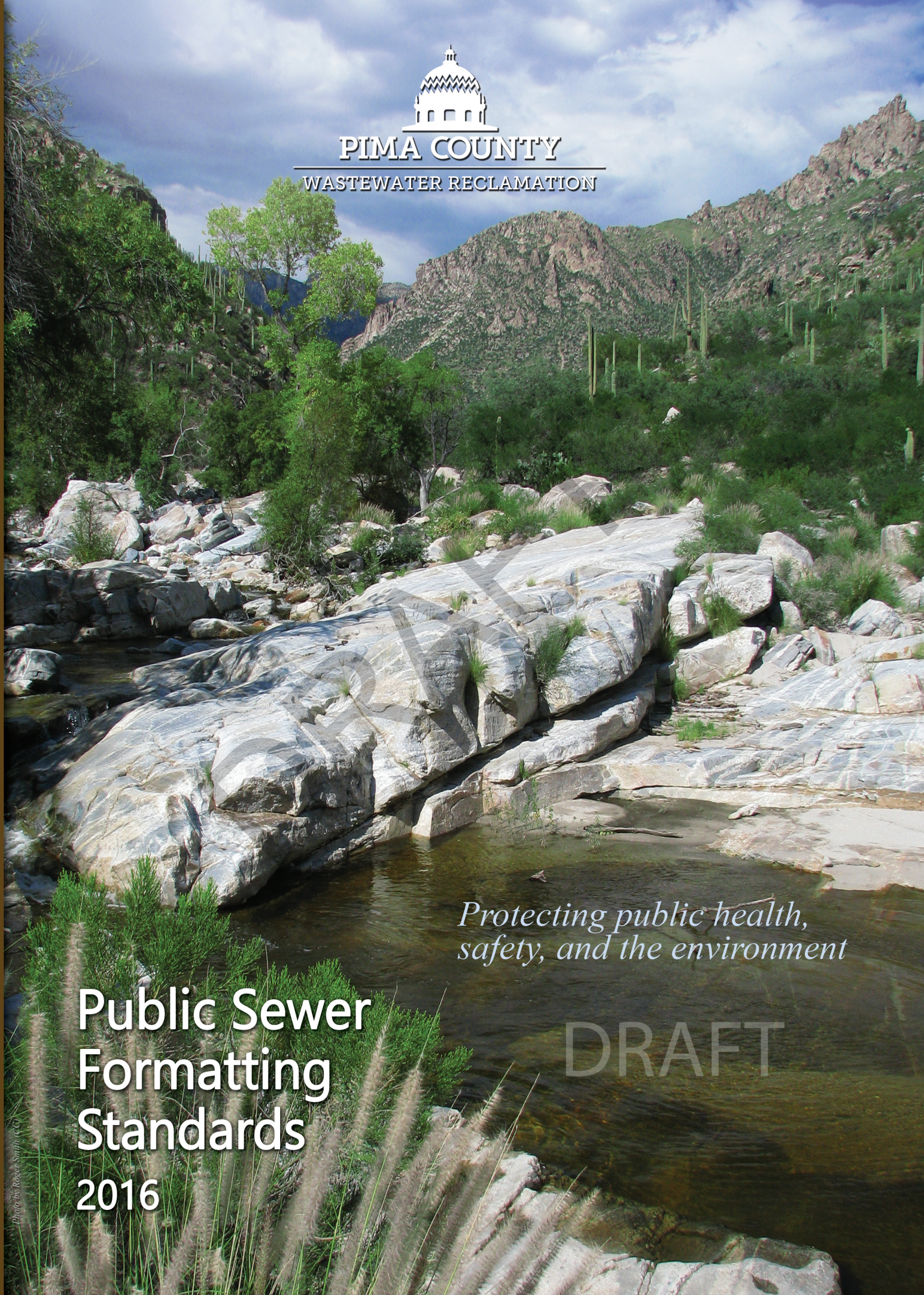
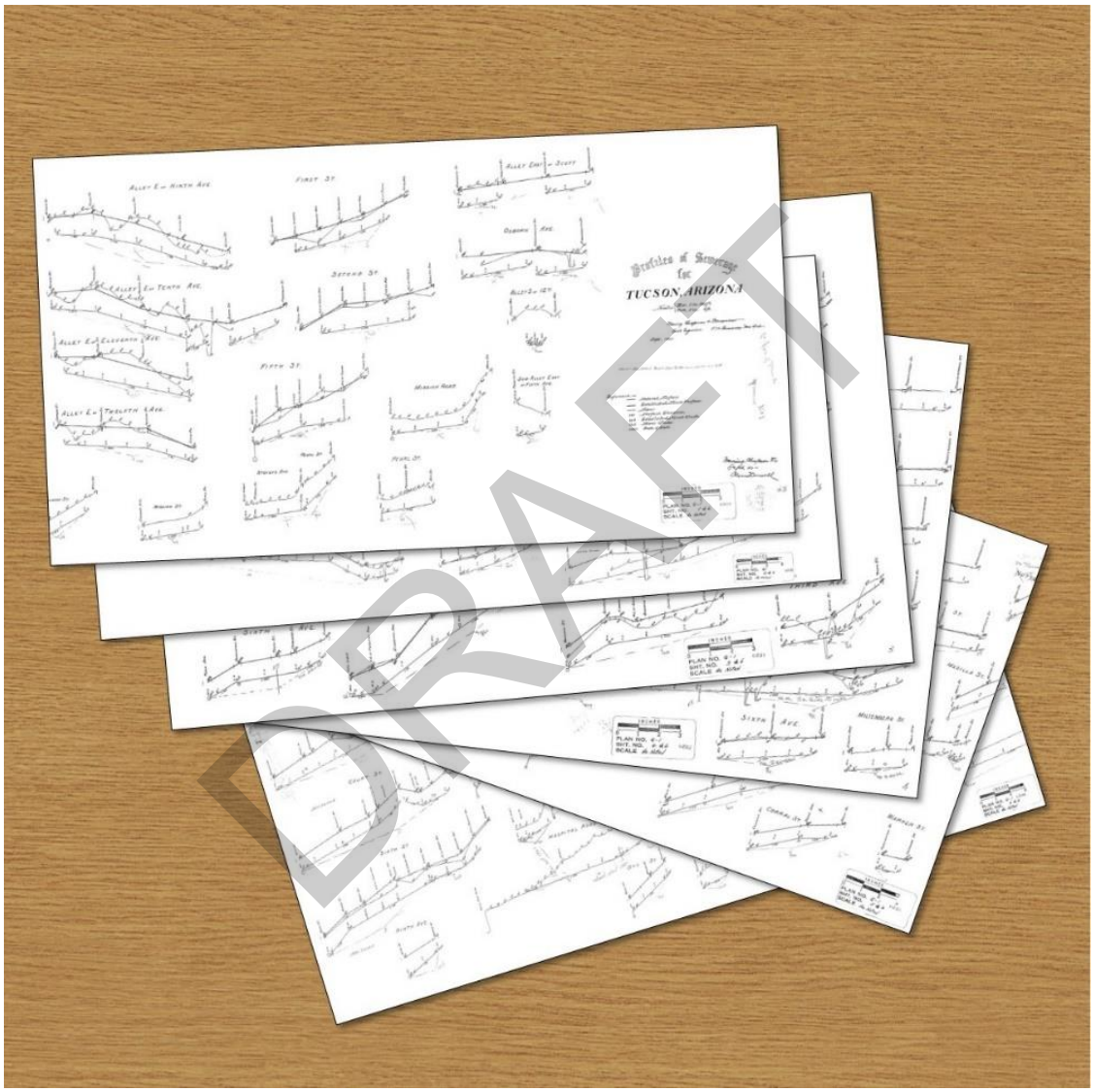


Public Sewer Formatting Standards

2016

PIMA COUNTY
WASTEWATER RECLAMATION



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Public Sewer Formatting Standards

Public Sewer Plan Formatting Standards

1.1 All Sheets shall include:

1. All construction plans shall be drawn on 24"x 36" sheets with clear and readable print, with a quality to produce legible electronic and microfiche copy.
2. Sheet title blocks shall contain the following;
   A. Project title
   B. Lot numbers to be served; and for single parcels, provide address or the assessors tax ID
   C. Sheet _____#_____ of ___##____
3. Engineering Firm's name, address and phone number
4. Project G-####-###
5. Plans shall be sealed by an Arizona Licensed Professional Engineer in accordance with Arizona Board of Technical Registration Rules.
6. Revision Block: see Exhibit #6.
7. Manhole numbers shall start from the most downstream manhole and increase upstream.
8. Arizona 811 Logo – see Exhibit #6.
9. North Arrow - The north arrow shall be provided on all maps and plan views

1.2 Cover Sheet (see Exhibit # 1) - In addition to the items identified in "All Sheets" above, the Cover Sheet shall include:

1. Project Title: Title to include the word "Public Sewer Improvement Plan" followed by the project name, the specific lots to be served, address or parcel ID if not a recorded subdivision, and the subdivision name (recording information or blank line if not recorded). If the sewer plan is only for offsite sewers include the word "offsite" in the project title.
2. A location map at a scale of 3"=1 mile with proposed development highlighted, adjacent platted subdivisions called out, major street intersection and section(s), township(s) and range(s) noted.
3. Overall Map (Key Map):
   A. Should be scaled appropriately to clearly depict the entire project including on-site and adjacent rights-of-way, easements, final street names and lot numbers.
   B. At a minimum, show the location of the sewer lines and manholes with numbers.
   C. Sheet number call outs shall be shown.
   D. Shall be consistent with the most recently approved Tentative Plat, Final Plat, Development Plan, or Preliminary Sewer layout.
   E. For off-site public sewer easements provide adjacent property tax ID

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F. Define the status of the downstream public sewer as being proposed or existing; if downstream public sewer is “proposed”, add a note addressing status of downstream sewer in relation to construction and release of proposed sewer.

4. Identify and describe the basis and record of bearing (horizontal control) and the benchmark elevation (vertical control). Elevations shall be NAVD 88 datum. For future phases of existing master planned communities having significant planning and design efforts established in NGVD 29 or other datum, the established datum may be allowed on a case-by-case basis. In these cases, a conversion equation from the established datum to NAVD 88 datum shall also be provided.
5. Lots requiring backwater valves shall be shown on Overall Map or on a list.
6. Signature Block for projects not located within unincorporated Pima County:
   A. Approval (signature) blocks for Pima County Regional Wastewater Reclamation Department and for the Department of Transportation. Example of signature block is shown below

ACCEPTED:

PIMA COUNTY REGIONAL WASTEWATER RECLAMATION DEPARTMENT DATE

   B. Add a Department of Transportation signature line for the appropriate jurisdiction (PCDOT, COTDOT, Oro Valley, Sahuarita, etc.) if work will be done in a public street.

ACCEPTED:

AGENCY (FOR SEWER LOCATION IN R.O.W. ONLY) DATE

7. Reference projects by the lower right corner of the page including but not limited to Final Plat, Preliminary Plat and Preliminary Sewer Layout.
8. Sheet Index List:
   A. The Sheet Index is a list containing sheet numbers and corresponding sheet subtitles used in the plans. This list shall be labeled “Sheet Index.”
   B. Group Categories - The Index may be categorized into groups with headings and sheet titles such as:
      1. General
         a. Cover Sheet - Location Map, Site Plan
         b. Legend and Note sheet, Second Sheet (Additional Construction Notes, Boundary and Marker, Symbols, Legend, Sheet Index, Abbreviations, Culture Symbols)
      2. Plan Sheets
         a. Plan and Profile Sheets
         b. Section and Detail Sheets

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9. As-built Certification Statement: The as-built certification statement shall be in accordance with the Standard Specifications and Details for Construction, Section 1.4.7.
10. Include the owner/developer's name, address, phone number and e-mail address
11. Locate the project G-####-### along right edge of the sheet, should be bold and obvious

1.3 Legend and Notes Sheet (see Exhibit # 2) - In addition to the items identified in "All Sheets" above, the Legend and Note Sheet shall include:

1. Legend: a list containing symbols and corresponding features used in the project plans.
   A. Symbols - Include all symbols used on the plans for this project, see Exhibit #3.
   B. Symbol Sources - Use only symbols that are in the Symbols section of the Exhibit #3.
   C. Symbol Limitations - Do not include symbols that are not applicable to the project.
2. General Sewer Notes
   A. General sewer notes for subdivisions and development projects can be found on Pima County Regional Wastewater Reclamation Department's website.

1.4 Plan and Profile Sheets - In addition to the items identified in "All Sheets" above, Plan and Profile Sheets shall include:

1. Plan views shall contain the following information:
   A. Existing sewer pipe size, material, and plan number.
   B. Adjacent right-of-ways
   C. New and existing sewer directional flow arrows
   D. Within a right-of-way, the sewer alignment shall be described using bearings, coordinates, and/or calculated stationing in combination with calculated right angle dimensional ties to the street construction line.
   E. Dimensions from section lines, survey control lines, property lines and/or easement boundaries to all new sewers to the nearest tenth of a foot
   F. Horizontal ties from existing street monuments to the proposed sewer system. Include station and offsets to the street monuments along the path of the proposed sewer main.
   G. Station equations when manholes are shown in different stationing alignments.
   H. Dimension new manholes constructed over existing sewer lines to downstream and upstream manholes.
   I. Show and label all new and existing service laterals (HCS/BCS). Locate all laterals by stationing or dimensioning to the nearest property corner to the nearest foot. Location information may be shown on the plan view or provided in a data table on the sewer plan sheet.
   J. New manhole numbers
   K. Existing manhole IMS numbers

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L. Show all existing and proposed structures over, under, or near public sewers.
M. All existing utilities
N. All new utilities, including water and drainage improvements
O. Dimension separation between sewer and water to the nearest tenth of a foot
P. Coordinates and/or bearings and distances will be utilized to define the horizontal position of the proposed main line sewer in all instances except when the main is located within a public right-of-way.
Q. Existing contours for unpaved areas , labeled adequately
R. Drainage flow arrows
S. Call-out the typical street/roadway cross section detail on every plan sheet.
T. Show all areas of pavement replacement according to the Standard Details of the applicable agency or jurisdiction.
U. Indicate horizontal and vertical scales. Include contour interval if applicable.

2. Profile views shall contain the following information:
   A. New sewer pipe diameters
   B. New sewer pipe material
   C. New sewer true pipe length, measured from the inside walls of adjacent manholes to the nearest hundredth of a foot
   D. New sewer true pipe slope, measured from the inside walls of adjacent manholes to the nearest hundredth of a percent
   E. New manhole numbers
   F. Existing manhole IMS numbers
   G. New manhole rim elevations to the nearest hundredth of a foot
   H. New and existing manhole inverts to the nearest hundredth of a foot
   I. Identify the invert direction if there is more than one invert per manhole.
   J. Show station and elevation of existing and proposed structures over, under, or near public sewers.
   K. All existing utilities including sizes
   L. All new water and drainage improvements. Dimension separation between sewer and water (outside diameters) to the nearest tenth of a foot
   M. Finished and existing profile grade along sewer alignment
   N. Show and station each appurtenance relevant to the sewer system
   O. Drainage Q_{100}, velocity, total scour (RWRD EDS Appendix A) and water surface elevation (text and graphically) within unpaved areas.
3. Unless otherwise approved, the scales used in the main body of the drawings shall be one inch equals forty feet (1" = 40') horizontally and one inch equals four feet (1" = 4') vertically. Where the profile is exceptionally irregular or steep, a vertical scale up to one inch equals eight feet (1" = 8') may be used. Short sewer reaches may be shown at a larger scale (for example: 1" = 10', 1" = 20', etc).
4. Show location and method of connection to existing public sewer. Identify the point of connection to existing downstream manhole number, invert elevation, plan number, northing and easting coordinates, and block out alignment; Invert elevations of

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existing manholes shall be from current survey information, referenced to the project basis of elevation.

5. Sewer plans must include HCS/BCS and Manhole Tables (Exhibit #5) and the distance from the downstream public manhole for each private sewer lateral along the length of the public sewer.
6. Where adjacent drainage ways or washes are in possible conflict with, or could have a future negative impact upon the proposed sewer line, special details such as enlarged profiles, plotting the flow line invert elevation of the adjacent wash on the sewer design profile or related cross sections may be required on the construction plans by the reviewing agency. Attention must be given to local run-off conditions where flood damage to the line may occur, or where run-off may be diverted onto contiguous private property.
7. Provide flood prone/erosion hazard setback limits in unpaved areas or areas requiring all weather access.
8. If sewer plans include both public and private sewers, label sewers as public or private.
9. Ensure that the lots and numbering are consistent with the cover sheet.
10. Show match lines and stationing as needed for information that continues onto another sheet.
11. Provide as-built manhole and HCS tables on plan & profile sheets, separate sewer detail sheet, or cover page. Tables shall be left blank and completed during preparation of as-builts, see Exhibit #5.

1.5 Sections and Details Sheets - In addition to the items identified in "All Sheets" above, Section and Detail Sheets shall include:

1. Section and detail sheets are usually created when it is determined necessary to clarify or make specific requirements on the construction item. These sheets shall be labeled as "Section and Detail Sheets."
2. Special profiles or details drawn to scale may be required for connections to existing manholes and large diameter (24 inches or more in diameter) trunk or interceptor sewers, as well as non-standard structures which are a part of the system or provide structural support. All details should be accompanied by notes explaining their function, capacities and their location in the system. Where Pima County RWRD Standard Specification and Details for Construction 2016 apply, reference may be made to these details by number only.

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(GENERAL GUIDELINE)

Project Title Block

PUBLIC SEWER IMPROVEMENT PLAN

project name,
lot (and/or buildings) served,
Subdivision case number (or book and page, if already recorded) or if offsite, the word "offsite", and Project G-####-###

Overall Map (Key Map)

North Arrow

North Arrow

Location Map

A location map at a scale of 3"=1 mile with proposed development highlighted, adjacent platted subdivisions called out, major street intersection and section(s), township(s) and range(s) noted.

Sheet Index

As-built Certification:

AS-BUILT:

Text in accordance with Standard Specifications and Details for Construction 2012, section 1.4.7

REGISTERED LAND SURVEYOR DATE
(OR REGISTERED P.E.)

Signature Block:

ACCEPTED:

PIMA COUNTY REGIONAL WASTWATER RECLAMATION DEPARTMENT DATE

Add a Department of Transportation signature line for the appropriate jurisdiction (PCDOT, COTDOT, etc.) IF work will be done in a public street AND the plans are for sewers only.

ACCEPTED:

PCDOT (for sewer location in R.O.W. only) DATE

Project G-####-###

Blue Stake Logo

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Revisions Block	Engineer's Seal Expiration Date	Design Consultant's Contact Info. (name, address, phone number, and logo)	Owner/Developer's Contact Info. (name, address and phone number)	Title Blocks Project Title, Lot Numbers to be served Sheet no # of ##.

EXHIBIT #2

(GENERAL GUIDELINE)

Legend

The legend is a list containing symbols and corresponding features used in the project plans. This list shall be labeled "legend."

Include all symbols used on the plans for this project.

Symbols and line types used in the plans shall be in accordance to the Standard Details For Public Improvements of the City of Tucson /Pima County, 2003 edition.

Abbreviations List

A-General Sewer Notes **B- Additional Construction Notes**

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Add special detail if there is enough room (optional)

Blue Stake Logo

Bench mark, datum base and survey control.

Or on the cover sheet (optional)

Legend and note sheet

PROJECT G -#### ###

Revisions Block	Engineer's Seal Expiration Date	Design Consultant's Contact Info.	Owner/Developer's Contact Info. (name, address and phone number)	Title Blocks Project title, lot numbers to be served Sheet no # of ##.

LEGEND

NEW	EXISTING	FEATURE
IMS# 0000–000	IMS# 0000–000	SANITARY SEWER MANHOLE AND CLEANOUT IMS#
		SANITARY SEWER MANHOLE
8"PVC	S–8"	SANITARY SEWER LINE
HCS	HCS	HOUSE CONNECTION SEWER
C.O.	C.O.	CLEAN OUT
3" G	3"–G	GAS LINE W/SIZE
UGT	UGT	UNDERGROUND TELEPHONE LINE
UGE	UGE	UNDERGROUND ELECTRIC LINE
	CTV	UNDERGROUND CABLE TELEVISION
W 6"	W–6"	WATER MAIN
W OR G	W OR G	WATER OR GAS METER BOX
		WATER OR GAS VALVE
BWV	BWV	BACK WATER VALVE
	IRR	IRRIGATION BOX
	T	TELEPHONE
		ELECTRIC POWER POLE DOWN GUY WIRE
	E	ELECTRIC BOX
	E	POWER PEDESTAL
	℄	PROPERTY LINE
		EASEMENT LINE
		FIRE HYDRANT
		SHRUB, HEDGE, ETC.
		UNCLASSIFIED TREE
		℄ GRADE PROFILE
		TERRAIN LINE PROFILE
		TERRAIN LINE CROSS SECTION
100 YR.		WATER SURFACE ELEVATION, 100 YEAR
		TOWNSHIP OR RANGE LINE
	S	SECTION LINE
	1/4 S	QUARTER SECTION LINE
	2 11 1 12	SECTION CORNERS
		QUARTER CORNERS
		BENCH MARK
SM	SM	SURVEY MONUMENT
		SURVEY CONTROL POINT MONUMENT

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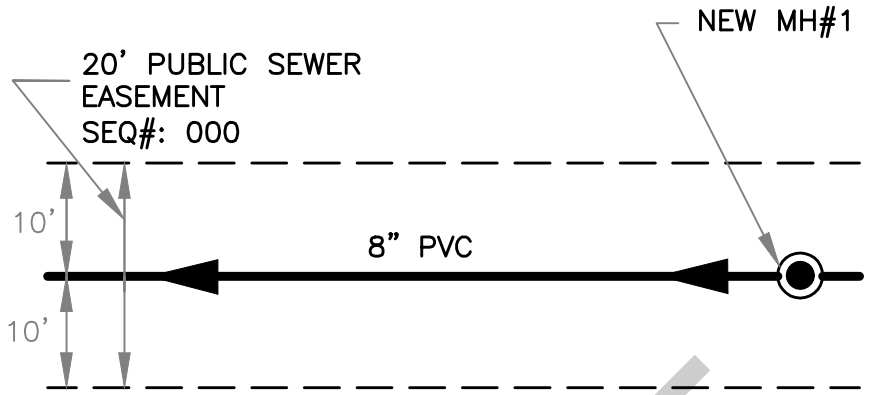
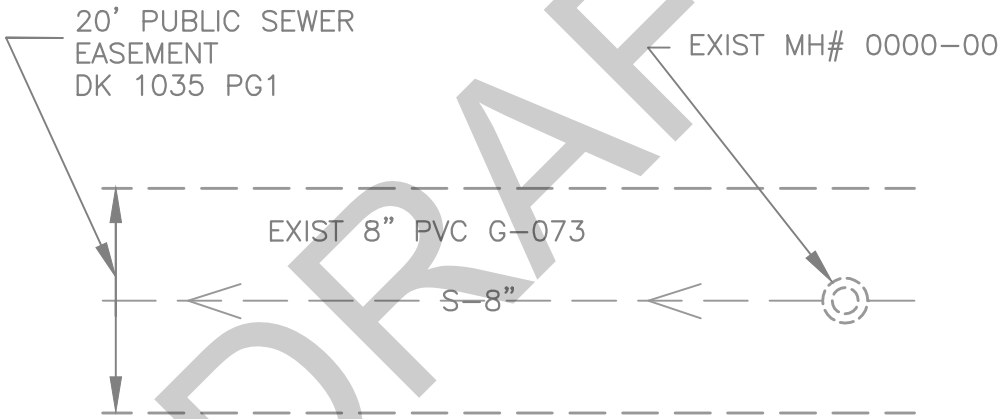
LEGEND



NEW SEWER LINE WITH EASEMENT



EXISTING SEWER LINE WITH EASEMENT

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SEWER LINE WITH EASEMENT

AS-BUILT MANHOLE AND HCS TABLES

MANHOLE AS–BUILT INFO		
MH NO	STATE PLANE COORDINATES (AZ CENTRAL) NAD 83 INTERNATIONAL FEET	
	NORTHING	EASTING

HCS AS–BUILT INFO				
STATE PLANE COORDINATES (AZ CENTRAL) NAD 83 INTERNATIONAL FEET AT CLEANOUT			DISTANCE FROM TAP TO DOWNSTREAM MANHOLE	SEWER LINE STATIONING AT HCS/BCS CONNECTION
LOT #	NORTHING	EASTING		

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AS-BUILT MH & HCS

NO.	DESCRIPTION	REV BY	DATE
REVISION BLOCK			

REVISION BLOCK

BLUE STAKE LOGO
(USE LAST UPDATE)

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REVISION BLOCK / BLUE STAKE LOGO

PLAN SYMBOLS AND DETAILS

DISCRIPTION			LINE TYPE	ACTUAL LINE THICKNESS (IN.)
SANITARY SEWER LINE SMALLER	EXISTING	S-8"	DASHED	0.012
	NEW	8" PVC	CONTINUOUS	0.040
SANITARY SEWER MANHOLE *	EXISTING		DASHED	0.012
	NEW		CONTINUOUS	0.020
SANITARY SEWER CLEAN OUT **	EXISTING		DASHED	0.012
	NEW		CONTINUOUS	0.020
SEWER EASEMENT LINE	EXISTING		HIDDEN	0.014
	NEW		HIDDEN	0.024
RIGHT OF WAY LINE	EXISTING		CENTER	0.020
	NEW		CENTER	0.032
SANITARY SEWER LINE TEXT	EXISTING	S-8"	CONTINUOUS	0.012
	NEW	8" PVC	CONTINUOUS	0.024
	EXISTING			
	NEW			
	EXISTING			
	NEW			
	EXISTING			
	NEW			
	EXISTING			
	NEW			
	EXISTING			
	NEW			
	EXISTING			
	NEW			

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* MANHOLES TO BE DRAWN TRUE SCALE IN CAD BASE FILE

** CLEANOUTS DIAMETER TO BE 0.125" WHEN PRINTED ON PLAN AND PROFILE SHEETS

PLAN SYMBOLS AND DETAILS