

## Sewer Improvement Plan Acceptance Substantive Review Checklist

PLAN NO. G-20\_\_\_\_ - \_\_\_\_\_

FOR RWRD USE ONLY			
Start Date of 1 <sup>st</sup> Submittal:		Returned Date:	
Start Date of 2 <sup>nd</sup> Submittal:		Returned Date:	
Reviewer	<input type="checkbox"/> Francisco Galindo <input type="checkbox"/> _____	Reviewer Phone #	

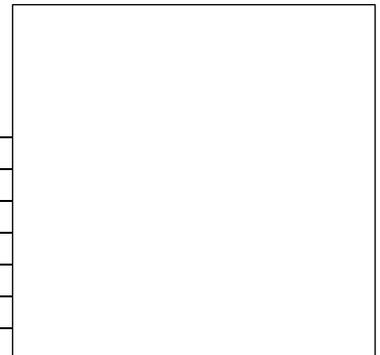
**APPLICABILITY:**

This checklist applies to the design of all new public sewer systems that are to be constructed by a private party.

This checklist was developed for the benefit of the engineering community. It is intended to cover the vast majority of circumstances encountered in plan design and review. However, it is ultimately the design engineer's responsibility to ensure that the proposed sewer design complies with all applicable laws, statutes, ordinances, regulations, codes, standards, directives and substantive policy statements. This checklist does not represent the entirety of the design standards. Please refer to the applicable references below for full requirements.

**REQUIRED WITH ALL SUBMITTALS:**

1. Comment Letter or Approval Letter from Preliminary Sewer Layout process prepared by RWRD, one (1) copy.
2. Sewer Improvement Plan Substantive Review Checklist which shall be completed, signed and sealed by the same engineer who prepared and sealed the SIP.
3. Sewer Improvement Plan, one (1) copy, rolled.
4. A completed Type III Sewerage Allocation Request or Sewerage Allocation Letter if previously issued one (1) copy.
5. Review Fee Payment; make checks payable to Pima County Treasurer.  
 Fee for First Submittal is \$166 base fee plus \$50 per sheet.  
 Fee for Second Submittal is \$50 per revised sheet.
6. Submit the plan set and check to: Regional Wastewater Reclamation Department  
 201 N. Stone Ave, 1<sup>st</sup> Floor  
 Tucson, AZ 85701



Project Name:			
Project Engineer:			
Signature:		Date:	
Company:			
Address:			
Telephone:		Fax:	
E-mail:			

**Applicable References (Ref.) for Public Sewer Design and Construction:**

(links at <http://www.pima.gov/www/regs.htm>):

1. Arizona Administrative Code, Title 18, Chapters 5 and 9
2. Pima County Code of Ordinances, Title 13 - Public Services, Division II – Sewers
3. Pima County Preliminary Sewer layout Requirements, March 1984 (Revised April, 1988)
4. Pima County Engineering Design Standards, 2012
5. Pima County Standard Specifications and Details for Construction, 2012
6. **Pima County Sewer Improvement Plan Formatting Standards Substantive Policy Statement DLU12-XX (to be adopted), 2013**
7. Pima County RWRD Directive ENG2005-01
8. Pima County RWRD Directive ENG2009-019

Engineer's Seal



Engineer	Reviewer	Use the Following Symbols	
		√	Plan Complies with Requirement
		○	Plan Does Not Comply with Requirement
		N/A	Not Applicable
		6.	A scaled map, but not dimensioned, that includes the overall system layout and the location of the sewers mains, manholes and HCS's. The background of the layout shall be a scaled presentation of the plat, the development plan and /or right-of-way/easements, inclusive of street names and lot numbers. Sheet numbers shall be called out. The map shall include contours of the existing grade. The sewer layout shall be consistent with the most recently approved Tentative Plat, Development Plan or Preliminary Sewer layout; (Ref. 6, Pg. 6(c))
		7.	Owner/developer name, address and telephone number; (Ref. 6, Pg. 6(d))
		8.	Sheet index that accurately reflects the sheet layout; Ref. 1, R-18-9-E301(4.01)(C)(7)
		9.	North arrow; (Ref. 6, Pg. 6(f))
		10.	Scale (typically 1"=100', ensure clarity); (Ref. 6, Pg. 6(f))
		11.	Legend of all symbols shown throughout plans with bold solid=proposed and bold dashed=existing; (Ref. 6, Pg. 6(h))
		12.	Streets names (actual names, NOT "Street 'A'"), identified as 'PUBLIC' or 'PRIVATE'; (Ref. 6, Pg. 6(c))
		13.	Lots or adjacent property owner info with docket/page, tax ID (proposed–solid, existing–dashed); (Ref. 6, Pg. 6(f))
		14.	Show existing onsite and adjacent sewers labeled with Pima County plan number and size. Include a minimum of two adjacent existing manholes labeled with the full 6-digit Pima County manhole number; (Ref. 4 Subsections 4.2)
		15.	Accurately show point and method of connection to existing sewer;(Ref. 2, Subsection 13.20.040 A), (Ref. 4, Subsections 4.2 and 5.2)
		16.	Numbered manholes sequentially from downstream to upstream; Ref. 1, R-18-9-E301(4.01)(C)(7)
		17.	Show all existing and new HCS to all lots; (Ref. 4, Subsection 5.3.5)
		18.	Show all new and existing easements; (Ref. 4, Sections 7)
		19.	Table of lots by phase, if phased (or indicated within title). Ensure clarity for permitting and release; (Ref. 6, Pg. 6(b))
		20.	List of lots requiring private backwater valves on HCS/BCS, if required; (Ref. 6, Pg. 6(c))
		21.	Design consultant's contact information (contact name, address and phone); (Ref. 6, Pg. 6(e))
		22.	Boundary line of the area (property) that sewer service will be provided; (Ref. 6, Pg. 6(i))
		23.	All applicable sewer annotations properly shown; (See Section C); Ref. 1, R-18-9-E301(4.01)(C)(7)
		24.	Latitude and longitude (in format: 00° 00' 00") at point of connection to public sewer;
		25.	Define the status of the downstream public sewer as being proposed or existing; if downstream public sewers are "proposed", add text box with note addressing status of downstream sewer in relation to construction and release of proposed sewer; (Ref. 6, Pg. 7)
		26.	Describe and identify on the plan the basis and record of bearing (horizontal control); (Ref. 6, Pg. 6(f))
		27.	Describe and identify on the plan the benchmark elevation (vertical control); (Ref. 6, Pg. 6(f))
		28.	As-built manhole and HCS tables per Figure G example below are provided on cover or separate detail sheet and left blank; (Ref. 6, Pg. 5)
		29.	All required general sewer notes per Figure H are provided on the cover sheet or a separate detail sheet; (Ref. 6, Pg. 5)
		30.	Symbols and line types used in the plans shall be in accordance to the (Ref. Standard Detail 100) and (Ref. 1, R-18-9-E301(4.01)(C)(7))

C. Plan View	
General / Annotation	
	<p>1. For proposed sewers and force mains, plan shall call out pipe size, pipe material, ownership classification (Public or Private), length (feet, hundredths), slope (percent, hundredths) and directional flow arrow as shown in the following example: <b>Ref. 1, R-18-9-E301(4.01)(C)(7)</b></p> <p>Proposed manholes shall be shown 1/8" in size.</p>
	<p>2. For existing sewers and force mains in the project's vicinity, plan shall call out pipe size, pipe material, ownership classification (Public or Private), IMS numbers, length (feet, hundredths), slope (percent, hundredths) and directional flow arrow as shown in the following example: <b>Ref. 1, R-18-9-E301(4.01)(C)(7)</b></p> <p>Existing manholes shall be shown 1/8" and cleanouts 5/64" in size.</p>
	3. Compare point of connection to existing downstream manhole number, invert elevation, plan number and block out alignment; Invert Elevations shall be from actual survey information ( <b>Ref. 6, Pg. 4</b> )
	4. Plans will not be accepted until downstream plans are accepted. New public sewers will not be released for discharge until downstream sewers have been released; ( <b>Ref. 2, Subsection 13.20.030</b> )
	5. Provide a north arrow; ( <b>Ref. 6, Pg. 7</b> )
	6. Use a horizontal scale of 1"=40' or other acceptable scale; ( <b>Ref. 6, Pg. 9</b> )
	7. Indicate whether stationing is along sewer, centerline or other control line; ( <b>Ref. 6, Pg. 8</b> )
	8. If sewer plans include public and private, label sewers appropriately as public or private; ( <b>Ref. 6, Pg. 7</b> )
	9. Number all manholes (as shown on cover sheet) and station to 0.01' accuracy, provide offset distances from construction centerline as necessary; ( <b>Ref. 6, Pg. 8</b> )
	10. Ensure lots and numbering shown are consistent with the cover sheet; <b>Ref. 1, R-18-9-E301(4.01)(C)(7)</b>
	11. Show distances and bearings for sewer reaches between manholes; ( <b>Ref. 6, Pg. 8</b> )
	12. Verify manhole spacing conforms to maximum spacing; ( <b>Ref. 4, Subsection 5.2.2 and Ref. 6, Pg. 19</b> )
	13. Verify information shown on more than one sheet is consistent; <b>Ref. 1, R-18-9-E301(4.01)(C)(7)</b>
	14. Show match lines and stationing as needed for information that continues onto another sheet; ( <b>Ref. 1, R-18-9-E301(4.01)(C)(7)</b> )
	15. Show all areas of pavement replacement according to Standard Details; ( <b>Ref. 8, Standard Detail 216</b> )
	16. Indicate which areas include proposed pavement; ( <b>Ref. 6, Pg. 7</b> )
	17. Show the typical street/roadway cross section details; ( <b>Ref. 6, Pg. 7</b> )
	18. Provide 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; ( <b>Ref. 6, Pg. 8</b> )
	19. Show drainage information with flow arrows, topography or other drainage information; ( <b>Ref. 6, Pg. 9</b> )
	20. Include on the plan two (2) foot contour (or as approved by RWRD) of the existing grade including all topographic features. ( <b>Ref. 1, R-18-9-E301(4.01)(C)(4)</b> )
Sewer Alignment	
	21. Verify that deflection angles at manholes conform to RWRD requirements ( $\leq 90^\circ$ for 8"-10" pipe, and $\leq 60^\circ$ for 12"+ pipe); ( <b>Ref. 4, Subsection 5.2.6</b> )
Manholes (General)	
	22. Manhole diameters shall conform to RWRD requirements; ( <b>Ref. 4, Subsection 5.2.7</b> )
	23. Verify that watertight manhole frames and covers are provided; ( <b>Ref. 4, Subsection 5.2.13</b> )

	24.	Verify that future connections into manhole provide a block-out (Public stub-outs not allowed); (Ref. 4, Subsection 5.2.10)
	25.	Concrete collars shall be provided in accordance with Ref. 4, Subsection 5.2.12
	26.	Specify corrosion protection for new manholes in accordance with Ref. 4, Subsection 5.2.16
	27.	Show proposed manholes, on a sewer line tributary to an 18" or larger sewer line, that are located 200 feet or less from the connection to the 18" or larger sewer line. Corrosion protection to the new manholes is required; (Ref. 4, Subsection 5.2.16)
<b>Service Laterals (HCS/BCS)</b>		
<b>Note: Building Codes reviews (for municipal plumbing code) from the edge of ROW/easement to the inside of the house or building.</b>		
	28.	Show, label and station all service laterals (HCS/BCS); (Ref. 6, Pg. 8)
	29.	Ensure no HCS/BCS connections into a manhole unless the manhole is in a cul-de-sac or adjacent to another terminal MH, with no possibility of future extension. Call out S.D. RWRD-402 for connection to a terminal manhole; (Ref. 5)
	30.	Station or dimension all HCS/BCS (new and existing) to the nearest property corner; (Ref. 6, Pg. 8)
	31.	Verify ALL HCS/BCS are at least 5 feet apart; (Ref. 6, Pg. 18)
	32.	Verify ALL HCS/BCS have 5 feet of clearance from the nearest manhole; (Ref. 6, Pg. 18)
	33.	Use flat DIP service laterals (include detail) when either (a) HCS inverts are < 4' deep at the property line OR (b) the sewer main invert depth is < 7.5' deep AND the HCS crosses a water main (resulting in < 2' vertical separation) per S.D. RWRD-401; (Ref. 1, R-18-9-E301(4.01)(C)(4))
	34.	Clearly identify if private backwater valves are required for any service laterals and provide a table on the plans if necessary; (Ref. 4, Subsection 5.3.6)
	35.	All sewer plans must include HCS/BCS and Manhole Tables for ALL HCS/BCS and manholes (see last page of this checklist); (Directive: ENG2005-01)
	36.	6" or larger HCS/BCS must connect to public sewer at an existing or new manhole; (Ref. 4, Subsection 5.3.2)
	37.	A manhole shall be required where a service lateral must connect to a 15-inch or greater diameter Public Sewer Line unless Special Approval is obtained; (Ref. 4, Subsection 5.3.4)
	39.	The plan view shall show the distance from the downstream public manhole, for each private sewer lateral along the length of the public sewer; (Directive: ENG2005-01)
<b>Potential Conflicts</b>		
	39.	Show all proposed and existing utilities (underground and overhead) within easements and rights of way; (Ref. 6, Pg. 8)
	40.	Show and station all drainage structures; (Ref. 6, Pg. 9)
	41.	Clearly label horizontal and vertical distances of between the sewer and other utility lines and structures to the nearest one hundredth of a foot; (Ref. 6, Pg. 8)(Ref. 4, Subsection 4.2.2)
	42.	Verify all parallel sewer and water lines horizontally separated by at least 6' or sewer constructed of DIP; (Ref. 5, S.D. RWRD-108)
	43.	Verify 6' of min. clearance provided between water lines and manholes; (Ref. 4, Subsection 5.1.8) and (Ref. 5, S.D. RWRD-108)
	44.	Show all areas of pavement replacement; Ref. 1, R-18-9-E301(4.01)(C)(7)
	45.	Show all existing structures and pertinent features over or near public sewers; (Ref. 6, Pg. 7)
<b>Dedicated Sewer Easements &amp; Accessibility</b>		
<b>Note: "Easements" are replaced with the terms "Lease" on state land and "Use Agreement" on tribal land.</b>		
	46.	Verify all sewers are within a public right-of-way or dedicated sewer easement; (Ref. 4, Subsection 5.1.1)(Ref. 2, Subsection 13.20.030 A.1)
	47.	Show and call out a stabilized surface per S.D. RWRD-111 for dedicated sewer easements; (Ref. 5)
	48.	Verify the minimum width of each dedicated sewer easement conforms to Ref. 4 Subsection 7.1
	49.	Verify the inner and outer return radii for all turns at least 35' and 55' respectively (including turnarounds for one-way access); (Ref. 4 Subsection 7.1)
	50.	Label public sewer easements dedicated by final plat as "XX' PUBLIC SEWER EASEMENT BY FINAL PLAT"; (Ref. 4 Subsection 7.2)
	51.	Label existing easements NOT dedicated by final plat: "EXISTING XX' PUBLIC SEWER EASEMENT DKT XX, PG XXX"; (Ref. 4 Subsection 7.2)
	52.	Label new easements NOT dedicated by final plat: "PROPOSED XX' PUBLIC SEWER EASEMENT BY SEPARATE INSTRUMENT. DKT __, PG __"; (Ref. 4 Subsection 7.2)
	53.	Label OFF-SITE public sewer easements as proposed/existing with owner name, address and parcel tax ID; (Ref. 4, Subsection 7.2)

		54. For easements dedicated by separate instrument: Include with the submittal an 8 ½" x 11" drawing and legal description, sealed/signed/dated by an RLS for review and processing; Drawing shall be a clear and accurate depiction of the easement description and shall all bearings, distances, and curve data; (Ref. 4 Subsection 7.2)
<b>E. Profile View</b>		
<b>General</b>		
		1. Use a horizontal scale of 1"=40' and vertical scale of 1"=4'. A vertical scale of 1"=8' may be used for unusually steep slopes; (Ref. 6, Pg. 9)
		2. Show both existing and finished grade profiles along sewer alignment; (Ref. 6, Pg. 9)
<b>Point of Connection</b>		
		3. Show location & method of connection to existing public sewer: (Ref. 6, Pg. 4) IF connecting to an existing (same size) block-out, add note: "Remove block-out and connect." (Do not refer to a Standard Detail); IF connecting to an existing manhole, without block-out, reference S.D. RWRD-300 or 301;(Ref. 5) IF connecting to an existing sewer with a new manhole, reference S.D. RWRD-303;(Ref. 5)
		4. Add the following note to point of connection: "Contractor shall verify existing invert elevation(s) prior to start of public sewer construction." (Ref. 2, Subsection 13.20.040)
		5. Add the following note to the outlet of first proposed manhole, upstream of existing sewer. "Install temporary plug and secure with a chain to a manhole step. Plug to include contractor's company name. The plug to be removed after ADEQ's Construction Authorization and post paving inspection." Locate the plug downstream of ALL proposed service laterals. (Ref. 2, Subsection 13.20.035 C)
<b>Manholes</b>		
		6. Label the top of each manhole with manhole number, station and rim elevation to the nearest hundredth of a foot (0.01'); (Ref. 6, Pg. 8)
		7. Verify the manhole diameters specified conform to the design requirements of Ref. 4 Subsection 5.2.7 and accurately call out the applicable S.D. RWRD-205 or 206;
		8. Label bottom of each manhole with invert elevations to the nearest hundredth of a foot and directions, if more than 2 inverts; (Ref. 6, Pg. 8)
		9. If the plans call for the construction of a new manhole over an existing line, add the following note (with data blanks accurately completed) in profile view in the vicinity of the new manhole: "New Manhole No. _____ is to be constructed over the existing in- service _____ inch diameter _____ (material) sewer. The rough base and/or benches shall be constructed with the existing main intact. Cut out the top portion of the _____ inch diameter main and complete the construction of the new manhole in accordance with referenced standard details". (Ref. 6, Pg. 20)
<b>Sewer Pipe</b>		
		10. Show and label all existing sewer LINES with plan number (G-XXXX) and size; (Ref. 4 Subsection 4.2)
		11. Label each sewer reach with diameter, material and length measured between center of MHs (to nearest hundredth). Also, in parenthesis show the pipe length measured from the inside face of the opposing manholes and calculated slope using this pipe length. For example: 8-in VCP, Length = 350.00 ft (Pipe Length = 346.00 ft, Slope = 1.00%); (Ref. 4, Subsection 5.1.3B)
		12. Verify all slopes are accurate to 0.01% and conform to the minimum design slopes (Ref. 4, Table 5.1, Subsection 5.1.3).
		13. Verify manhole drops conform to Ref. 4, Table 5.4, Subsection 5.2.9
		14. Match top of pipe (crown) elevations on pipe size changes (unless the minimum required fall would not be met); (Ref. 4, Subsection 5.2.9)
		15. Coupling for unlike pipe materials shall be in accordance to Ref. 5, S.D. RWRD-103.
		16. Dimension water/sewer separation at crossings and other utility, drainage and structure crossings that may affect construction; (Ref. 5, S.D. RWRD-108)
		17. Show invert/top elevations for both, water AND sewer at ALL water/sewer crossings and dimension the pipes' separation; (Ref. 5, S.D. RWRD-108)
		18. For pipes 8" with 10%+ slopes, include with submittal a Design Report with velocity calculations. Use DIP for reaches with velocities exceeding 10 fps. For larger pipes, submit a Design Report for slopes in excess of 5%; (Ref. 4, Subsection 5.1.3)
		19. For sewer lines crossing under water lines, verify all water/sewer crossings have vertical clearance of no less than 2.00 feet. If not, use DIP; (Ref. 5, S.D. RWRD-108)
		20. For sewer lines crossing over water lines, verify sewer is DIP and a minimum 2 feet vertical clearance is provided; (Ref. 5, S.D. RWRD-108)
		21. Verify all new water and sewer lines have a minimum of 6 feet horizontal clearance; (Ref. 5, S.D. RWRD-108)
		22. Verify a minimum cover of 4 feet (3 feet for DIP); (Ref. 4, Subsection 5.1.7)

	23.	When connecting to a public sewer, add note: "NOTE: Do not allow sewage flow to enter public sewer until released by PCRWRD"; (Ref. 2, Subsection 13.20.030 D.2)
	24.	Verify that all terminal 8" sewer reaches have a minimum slope of 1.00%. (Ref. 4, Table 5.1, Subsection 5.1.3)
<b>Public Sewer Wash Crossing, Access &amp; Miscellaneous</b>		
	25.	Show and label all areas requiring fill: "Fill and compact to 95% of maximum dry density"; (Ref. 5, Subsection 3.1.3)
	26.	Show and label all wash crossings with flow data and 100-year flood limits; (Ref. 6, Pg. 9)
	27.	For wash crossings, show the calculated scour depth for a 100-year flood event. (All wash crossings require DIP sewer pipe and 2 feet clear below scour depth); (Ref. 4, Subsection 5.2.11)
	28.	Include with submittal a Design Report with scour depth calculations for all wash crossings. Show scour depth and lateral migration on plans; (Ref. 4, Subsection 5.2.11)
	29.	Verify all-weather vehicular access to all manholes is provided with a stabilized surface slopes equal or less than 9%. (Ref. 4, Subsection 5.2.12 and Ref. 5, S.D. RWRD-110 and RWRD-111;)
<b>F. Plan/Profile:</b>		
	1.	Verify distances, elevations and other overlapping information shown on multiple sheets are consistent with each other; Ref. 1, R-18-9-E301(4.01)(C)(7)
	2.	Orient plan and profile so that flow in the sewer is from left to right; (Ref. 6, Pg. 7)
	3.	Plan and profile stationing should increase from left to right. (Ref. 6, Pg. 7)
<b>G. Additional Applicable Requirements Not Included Above:</b>		
	1.	
	2.	
	3.	
	4.	
	5.	
	6.	
	7.	
	8.	
	9.	
	10.	

**Figure G – As-built Manhole and HCS Tables**

MH No.	Manhole As-Built Info.		HCS As-Built Info		
	State Plane Coordinates (AZ Central) NAD 83 international feet		State Plane Coordinates (AZ Central) NAD 83 international feet at Cleanout		Distance to downstream Manhole
	Northing	Easting	Lot #	Northing	

**Figure H – Standard General Notes for Public Sewer Construction**

1. ALL DESIGN STANDARDS, MATERIALS AND WORKMANSHIP FOR PUBLIC SANITARY SEWERS SHALL BE IN ACCORDANCE WITH THE PIMA COUNTY REGIONAL WASTEWATER RECLAMATION DEPARTMENT (PCRWRD) *ENGINEERING DESIGN STANDARDS 2012* AND THE *STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION 2012*. SAID DOCUMENT IS AVAILABLE THROUGH THE PCRWRD WEBSITE ([www.pima.gov/wwm/eng/des\\_std.htm](http://www.pima.gov/wwm/eng/des_std.htm)).
2. BENCHMARK ELEVATIONS ARE BASED ON \_\_\_\_\_ DATUM. (SIMILAR LANGUAGE THAT INCLUDES DESCRIPTION AND ELEVATION OF AN ACCEPTABLE BENCHMARK MAY BE USED. USE NAVD 88 DATUM).

3. [BASIS AND RECORD OF BEARING (HORIZONTAL CONTROL) DEFINED IN ACCORDANCE TO ARIZONA BOUNDARY SURVEY MINIMUM STANDARDS 14.E.2.a]
4. THE CONTRACTOR SHALL CALL "BLUE STAKE" (1-800-782-5348) A MINIMUM OF TWO (2) BUSINESS DAYS PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL KEEP ALL "BLUE STAKE" REQUESTS UP-TO-DATE AND COMPLY WITH APPLICABLE ARIZONA REVISED STATUTES (A.R.S.), TITLE 40, CHAPTER 1, ARTICLE 6.3, SECTION 40-360.22 PERTAINING TO "BLUE STAKE". ERRORS IN "BLUE STAKE" SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER.
5. THE CONTRACTOR SHALL VERIFY LOCATION AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION. CALL "BLUE STAKE" (1-800-782-5348) A MINIMUM OF TWO (2) BUSINESS DAYS PRIOR TO EXCAVATING.
6. THE CONTRACTOR SHALL FIELD VERIFY EXISTING SEWER ELEVATIONS AND ALIGNMENTS PRIOR TO CONSTRUCTION AND IMPLEMENTATION; VERIFICATION MAY REQUIRE POT-HOLING.
7. HOUSE OR BUSINESS CONNECTION SEWERS (HCS OR BCS) ARE NOT PART OF THE PUBLIC SANITARY SEWER CONVEYANCE SYSTEM. PRIVATE CONNECTION SEWERS CONSTRUCTED PRIOR TO JANUARY 2006 ARE NOT REQUIRED TO BE BLUE STAKED. ANY HCS/BCS ENCOUNTERED DURING CONSTRUCTION SHALL BE PROTECTED, REPAIRED, OR REROUTED, AS THE SITUATION DICTATES PER PIMA COUNTY REGIONAL WASTEWATER RECLAMATION DEPARTMENT (PCRWRD) STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION 2012 MANUAL, DETAIL RWRD 400 AND AT NO EXPENSE TO THE PROPERTY OWNER OR THE PIMA COUNTY REGIONAL WASTEWATER RECLAMATION DEPARTMENT.
8. PROVIDE A LIST OF LOTS THAT REQUIRE PRIVATE BACKWATER VALVES OR A NOTE INDICATING THAT NO PRIVATE BACKWATER VALVES ARE REQUIRED FOR THIS PROJECT.
9. ANY ACTIVITY THAT MIGHT AFFECT THE SANITARY SEWER SYSTEM (MATERIALS ENTERING THE SYSTEM, CONVEYANCE AND TREATMENT) REQUIRES APPROVAL AND/OR PERMIT BY PCRWRD PRIOR TO ANY ACTIVITY.
10. SEWER CONSTRUCTION SHALL NOT COMMENCE UNTIL (A) PIMA COUNTY DEPARTMENT OF ENVIRONMENTAL QUALITY (PCDEQ) HAS ISSUED A CERTIFICATE OF "CONSTRUCTION AUTHORIZATION" FOR THIS PROJECT AND (B) THE CONTRACTOR HAS OBTAINED A PUBLIC SEWER CONSTRUCTION PERMIT FROM THE PIMA COUNTY REGIONAL WASTEWATER RECLAMATION DEPARTMENT (520-740-6369) (C) A PRE-CONSTRUCTION MEETING WITH THE ASSIGNED PIMA COUNTY PROJECT FIELD INSPECTOR IS SCHEDULED AT LEAST THREE (3) FULL WORKING DAYS PRIOR TO THE START OF SEWER CONSTRUCTION. FLOW MANAGEMENT PLANS SHALL BE SUBMITTED TO FIELD ENGINEERING THIRTY (30) DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING.
11. THE CONTRACTOR SHALL MAKE FULL PAYMENT OF THE INSPECTION FEES AND OBTAIN A PCRWRD SEWER CONSTRUCTION PERMIT FROM THE PIMA COUNTY SEWER CONSTRUCTION PERMIT SECTION A MINIMUM OF THREE (3) FULL BUSINESS DAYS PRIOR TO COMMENCING ANY SEWER CONSTRUCTION ACTIVITIES. FIVE (5) SETS OF THE CONSTRUCTION PLANS, SPECIFICATIONS, AND SPECIAL PROVISIONS (IF APPLICABLE) SHALL BE SUBMITTED WITH THE SANITARY SEWER CONSTRUCTION PERMIT APPLICATION. FIELD ENGINEERING REQUIRES A MINIMUM OF 3 BUSINESS DAYS NOTIFICATION, (520-740-2651). NO WORK SHALL BE PERFORMED IN ANY CASE WITHOUT A PCRWRD CONSTRUCTION PERMIT.
12. IMMEDIATELY REPORT ANY RELEASE OF SEWAGE, AND/OR ANY DAMAGE TO OR THE DROPPING OF DEBRIS INTO THE PUBLIC SANITARY SEWAGE CONVEYANCE SYSTEM TO EITHER PCRWRD FIELD ENGINEERING (520-740-2651) OR PCRWRD CONVEYANCE DIVISION (520-443-6500). ON WEEKENDS, HOLIDAYS, OR BETWEEN 5:00 P.M. AND 7:00 A.M., IMMEDIATELY CALL PCRWRD CENTRAL CONTROL ROOM (CCR) AT 520-443-6048 AND REQUEST A PCRWRD REPRESENTATIVE TO BE DISPATCHED TO THE SITE. TAKE IMMEDIATE ACTION TO CONTAIN THE SANITARY SEWAGE OVERFLOW (SSO) FROM THE SEWER SYSTEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS TO REPAIR THE SYSTEM, FOR ALL EXPENSES TO MITIGATE THE RELEASE AND TO DISINFECT THE RELEASE AREAS AND FOR ANY REGULATORY PENALTIES LEVIED ON PCRWRD BECAUSE THE SSO ENTERED A NATURAL DRAINAGE WAY OR STORM WATER DRAINAGE SYSTEM. THE CONTRACTOR SHALL REPAIR ALL DAMAGE AS DIRECTED AND APPROVED BY PCRWRD.
13. THE INSPECTION OF THE CONTRACTOR'S WORK BY AN AGENCY AND/OR PCRWRD STAFF SHALL IN NO WAY RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, CONSTRUCTION PLANS AND/OR SPECIFICATIONS. IF THE ENGINEER OF RECORD OR PCRWRD STAFF FAIL TO POINT OUT A DEFECT, DEFICIENCY OR ERROR IN THE WORK FROM LACK OF DISCOVERY OR FOR ANY OTHER REASON, IT SHALL IN NO WAY PREVENT LATER REJECTION OR RELIEVE THE CONTRACTOR OF PERFORMING CORRECTIONS TO THE UNSATISFACTORY WORK WHEN DISCOVERED. THE CONTRACTOR SHALL NOT FILE A CLAIM FOR LOSSES SUFFERED DUE TO ANY NECESSARY REMOVALS OR REPAIRS RESULTING FROM THE UNSATISFACTORY WORK.
14. THE CONTRACTOR SHALL COMPLY WITH APPLICABLE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS AT ALL TIMES AND PCRWRD MANHOLE ENTRY GUIDELINES.
15. ALL ROUGH GRADING, INCLUDING FILL, SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF SANITARY SEWERS TO A MINIMUM OF 4 FEET OVER THE TOP OF THE SEWER PIPE AND COMPACTION AS INDICATED ON THE PLANS OR AS OTHERWISE DIRECTED BY PCRWRD.
16. BEDDING, SHADING, AND TRENCH BACKFILL COMPACTION SHALL BE IN ACCORDANCE WITH DETAILS NOS. RWRD-104 AND RWRD-105, OR AS SHOWN ON THE PLANS. SHOULD GROUND WATER OR UNANTICIPATED SOIL CONDITIONS BE ENCOUNTERED, THE BEDDING SHALL BE MODIFIED BY THE ENGINEER OF RECORD AND APPROVED BY PCRWRD.
17. SANITARY SEWER CONSTRUCTION SHALL START AT THE LOWEST DOWNSTREAM POINT AND PROGRESS UPSTREAM, REGARDLESS OF THE STATIONING SHOWN ON THE PLANS. IF NOT, THE CONTRACTOR SHALL PROVIDE AN OUT OF SEQUENCE LETTER FOR APPROVAL BY PCRWRD.

18. THE HORIZONTAL AND VERTICAL SEPARATION BETWEEN PUBLIC WATER MAINS AND PUBLIC SEWER LINES SHALL COMPLY WITH A.A.C. R18-5-502 AND S.D. RWRD-108.
19. ACCORDING TO THE REVISED "BLUE STAKE LAW" (ARS 40-360.21 THROUGH 40-360.32), THIS PROJECT IS SUBJECT TO THE NEW SERVICE LATERAL DESIGN AND CONSTRUCTION REQUIREMENTS PER SUBSECTION 5.3.5 OF THE *PCRWRD ENGINEERING DESIGN STANDARDS 2012* AND S.D. RWRD-401 AND RWRD-404.
20. NEW PUBLIC SEWER FACILITIES MUST BE TESTED, INSPECTED AND AUTHORIZED FOR DISCHARGE BY PCRWRD AND ADEQ PRIOR TO DISCHARGING INTO THE EXISTING PUBLIC SANITARY SEWER.
21. AS-BUILT SEWER PLANS ARE REQUIRED FOR FINAL ACCEPTANCE OF SEWER CONSTRUCTION BY PCRWRD AND SHALL CONFORM TO SUBSECTION 1.4.7 OF THE *PCRWRD STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION 2012*. SUBMIT THREE BLACK LINE COPIES AND AN ELECTRONIC VERSION TO THE PCRWRD FIELD ENGINEER.
22. ONLY PLANS ACCEPTED BY PCRWRD SHALL BE USED FOR THE INSTALLATION OF SANITARY SEWER FACILITIES. PLANS ACCEPTED BY PCRWRD REQUIRING REVISION SHALL BE RESUBMITTED FOR REVIEW AND RE-ACCEPTANCE BY PCRWRD PRIOR TO START OF THE REVISED WORK.
23. SEWER CONSTRUCTION WILL NOT BE ACCEPTED BY PCRWRD IF IT INCLUDES ADDITIONAL WORK NOT PROVIDED IN THE APPROVED SET OF PLANS. SEE SUBSECTION 1.4.5 OF THE *PCRWRD STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION 2012* REGARDING THE APPROVAL OF FIELD CHANGES.
24. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL SANITARY SEWER MANHOLE STRUCTURES AT ALL TIMES.
25. ALL LANDSCAPING LOCATED WITHIN TEN (10) FEET HORIZONTALLY OF THE PUBLIC SANITARY SEWER AND MANHOLES AND/OR WITHIN THE PUBLIC SEWER EASEMENTS SHOWN HEREON SHALL BE IN ACCORDANCE WITH THE PLANTING GUIDELINES CONTAINED WITHIN PCRWRD ENGINEERING DESIGN STANDARDS 2012 MANUAL, SECTION 7.7.
26. ALL STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MEASURES SHALL BE INSTALLED SO AS TO PREVENT ALL STORM WATER, CONSTRUCTION WATER, FUELS, CHEMICALS, OR LIQUIDS TO BE DIRECTED INTO OR ONTO ANY SANITARY SEWER FACILITIES. PROTECTION OF SANITARY SEWER FACILITIES SHALL BE A PART OF THE APPROVED CONSTRUCTION SWPPP AND BEST MANAGEMENT PRACTICES. PROTECTION DEVICES SHALL BE INSTALLED AND MAINTAINED AROUND ALL POTENTIALLY AFFECTED SANITARY SEWER FACILITIES WITHIN THE PROJECT LIMITS. ADDITIONAL MEASURES SHALL INCLUDE BUT NOT BE LIMITED TO THE USE OF RAIN STOPPERS AND MANHOLE COVERS AS DEEMED NECESSARY BY PCRWRD.
27. ALL PROJECT ACTIVITIES MUST BE KEPT WITHIN THE PROJECT AREAS. A CAUTION MUST BE NOTED CONCERNING HUMAN BURIALS. ARCHAEOLOGICAL CLEARANCE RECOMMENDATIONS DO NOT EXEMPT THE DEVELOPMENT FROM COMPLIANCE WITH STATE BURIAL PROTECTION LAWS. IN THE EVENT THAT HUMAN REMAINS, INCLUDING HUMAN SKELETAL REMAINS, CREMATIONS, AND/OR CEREMONIAL OBJECTS AND FUNERARY OBJECTS ARE FOUND DURING EXCAVATION OR CONSTRUCTION, GROUND DISTURBING ACTIVITIES MUST CEASE IN THE IMMEDIATE VICINITY OF THE DISCOVERY. STATE LAWS ARS 41-865 AND ARS 41-844 REQUIRE THAT THE ARIZONA STATE MUSEUM BE NOTIFIED OF THE DISCOVERY AT (520) 621-4795 SO THAT CULTURAL GROUPS WHO CLAIM CULTURAL OR RELIGIOUS AFFINITY TO THEM CAN MAKE APPROPRIATE ARRANGEMENTS FOR THE REPATRIATION AND REBURIAL OF THE REMAINS. THE HUMAN REMAINS WILL BE REMOVED FROM THE SITE BY A PROFESSIONAL ARCHAEOLOGIST PENDING CONSULTATION AND REVIEW BY THE ARIZONA STATE MUSEUM AND THE CONCERNED CULTURAL GROUPS.
28. SURVEY CUT SHEETS SHALL BE DEVELOPED IN ACCORDANCE WITH SUBSECTION 3.2.3(A)(i) OF THE *PCRWRD STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION 2012*. CERTIFIED CUT SHEETS SHALL BE SUBMITTED TO THE PCRWRD FIELD ENGINEER PRIOR TO COMMENCEMENT OF SEWER CONSTRUCTION. THE CUT SHEETS ARE FOR THE PROJECT FILE AND COMMENCEMENT OF SEWER CONSTRUCTION WILL NOT BE DELAYED DUE TO REVIEW OF THE DELIVERABLE. ANY ERRORS OR EMISSIONS RESULTING IN IMPROPER SEWER CONSTRUCTION SHALL NOT BE THE RESPONSIBILITY OF PCRWRD. REFER TO SUBSECTION 3.2.3(A)(ii) FOR ALIGNMENT VERIFICATION REQUIREMENTS INCLUDING THE SPACING REQUIREMENTS FOR GRADE STAKES.
29. SURVEY LAYOUT AND SURVEY CONTROL SHALL BE PERFORMED BY, OR UNDER THE DIRECT SUPERVISION OF, A REGISTERED LAND SURVEYOR (RLS) REGISTERED IN THE STATE OF ARIZONA. PRIOR TO THE START OF SURVEY ACTIVITIES, THE INDIVIDUAL OR COMPANY RESPONSIBLE FOR SURVEY LAYOUT AND CONTROL SHALL CONTACT THE PIMA COUNTY DEPARTMENT OF TRANSPORTATION, SURVEY SECTION, DANIEL TREMBLAY, RLS, SURVEY MANAGER, AT 740-2629 TO ARRANGE A MEETING TO REVIEW SURVEY CONTROL, (HORIZONTAL AND VERTICAL), TO BE UTILIZED ON THE PROJECT.

***Additional General Sewer Notes, any of the following notes may be omitted when not applicable:***

30. SECTION 2, FOR FLOW MANAGEMENT PLAN REQUIREMENTS. CALL REGIONAL WASTEWATER FIELD ENGINEERING AT 520-740-2651 REGARDING ALL QUESTIONS INVOLVING THE PREPARATION OF FLOW MANAGEMENT PLANS. PCRWRD STANDARD SPECIFICATIONS AND DETAIL FOR CONSTRUCTION 2012 MANUAL, SECTION 2.2.1 APPLIES TO ANY PROJECT THAT REQUIRES TRENCHING WITHIN SIX (6) FEET HORIZONTALLY AND / OR TWO (2) FEET VERTICALLY OF AN EXISTING PUBLIC SEWER LINE. PRECEDING ANY WORK THAT MAY AFFECT A LIVE SEWER, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO: (A) IDENTIFY AND INCLUDE ALL FLOW MANAGEMENT COSTS IN THE CONSTRUCTION BID AND (B) PROVIDE A FLOW MANAGEMENT PLAN THIRTY (30) DAYS PRIOR TO A PRE-CONSTRUCTION MEETING WITH WASTEWATER FIELD ENGINEERING. REFER TO PCRWRD STANDARD SPECIFICATIONS AND DETAIL FOR CONSTRUCTION 2012 MANUAL,
31. FOR PROJECTS REQUIRING A FLOW MANAGEMENT PLAN, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO (A) IDENTIFY AND INCLUDE ALL FLOW MANAGEMENT COSTS IN THE SEWER CONSTRUCTION BID SUBMITTED WITH THE

PUBLIC SEWER PERMIT APPLICATION, AND (B) PROVIDE A FLOW MANAGEMENT PLAN AT LEAST THIRTY (30) DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING WITH PCRWRD FIELD ENGINEERING PRIOR TO BEGINNING SEWER CONSTRUCTION. FIELD ENGINEER WILL REVIEW THE FMP WITHIN 10 BUSINESS DAYS TO ACCOMMODATE REVIEW AND REVISION CYCLES. REFER TO SECTION 2 OF THE *PCRWRD STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION 2012*. FOR ANY QUESTIONS REGARDING FLOW MANAGEMENT, PLEASE CONTACT PCRWRD FIELD ENGINEERING AT (520) 740-2651.

32. THE CONTRACTOR SHALL FURNISH, OPERATE AND MAINTAIN ALL EQUIPMENT AND LABOR NECESSARY TO PROVIDE CONTINUOUS 24 HR/DAY SANITARY SEWER SERVICE TO ALL PARTIES TRIBUTARY TO A LIVE SANITARY SEWER TO WHICH A CONNECTION IS TO BE MADE. THE PCRWRD CONVEYANCE SECTION SHALL BE NOTIFIED AT (520-443-6500) A MINIMUM OF TWO (2) BUSINESS DAYS PRIOR TO COMMENCING ANY CONSTRUCTION ACTIVITIES THAT COULD EITHER ADVERSELY IMPACT THE FLOW WITHIN A LIVE SANITARY SEWER SYSTEM, OR INVOLVE CONNECTION TO ANY PUBLIC SANITARY SEWER. THE CONTRACTOR'S ATTENTION IS DIRECTED TO SECTION 2 OF THE *PCRWRD STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION 2012*.
33. WHERE CONNECTIONS TO EXISTING MANHOLES ARE TO BE MADE, THE CONTRACTOR SHALL CONSTRUCT NEW INVERTS IN THE EXISTING BASE TO SMOOTHLY DIRECT THE FLOW IN THE PROPER DIRECTION.
34. DUCTILE IRON PIPE 6 INCHES AND GREATER IN DIAMETER, FITTINGS AND METAL COUPLINGS SHALL HAVE AN APPROVED INTERIOR LINING. ALL DIP SHALL BE INSTALLED WITH AN APPROVED EXTERIOR POLYETHYLENE WRAPPING.
35. MANHOLE SURFACES THAT REQUIRE INTERIOR CORROSION PROTECTION SHALL BE CAULKED, SEALED AND COATED PER PCRWRD ENGINEERING DESIGN STANDARDS 2012 MANUAL, SECTION 5.2.16, AND STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION 2012 MANUAL, SECTION 3.3.3(viii)
36. [length] LINEAR FEET OF EXISTING [diameter] PUBLIC SEWER FROM MANHOLE # [IMS manhole #] TO MANHOLE # [IMS manhole # ] OF [ PCRWRD Improvement Plan # ] IS TO BE ABANDONED. REMOVE SEWER COMPLETELY. SEWER SHALL NOT BE ABANDONED IN PLACE WITHOUT PRIOR APPROVAL FROM PCRWRD.
37. THE WORDS "PIMA COUNTY SANITARY SEWER" SHALL BE IMPRINTED ONLY ON COVERS OF MANHOLES WHICH ARE TO BE PART OF THE PIMA COUNTY REGIONAL WASTEWATER RECLAMATION (PUBLIC) SANITARY SEWER CONVEYANCE SYSTEM. SEWER MANHOLE COVERS ON CONVEYANCE SYSTEMS TO BE OWNED AND OPERATED BY ANYONE OTHER THAN PIMA COUNTY SHALL HAVE CAST INTO THEM THE WORDS "PRIVATE SEWER."
38. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ADJUST OR RECONSTRUCT ALL SANITARY SEWER MANHOLES TO FINISHED GRADE. ALL FRAMES AND COVER ADJUSTMENTS ARE TO BE IN ACCORDANCE WITH PIMA COUNTY REGIONAL WASTEWATER RECLAMATION DEPARTMENT (PCRWRD) STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION 2012 MANUAL, DETAIL RWRD 211, 212, 304 OR RWRD 305 (AS APPLICABLE) AND DETAIL RWRD 306. WHILE ADJUSTING THE MANHOLE TO FINISHED GRADE IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT FRAMES AND COVERS ARE CLEANED OF ANY AND ALL ATTACHED MATERIALS (ASPHALT, CONCRETE, ETC.) AND THAT ANY VENT HOLES ARE OPEN AND CLEAR OF OBSTRUCTIONS. IF THE FRAME AND COVER ARE DAMAGED OR CANNOT BE COMPLETELY CLEANED A NEW FRAME AND COVER ARE TO BE PUT INTO PLACE. COSTS ASSOCIATED WITH THESE ACTIONS ARE THE RESPONSIBILITY OF THE CONTRACTOR. REFER TO PIMA COUNTY REGIONAL WASTEWATER RECLAMATION DEPARTMENT (PCRWRD) STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION 2012 MANUAL, DETAIL RWRD 213 – 218 FOR FRAME AND COVER REQUIREMENTS.
39. THIS PUBLIC SEWER IS DESIGNED AT MINIMUM ALLOWABLE PIPE SLOPE. SPECIAL CARE SHOULD BE TAKEN TO ASSURE DESIGN SLOPE IS MAINTAINED. SEWERS FOUND TO BE CONSTRUCTED AT INSUFFICIENT SLOPES WILL NOT BE ACCEPTED BY PCRWRD AND/OR ADEQ. CORRECTIVE ACTION, INCLUDING RE-CONSTRUCTION OF THE SEWER(S) AT THE SOLE EXPENSE OF THE PROJECT OWNER/CONTRACTOR WOULD BE REQUIRED. AS-BUILT PLANS SHALL BE REQUIRED FOR ALL NEW PUBLIC SEWERS PRIOR TO FINAL ACCEPTANCE.
40. EXISTING PRESSURE AND ABANDONED SEWER MAIN LOCATIONS WILL BE IDENTIFIED AND MARKED PER PIMA COUNTY REGIONAL WASTEWATER RECLAMATION DEPARTMENT (PCRWRD) STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION 2012 MANUAL, DETAIL RWRD 503.
41. EXISTING MANHOLE(S) [IMS manhole #] OF [PCRWRD Plan #] IS(ARE) TO BE REMOVED. CONTRACTOR SHALL REMOVE THE FRAME AND COVER. THE SALVAGED FRAME AND COVER SHALL BE DELIVERED TO PCRWRD AT THE LOCATION SPECIFIED BY THE INSPECTOR. THE MANHOLE(S) WILL BE COMPLETELY DEMOLISHED, THE CRATER FILLED WITH SELECT MATERIAL AND COMPACTED IN ACCORDANCE WITH THE STANDARDS SET BY THE AGENCY CONTROLLING THE RIGHT-OF-WAY. IN ALL CASES A MINIMUM OF 95% OF THE STANDARD PROCTOR DENSITY, IN ACCORDANCE WITH THE PROVISIONS OF THE ARIZONA TEST METHOD 225, SHALL BE ACHIEVED. THE CONTRACTOR SHALL DISPOSE OF ALL MANHOLE DEMOLITION MATERIAL OFF-SITE AT A LANDFILL OR OTHER APPROVED LOCATION.