restraints or City-approved equal.
13. Any asphalt mix design used on City projects shall have been approved for that use per Section 5-10 the City's DS&PM and appear on the "Approved List of Asphalt Mixes" as distributed by the East Valley Asphalt Committee (EVAC).
14. The Contractor shall be responsible to remove and replace, at no additional cost to the City, any and all pavement, sidewalk, curb and gutter, drainage structures, etc. outside the pay limit that are damaged due to their activities on the project. This includes, but is not limited to, the removal and replacement of newly cracked roadway infrastructure, the removal and replacement of existing cracked roadway infrastructure where the cracks have been enlarged due to the Contractor's operations, the removal and replacement of deformed roadway infrastructure. All sawcuts used for the removal of these items shall be perpendicular and parallel to the centerline controlling that item, or at the direction of the City's Capital Projects Inspector.
15. All Capital Improvement Projects shall meet the procedures and standards for the use of temporary/security fencing around the perimeter of construction sites, as defined in the City's Zoning Ordinance, Article VII.

FIGURE 9.1-4 GENERAL CONSTRUCTION NOTES FOR PUBLIC WORKS IMPROVEMENTS & FACILITIES PROJECTS

QUALITY SUMMARY SHEET

9-1.303

The city will provide a blank format for quantity summaries upon request, refer to Figure 9.1-5 below. The sequence number preceding the bid item should correspond to the construction note number on the plan sheets.

ITEM NO.	DESCRIPTION	QUANTITY SUMMARY SHEET				TOTAL
		P-1	P-2	P-3	P-4	
01	REMOVE EX. ASPHALT	200	200	200	200	800
02	REMOVE EX. CURB & GUTTER	100	100	100	100	400
03	REMOVE EX. SIDEWALK	50	50	50	50	200
04	REMOVE EX. CONC. FWDWENT	30	30	30	30	120
05	REMOVE EX. CONC. & GUTTER	100	100	100	100	400
TOTAL						

FIGURE 9.1-5 QUANTITY SUMMARY SHEET

PAVING PLAN, PROFILE, & DETAIL SHEETS SHEET FORMAT

9-1.400
9-1.401

1. Single plan and profile sheet, scale: 1 inch = 20 feet and not to exceed 500 feet per sheet; separate profiles for each curb and gutter and crown line at 1 inch = 2 feet vertical scale and 1 inch = 20 feet horizontal, using 3 inch separation between profiles.
2. Removal, construction and other notes shall be categorically and numerically referenced and listed on the right-hand side of sheet. Use the same number for like work on all sheets including the quantity summary sheet. Categorize notes to type of operation, such as demolition/removal notes are first, followed by construction notes, relocation notes, sheet notes and sheet cross-reference notes. Quantities shall be shown within each construction note and duplicated to the quantity summary sheets. Upon request, the city will provide a sample format for the consultant to use.
3. In the area of match lines, portions of the same street are not to be repeated on separate sheets. Match lines shall show stationing and adjacent sheet number.
4. Intersections shall not be cut by match lines and shall be complete from BCR (beginning of curb return) to ECR (end of curb return) on same sheet. When intersecting streets are to be improved beyond ends of curb returns, additional plan and profile sheets should be used to detail the intersecting street. The intersections at the beginning and end of the project shall be fully shown.

HORIZONTAL GEOMETRICS

1. City major streets are typically centered along section lines, from section corner to section corner. Bearings need to be shown on plans; and all bearings of intersecting streets must be shown. All section corners, tangent points, Point of Intersection (PI) of curvilinear sections, beginning and ending taper points and monument lines of all intersecting streets shall be labeled and stationed. Survey markers shall be installed per MAG Standard Details.
2. Show centerline stationing on plan and profile. Stationing numbers should be chosen to prevent “negative” stationing. The project need not start with 0+00. On curved sections the stationing should be along the centerline of the curve and not the tangent lines.
3. Show curve data on the same sheet as the curve. Stationing shall run from South-to-North and from West-to-East.
4. On streets that are not centered on the monument line, the stationing shall be along the construction centerline, which shall also be the proposed crown line, unless superelevation or other conditions dictate otherwise. On such streets, the rights-of-way shall be measured from the monument line. The offset between the monument line and construction centerline shall be shown and all offsets shown for new construction shall be from the construction centerline.
5. Design on intersecting streets shall be done in accordance with the city furnished geometrics and guides, refer to Section 5-3.000. Care must be taken to ensure a smooth grade in all directions through intersections. Special design work sheets are required to show profiles on the intersecting street to ensure smooth grades in both directions. These work sheets are to be included with the grade and alignment submittals, refer to Figure 9.1-6 below.

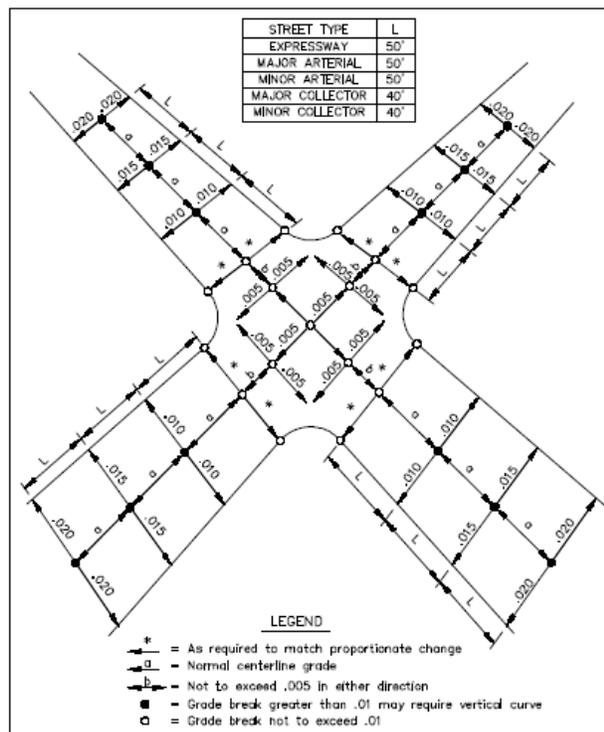


FIGURE 9.1-6 INTERSECTION CROSS-SLOPES & CROWN RUN-OFF

6. All curb radii shall be dimensioned on the plans to back of curb, Ramp Control Points, as per COS Standard Detail No. 2232 (for new construction) or 2233 (for retrofit construction), shall be clearly located and shown on the plans.
7. On all existing roadways and intersecting streets, the plans shall show dimensions from monument line to rights-of-way and to existing back-of-curb. Existing medians, sidewalks, curb ramps, etc. will be clearly dimensioned and labeled.
8. All new pavements should be fully dimensioned to the edge of pavement or back-of-curb and tied to horizontal control lines.

TOPOGRAPHY AND NOTATION

1. Show all subdivision names, block numbers, lot numbers, property splits, lot dimensions, addresses, names of major businesses, schools, fire stations and other public facilities.
2. Show final rights-of-way as a heavy ink line. Show original rights-of-way, where it differs from the new rights-of-way line, with a lighter weight line.
3. Show all existing alleys and easements with proper designations and dimensioning. Show all new easements required for the project, including temporary or permanent.
4. Show all underground utilities and appurtenances and their distances from the monument line and label size, type of material and type of utility. Utilities that are abandoned, or to be abandoned or removed should be indicated. Any utilities to be constructed prior to the project should be shown and so indicated. Underground electrical lines shall be denoted as direct burial cable or conduit-enclosed cable.
5. Show all buried fuel tanks. When the new rights-of-way is in an area where such tanks may exist, a special effort should be made to check for the possibility of their existence.
6. Show existing underground concrete pavements. Core borings should be utilized to determine the existence of such pavements when authorized by the city.
7. Show existing site conditions and topography to at least 10 feet beyond the new rights-of-way line or any required easements. Use standard MAG symbols where applicable. Show all information for buildings, canopies, asphalt aprons and overhangs within 30 feet of the new rights-of-way. Existing site information should be screened approximately 40 to 60 percent, to the satisfaction of CPM plan review.
8. Show all signs within the new rights-of-way and 20 feet beyond the rights-of-way. Electric signs shall be so noted and their source whether overhead or underground identified.
9. Show diameter and variety of trees and shrubs within 30 feet of the new rights-of-way and within temporary construction easements. The city will determine the disposition of all trees and shrubs. If slight changes in alignment could be made to save valuable trees or the sidewalk could be realigned by acquisition of additional rights-of-way, it should be brought to the attention of the city's project manager at the earliest time possible.
10. Show all utility poles. Differentiate between power poles with street lights and those without. Also show all traffic signal poles and their appurtenances.
11. Show all subdivision entrance structures and indicate any utility connections. When these interfere with new construction they should be relocated or reconstructed. At times it may be necessary to obtain rights-of-way for these structures.

9-1.403

12. As-built drawings or sufficient elevations must be obtained to indicate the direction of surface flow on all intersecting streets, frontage roads and parking lots. The direction is to be shown by a small arrow.
13. Where certain items such as monuments, water valves, water meters (sizes if relocation is indicated) etc., are shown on city utility maps or record drawings but are not located, they should be shown and labeled “not found” on the plans.
14. Show all existing irrigation systems. Where new construction requires alterations, these irrigation systems must be put back in operation by the contractor and shall be so noted on the paving plan sheets (or landscape plans).
15. Where new rights-of-way is required, the consultant must investigate if any disconnected water or sewer connections (stub-outs) are completed to the old rights-of-way line only. Where this occurs, show the service connection (size and material) to be extended to the new rights-of-way line. Galvanized services are to be replaced in their entirety. The city will furnish a new meter if the old meter is faulty.
16. Show all existing safety curbs. Call for relocation of existing safety curbs and the addition of new safety curbs where required.

PROFILES AND GRADES

1. Construction benchmarks shall be a maximum of 1,000 feet apart and each sheet shall refer to the nearest benchmark. All benchmarks must be based on the COS datum and at least 2 benchmarks on a project shall be existing city monuments. Elevations of city benchmarks shall be furnished by Field Engineering upon request and are available online at <http://eservices.ScottsdaleAZ.gov/landsurvey>. Refer to Section 3-1.000 for more information. Some areas of the city have experienced considerable ground subsidence. Report variations from recorded city benchmarks to Field Engineering at 480-312-5750.
2. The proposed construction centerline profile shall show the profile of the existing surface at the construction centerline. The proposed curb and gutter profiles shall also show the existing surface line at the location of the new curb line. If the proposed curb and gutter are adjacent to the existing curb of a frontage road, the existing surface line shall be omitted and the top of the existing curb of the frontage road shall be shown.
3. Top of embankments at ditches and bottom of ditches shall not be shown to express existing surface lines. They may be shown in addition to existing surface lines if properly labeled.
4. Existing ground elevations along the rights-of-way lines should be indicated by tick marks along the left and right gutter profile lines at approximately 100-foot intervals.
5. If the ditch bottom or banks occur at the property line, the elevation to be shown in the profile for the property line shall be taken beyond the ditch on “average” ground and the offset noted.
6. Existing roadway profiles shall be extended to a minimum of 300 feet past the ends of the project to assure a smooth transition between the existing and new roadway.
7. Elevations must also be shown in the profile at all driveways, sidewalks, curb ramps and parking lots. Elevations of building floors within 30 feet of the property line shall also be shown in the profile and any other buildings that appear to be low compared to street grades. Sufficient elevations beyond the property line shall be recorded in

9-1.404

the field notes at driveways that may require significant alterations beyond the property line.

8. Cross section sheets shall have a scale of 1 inch = 10 feet horizontal and vertical. 1 inch = 5 feet or 1 inch = 20 feet may be used where special conditions warrant their use. Cross sections shall be plotted at 25 foot intervals depicting the proposed street cross section, in areas where new curb and gutter is retrofitted into existing pavement and less than 1 lane of pavement adjacent to the curb is removed and replaced to insure smooth cross sectional transitions.
9. Sufficient elevations shall also be taken and recorded in the field notes of all parking areas, driveways and private property to be certain that the property ADA slopes and cross slopes are indicated.
10. Elevations of existing water valve nuts shall also be shown in the profile with the appropriate symbol. It is the responsibility of the consultant to uncover these valves, obtain the elevations and replace the cover and any excavated pavement.
11. Longitudinal and transverse grades shall be designed for proper drainage following the guidelines of COS design criteria, standards and ordinances, refer to Figure 9.1-6. Proposed curb grades shall be set to drain all paved adjacent property. Where this is not possible, catch basins may be required beyond the rights-of-way lines, but only where permanent rights-of-way or permanent drainage easements are obtained for the catch basin. In projects with flat longitudinal slopes, the grades shall be set to prevent sump conditions that may flood private property during large storms. Chapter 3.7 of the Scottsdale Revised Code stipulates specific requirements for depth of water in roadways and minimum numbers of clear lanes during storm runoff refer to www.ScottsdaleAZ.gov/codes. The consultant shall obtain and design to these requirements.
12. Where possible, grades should be set to reduce high crowns where they exist. This will assist the flow of floodwaters and prevent backup into houses. Care should be used in lowering existing streets since excavation to construct pavements may uncover existing utilities and possibly change drainage patterns.
13. Any streets with horizontal curves sufficient to require superelevation should be designed in accordance with AASHTO guidelines. The consultant is advised to discuss this subject with the city prior to design of superelevation. Limitations on the use of super-elevations are described in COS design criteria and standards.

STORM DRAIN PLAN, PROFILE, AND DETAIL SHEET

A. Storm Drain Design Sheet

Alternate storm drain piping materials should be summarized on a single sheet and shall reference types of materials, design dimensions, material strengths, bedding conditions and soils information, etc. Refer to Figure 9.1-7 below for an example.

9-1.405

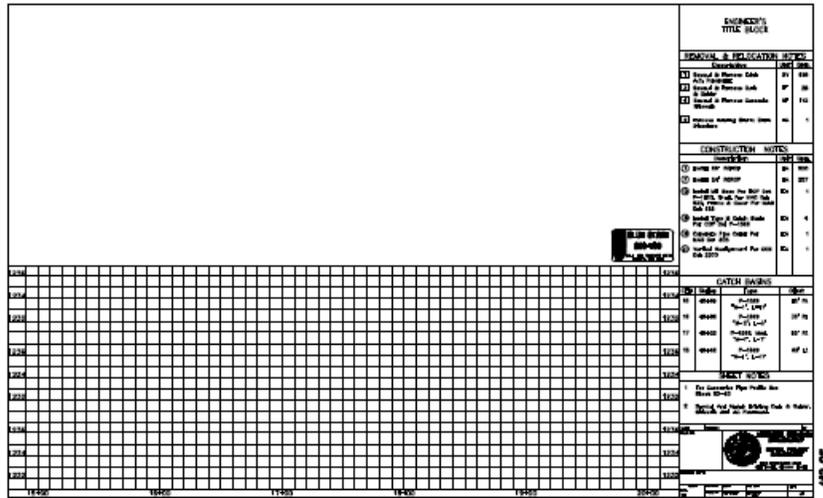


FIGURE 9.1.7 STORM DRAIN PLAN & PROFILE SHEET

B. Sheet Orientation

Sheets are to be oriented and have the same horizontal and vertical scale as the paving plans.

C. Topography and Notation

1. Storm drain drawings shall show all of the existing utilities and any new utilities proposed within a minimum of 30 feet of the centerline of the storm drain. It shall also show other existing topography as shown on the paving plans (or to within 30 feet of the drain centerline if not located within right-of-way) that is pertinent to drainage.
2. These drawings shall show, in plan, all proposed storm drain pipe, manholes, catch basins, connector pipes, pipe collars and other drainage appurtenances. These items should be listed and referenced to standard details. The plan sheet quantity should be noted in the right-hand column of the plan sheet. Add reference to sheets where details or sections are shown.
3. Storm drain main lines, connector pipe and catch basins shall also be shown, in plan, on the paving sheets. A reference to the appropriate sheet number for the storm drain plans shall be shown on each paving plan sheet.
4. If the storm drain main exists and no separate storm drain plans are required, the catch basins and their lines shall be called out on the paving plans. Details of catch basin with connecting pipes shall be included with paving details.
5. Conflicts with existing utilities shall be noted in both plan and profile.

D. Horizontal Alignment

The most satisfactory alignment is determined by the location of existing facilities. Desired location is near the centerline of the existing or proposed street. Existing utilities crossed under at an angle less than 45 degrees may require special design considerations and should be avoided. Location of the storm drain should consider the interference of water main thrust blocks and the need to provide maintenance on either system.

E. Profiles and Grades

1. An overall system profile sheet shall be included with the set and shall show the pipe sizes, grades and locations of manholes and lateral connections. The hydraulic grade lines shall be shown along with the existing/proposed finish grade over the pipe. Crossing utilities including sanitary sewer lines, water lines greater than 12 inches, storm drain lines, and major electric and telephone feeds shall be indicated at their proper locations.
2. The storm drain pipe and manholes shall be shown in profile. The pipe size and the slope to 4 significant figures shall also be shown in the profile. The existing ground over the proposed pipe and the proposed grade shall be shown.
3. Design of storm drain systems shall be per COS design criteria and standards. The Consultant shall obtain the applicable criteria and standards and arrange for a consultation with the city Floodplain Administrator prior to starting design of the storm drain system. This is very important since the drainage areas to be considered in the design may vary.
4. Generally for maintenance reasons, the minimum pipe size required for the main is 24 inches and the lateral collector pipe shall be 18 inches. Smaller diameter pipes require staff approval and will be considered by the city if utility conflicts may be avoided and the pipe has sufficient capacity to carry the design flows.
5. All existing or proposed utilities crossing the new storm drain shall be shown in the profile at their proper as-built, field-verified, or potholed locations.
6. Prefabricated fittings shall be used for all new horizontal or vertical bends where feasible. Locations of bends or fittings shall be called out on plan and profile.

PROFILES FOR CATCH BASINS AND CONNECTING PIPE

9-1.406

A. Sheet Orientation

- All these sheets are to be cross-section sheets.
- Sheets should have the appropriate COS title blocks.
- Catch basins and their connecting lines shall be drawn facing North or facing East.

B. Profiles and Grades

1. Profiles should show the correct top of curb elevation at the catch basin and a cross section of the proposed catch basin. Invert elevations of the connector pipe shall be shown at the outlet from the catch basin and the inlet to the storm sewer as well as any grade breaks. Show the size of the pipe and the percent of slope (to 4 significant digits). Also, show the catch basin type and size, the station and offset, and a cross reference to the storm drain plan and profile sheet where the catch basin is shown.
2. All existing utilities crossing the proposed pipe shall be shown at their proper location and elevation. Use as-built drawings to obtain the correct elevation. When elevations are available from as-built plans, the elevation should be called out on the profiles. Where no elevations are available, the utility shall be located from the best available information.
3. A note should be included on each sheet stating that the elevation is unknown, unless noted on the profile. Where elevations of existing utilities are not known and their existence could be in conflict with the proposed pipe or catch basin, to

determine exact elevations and horizontal locations, the consultant must coordinate digging potholes with the respective utility company.

4. Utilities located in the field shall be shown in plan and profile at their correct location, and noted in profile with their exact elevation and the notation “potholed elevation”.
5. Minimum vertical clearance between the proposed pipe and all existing utilities, other than Salt River Project (SRP) pipe, shall be per MAG Standard Specifications or the COS MAG Supplement see www.ScottsdaleAZ.gov/design/COSMAGSupp. SRP requires a 2-foot horizontal clearance with underground utility lines, poles, fences, buildings, etc., and 1-foot vertical clearance with underground utilities. On special occasions they will permit 3 inches of horizontal clearance with catch basins.
6. Utilities that will require relocation shall be noted in the cross sections and shown at the existing and new locations.
7. All required pipe collars and pipe supports shall be called out on the cross section. Prefabricated tees shall be utilized whenever possible.

IRRIGATION PLAN, PROFILE, AND DETAIL SHEETS

9-1.407

A. Sheet Orientation

Sheets shall have the same orientation as the paving plan sheets.

B. Topography and Notation

Paving removal items shall be called out on the paving sheets, not on the irrigation sheets. When Salt River Project does its own construction, removals to be done by SRP forces shall be called out on the paving sheets and it shall be noted that they will be removed by SRP. Construction items for irrigation work shall be called out on the irrigation sheets. If SRP is required to complete its own construction, the construction items shall be listed and noted as such.

C. Horizontal Alignment and Design

1. Private irrigation pipe, ditches and structures will be placed on private property using a temporary construction easement. The private irrigation pipelines may be placed under the proposed sidewalk if placing pipe on private property would result in the loss of existing trees or landscaping, or cutting of planters or buildings or concrete pavement parking areas, and if there is no conflict with SRP.
2. SRP irrigation pipe may be placed under the proposed sidewalk; however, their structures are to be placed on city rights-of-way, behind the sidewalk.
3. In locating private or SRP pipe, care should be used to allow space for utility poles, streetlights, or traffic signal pole bases along the property line, and sufficient horizontal clearance between any structures and the proposed pipe.
4. The consulting engineer, at the earliest opportunity, shall notify SRP, in writing, of the project and request a design schedule and estimated design cost. A copy of this request and the proposed schedule must be sent to the city. The consultant will provide SRP with all available information on the location of other utilities, street grades and street alignment. The consultant shall cooperate with SRP so that the final design will meet their standards and be the most economical for the city.
5. At the same time they are submitted to the city for review, the consultant shall send a set of grade and alignment plans to SRP and request a determination of rights-of-

way requirements for their facilities. It is essential in order to meet rights-of-way schedules that these rights-of-way requirements be submitted to the city as soon as possible.

6. A second set of grade and alignment plans shall be sent to SRP after approval by the city. Based on these plans, SRP can proceed with the design. SRP will prepare a red-line preliminary design and transmit it to the consultant. The consultant shall review the red-line preliminary design and return it, with comments, to SRP as soon as possible. SRP will then complete the final design.
7. If existing private or SRP irrigation pipes are to remain as is, the consultant shall investigate the type of pipe and its condition to ensure it is fit to remain. The consultant shall also investigate the elevation of the pipe to be sure enough cover will be provided over the pipe even during the time of construction. The consultant must meet with SRVWUA to determine what requirements should be met for the project.
8. On private irrigation lines and ditches, the consultant must obtain the delivery quantities and irrigation schedule from the Water Master. The consultant shall be completely responsible for the design of private irrigation systems. The determination of rights-of-way requirements at an early date is essential in maintaining the time schedule; submit these requirements to the city as soon as possible. Hydraulic computations on private irrigation shall be furnished to the city. All work involving private or SRP irrigation shall be coordinated with the city's project manager.
9. SRP typically constructs its own facilities, therefore, the consultant shall show SRP's design on the plan of the paving sheets and properly note which work shall be done by the city's contractor and which will be done by SRP. Mylar plans of SRP work are to be placed at the end of the construction plans for a permanent record.

D. Profiles and Grades

Profiles shown for irrigation pipes must show the proposed surface grades over the centerline of the pipe as well as the invert profile of the pipe and the top of the pipe. Top elevations must also be shown for all irrigation structures. Grades of pipe shall be established which will provide sufficient cover over the pipe as well as be hydraulically efficient.

SANITARY SEWER PLAN, PROFILE, AND DETAIL SHEETS

9-1.408

A. Sheet Orientation

Sheets shall have the same orientation as described in the paving plans section.

B. Topography and Notations

1. Provide the same siting information as required for the paving plan base sheets for the sanitary sewer plan sheets.
2. If the sewer is located in an easement outside the rights-of-way, show all existing site conditions to 30 feet minimum along each side of the pipeline.

C. Horizontal and Vertical Control

INFRASTRUCTURE PLAN REQUIREMENTS

1. Establish 1 construction benchmark for every 1000 feet minimum along the alignment of the pipeline. At least 2 city benchmarks should be referenced (NAVD 88).
2. Stationing shall be established along the pipeline, increasing from lower to higher invert elevations, and be referenced to street centerline or monument lines at manholes or angle points where possible. Where this is not possible, the use of bearings and distances along the pipe centerline shall be utilized. The beginning and end point of the sanitary sewer line shall be tied to the nearest monument point.

D. Soils Testing

1. Prepare the geotechnical investigation.
2. Additionally, provide soils boring logs at a minimum spacing of 1320 feet along projects whose average trench depth exceeds 10 feet. Boring should extend to 24 inches below the proposed bottom of the trench and be of sufficient diameter to allow for laboratory testing and analysis. Locations of borings shall be identified on the plans. Soil boring logs shall be included on a geotechnical report along with a discussion of any particular bedding, shoring, excavating, or dewatering considerations.

E. Profiles and Grades

1. Profiles shall indicate the existing and design grade line over the pipe and shall include the “as-built,” “field-verified,” or “potholed” locations of all crossing utilities.
2. Vertical locations of storm drains and sanitary sewers should be interpolated from verifiable field elevations along accessible points. Locations of other pipes shall be taken from information on existing “as-built” drawings or actual field “pothole” datum.
3. When existing “as-built” plans of a water line greater than 12 inches diameter, a high pressure gas line greater than 4 inches diameter, and telephone or electrical conduits do not indicate a depth of bury, the engineer must coordinate with the utility company for a “pothole” location to be provided. When existing “as-built” plans of a water line, a gas line, or telephone or electrical conduits do not indicate a depth of bury, the engineer shall coordinate with the utility company to provide a “pothole” location.
4. Identify existing utilities by name, size and type of pipe in the profile. If existing or proposed pipes are greater than 21 inches (inside) diameter, show top and bottom invert grade line and an indication of pipe wall thickness in the profile. For pipes 21 inches or smaller (inside) diameter, indicate only top and bottom invert grade.
5. Necessary water relocations shall be per COS Standard Detail No. 2370, see www.ScottsdaleAZ.gov/design/COSMAGSupp. Coordinate requirements for shut-off and air release/vacuum valving with the city Water Resources Department.
6. Show invert and rim elevations on all manholes and pipeline invert elevations on all ends of stubouts or at points of match sheet. Pipeline grades should be established to 4 decimal places.
7. Calculate invert elevations and lengths of pipe from center of manhole to center of manhole. Sections of pipe connected to manholes should be 5-foot maximum length to minimize the adverse effects of any settlement.

WATER LINE PLAN, PROFILE, AND DETAIL SHEETS

9-1.409

Sheet orientation, topography and notations, horizontal and vertical control, and soils testing should be similar to those criteria described for the previous section “Sanitary Sewer Plans, Profiles and Details”.

Profiles and Grades

1. Profiles are required for all waterlines 12 inches and greater.
2. Profiles shall indicate the existing and design grade line over the pipe and shall include the “as-built,” “field-verified,” or “potholed” locations of all crossing utilities.
3. Vertical locations of storm drains and sanitary sewers shall be interpolated from verifiable field elevations along accessible points. Locations of other pipes shall be taken from information on existing “as-built” drawings or actual field “pothole” datum.
4. When existing “as-built” plans of a water line, a gas line, or telephone or electrical conduits do not indicate a depth of bury, the engineer shall coordinate with the utility company to provide a “pothole” location.
5. Identify existing utilities by name, size and type of pipe in the profile.
6. Existing water line relocations may be necessary and shall be per COS Standard Detail No. 2370. Minimum separations between water lines and electric/gas lines shall be per COS Standard Detail No. 2372, see www.ScottsdaleAZ.gov/design/COSMAGSupp.
7. Construct all fire line services and hydrant connections with DIP.
8. Water mains 12 inches in diameter shall have a minimum cover of 48 inches to finish grade; mains smaller than 12 inches in diameter shall have a minimum cover of 36 inches to finish grade; mains greater than 12 inches in diameter shall have a minimum cover of 60 inches to finish grade. Water mains in industrial areas or in major collectors and arterials shall have a minimum of 48 inches cover.
9. All bends, angle points, fittings shall be stationed. On water lines 12 inches or larger in diameter, show the design top of pipe elevation. Cut stakes shall be provided for the trenching of all water lines 12 inches or more in diameter.

TRAFFIC SIGNAL PLAN, SCHEDULE, AND DETAIL SHEETS

9-1.410

A. Plan Sheet

Refer to Section 5-4.100 Traffic Signal Design, for specific information on plan sheet sets. Plan submittals and plan content are described in Section 5-4.200 and Section 5-4.300.

B. Notes and Schedules

Develop these as necessary to show the conductor schedules, controller and pole schedules, phasing details, etc., and general notes with cross references to items shown on the plan sheet. See Section 5-4.302 and Figure 5.4-5 for further guidance.

TRAFFIC SIGNING AND PAVEMENT MARKINGS

9-1.411

A. Sheet Format

Provide double plan at 1 inch = 40 feet scale, the same orientation as the paving plans.

B. Plans

1. Signing and striping shall conform to ADOT Specifications and Standard Drawings and the Manual of Uniform Traffic Control Devices, unless shown otherwise in COS design criteria and standards, or as directed by the Traffic Engineering Program.
2. Existing striping shall be shown and dimensioned to a minimum of 300 feet beyond where it ties into the new work. All new work shall be appropriately dimensioned from lip-of-gutter to center-of-stripe, etc. Overall dimensioning shall be provided across pavement widths and rights-of-way. Refer to Section 5-4.000 for a list of applicable notes to place on plans.
3. All permanent pavement striping, including crosswalks, shall be hot sprayed 6 mil thermoplastic. Temporary pavement markings and island noses should be reflectorized traffic paint. Legends and arrows to conform to ADOT Specifications and Standard Drawings.
4. Raised pavement markers are generally required for all new COS paving projects.

LANDSCAPE AND LANDSCAPE IRRIGATION; INTEGRATED SIGN PLAN

9-1.412

A. Sheet Format

Landscaping and irrigation may be combined on the same plan for simpler projects, but generally require separate plan sheets. In either case, the orientation and scale shall be the same as for paving plans, using a double plan on each sheet. The landscaping plan shall also show all street signs to avoid landscaping conflicts that interfere with street sign placement. The standards for sight lines in C.2. below shall be considered for appropriate landscaping near street signs.

B. Note and Legends Sheet

This sheet may be combined for the landscaping and irrigation plans. It shall contain general notes, landscaping notes, irrigation notes, list of plants and shrubs used (noting common and botanical names), list of irrigation components, legends of landscape and irrigation symbols, quantities, approval block, maintenance statement signature block per Figure 1.2-7 and miscellaneous details. If the project will be reviewed and approved by the Development Review Board, the DR number and signature block per Chapter 1.3 shall be placed on the lower right-hand corner of each sheet.

C. Plan Sheets

1. Landscape plans shall show individual shrubs and trees plus types and areas of various groundcovers, including grass, decomposed granite, pavers, exposed aggregate paving, etc., with quantities shown on the right-hand column. Identify restoration work behind new sidewalks, or in other areas disturbed by construction work. Existing items to be removed or transplanted shall be shown with special attention to native plants that are required to be salvaged. The city will furnish guidance and assistance in identifying plants to be salvaged or transplanted as well as selecting types of new plants that will conform to the city landscaping policy and

to the requirements of the Arizona Department of Water Resources for the Phoenix Active Management Area.

2. Sight lines shall be shown on the landscaping plans and shall conform to COS criteria and standards. Design consideration should be given to placement of plants, size of plants at maturity, canopy widths and general maintenance. Planting density shall not exceed tree/shrub natural growth habits. Generally, shrubs should be kept a minimum of 4 feet away from the curb or sidewalk, and when within a sight line they should not exceed a maturity height of 18 inches above the curb.
3. Trees should be located so that the mature canopy will not overhang the curb or sidewalk line. Within a sight line, trees shall have a single trunk with a clear height of 8 feet to the canopy.
4. Irrigation plans shall provide detailed design from the service side of the meter. The irrigation service and meter size will be provided and noted on the civil plans.
5. Identify the detail and dimension, or station the locations and layout of the meter, backflow preventer, control valves, main and lateral lines, pressure regulator and emitters, etc. Diagrammatic layout plans will not be accepted by the city. The consultant shall clearly indicate with stations and dimension to the back of curb or sidewalk the proposed locations of the irrigation components.
6. Valve flow rate, station number, size and description (tree, shrub, turf, etc.) shall be given for each valve.
7. Separate emitters shall be shown to each plant. Distribution tubing length shall not exceed 6 feet. Trees and shrubs are to be valved separately. Separate emitters shall be shown to each plant. Number of multi-port emitters for trees shall be per City of Scottsdale emitter layout detail number 2641-2. Emitter flow rate shall be provided on the plans.
8. Show the electrical source plus the controller location and all wiring, including conduits and sleeves.
9. Upon request, the city will provide the consultant a listing of products that may be listed for performance and quality control. The drawings need to reference "or approved equivalent" in all cases.
10. City of Scottsdale maintained landscape and irrigation improvements shall be designed based upon City of Scottsdale supplement to MAG specs and details, DS&PM Chapter 8-1 & 8-2, along with other design criteria. City of Scottsdale landscape and irrigation details shall be provided in the plan sets.

BRIDGE AND STRUCTURAL PLANS AND DETAILS

9-1.413

At the city's option, bridges on canals may be designed as a separate contract to be bid separately from the roadway plans, since the bridge must be built during the annual canal dry-up. Bridges over washes may be included as part of the paving plans.

A. Required Sheets

The sheets required on a typical set of bridge plans, which are independent of the roadway plans, are shown in Figure 9.1-8.

REQUIRED SHEETS FOR BRIDGE AND STRUCTURAL PLANS	
1.	City cover sheet with information as shown in Figure 9.1-2.
2.	Typical section sheet to show sections of roadway work included.
3.	Notes and legend sheet with information shown in Figure 9.1-3 with additional bridge and structural notes.
4.	Paving plans and profile sheet with additional information concerning bridge and structural details.
5.	Detour plan and profile, if required, showing all details required for the detour in plan and profile.
6.	Plan and profile for any water, sewer, or irrigation alterations to be included as part of the bridge contract.
7.	Bridge location plan showing the bridge in plan and profile and the bridge quantities.
8.	Soil boring log sheet showing all soils information obtained and the note concerning responsibility.
9.	Abutment Details.
10.	Pier Details.
11.	Deck Details.
12.	Miscellaneous details (approach ramps).
13.	Handrail and Guard Details.

FIGURE 9.1-8 REQUIRED SHEETS FOR BRIDGE & STRUCTURAL PLANS

B. Additional Requirements

1. The consultant shall discuss the project with SRP at an early date in order to obtain their requirements when designing a bridge over a canal or when any SRP facilities are involved. Generally, the first step of a bridge design over an SRP canal will be to obtain a statement from SRP as to whether they consider the bridge a restriction in the canal. If they do consider it a restriction, it shall be necessary for the engineer to submit a hydraulic study to SRP to assure that construction of the new bridge or bridge widening will not adversely affect hydraulic characteristics in the canal. Upon approval of that study by SRP, the consultant shall proceed with preparation of preliminary plans. Following review and approval of such plans by the city and SRP,

the consultant shall proceed to drafting final plans. Throughout all stages of project design, the consultant shall coordinate all work with SRP in order to minimize any possible conflicts. Bridges over SRP canal facilities must conform to prevailing SRP standards and requirements.

2. Consultant shall consider sight distance requirements when designing the roadway portion of the contract.
3. At an early date, the consultant shall coordinate with other utilities such as Qwest, SRP, APS, Southwest Gas, Cable TV and the COS Water and Wastewater Department in order to identify any necessary relocations of their facilities.

RIGHT-OF-WAY PLANS

9-1.414

A. Strip Map

Strip maps shall be at a scale (generally 1 inch = 100 feet) sufficient to differentiate the various easements, parcels and existing improvements. Format should be shown on a 24 inches x 36 inches sheet. Show each parcel abutting the project and indicate proposed and existing dimensioned rights-of-ways, easements, ownership and areas.

Refer to Figure 9.1-9 below for a sample ROW Strip Map Exhibit.

- Format: 24 inches x 36 inches per city.
- Scale: 1 inch = 100 feet (or as required).
- Property addresses and occupants identified.
- Property owners identified, including Tax Assessor's parcel numbers.
- Existing easements and ROW identified.
- New easements and ROW to be acquired identified.

B. Parcel Exhibits

One exhibit per parcel is required. One exhibit per ownership may be submitted with approval from the COS Right-of-Way Agent. Prepare parcel exhibit maps on individual sheets and include a legend indicating the type of acquisition. The plan view should show the parcel boundary dimensioned to section corners (non-subdivided lots), adjacent rights-of-way centerline and any on-site improvements, along with all existing and proposed easements and rights-of-ways clearly identified and dimensioned. The identification of existing rights-of-way and easements should include the appropriate county recording information.

Refer to Figure 9.1-10 below for a sample Parcel Exhibit.

- Format: 8-1/2 inches x 11 inches.
- Title block at lower right identifying the city's project, project number, tax parcel number and the property owner(s).
- North arrow and scale.
- 1/4 section ties.
- Property addresses and occupants identified.
- Existing easements and ROW identified.
- New easements and ROW to be acquired identified.
- Individual areas noted.

INFRASTRUCTURE PLAN REQUIREMENTS

- Parcels dimensioned and bearings.

C. Parcel Descriptions

The individual parcel descriptions for all new easements and/or rights-of-way shall be prepared by, or under the direct supervision of a land surveyor registered in the State of Arizona, and shall be sealed by the same. All parcel descriptions shall be typed on separate 8-1/2 inches x 11 inches formats and shall be consistent with APLS standards. Refer to Figure 9.1-11 for a sample Parcel Description.

The description should be typed in single space format and double spaced between its various parts as outlined below:

1. Caption

- Brief introduction stating location of parcel, portion of a subdivision, aliquot portion of sectional breakdown, township and range.

2. Body

- Tie true point of beginning to an established section corner, identifying its character
- Metes and bounds courses
- Identify boundary lines of joiners, citing Maricopa County Recorder's numbers and pages

3. Area of easement or ROW, stated to nearest square foot and 10,000th acre.

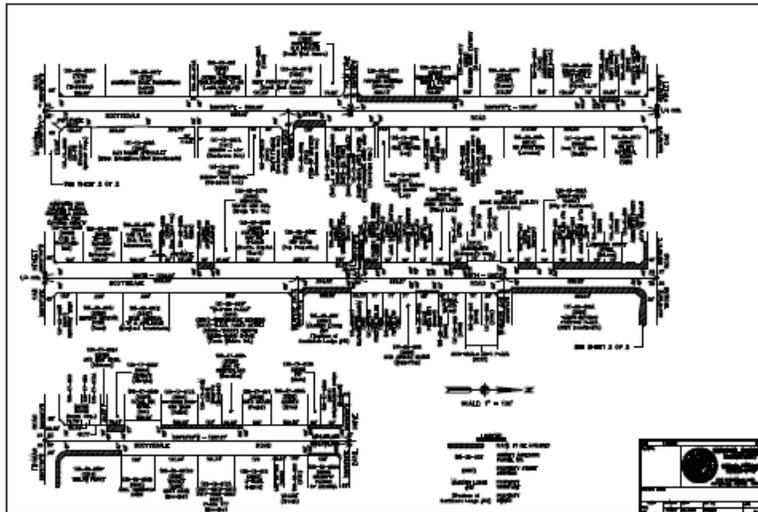


FIGURE 9.1-9 SAMPLE ROW STRIP MAP

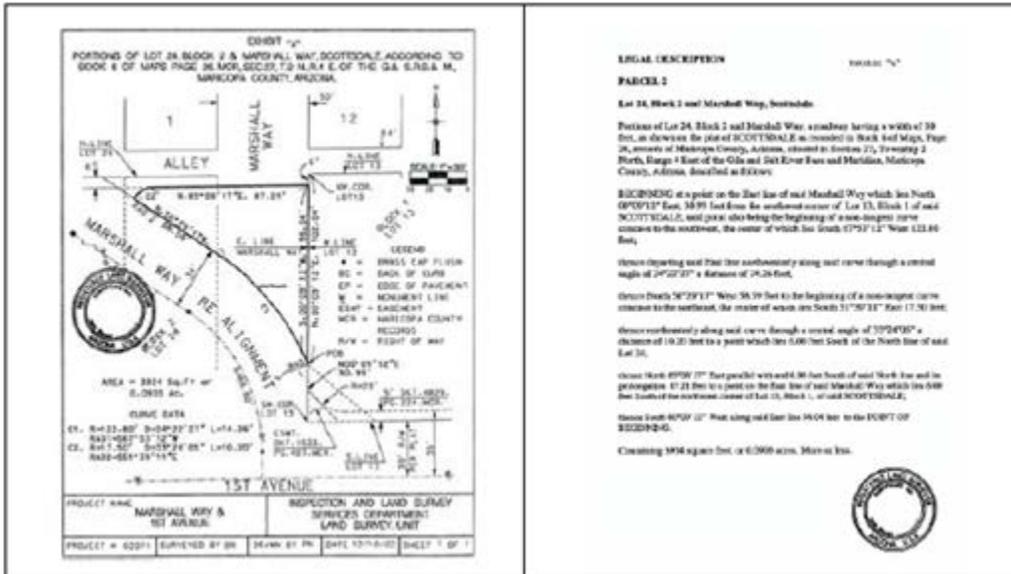


FIGURE 9.1-10 SAMPLE ROW PARCEL EXHIBIT (left side)
 FIGURE 9.1-11 SAMPLE ROW PARCEL DESCRIPTION (right side)

LEGAL DESCRIPTION

EXHIBIT "A"

PARCEL 2

Lot 24, Block 2 and Marshall Way, Scottsdale

Portions of Lot 24, Block 2 and Marshall Way, as recorded in Book 8 of Maps, Page 36, records of Maricopa County, Arizona, relevant to Sections 12, 13, 14 & E. of Township 2 North, Range 4 East of the Gila and Salt River Basins and Meridian, Maricopa County, Arizona, described as follows:

BEGINNING at a point on the East line of said Marshall Way which lies North 09°01'31" East, 58.99 feet from the southeast corner of Lot 13, Block 1 of said SCOTTSDALE, said point also being the beginning of a new tangent curve concave to the southwest, the center of which lies South 07°57'12" West 123.86 feet;

thence departing said line the northwesterly along said curve through a central angle of 24°22'21" a distance of 14.36 feet;

thence South 58°29'11" West 58.99 feet to the beginning of a non-tangent curve concave to the southeast, the center of which lies South 51°50'33" East 17.50 feet;

thence northwesterly along said curve through a central angle of 37°04'30" a distance of 10.30 feet to a point which lies 0.0653 acres South of the North line of said Lot 24;

thence North 89°08'27" East parallel with and 4.80 feet south of said North line and in prolongation 17.21 feet to a point on the East line of said Marshall Way which lies 0.0653 acres South of the southeast corner of Lot 13, Block 1, of said SCOTTSDALE;

thence South 89°08'27" West along said East line 14.04 feet to the E087°07'30"00"00";

Containing 0.0653 acres, less or more.



CAPITAL PROJECT PLAN REVIEW PROCESS

Improvement and Facilities Projects

A. Review Submittals

1. Infrastructure Projects
 - a. Concept Submittal / Preliminary Drainage Study
 - b. First Submittal (Grade & Alignment review)
 - c. Rights-of-Way Submittal
 - d. Second Submittal (Progress plans)
 - e. Third Submittal (Completed plans)
 - f. Approval Submittal (Sealed plans 100% complete)
2. Facilities Projects
 - a. Schematic/Program Design
 - b. Design Development
 - c. Construction Documents (90% Complete)
 - d. Final Construction Documents (Sealed Plans 100% complete)

B. Develop Project Review Schedule

1. Establish project review schedule using division monthly report.
2. Verify project submittal dates with Project Manager.
3. Coordinate project review schedule with One Stop Shop Final Plan Review.
4. Update and review schedule monthly.

C. Pre-Submittal Preparation (prior to a scheduled project submittal)

1. Verify submittal date with Project Manager.
2. Coordinate with COS staff members involved in the review process (see below) and establish timeframes for their participation:
 - a. Designated One Stop Shop Final Plan Review staff member: for project components deviating from design criteria or General Plan.
 - b. Floodplain Administrator or designee: for preliminary drainage study compliance with floodplain management policies.
 - c. Traffic Engineering Director or designee: for approval of traffic-related deviations from Master Plan, and reviewing signalization, striping, signing and counter loop locations.
 - d. Field Services: for review and input on landscaping and irrigation systems.
 - e. Field Services: for review and input on pavement, signing and striping designs.
 - f. Facilities Maintenance, Parks Department: for review and input on all city-maintained structures and/or equipment.
 - g. Water Resources: for projects with any facilities, main transmission, supply or trunk lines.
 - h. Rights-of-Way Agents and City's appraiser: for reviewing rights-of-way submittal.
 - i. Planning: for theme districts or roadway landscaping.

CAPITAL PROJECT PLAN REVIEW PROCESS

Improvement and Facilities Projects

D. Project Review Timeframe (Usually 2 weeks from date of plan submittal to Project Manager)

1. Upon receipt of plans, confirm review dates with other involved COS staff, provide documents for their review, and apprise them of review completion deadline.
2. Obtain design criteria from Project Coordinator.
 - a. Scope of work from contract.
 - b. Minutes of meetings that contain design criteria determination.
3. Perform plan review for:
 - a. Compliance with Master Plan.
 - b. Compliance with plan format in accordance with the Project's Scope of Work.
 - c. Compliance with minimum technical requirements for particular submittal per City's criteria and applicable standard specifications and details.
 - d. Technical accuracy.
 - e. Constructability.
 - f. Value Engineering.
 - g. Right-of-way utilization.
 - h. Compliance with COS Codes.
4. Coordinate comments with those of City Departmental reviews.
 - a. Schedule a meeting to resolve any conflicts in review.
 - b. Arrange for any required departmental input on comments.
5. Complete CPM Review comment form and incorporate with One Stop Shop Final Plan Review's comments.
 - a. Add to CPM's redlines the outstanding comments from One Stop Shop Final Plan Review for a single presentation of City comments.
6. Return copy of comments to Project Manager.
 - a. Project Manager to schedule a review conference with the Consultant.
 - b. Coordinate with any COS staff to be present at review conference.

E. Post Review Activity

1. Attend conference with consultant and Project Manager to resolve review issues.
2. File review documents.

FACILITIES PLAN REQUIREMENTS

This section outlines the submittal and review process and requirements for public facilities, including plan sheet numbering, sequence, and content.

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GENERAL INFORMATION

DESIGN STANDARDS AND GUIDES

A. Standards and Codes

The standards, codes, and amendments adopted by the City of Scottsdale can be viewed on the Planning and Development Services page of the city's website.

<http://www.scottsdaleaz.gov/codes.asp>

B. Design Policies and Guidelines

- Project stipulations from the Development Review Board
- Other general acceptable design standards, policies and guides

GENERAL REQUIREMENTS

Refer to Appendix 9-1A for the capital project plan review process.

1. Prepare plans on standard ANSI "D" Size (22 x 24 inches) sheets unless prior approval has been obtained from the City of Scottsdale to use the larger 24 x 36 inches sheets. All sheets must be clearly reproduced on print paper in black line format.
2. Upon request, the city will furnish the consultant with electronic files of base drawings shown in the figures at the end of this section. The consultant will be responsible for completing the drawings as applicable for the project.
3. Place a standard city title block in the lower right hand corner of each sheet. Also, show the architect's identification/logo along with that of any sub-consultant, along the right edge or upper right corner of the sheet.
4. Make the minimum lettering size 3/16 inch for manually drafted or 1/2 inch for mechanically produced lettering and ensure it is legible when reduced 50 percent. Reproduction of final drawings must be legible when microfilmed or reduced to 1/2 scale. Capital Projects Management (CPM) Plan Review determines the legibility of all drawings submitted. Adhesive backed appliques for lettering and shading will not be permitted without approval of CPM Plan Review.
5. On all sheets with maps or plans, orient north to the top of the sheet. A north arrow and scale must be on all applicable sheets.
6. Keynote all construction notes. Group construction keynotes referencing to a specific symbol (square symbols designate demolition and removals, diamond symbols designate relocations and circular shapes designate construction items).
7. The designer responsible for the design must seal all plans and documents submitted for review and mark them: "For Review Purposes, Not To Be Used For Bidding or Construction." Submitted plans and documents must also be signed by the registrant when the submittal reaches the level of 90 percent or better.
8. All projects must comply with Section 404 of the Federal Clean Water Act. Before the city may issue development permits for a project, the 404 Certification Form must be completed and submitted with improvement plans to the CPM Design and Plan Review staff, refer to www.ScottsdaleAZ.gov/bldgresources/forms. Consultants are advised to apply to the Corps as early as possible for a Section 404 permit and allow for the necessary processing time to prevent delays in obtaining development permits from the city.
9. All projects submitted for review and/or further processing must be complete and consist of plans, specifications, structural calculations, mechanical calculations,

Section 9-2

9-2.001

9-2.002

FACILITIES PLAN REQUIREMENTS

- plumbing calculations, electrical calculations, geotechnical report, drainage report, native plant information and other documentation as required for that project.
10. For code review, the Architect shall submit a minimum of 4 full size sets of drawings on paper, 2 sets of specifications and 1 set of other documents as required. In addition, the designer shall provide additional plans, specification and other documents as required for internal user group review purposes. All plans and documents are to be submitted to the City of Scottsdale through CPM.
 11. Provide an electronic copy of the final plans and specifications in MicroStation and Microsoft Word formats, respectively. CAD drawings shall be saved in the version currently in use by the City (v8 as of May '07). At the Project Manager's request, a set of signed and sealed drawings in full-size PDF format on CD shall also be submitted.
 12. After tentative approval of the final review package, the Architect shall submit a complete set of full size (refer to Note 1 in Section 9-2.200) signed and sealed Mylar drawings for approval and signatures. The Mylar set shall have the note "Not for construction or bidding purposes" removed.
 13. Any infrastructure portion of a facilities project must comply with Section 9-1.100, particularly Figure 9.1-4 General Construction Notes for Public Works Improvements & Facilities Projects.
 14. All re-submittals must include the "Attachment A" or equivalent form stating what corrective action has been taken on all red-line comments (refer to Appendix 9-1B).

PLAN SHEET NUMBERING & SEQUENCING

Sheets shall be identified by design discipline as designated below and consecutively numbered. Additionally, final consecutive numbering of the entire set of plans should be provided on each sheet. The sheet numbering prefixes shown in Figure 9.2-1 are commonly used and the consultant shall review the sheet sequencing and/or intended numbering with the city's project manager.

PLAN SHEET NUMBERING & SEQUENCING			
Plan sheet prefixes:			
G = General C = Civil	L = Landscape A = Architectural	S = Structural M = Mechanical	P = Plumbing E = Electrical
Plan sheets shall be sequenced as follows:			
1	G1	City cover sheet	
2	G2	Notes, legend, approval blocks and notations	
3	C1	Existing site survey	
4	C2	Civil grading and drainage plans	
5	C...	Civil site utility plans	
6	L1	Landscaping and irrigation plans	

9-2.100

FACILITIES PLAN REQUIREMENTS

7	A1	Architectural site plan
8	A2	Architectural plans, elevations, sections, details, schedules
9	S1	Structural general notes
10	S2	Structural plans
12	M1	Mechanical legends, notes, abbreviations
13	M2	Mechanical plans, details, schedules
14	P1	Plumbing plans, details and diagrams
15	E1	Electrical legends, notes, abbreviations
16	E2	Electrical site plan
17	E3	Electrical plans, schedules and details

FIGURE 9.2-1 PLAN SHEET NUMBERING & SEQUENCING

DETAILED SHEET INFORMATION

NOTES, LEGEND, AND KEY MAP SHEETS

1. Key Map – Show all intersections, rights-of-way and key to all plans with stations
2. Legend of symbols used for existing and design elements
3. List of abbreviations used in plan set (other than as shown in the MAG Specifications)
4. Include Figure 9.1-4, General Construction Notes for Public Works Improvements & Facilities Projects in addition to any special project notes generated.

9-2.200

CONSTRUCTION BID DOCUMENTS

This section provides specific requirements for construction bid documents for city public works projects. It gives direction for preparing construction drawings, discovering a project's special provisions, creating a bid schedule, and estimating construction costs.

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CONSTRUCTION BID DOCUMENTS

GENERAL INFORMATION

The project's scope of work will contain specific requirements for the construction documents provided by the consultant. Generally, the consultant provides the following bidding documents to the City of Scottsdale. The Project Manager determines how many copies of each document are needed.

- Construction Plans
- Project Special Provisions
- Project Schedule of Bid Items
- Construction Cost Estimate

CONSTRUCTION DRAWINGS

Original drawings submitted to the city will remain the property of the city. All drawings will be on clear 4-mil Mylar with original ink, mechanically plotted, or photographically reproduced. Ammonia based sepias or electrostatic media will not be accepted by the city. All mechanically plotted drawings will be of such quality that the plotted medium does not peel or scratch off with reasonable handling. The consultant will guarantee the quality of the drawings and replace any drawings on which the lettering and/or line work peels, smudges, or is otherwise deemed to be unacceptable by the city. Such drawing replacement will be at no cost to the city.

The design engineer will provide the city with electronic files of the final construction drawings, special provisions, calculations, reports, schedule of bid items, and other documents as specified. Drawing formats will be in MicroStation, the latest version. The special provisions and schedule of bid items will be in Microsoft Word and/or Excel, the latest versions. Electronic files will be submitted on CD.

- Architects shall supply Facilities Management with a floor plan with door tags showing door and room numbers in dwg format for the City's locksmith's use. Dwg files shall be submitted to Facilities Management Department at least sixty (60) days prior to the completion of the project.
- Evacuation Routes - all new and remodeled facilities shall have evacuation routes posted in acrylic sign holders in strategic locations.

SPECIAL PROVISIONS/TECHNICAL SPECIFICATIONS

"Invitation To Bid" documents follow a specific format for all Capital Improvement Projects. They include city drafted boiler plates consisting of the notice inviting bids, information for bidders, general conditions, bid forms, contracts, bonding and insurance forms, etc. The project's special provisions will supplement the city's general conditions.

Upon request, the city will provide the consultant with a sample format of the project's special provisions, including a compilation of guideline special provisions. The consultant must thoroughly review the special provisions guideline, determine which portions are applicable for his/her specific project, and determine the need for supplementation.

Section 9-4

9-4.000

9-4.100

9-4.200

The special provisions are updated as needed; therefore, the consultant should request a current version for each capital project design.

BID SCHEDULE

The consultant will complete a standard schedule of bid items consistent with the city's required format, available online at www.ScottsdaleAZ.gov/design/biditemschedule.

Bid item numbers will be taken from a master list of items that is available from Capital Project Management (CPM) Plan Review. Project specific item numbers that are not listed will be coordinated with CPM Plan Review.

The master bid item list is frequently updated so the consultant should request a current version for each design project.

CONSTRUCTION COST ESTIMATE

The engineer / architect will provide the city with a final detailed estimate of the probable cost of construction.

9-4.300

9-4.400