SECTION G1

GENERAL CONDITIONS

A. DESCRIPTION

The General Requirements Chapter of these Specifications stipulates general requirements for the design, preparation of reports, Plans, Specifications, methods of construction, inspection, testing, and final approval of any proposed water and/or sanitary sewer lines, appurtenances, or other structures within the jurisdiction of the Springdale Water Utilities. Any deviations from the requirements set forth in these Specifications shall be approved only by written authorization from the Springdale Water Utilities. Special conditions may arise that are not covered in these Specifications or that may require special consideration. In case of such special conditions, complete detail as to design, materials, method of construction, testing, and/or other procedures shall be submitted to the Springdale Water Utilities for prior review and approval.

Standard construction details incorporated in these Specifications shall become a part of the standard requirements for water and sewer line construction. The Standard Details are included in the Appendices at the back of these Specifications. In the case of a discrepancy, these Specifications shall govern over the Standard Details. The standards required by this document are considered as minimum standards. Any requirements set forth by other regulatory authorities that are more stringent than these requirements shall govern.

Where reference is made to a particular industry specification (ASTM, ANSI/AWWA, AASHTO etc.) it shall be hereby understood that the latest effective specification revision is implied by such reference.

B. DISCLAIMER

These Specifications are intended to set forth minimum standards of quality for the construction of water and sewer facilities to be accepted by the Springdale Water Utilities. These Specifications do not replace the Engineer's Specifications or Contract Documents; however, construction of all water and sewer facilities shall meet these standards of quality as a minimum.

The Springdale Water Utilities shall not be responsible nor bear any liability for the Contractor's means, methods, techniques, sequences and procedures of construction, or safety precautions and programs incident thereto, nor shall the Springdale Water Utilities be responsible for any actions resulting from the direction of the Engineer.

The Springdale Water Utilities shall not be responsible for the acts or omissions of the Contractor(s), Subcontractor(s), Supplier(s), or any other person or organization performing or furnishing any of the Work.

Nothing contained in these Specifications shall be construed as an endorsement or warranty by the Springdale Water Utilities of any product, material, or workmanship. The Springdale Water Utilities shall not be responsible nor bear any liability for the failure of any material or resulting from any method of construction.

C. DEFINITIONS AND ABBREVIATIONS

Contract Documents - The agreement between the Developer and Contractor, pertinent Addenda, the Contractor's Bid, Notice to Proceed, Bonds, these Specifications, Drawings, Written Amendments, Change Orders, Work Change Directives, Field Orders, and the Engineer's written clarifications. Shop drawing submittals are not Contract Drawings.

Contractor - The person, firm, or corporation with whom the Developer has entered into an agreement to construct the water and/or sewer facilities.

Department– The Springdale Water Utilities.

Department Engineer – The employee of the City of Springdale responsible for the approval of new construction, reconstruction, or any alterations involving the City's water and sanitary sewage system.

Developer - Individual, partnership, corporation, or other legal entity such as an improvement district desiring to construct water and/or sanitary sewer facilities for immediate or contemplated future inclusion in the Springdale Water Utilities' systems.

Director - The executive director of the Springdale Water Utilities.

Drawings - The drawings which show the scope, extent, and character of the Work to be furnished and performed by the Contractor and have been prepared or approved by the Engineer.

Engineer - The individual registered to practice engineering in the State of Arkansas responsible for the preparation of reports, Plans, Specifications, and inspection of the Work. The Engineer shall be considered the Engineer of Record for the project.

Inspection – Construction observation conducted at appropriate intervals.

Plans - All of the Drawings pertaining to the project, including supplementary Drawings as may be issued over the course of the project to clarify the Drawings, show authorized changes to the Work, and show further required detail.

Resident Project Representative - The authorized representative of the Engineer responsible for the inspection of construction for compliance with approved Plans and Contract Documents.

Subcontractor – A person, firm, or corporation having a direct contract with the Contractor or any other Subcontractor for the performance of a part of the Work.

Supplier – A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with the Contractor or Subcontractor to furnish materials or equipment to be incorporated in the Work.

Specifications - shall refer to the "Specification Requirements for the Construction of Water and Sewer Facilities", latest revision, written by the Springdale Water Utilities and adopted by the Springdale Water and Sewer Commission. It shall be the responsibility of the Contractor, Engineer, Developer, and other involved parties to obtain copies of and comply with the latest revision of these Specifications.

Springdale Water Utilities - The department of the City of Springdale under the jurisdiction of the Springdale Water and Sewer Commission, hereinafter referred to as "Department", having full and complete authority to manage, operate, improve, extend, and maintain the City of Springdale's water works, water distribution system, sanitary sewage treatment plant, and sewage collection system.

Work – The entire completed construction or the various parts thereof required to be furnished. Work includes and is the result of performing or otherwise providing labor and incorporating materials and equipment into the construction and performing or furnishing services and documents as required.

The words "as specified" shall mean as specified by the Springdale Water Utilities in Plans, proposals, other Specifications, and written or oral instructions.

The words "or equal" shall mean that the proposed material or item shall perform adequately the duties imposed by the general design and shall be at least equal in design, substance, and junction to that specified by using the name of a product, manufacturer, and/or vendor. Any party proposing to substitute an "equal" shall obtain prior approval of the Department. The Springdale Water Utilities shall make final approval of such items or materials judged to be "equal".

Whenever the following abbreviations are used throughout these Specifications, they shall have the meanings as given below:

Associations, Organizations, and Titles

“10 States”	-	*Recommended Standards for Wastewater Facilities*
AASHTO	-	American Association of State Highway and Transportation Officials
ACI	-	American Concrete Institute
ADH	-	Arkansas Department of Health
ANSI	-	American National Standard Institute
ARDOT	-	Arkansas Department of Transportation
ASSE	-	American Society of Sanitary Engineering
ASTM	-	American Society for Testing and Materials
AWS	-	American Welding Society
AWWA	-	American Water Works Association
CFR	-	Code of Federal Regulations
COE	-	Corps of Engineers
DEQ	-	Department of Environmental Quality
FHA	-	Federal Highway Administration
FM	-	Factory Mutual
ISO	-	International Organization for Standardization
NACE	-	National Association of Corrosion Engineers
NEC	-	National Electrical Code
NEMA	-	National Electrical Manufacturers Association
NPDES	-	National Pollutant Discharge Elimination System
NSF	-	National Sanitation Foundation
OSHA	-	Occupational Safety and Health Organization
PLS	-	Professional Land Surveyor
PPI	-	Plastics Pipe Institute
RPR	-	Resident Project Representative
SSPC	-	Steel Structures Painting Council/The Society for Protective Coatings
SWU	-	Springdale Water Utilities
UL	-	Underwriters Laboratories
USCS	-	Unified Soil Classification System

General Abbreviations

ACHM	-	asphaltic concrete hot-mix
AEA	-	air entraining agents
BHN	-	Brinell hardness number
BOD5	-	biochemical oxygen demand
Buna-N	-	acrylonitrile butadiene rubber
CC	-	AWWA corporation stop thread
cfm	-	cubic feet (of air) per minute

CFU	-	colony forming units
CMA	-	concrete manhole adapter
CPU	-	central processing unit
CTS	-	copper tubing size
DI	-	ductile iron
DIP	-	ductile iron pipe
DR	-	dimension ratio
EHMW	-	extra high molecular weight
EPDM	-	ethylene propylene diene monomer rubber
°F	-	Fahrenheit
f'c	-	compressive strength
ft	-	feet
ft/s	-	feet per second
FIP	-	Female Iron Pipe
gph	-	gallons per hour
gpm	-	gallons per minute
H20	-	standard 20-ton, 2 axle dump truck
HDPE	-	high density polyethylene
HMI	-	human-machine interface
Hz	-	hertz
I/I	-	inflow and infiltration
I/O	-	input/output
in	-	inch
lbs	-	pounds
LMDPE	-	linear medium density polyethylene
MHz	-	megahertz
mil	-	thousands of an inch
MIP	-	male iron pipe
MJ	-	mechanical joint
mL	-	milliliter
MSDS	-	material safety data sheet
MSL	-	mean sea level
NRS	-	non-rising stem
PA	-	paint application
PE	-	polyethylene
PLC	-	programmable logic controller
psig	-	pounds per square inch (gauge)
PVC	-	polyvinyl chloride (pipe)
RP	-	recommended practice
rpm	-	rotations per minute
SCADA	-	supervisory control and data acquisition
SDR	-	standard dimension ratio
SP	-	standard practice
SWPPP	-	Storm Water Pollution Prevention Plan
TN	-	technical note
TSS	-	total suspended solids
OD	-	outside diameter
O&M	-	operation and maintenance
UV	-	ultraviolet (light)
VAC	-	volts of alternating current
VDC	-	volts of direct current
VCP	-	vitrified clay pipe

END OF SECTION

SECTION G2

JURISDICTION

A. DESCRIPTION

This Section describes the area presently being served or proposed to be served water and/or sanitary sewer service by the Department.

B. AREA OF JURISDICTION

These general requirements for water and sanitary sewer lines shall be required for the area within the city limits of Springdale, Arkansas, as may be changed over time; areas outside the city limits served by the Department's water distribution system, and those areas located within the city limits whose sewage is to be treated by the Department's wastewater treatment facilities or communities whose wastewater is treated by the City of Springdale by virtue of established inter-municipal agreements.

END OF SECTION

SECTION G3

GENERAL PROJECT REQUIREMENTS

A. DESCRIPTION

This Section describes general project requirements such as scope and sequence of Work, right-of-way; working hours; security measures; parking and site access provisions; dust control; drainage, pollution and erosion control measures; vegetation protection; payment and performance bonds; and safety.

B. SCOPE OF WORK

The Work to be performed under these Specifications shall be shown on the Plans and shall include all materials, equipment, tools, supplies, and incidentals as well as the performance of all labor necessary for the completion of the project.

C. SEQUENCE OF WORK

Construction of each line shall begin at Station 0+00 as indicated on the Plans and proceed in an orderly manner until the end of the line, unless otherwise approved. Construction shall be sequenced to obtain the best results where an installation depends on the installation of another component. Make provisions shall be made to accommodate for items scheduled for later installation, and installations shall be coordinated with other Contractors and/or Subcontractors as necessary. If space is limited, installation of components shall be coordinated to ensure maximum performance and accessibility.

D. LANDS AND RIGHT-OF-WAY

The Developer shall be responsible for the production of all necessary easement documents and the acquisition of all necessary on-site and off-site temporary and permanent utility and construction easements. Standard easement forms are included in the Appendices to this document. The Contractor shall confine construction activities, including storage of materials and equipment, to these obtained rights-of-way and properties of the Developer. Further detailed information concerning easements is contained in the Easement Section of the General Chapter of these Specifications.

E. ON-SITE WORK HOURS

No work shall be done between the hours of 6:00pm and 7:00am, on weekends, or on any legal holiday, so as to comply with the City of Springdale's noise ordinance, except in case of urgent necessity in the interest of public health and safety, and then only with a permit from the Department. In such exceptions, permission may be granted for a period not to exceed three (3) working days or less while the emergency continues and may be renewed for successive periods of three (3) days or less for the duration of the emergency. If the Department Engineer determines that the public health and safety will not be impaired by the erection, demolition, alteration or repair of the Work within the prohibited hours, the Department Engineer may grant permission for such Work to be done for the duration of or within a shorter time period during said prohibited hours.

F. USE OF PREMISES AND ACCESS ROADS

The Contractor shall establish and maintain temporary access roads to the site as required to complete the project, if existing entrances do not exist or are not otherwise available. Such access roads shall be available for the use of all persons performing work or furnishing services for the project and for emergency vehicles at all times. Such access areas shall not be used for parking or the storage of materials.

G. DUST CONTROL

The Contractor shall take reasonable measures to prevent unnecessary dust from becoming airborne. Disturbed surfaces or other areas subject to dusting shall be kept moist with water. Dusty materials stored in piles or in transit shall be covered when practicable to prevent airborne dispersion.

Facilities, machinery, and equipment which may be affected adversely by dust shall be adequately protected.

H. TEMPORARY DRAINAGE PROVISIONS

The Contractor shall provide for the drainage of stormwater and other water that may be discharged from the site in the performance of the work. Drainage facilities shall be adequate to prevent damage to the Work, the site, and adjacent property.

I. EROSION CONTROL

The Developer shall be responsible for submitting a Stormwater Pollution Prevention Plan (SWPPP) along with a General Stormwater Permit, as further addressed in the Environmental Permits Section of these Specifications and in accordance with Arkansas State Law.

The Contractor shall prevent erosion of soil on the site and adjacent property resulting from construction activities by implementing all applicable pollution and erosion prevention controls for discharges that are associated with the Contractor's construction activities. Effective measures shall be initiated prior to the commencement of clearing, grading, excavation, and other surface disturbances and maintained throughout the course of the project.

Work shall be scheduled to expose areas subject to erosion for the shortest possible period of time, while preserving natural vegetation to the greatest practicable extent. Temporary storage and construction shall be located and traffic shall be routed such to minimize erosion. Temporary fast-growing vegetation and other suitable ground cover shall be provided as necessary to control runoff.

J. POLLUTION CONTROL AND OTHER ECOLOGICAL CONSIDERATIONS

The Contractor shall prevent the pollution of drains and watercourse by sanitary wastes, sediment, debris, and other substances resulting from construction activities by taking reasonable measures to prevent such materials from entering said drains and watercourses. Sanitary wastes, sediment, debris, and other substances shall not be permitted to enter any drain or watercourse.

The Contractor shall follow applicable state and/or local sanitary sewer, septic system, and waste disposal regulations.

K. VEGETATION PROTECTION

Trees shall be trimmed in accordance with ANSI A300 (Tree, Shrub, and Other Woody Plant Maintenance – Pruning (Part I)) by a qualified horticulturist unless otherwise directed by the Department.

The removal of vegetation for construction purposes shall be as set forth in the Clearing and Grubbing article of the Site Preparation, Excavation, and Fill Section and the Clearing and Grubbing article of the Clearing and Protection of Right-of-Way Section in the Technical Requirements Chapter of these Specifications.

L. CONSERVATION

Construction activities shall be coordinated to ensure that operations shall be carried out with consideration given to the maximum practical conservation of water, energy, and materials.

M. PAYMENT AND PERFORMANCE BOND

All corporations, firms, or individuals placing or installing water and/or sewer lines, except when the facilities are installed by Department employees, shall have a current, valid, and appropriate Contractor's license and shall post a performance and payment bond in a form acceptable to the Director or an approved Department representative. The performance and payment bond shall be for the amount of the contract to guarantee performance of the job in accordance with the Plans and Specifications within the time prescribed for project completion and extending for a period of one (1) year after acceptance and integration into the municipal system. Sample payment and performance forms are included in the Appendix of this document.

N. SAFETY

The Contractor shall be responsible for all necessary safety precautions and programs in connection with the Work to prevent damage, injury, and loss to persons on the Work site, all Work, materials and equipment, utilities, underground facilities, and adjacent properties. The Contractor shall comply with all applicable laws and regulations having jurisdiction over the safety of persons or property. The Contractor shall be responsible and remedy any damage, injury, or loss of property caused directly or indirectly by the Contractor, Subcontractor, Supplier, or other entity directly or indirectly employed by the Contractor to perform any part of the Work.

O. FLOODPLAIN AREAS

It shall be the responsibility of the Contractor/Developer for obtaining and complying with all local, state, and federal floodplain permits. All permits and licenses required shall be obtained in strict accordance with the requirements of the governing agency. When required by the licensing agency, the Department shall assist in the application for permits and licenses. The cost of any permit, fee, or bond required shall be borne by the Contractor/Developer. Work shall not commence without all appropriate permits in place. Additional requirements pertaining to the obtainment of permits shall be as set forth in the Rules, Regulations, and Permits Section of these Specifications.

P. ARDOT PERMITS

It shall be the responsibility of the Contractor/Developer for obtaining and complying with all permits required by ARDOT. All permits and licenses required shall be obtained in strict accordance with the requirements

of ARDOT. When required by ARDOT, the Department shall assist in the application for permits and licenses. Additional requirements pertaining to the obtainment of permits shall be as set forth in the Rules, Regulations, and Permits Section of these Specifications.

Q. CONSTRUCTION PLAN APPROVAL REQUIREMENTS

Plans shall first be approved by the Department, after which the Engineer shall make submittal to the Arkansas Department of Health (ADH) for review and approval. In no case shall the Plans be submitted to the ADH prior to obtaining approval from the Department. Additional requirements for the approval of construction Plans shall be as set forth in the Plans and Specifications Section of these Specifications.

END OF SECTION

SECTION G4

GENERAL DESIGN CONSIDERATIONS

A. DESCRIPTION

The following design principles outlined in this Section shall be adhered to at a minimum, unless otherwise approved.

B. GENERAL DESIGN CONSIDERATION FOR WATER AND SEWER FACILITIES

1. Where water and sewer lines cross, a minimum vertical distance of 18 inches shall be provided between the outside of the water line and outside of the sewer line, whether the water line is either above or below the sewer line. Should this minimum distance not be available, the Contractor shall raise or lower the existing line to provide the adequate vertical spacing. If the minimum vertical distance is still unattainable, then the water line or the sewer line shall be encased in watertight casing pipe. At crossings, water lines shall be above sewer lines unless circumstances do not allow for such orientation. If a water line unavoidably must cross below a sewer line, at least 18 inches of vertical separation still must be maintained, and either the water or sewer line shall be encased in a watertight casing pipe. The choice of which line to be encased shall be at the Department's discretion. All watertight casing pipe shall be in accordance with the Steel Encasement Pipe and Appurtenances Section in the Technical Requirements Chapter of these Specifications, with sealed watertight ends extending a minimum of 10 feet on either side of the crossing. All joints shall be mechanically restrained and located equidistant and as far as possible from the point of crossing.

2. There shall be no physical connections between the potable water supply system and a sewer line or sewage appurtenance which may permit the passage of sewage or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of a sewer manhole. Water and sanitary sewer lines shall be laid at least 10 feet horizontally apparent, measured edge to edge. Where it is not practical to maintain this separation, deviations from this distance for gravity sewers shall be addressed by the ADH on a case-by-case basis if supported by data and pertinent facts supplied by the Engineer and agreed upon by SWU.

3. A minimum horizontal distance of three (3) feet shall be maintained between water or sewer lines and other underground utilities, such as gas and electric, and any storm drainage structures, as per ADH regulations.

4. Water and sewer lines shall be located a minimum horizontal distance of 10 feet from any part of a proposed or existing building.

5. Water and sewer lines shall be located along main streets where possible to minimize locating said facilities at the back of residential lots.

6. All design shall be based on sound engineering judgment and practices.

C. DESIGN CONSIDERATIONS FOR SANITARY SEWERS AND FORCE MAINS

1. Sewers shall be designed for full flow capacity, without consideration given for surcharge.

2. The sizing of wastewater facilities receiving flow from new wastewater collection systems shall be based on an average daily flow of 100 gallons per capita, plus that flow contributed by industrial and major institutional and commercial facilities, unless water use data or other adequate justification is provided and approved by the Department. An appropriate design peaking factor, as recommended in "10 States", shall be applied to the average daily flow figure to calculate the design peak hourly flow. If the new system is to serve existing development, the likelihood of I/I

contributions from existing line, and connections shall be evaluated and new wastewater facilities shall be designed accordingly.

3. The sizing of wastewater facilities receiving flow from existing wastewater collection systems shall be based on actual flow data to the greatest possible extent.

4. In general, sewerage facility design shall be based on the estimated ultimate population served as based on a minimum 20-year planning period, unless otherwise approved by the Department.

5. Population capita per household values shall be based on good engineering judgment but shall never be taken as less than the value published in the most recent recorded census or 3.0 persons per household, whichever is greater, unless otherwise approved by the Department.

6. No main line gravity sewer conveying raw sewage shall be less than eight (8) inches in diameter.

7. Sewers shall be sufficiently deep to prevent freezing. Insulation shall be provided for sewers that cannot be placed at sufficient depth to prevent freezing.

8. Buoyancy shall be considered in design and installation of sewerage facilities, thereby preventing flotation in areas where high groundwater conditions may be anticipated.

9. Sewers shall be designed with regard to slope and diameter to maximize velocity and minimize deposition to the greatest practical extent. Oversized sewers shall not be approved to justify a lesser slope, unless approved by the Department Engineer.

10. Minimum slopes shall be as recommended in “10 States” unless otherwise approved by the Department Engineer. Slopes less that those reported may be allowed by SWU only on a case- by-base basis.

11. All sewers shall be designed and constructed to given mean velocities of not less than 2 ft/s based on Manning’s formula using an “n” value of 0.013, as set forth in “10 States”.

12. For sewers attaining velocities 15 ft/s or greater, special provisions shall be provided for protection against erosion and impact.

13. Sanitary sewers shall be laid with uniform slope and alignment between manholes.

14. Ductile iron sewer pipe, as set forth in the Ductile Iron Pipe and Fittings for Gravity Sewer Lines and Force Mains Section in the Technical Requirements Chapter of these Specifications, shall be used on all sewer lines where the grade is 15% or greater.

15. Sewers or force mains with slopes of 20% and greater shall be secured with concrete, or an otherwise approved restraint system, and spaced as follows:

    a. For slopes 20% - 35%, not more than 36 feet on center;
    b. For slopes 35% - 50%, not more than 24 feet on center; and
    c. For slopes 50% and greater, not more than 16 feet on center.

16. Where the difference in invert elevation between any two (2) pipes entering a manhole shall be two (2) feet or more, a drop connection shall be utilized as shown on the Standard Detail Sheets.

17. The minimum earth cover for sanitary sewer mains shall not be less than 24 inches, unless otherwise approved by the Department Engineer.

18. Where the earth cover over the pipe bells cannot be maintained at least 30 inches, the pipe material shall be ductile iron sewer pipe as specified in the Ductile Iron Pipe and Fittings for

Gravity Sewer Lines and Force Mains Section in the Technical Requirements Chapter of these Specifications. Sewers at a depth of 14 feet or greater, measured from flowline to finished grade, shall be analyzed to ensure there is less than 5% deflection.

19. Location of main extensions to serve parcels of property shall be planned to minimize the length of building sewer to be maintained in the future by the property owner.

20. All sewer main extensions, without regard to length, shall terminate in a standard manhole.

21. Manholes shall be located at a maximum interval of 400 feet or at any change in grade or direction, unless otherwise specified. A minimum fall of 0.1 feet shall be provided in all manholes. Rims shall be brought to finished grade, and sealed rings and lids shall be provided in 100-year flood zones or other areas prone to flooding, unless otherwise specified by the Department Engineer.

22. Sewer line materials and construction shall be as set forth in these Specifications. Materials not specifically authorized in these Specifications shall be prohibited for use in the system, unless otherwise approved in writing by the Department.

23. Creek crossings design considerations are addressed in the Pipeline Crossings at Streams and Creeks Section in the Technical Requirements Chapter of these Specifications.

D. DESIGN CONSIDERATIONS FOR WATER MAINS

1. No dead-end water mains shall be less than eight (8) inches in diameter. Looped water mains shall be no less than six (6) inches in diameter.

2. Fire hydrant spacing shall be dependent upon the required fire flow, but in general, shall not be greater than 500 feet or located at a distance greater than 250 feet from any point on the street or road frontage. However, if the street is a dead-end, the hydrant spacing shall be no greater than 400 feet and the distance to the hydrant from any point on the street shall be no greater than 200 feet. Where new water mains are extended along streets where hydrants are not needed for fire protection of structures, hydrants shall be provided at a spacing not to exceed 1,000 feet to provide for fire protection against transportation hazards.

3. All water main extensions, without regard to length, shall terminate in a fire hydrant, unless otherwise approved by the Department Engineer.

4. The minimum earth cover for water mains shall be as set forth below for varying nominal pipe diameters:

    a. 36 inches of cover for lines 6-8 inch pipe
    b. 48 inches of cover for lines 10-16 inch pipe
    c. 60 inches of cover for lines greater than 16 inch pipe

    Cover shall be taken as the depth from the top of pipe to finished grade or adjacent curb or ditch flowline. In no case shall the cover ever be less than 30 inches for service lines.

5. The normal working pressure in a water main should be approximately 60 psi but in general not less than 35 psi. The system should meet reasonable demands, including fire flow and peak daily demands, without producing a pressure of less than 20 psi. Where water pressure within a building exceeds 80 psi, an approved water-pressure reducing valve conforming to ASSE 1003 with strainer shall be installed to reduce the pressure to 75 psi or less, as set forth by the Arkansas Plumbing Code. Main line pressures exceeding 150 psi shall be reviewed and considered on a case-by-case basis.

6. The hydraulic analysis of the water distribution system shall be provided in a report for review and approval if required by the Department. The design flows and residual pressures in the mains shall be indicated. Additional design data may be required if, in the opinion of the Department Engineer, it shall be necessary for the review and approval of the Plans.

7. A sufficient number of valves shall be provided on water mains to minimize inconvenience and sanitary hazards during repairs. Valves shall be located on all connecting lines at all intersections but at intervals not greater than 500 feet, with the exception that a maximum spacing of 1,000 feet may be permissible in rural areas, unless otherwise specified by the Department Engineer.

8. Water line materials and construction shall be as set forth in these Specifications. Materials not specifically authorized in these Specifications shall be prohibited for use in the system, unless otherwise approved in writing by the Department. Under certain circumstances the SWU reserves the right to augment or exchange certain materials in best interest of the department when water mains are to be constructed in highly conductive soils.

9. Creek crossings design considerations are addressed in the Pipeline Crossings at Streams and Creeks Section in the Technical Requirements Chapter of these Specifications.

END OF SECTION

SECTION G5

PLANS AND SPECIFICATIONS

A. DESCRIPTION

This Section sets forth the requirements for submission of Plans and Specifications to the Department for approval. All Plans and Specifications shall be prepared in accordance with generally accepted standard engineering practices.

B. PRELIMINARY ENGINEERING REPORT

When requested by the Department, the Engineer shall prepare and submit to the Department a preliminary engineering report prior to approval of construction Plans. The report shall conform to accepted engineering criteria including the requirements of the ADH and DEQ.

The size, scope, and contemplated land use of the proposed development shall determine the need for a preliminary report.

C. CONSTRUCTION PLANS AND SPECIFICATIONS

No water or sewer main extension shall be approved for connection to the Department's system if constructed prior to the approval of Plans by the Department or if not constructed in accordance with the approved Plans. Plans shall conform to the requirements herein. The submission of Plans for approval shall be accompanied by a letter from the Engineer stating that materials and workmanship shall be in accordance with these Specifications and Standard Details.

All Plans shall be drawn at a scale suitable for adequately showing the facilities proposed, except as otherwise stipulated herein. All Plans and profiles of lines shall be drawn to scale and as follows:

1. Profile vertical scale
   a.) water lines
   1" = 5' or 1" = 10', if required
   b.) sewer lines
   1" = 5' or 1" = 10'

2. Plan horizontal scale
   a.) water lines
   1" ≥ 50'
   b.) sewer lines
   1" ≥ 50'

All vertical information and elevations must be referenced to MSL, as determined by the National Geodetic Vertical Datum of 1988. Proposed plans referencing any other datum shall not be accepted. Horizontal datum shall be based on State Plane coordinates.

All proposed Plans for extensions to the water distribution system or sewage collection system shall be prepared on reproducible drawings, 24" x 36" in size, by the latest version of AutoCAD or an approved equal digital format drafting software. An overall project map shall accompany the construction Plans. The project map shall be 24" x 36" and drawn to a scale of 1" = 100' or larger. The project map shall depict the entire project, indicating all proposed water and sewer lines with all such lines properly labeled as to size and pipe material. All other utilities, such as gas, cable, phone, and electric, shall be shown on the Plans. A vicinity map at a scale of 1" = 2000' shall also be furnished, indicating

the location of the project in relation to arterial streets and major highways where the proposed construction shall be located. Plans shall include a north arrow for orientation.

Matching plans and profiles shall be provided on the same sheet where possible and shall include existing and proposed ground profiles, adjacent street elevations, and utility crossings. Water line profiles shall be provided if requested by the Department.

D. CHANGES FROM APPROVED PLANS

Any changes from the approved construction Plans and Specifications shall be authorized by the Department and ADH prior to the start of construction involving said changes.

E. APPROVAL

Two (2) sets of complete construction Plans shall be furnished to the Department for review. A statement by the Engineer, indicating that the materials and workmanship shall conform to these Specifications and Standard Details and that professional construction inspection shall be provided, must accompany the Plans.

If requested by the Department, design data, capacity analyses, analyses of existing systems for sewer or water line extensions, or other reports as required shall be furnished by the Engineer for the Department's review.

Upon approval by the Department, one (1) set of Plans shall be returned to the Engineer for submittal to the Arkansas Department of Health (ADH) for review and approval. Plans shall not be submitted to the ADH prior to obtaining approval from the Department. It shall be the responsibility of the Engineer for submitting Plans to the ADH. Proposed construction shall not be allowed until approved by SWU, ADH, and any other agencies with jurisdiction.

F. CONFORMITY

All Plans, Specifications, and construction procedures shall conform to the standards as established by the Department. All Plans and Specifications shall be prepared under the supervision of a Professional Engineer and Surveyor, licensed in the State of Arkansas, if required. The Engineer's seal shall be stamped on all Plans and Specifications in accordance with state law. All land ties, elevations, and land surveys shall be performed by a PLS in the State of Arkansas.

G. PLANS OF RECORD

Upon completion of the project, two (2) complete sets of Plans of Record and digital drawings in AutoCAD format shall be furnished to the Department for record keeping purposes by the Engineer who prepared and submitted the original construction Plans and Specifications. Plans of Record must be presented prior to acceptance of any improvements. The size and scale of the Drawings shall be as outlined in the Construction Plans and Specifications paragraph of this Section. The Plans of Record shall show in plan and profile the exact and actual locations, dimensions, sizes and types of pipes, and other applicable construction information for all facilities constructed. In addition, the Plans of Record shall reflect the location, width, and type (i.e., water, sewer, utility) of easement. Other specific requirements for Plans of Record shall be as follows:

1. Sanitary Sewer System
   All service wyes and manhole stub-outs shall be shown on the Plans of Record. Each service line shall be referenced to the sewer main stations in linear feet and dimensioned to at least one

(1) manhole. The depth of the end of each service line shall be clearly marked on the Plans of Record. A table of GPS coordinates for all manholes and sewer service stub-outs or lines shall also be provided.

2. Water Distribution System

All meter boxes with indication of single or split service, valves, blow-offs, fire hydrants, or other installed appurtenances must be shown on the Plans of Record. Meter boxes shall be referenced by dimensioning to at least one (1) lot corner. Valves and blow-offs shall be referenced by dimensioning to at least two (2) permanent objects. A table of GPS coordinates for all water service meters, valves, and hydrants shall also be provided.

END OF SECTION

SECTION G6

RESPONSIBILITIES, INSPECTION, AND LAYOUT

A. DESCRIPTION

This Section sets forth the requirements of inspection and layout for the construction of water and/or sanitary sewerage facilities and outlines the general responsibilities of the Engineer and Contractor, or their duly authorized representatives.

B. RESPONSIBLE ENGINEER

The Engineer who shall prepare and submit the construction Plans and Specifications shall also be responsible for construction layout, general direction, and resident construction observation as described in further detail in the following paragraphs of this Section. Continuous project responsibility shall be an express condition of Plan approval. The Engineer's responsibility shall extend through submittal of the Plans of Record and the full acceptance of the project by the Department for maintenance.

C. RESIDENT PROJECT REPRESENTATION

The Engineer shall provide necessary construction observation in accordance with Arkansas ADH regulations to ensure conformance with the approved Plans and Specifications. If required by the Department, full-time resident observation may be required and shall be performed by qualified personnel under the direct supervision of the Engineer. The name of the RPR shall be furnished to the Department prior to construction. It shall be the responsibility of the RPR to safeguard the Department's interests by ensuring that the Work is in general compliance with the approved Plans, Specifications, and other applicable standards. Any defects, deficiencies, or irregularities shall be reported in a timely fashion to the Engineer and the Department. A daily job diary shall be kept, outlining all aspects of the construction project, and shall be made available to the Department upon request.

D. GENERAL DIRECTION

All water and/or sanitary sewerage facilities proposed shall be constructed under the general direction of the Engineer. General direction shall consist of, but not be limited to, periodic site visits at a sufficient frequency to the construction site to observe the progress and quality of the executed Work in order to examine and determine if the Work is proceeding in accordance with the approved Plans, Specifications, and standards set forth by the Department. The Engineer will keep the Developer and the Department informed of the progress of the Work.

Any defects, deficiencies, or irregularities in the Work found by the Engineer or reported by the RPR shall be reported to the Department. Such action(s), as deemed appropriate and approved by the Department, shall be taken to correct these deficiencies, including but not limited to the removal of the defective work and orders to stop of the Work or any portion thereof until the cause for such order has been eliminated.

All performed Work subject to these requirements shall at all times also be subject to the general inspection of the Director or an approved representative. The frequency and duration of site visits required by Department personnel shall be at the discretion of the Department.

E. CONSTRUCTION SUPERVISION AND RESPONSIBILITY

The Department shall not be responsible for the means, methods, techniques, sequences, and procedures of construction or for acts and omissions of the Contractor, Subcontractors, Suppliers, or other entities performing or furnishing any of the Work.

Unless otherwise specified or directed, the Contractor shall obtain and pay for all construction permits and licenses.

If, during the performance of the Work, the Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any legal provision or regulation, standard, specification, manual, code, or manufacturer's recommendation, the Contractor shall report it to the Engineer and the Department in writing immediately and not proceed with that portion of the Work affected thereby until an amendment or supplement to the Contract Documents has been issued.

F. CONSTRUCTION LAYOUT AND STAKING

The layout and staking of the Work shall be completed by trained and qualified survey personnel under the supervision of the Engineer and a PLS registered in the state of Arkansas. Such layout and staking shall consist of setting alignment and grade stakes as necessary to establish grade lines required for use in attaining proper alignment and grade of the facilities. The use of laser leveling devices is required as a minimum for gravity sewer construction.

If property or public right-of-way markers are to be disturbed or removed in the course of construction, the Contractor shall employ a PLS registered in the state of Arkansas to witness the position of the marker prior to its disturbance or removal. After the completion of construction, an Arkansas PLS. shall again be employed to restore all disturbed or removed markers to their original positions.

Where mains and service lines are adjacent to or under proposed streets or are located in areas where the final grade of the site has not been established before installation, the line shall be staked for grade to ensure the minimum cover required, as set forth in the General Design Consideration Section of these Specifications.

Cut sheets shall be submitted to the Department upon request prior to any water or sewer line construction.

END OF SECTION

SECTION G7

EXISTING UTILITIES

A. DESCRIPTION

This Section sets forth the requirements with respect to existing public or private utilities including allowable proximity to existing utilities; procedures for uncovering, interrupting, connecting, protecting, repairing and replacing existing utilities; and Arkansas One Call notification protocol.

B. PROXIMITY

All Plans shall be drawn in such a manner that all known utilities are shown using the best available information, including utility maps, field surveys, locates by Arkansas One Call or other utility companies, and other sources of information. Water and sewer lines shall be kept a minimum horizontal distance of three (3) feet from all other underground utilities and storm drainage structures, in accordance with the ADH regulations, with the exception that a minimum horizontal distance of 10 feet shall be maintained between water and sanitary sewer lines.

C. UNCOVERING, INTERRUPTION, AND CONNECTION TO EXISTING UTILITIES

The Contractor shall be responsible for uncovering all existing utility crossings, points of tie-in, and other required locations in sufficient advance of construction to continue the efficient progression of the Work. The Engineer shall be notified of any utility found to be within 10 feet horizontally of the outside diameter of the proposed line at a utility crossing so that grades may be evaluated and adjusted, if required. The Contractor shall not interrupt utilities unless permitted and only after arranging to provide temporary utility service.

The Contractor shall notify the Department Engineer not less than two (2) days in advance of the proposed utility interruptions. Utility interruptions shall not proceed without the Department Engineer's written permission.

The Contractor shall submit a plan of action for each critical tie-in that may impact utility usage. The plan of action shall include a list of materials and other appurtenances necessary for the tie-in, as well as the proposed action sequence and anticipated schedule. This plan of action must be submitted within a week before the scheduled critical tie-ins to allow time for correction and resubmission if insufficient materials and/or plans are presented. In the case of a special critical interruption or tie-in, a meeting may be called to coordinate materials, schedules, and activities. The Contractor, Engineer or RPR, and a representative of the Department must be present at said meeting.

All connections to existing facilities in service shall be thoroughly planned in advance, with all required equipment, materials, and labor on hand at the time of the connection. Work shall proceed continuously if necessary to complete connections in the least amount of time possible. Operation of existing valves or other appurtenances, when required, shall be by or under the direct supervision of the Department.

D. PROTECTING, REPAIRING, AND REPLACING UTILITY SERVICES

In some instances, pipe may be installed under, alongside, or over other existing public or private utility services. The Contractor shall be responsible for locating and protecting such services. In the event of damage incurred by the Contractor to existing utility lines, the Contractor shall be responsible for the repair and/or replacement of the damaged utility service.

The Contractor may repair or replace the damaged utility with own labor, equipment, and materials, provided the Contractor has received prior written permission from the affected utility to perform such repairs or replacement. Otherwise, the Contractor shall make arrangements for utility service repair or replacement with the affected utilities prior to the start of construction.

E. HORIZONTAL SEPARATION OF WATER AND SEWER LINES

There shall be no physical connections between the potable water supply system and a sewer line or sewage appurtenance which may permit the passage of sewage or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of a sewer manhole. Water and sanitary sewer lines shall be constructed at least 10 feet horizontally apparent, measured edge to edge. Where it is not practical to maintain this separation, deviations from this distance for gravity sewers shall be addressed by the ADH on a case-by-case basis if supported by data and pertinent facts supplied by the Engineer and agreed upon by SWU.

F. CROSSINGS OF WATER AND SEWER LINES

Where water and sewer lines cross, a minimum vertical distance of 18 inches shall be provided between the outside of the water line and outside of the sewer line, whether the water line is either above or below the sewer line. Should this minimum distance not be available, the Contractor shall raise or lower the existing line to provide the adequate vertical spacing. If the minimum vertical distance is still unattainable, then the water line or the sewer line shall be encased in watertight casing pipe. At crossings, water lines shall be above sewer lines unless circumstances do not allow for such orientation. If a water line unavoidably must cross below a sewer line, at least 18 inches of vertical separation still must be maintained, and either the water or sewer line shall be encased in a watertight casing pipe. The choice of which line to be encased shall be at the Department's discretion. All watertight casing pipe shall be in accordance with the Steel Encasement Pipe and Appurtenances Section in the Technical Requirements Chapter of these Specifications, with sealed watertight ends extending a minimum of 10 feet on either side of the crossing. All joints shall be mechanically restrained and located equidistant and as far as possible from the point of crossing.

G. ARKANSAS ONE CALL

Before any excavation shall begin, the Arkansas One Call Center shall be notified in accordance with the Underground Facilities Damage Prevention Act.

H. OPERATION OF EXISTING SYSTEM

Only employees of SWU shall operate existing water or sewer valves or other appurtenances on the existing system or which are otherwise in service. If existing valves must be operated, the Contractor shall make prior arrangements with SWU. Newly installed tapping valves shall only be operated by SWU personnel.

END OF SECTION

SECTION G8

EASEMENTS

A. DESCRIPTION

This Section sets forth easement requirements as necessary for the purpose of installing and maintaining water and/or sanitary sewer lines if the proposed lines are located on private property or where the proposed lines are within public rights-of-way and additional right-of-way is required for the future operations and maintenance of facilities. All offsite easements shall be located outside of public rights-of-way when possible or directed by the Department.

B. WIDTH OF EASEMENT

If water and/or sanitary sewer lines are not placed in public rights-of-way, a permanent easement shall be acquired for the Department and dedicated for the purpose of maintaining the lines. Generally, easements shall have a minimum width of 20 feet. However, when the buried depth of the utility exceeds eight (8) feet, as measured from invert to finished grade, additional easement width will be required. Minimum widths shall be as required to facilitate a safe excavation. The Engineer shall ensure easements are in compliance with 29 CFR 17, Part 1926, Subpart P – OSHA - Excavations. Easements of lesser width shall be considered on a case-by-case basis, when adjacent to another easement, street right-of-way, or under special circumstances and as approved by the Department. Where practicable, easements of the maximum possible width shall be provided to allow access to all manholes, fire hydrants, valves, and other appurtenances.

Common utility easements shall be accepted provided that the easement is wide enough to accommodate the above requirements. No other utilities shall be located within a minimum clear distance of three (3) feet of proposed lines. Greater distances may be required by the Department depending upon depth and other circumstances.

In no case shall water or sewer facilities be built within ten (10) feet of any proposed or existing permanent structure.

C. FILING OF EASEMENT

Easements shall be properly executed and presented to the Department along with the necessary filing fee for Department records. The conditions of the easement form shall meet with the requirements of standard easements and shall be acceptable to the Director or an approved Department representative. Standard Easement Forms are included in the Appendix of this document. All easements shall be in favor of the City of Springdale Water and Sewer Commission. Easements shown on a recorded plat shall be considered as public easements and adequate for this purpose.

D. PLANS

Construction Plans shall reflect the type, location, and dimensions of all proposed easements. Plans of Record shall also reflect the type, location, and dimensions of all dedicated easements.

END OF SECTION

SECTION G9

RULES, REGULATIONS, AND PERMITS

A. DESCRIPTION

This Section describes proper action for compliance with applicable ordinances, rules, and regulations as required by law for the completion of Plans, Specifications, and Work on proposed water and/or sanitary sewer facilities.

B. LAWS, REGULATIONS, AND ORDINANCES

All projects shall comply with all federal, state, county, and city laws, regulations, and/or ordinances. This shall include, but not be limited to, the obtainment of approval from ADH for all water or sanitary sewer extensions and DEQ for other required environmental or discharge permits. It shall be the responsibility of the Engineer for submission to and approval by ADH and DEQ as necessary, as well as the payment of any applicable submission fees.

C. PERMITS AND LICENSES

All permits and licenses required by any federal, state, county, and/or local governing body shall be obtained in strict accordance with the requirements of that governing agency. When required by the licensing agency, the Department shall assist in the application for permits and licenses. Such permits may include but not be limited to permits for construction within ARDOT and railroad right-of- ways, wetlands, or flood zones; erosion control; drainage; grading; and tapping. It shall be the responsibility of the Contractor/Developer for obtaining and complying with all local flood plain permits. The cost of any permit, fee, or bond required shall be borne by the Contractor/Developer, unless otherwise specified by the Department. Work shall not commence without all appropriate permits in place.

D. SWPPP

The Contractor shall be responsible for implementing all applicable requirements of the DEQ General Stormwater Permit for Construction Activity associated with the construction activities contracted to perform.

The Contractor shall be responsible for implementing all applicable pollution prevention controls described in the SWPPP that are associated with the construction activities contracted to perform. The Contractor shall be responsible for achieving temporary soil stabilization and pollution prevention during the period of active construction, as well as reaching final stabilization when construction activities have ceased.

E. 404 PERMIT

The Contractor shall be responsible for implementing all applicable requirements of the COE Section 404 Nationwide Permit 10120-2 associated with the construction activities.

As required by the Section 404 permit, the Contractor shall implement the Little Rock District Corps of Engineers Sedimentation and Erosion Control Guidelines for Pipeline Projects.

F. RECORDKEEPING

The Contractor and Developer shall be responsible for adhering to all record keeping requirements, including the retention and display of all permits and licenses as required.

END OF SECTION

SECTION G10

NOT USED

END OF SECTION

SECTION G11

TESTING AND CERTIFICATIONS

A. GENERAL

This Section of the Specifications outlines the general test requirements for newly constructed water and sewer facilities. The Contractor shall be responsible for and shall pay all costs associated with any inspection or testing required in connection with the Department's acceptance of materials or equipment incorporated in the Work, unless otherwise specified. Specific testing requirements shall be as set forth in the applicable Sections of the Technical Requirements Chapter of these Specifications.

B. CERTIFICATES OF COMPLIANCE

The Developer or Contractor shall be responsible for furnishing the Engineer with the material and/or equipment manufacturers' certificates of compliance with the requirements and provisions of all applicable standards (i.e. AWWA, ASTM, ANSI, AASHTO, ARDOT, etc.) for all materials and equipment delivered to the project.

C. SPECIFIC TESTING REQUIREMENTS

All tests shall be made in the presence of the Engineer and a representative of SWU. All required tests must be successfully passed before new facilities shall be accepted by the Department. It is the responsibility of the Contractor or Engineer to coordinate the scheduling of tests with SWU and other involved parties. SWU requires a minimum 48-hour advance notice before all tests. Calls to SWU for the purpose of scheduling a test time shall be made no later than 10:00 AM, unless circumstances prohibit. Tests delayed by weather or other unforeseen circumstances shall be rescheduled by the Contractor or Engineer.

Tests shall include but not be limited to the following: pressurized lines shall be hydrostatically tested, gravity sewer lines shall be air tested, PVC gravity sewer lines shall be mandrel tested, and manholes shall be leak tested. SWU shall have the authority to require any test outlined in these Specifications, if required to demonstrate the quality of materials and construction procedures meet the requirements of these Specifications.

Specific requirements for testing and certificates of compliance shall be set forth in the applicable Sections of the Technical Requirements Chapter of these Specifications.

END OF SECTION

SECTION G12

USE OF EXPLOSIVES

A. DESCRIPTION

This Section sets forth the requirements for the use of explosive materials in excavation or demolition.

B. USE OF EXPLOSIVES

In the event that the use of explosives is necessary for the efficient continuation of the Work, the Contactor shall observe all local, state, and federal laws and regulations in purchasing, storing, handling, and utilizing explosives. The Contractor shall obtain all appropriate permits from all applicable agencies prior to blasting. Excessive blasting shall not be permitted. The Contractor shall exercise all necessary precautions to protect persons, completed Work, neighboring property, existing utilities, underground structures, springs, or other natural features. The Contractor shall notify the Department Engineer in advance of the intent to use explosives.

The Contractor shall notify all owners of all nearby property, including public utilities, of the intention to use explosives at least 48 hours before blasting is scheduled.

The Contractor shall submit to the Developer and Department a certificate of insurance covering such blasting operations a minimum of 15 days prior to any blasting. Insurance shall be the minimum amount to cover any damage which may occur from blasting operations.

C. RESPONSIBILITY

The Contractor shall be fully and wholly responsible for handling explosives in a safe manner and for any damage resulting from the use of said explosives. Any damage to private property as a result from the use of explosives shall be the liability of the Contractor. Any observation by a representative of SWU shall not in any way reduce the responsibility of the Contractor for damage resulting from the use of explosives.

The Contractor shall obtain the services of an independent, qualified seismic consultant acceptable to the Department prior to any blasting to mitigate damage to structures, property, springs, or other natural features from resulting vibration and shock. The seismic consultant shall provide and operate seismic monitoring equipment in areas where structures, springs, or other natural features may be affected during the use of the explosives and shall provide the Engineer and the Department a report describing the resulting vibration and forces exerted during blasting in the areas described above.

END OF SECTION

SECTION G13

STORAGE AND HANDLING OF MATERIALS

A. DESCRIPTION

This Section sets forth the requirements for the storage and handling of materials. The Contractor shall be responsible for all furnished material and shall replace at own expense all materials found defective in manufacture or handling after delivery by the manufacturer. This shall include the furnishing of all material and labor required for the replacement of installed material discovered to be defective prior to the final acceptance of the Work.

B. STORAGE OF MATERIALS

The Contractor shall be responsible for the safe storage of any material furnished by or to the Contractor intended for incorporation into the Work until the material has been incorporated into the completed project. All materials shall be stored in strict conformance to the manufacturer's recommendations giving consideration for humidity, temperature, ventilation, and other environmental factors.

Storage of materials shall be in a manner that facilitates easy inspection and inventory. Storage shall not endanger or damage other materials or facilities. Pipe shall not be stacked higher than the limit set forth by the manufacturer's recommendations. The interior of all pipe, fittings, and other accessories shall be kept free from dirt and other foreign matter at all times.

Delivery of materials shall be scheduled to minimize long-term storage of materials onsite, particularly items which are fragile, hazardous, flammable, and/or subject to deterioration. Items subject to damage from the elements shall be covered, providing adequate ventilation to prevent condensation. Foam, plastic, gaskets, PE film, and other UV and heat sensitive materials shall be stored away from sunlight. All cementitious materials shall be stored on a raised elevation, not directly on the ground, and in a dry location. All materials, including chemicals, fluids, lubricants, and other liquids shall be protected from freezing.

C. HANDLING OF MATERIALS

Pipe and accessories shall be loaded and unloaded by lifting with hoists or skidding to prevent shock or damage. Under no circumstances shall materials be dropped. Pipe handled on skid ways shall not be skidded or rolled against other pipe.

In distributing material at the site of the Work, each piece shall be unloaded on level ground as near the place where the material is to be utilized as possible.

Pipe and fittings shall be handled such that the exterior coating and interior lining shall not be damaged. Lined pipe and fittings shall be handled only from the outside. Devices such as forks, chains, straps, and hooks shall not be placed inside pipe or fittings for lifting, positioning, or laying. If any part of the coating or lining is damaged, repair shall be made by and at the expense of the Contractor and to the satisfaction of the Department.

PE film shall be handled so as to not puncture or blemish the film. Damaged PE film shall not be used to wrap pipe, fittings, or appurtenances.

END OF SECTION

SECTION G14

SUBMITTALS

A. DESCRIPTION

This Section of the Specifications includes administrative and procedural requirements for submitting shop drawings, engineering product data, samples, and other submittals.

B. REQUIREMENTS

Submittals for all equipment and materials which shall become a permanent part of the Work shall be submitted to the Department Engineer for review and approval. Submittals shall verify compliance with these Specifications and shall include drawings and other descriptive information in sufficient detail to indicate the kind, size, arrangement, and operation of component materials and devices; the external connections, anchorages, and supports required; performance characteristics; and dimensions needed for installation and coordination with other materials and equipment. If an item consists of components from several sources, the Contractor shall submit a complete submittal including all components.

C. CONTRACTOR REVIEW

All submittals, regardless of origin, shall be stamped with the approval of the Contractor and identified with the name and number of the Contract, the Contractor's name, and references to all applicable Specification Sections and Contract Drawings. Submittals shall be consecutively marked in sequence of submittal and without division by subcontracts or trades.

Each submittal shall indicate the intended use of the item in the Work. When catalog pages are submitted, applicable items shall be clearly identified and inapplicable data omitted or marked out. The current revision, issue number, and date shall be indicated on all drawings and other descriptive data.

The Contractor shall be solely responsible for the completeness of each submission. The Contractor's stamp of approval shall be a representation to the Department that the Contractor accepts sole responsibility for determining and verifying all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data and that the Contractor has reviewed and coordinated each submittal with the requirements of the Work and Contract Documents.

D. SEQUENCE OF REVIEW

After the Contractor's review and the Engineer's initial review, the Department shall review the submittal. If the submittal deviates from any SWU specifications, the Engineer shall notify the Department of such deviation. The Department shall only accept submittals from the Engineer. After the Department's review and approval, the Engineer may approve or disapprove the submittal. The Contractor may not perform the associated Work until approved by the Department and the Engineer.

E. COPIES

Two (2) copies of each drawing and necessary supplementary data shall be submitted by the Engineer to the Department for review. The Department shall return one (1) marked copy to the Engineer. Faxed copies of submittals or resubmittals shall not be acceptable.

END OF SECTION

SECTION G15

OPERATION AND MAINTENANCE MANUALS

A. DESCRIPTION

This Section sets forth adequate materials and procedures for compiling and submitting operation and maintenance manuals. Adequate O&M information shall be supplied by the supplier for all equipment that shall require maintenance or other necessary attention. O&M manuals shall be provided in addition to any instructions or parts lists packed with or attached to the equipment. O&M manuals shall be formatted and include the specific content as outlined below.

B. OPERATION AND MAINTENANCE DATA

The equipment supplier shall prepare an O&M manual for each type of equipment furnished. O&M manuals shall include the following, where applicable:

1. Name, address, and telephone number of the nearest competent service representative who can furnish parts and technical service;
2. Descriptive literature, including illustrations, covering the operational features of the equipment, specific for that particular installation and with all inapplicable information omitted or marked out;
3. Equipment function, normal operating characteristics, and limiting conditions;
4. Assembly, installation, alignment, adjustment, and checking instructions;
5. Operating instructions for startup, routine and normal operation, regulation and control, and shutdown and emergency conditions;
6. Lubrication and maintenance instructions;
7. “Troubleshooting” guide;
8. Parts lists and predicted life of parts subject to wear;
9. Outline, cross section, and assembly drawings; engineering data; and wiring diagrams;
10. Test data and performance curves;
11. Complete motor data;
12. Equipment weight;
13. Approved shop drawings; and
14. Other pertinent information.

C. FORMAT

O&M manuals shall be printed on heavy, first quality (minimum 20 pound) paper, 8-1/2 inch by 11 inch size with standard 3-hole punching. Drawings and diagrams shall be reduced to 8-1/2 inches by 11 inches or 11 inches by 17 inches and shall be folded to the same size as the text pages. Where

drawing reduction is not practical, larger drawings shall be folded separately and placed in envelopes bound into the manuals. The outside of each envelope shall bear suitable identification.

Binders shall be heavy-duty, 3-ring, vinyl-covered, loose-leaf, in thickness necessary to accommodate the contents. Binders shall bear suitable external identification.

D. MANUALS

After review by the Engineer, two (2) final copies of each O&M manual shall be prepared and delivered to the Department Engineer not later than 15 days prior to operation and final acceptance of the facility. Tabs for the table of contents and index shall be furnished for all volumes containing data for two (2) or more items of equipment.

All material shall be appropriately marked for project identification, and inapplicable information shall be omitted or marked out.

Material and equipment shall not be accepted for use until O&M manuals have been approved by the Department.

END OF SECTION

SECTION G16

SERVICE CONNECTIONS

A. DESCRIPTION

This Section describes requirements with respect to water and sewer service line connections and locations.

B. MINIMUM SIZE AND LOCATION OF SERVICE CONNECTIONS

1. Sewer Services

   All service stubs shall be installed on the sewer main to facilitate future connection of anticipated services to the sewer. All service stubs shall terminate in a manner suitable for insertion of a watertight plug or cap. Unless anticipated service requires a larger line, all service stubs shall be a minimum nominal diameter of four (4) inches.

   Service stubs shall terminate a minimum of two (2) feet inside the property line, but in no case shall the service stub terminate at a distance less than eight (8) feet from the sanitary sewer main. Sewers stubs shall be at a depth no greater than five (5) feet, measured from top of pipe to finished grade.

   The location(s) of all sanitary sewer stub(s) shall be accurately identified in the field at the property line to facilitate easy location of the service in the future. A steel fence post shall terminate at the stub depth, extending a minimum of three (3) feet above grade. The fence post shall be welded or spliced if required to extend to the required depth of bury. A Standard Detail is included in the Appendix of this document.

   The location shall be accurately depicted on the Plans of Record, with dimensioning provided from the nearest manhole(s) and property corners along the street right-of-way line or lot line. Dimension tables and line stationing charts shall not be accepted by the Department. All Plans of Record shall include a table of GPS Coordinates related to location of each sanitary sewer service.

   Sewer stubs shall be located as required by the Standard Detail in the Appendix of this document. In general, sewer stubs shall be at the low end of the lot, with the distance to lot line no less than 10 feet, unless otherwise approved by the Department. Service stubs shall be installed to provide sufficient vertical clearance from other utilities.

2. Water Services

   All water services shall be installed on the water main to facilitate future connection of anticipated services. All water service meter boxes shall be set at least two (2) feet inside the property line. Unless anticipated service requires a larger line, all service lines shall be one (1) inch nominal diameter. The meter box shall be field-adjusted to final grade. The location of meter boxes shall be accurately depicted on the Plans of Record along with a GPS coordinate table. Water meters shall be dual 5/8” by 3/4” at a minimum, unless otherwise specified by the Department, and shall conform to all requirements set forth in the Water Meters, Service Lines, and Appurtenances Section in the Technical Requirements Chapter of these Specifications and by the Standard Detail included in the Appendix of this document. All residential and commercial building lots shall incorporate a double meter service for each lot. Residential fire suppression systems shall be equipped with a one (1) inch minimum meter service. All meters two (2) inches and greater shall be installed by SWU, unless otherwise approved by the Department.

END OF SECTION

SECTION G17

FINAL INSPECTION AND ACCEPTANCE

A. DESCRIPTION

This Section sets forth the requirements for final inspection and acceptance of the water and/or sanitary sewerage facilities upon completion of the project.

B. ACCEPTANCE TESTING

Methods of acceptance testing are outlined in the applicable Sections of the Technical Requirements Chapter of these Specifications and the Testing and Certifications Section herein. All tests shall be conducted in the presence of the Engineer and a representative of the Department. The Contractor or Engineer shall give the Department at least a 48-hour notice prior to commencing any tests. All water and/or sewer services shall be in place before the main line shall be tested.

C. USE OF COMPLETED PORTIONS

Completed portions of the project shall not be placed into service without written approval from the Department. Approval to use any completed portions of the project shall be granted only in the best interest of the Department. Use of any completed portion of an incomplete project shall not constitute final acceptance of the project by the Department.

D. FINAL INSPECTION

Final inspection shall be made at the written request of the Engineer. Upon said request, the Department Engineer or an authorized representative of the Department shall make a final inspection in the presence of the Contractor and Engineer. Water and/or sanitary sewer extensions shall be not accepted for ownership by the Department and service connections to said extensions shall not be approved until final inspection. The final inspection shall not be conducted until the Plans of Record are submitted to the Department.

A list of material and workmanship defects, if any, shall be forwarded to the Engineer. Defects noted shall be corrected before final acceptance. Improvements not found as depicted on the submitted Plans of Record shall be rejected.

E. MAINTENANCE BOND

Upon completion of the project and after all defects have been corrected in accordance with the final inspection, a maintenance bond for an amount equal to 50% of the construction cost in a form acceptable to the Director or an approved Department representative shall be submitted to the Department. The Maintenance Bond Form is included in the Appendix to this document. The bond shall be issued for a period of one (1) year and shall cover all defects in materials and Workmanship. The bond shall be binding to the Developer or the Contractor and benefiting the City of Springdale Water and Sewer Commission, the obligor.

F. INSPECTION BEFORE EXPIRATION OF MAINTENANCE BOND

An inspection shall be conducted by the Department before the expiration of the maintenance bond. A list of any defects in material or workmanship, if any, found during this inspection shall be forwarded to the Engineer. If corrections are not made within a reasonable period of time, a claim shall be filed with the bonding company. As soon as the defects found during the inspection are corrected, the Department shall issue full acceptance of the project for maintenance.

G. FINAL ACCEPTANCE

No connection of customer facilities or any other utilization of main extensions shall be permitted by the Department until a letter of acceptance is issued. The acceptance letter shall not be issued until the following requirements are met:

1. Receipt of two (2) copies of approved Plans of Record and profiles of main extensions and digital drawing in AutoCAD format;

2. Receipt of O&M manuals;

3. Satisfactory correction of all defects noted in final inspection;

4. Receipt of maintenance bond;

5. Receipt of all required easements and deeds;

6. Receipt of the Engineer's certification stating that all improvements have been constructed in accordance with the approved Plans and Specifications;

7. Receipt of an affidavit from the Developer stating that all materials, supplies, and labor bills have been paid;

8. Receipt of Engineer's report outlining the total capital cost for water and/or sewer facilities, including all engineering fees; and

9. All testing requirements have been certified as acceptable.

H. PLAT APPROVAL

Final plats shall not be approved by the Department until all of the above listed requirements for final acceptance have been met and the Department has acknowledged acceptance of the water and/or sewerage facilities.

I. BEGINNING OF WARRANTY PERIOD

The Contractor shall guarantee the Department that all Work performed shall be free from defects in workmanship and material for a minimum period of one (1) year from the date of final acceptance. Defects that arise during the warranty period shall be promptly remedied by the Contractor at his expense, upon request of the Department. If any defective or damaged Work is corrected, removed, or replaced within this one (1) year warranty period, the warranty period for the defective or damaged Work shall be extended for the period of one (1) additional year after corrective action is taken.

END OF SECTION

SECTION G18

ABANDONMENT OF WATER AND SEWER LINES

A. DESCRIPTION

This Section sets forth the requirements for the abandonment of water and sewer lines as required by the Department.

B. MATERIALS

1. Aggregate Base Course
   Aggregate base course shall be Class 8 as specified in the *Standard Specifications for Highway Construction* published by the Arkansas State Highway Commission.

2. Flowable Fill (Controlled Low-Strength Materials)
   Flowable fill is defined as a self-compacting, non-excavatable cementitious material that is in a flowable state at placement and has a compressive strength of 1,200 psi or less at 28 days as set forth by ACI. Flowable fill generally consists of a combination of fine aggregate, water, cementitious materials and/or cement replacements such as slag and/or fly ash, and chemical admixtures and shall conform to the requirements as set forth in the Concrete and Reinforcing Steel Section in the Technical Requirements Section of these Specifications.

C. EXECUTION

1. Sewer Lines
   Manholes shall be abandoned as shown on the Standard Detail Sheet and as set forth herein. The Contractor shall ensure that all pipes shall be adequately filled and sealed with flowable fill to prevent infiltration or degradation of road subgrade. Flowable fill shall be mixed and placed as set forth in the Concrete and Reinforcing Steel Section in the Technical Requirements Chapter of these Specifications. The acceptable slump range for flowable fill shall be 6-10 inches.

   The manhole shall be removed to a minimum depth of two (2) feet below the subgrade and disposed of by the Contractor. The manhole ring and lid shall be removed and returned to the Department. The excavated area shall then be backfilled with Class 8 aggregate base course to the existing grade, finished grade, or roadway as applicable and compacted to 95% Modified Proctor, as set forth by AASHTO T180 (The Moisture-Density Relations of Soils Using a 10-lb Rammer and an 18-Inch Drop). Existing services shall be abandoned in a similar manner.

   Varying procedures and materials necessary for the abandonment of sewer lines and manholes may require individual design on a case-by-case basis and as approved by the Department.

2. Water Lines
   Any water lines to be abandoned shall be as shown on the approved Plans and set forth herein. The water line shall be filled with flowable fill to prevent the infiltration of water or soil, ensuring the integrity of the subgrade is maintained. Flowable fill shall be placed as set forth in the Concrete and Reinforcing Steel Section in the Technical Requirements Chapter of these Specifications. Valve boxes, fire hydrants, and meter services shall be removed and returned to the Department. Varying procedures and materials necessary for the abandonment of water lines may require individual design on a case-by-case basis and as approved by the Department.

END OF SECTION