INTRODUCTION

1. PURPOSE OF THE STANDARDS MANUAL

These Standards are guidelines for Developers, their Engineers and Contractors for the planning, design and construction of sanitary sewers, small wastewater pumping stations, and associated appurtenances within the City of Lebanon, Tennessee, Public Services Department, hereinafter identified as the "City of Lebanon", service areas.

These Standards shall govern the construction materials and installation of wastewater collections systems that are, or will become, the responsibility of the City of Lebanon to operate and maintain as part of their system.

These standards are intended to meet or exceed the requirements of the State of Tennessee's Department of Environment and Conservation (TDEC) and to aid the Engineer in his design of wastewater collection systems and wastewater lift stations. This design should incorporate the highest level of standards of practice and specify materials of highest quality identified in the technical specifications.

The Standards identify a single set of standards, criteria, submittal requirements and approval procedures to be used in the planning, design, and construction of projects within the City of Lebanon service area.

These Standards are not intended to serve as a step-by-step design and construction method nor can this manual address every situation that may arise. The application of sound engineering/surveying principles combined with the information contained herein is necessary to complete the planning, design, and construction for wastewater collection projects.

SECTION 1 – GENERAL

1. DEFINITIONS

Public Services – City of Lebanon, Tennessee; Department of Public Services

City – City of Lebanon, Wilson County, Tennessee

City Engineer – Employed by the City of Lebanon, Registered Professional Engineer in Tennessee and is responsible for review and approval of all proposed sewer improvements, manages the Engineering Department.

Engineering Department – The Division of the Public Services Department, which oversees, plans review, approval and installation of sanitary sewer facilities.

Planning Commission – City of Lebanon Planning Commission

Developer – Owner of a proposed development in which sewer lines are to be located.

Contractor – Contractor who is installing sewer lines in a proposed development.

Engineer – One who has prepared the construction plans and specifications for the installation of sewer lines in a proposed development. As provided by the laws of Tennessee, he or she must be a registered professional engineer and plans and specifications must bear his or her official seal.

State Regulatory Authority – Tennessee Department of Environment and Conservation; Division of Water Pollution Control

Plans – Drawings, details, specifications, survey, plats and any other documents used to communicate design information to a Contractor or regulator necessary to construct improvements, extensions or modifications to the City of Lebanon wastewater system.

2. SCOPE OF REGULATIONS

These regulations shall apply to any person, developer, firm, business, or entity interested in and desiring to construct additional sewer lines or to extend sewer lines within the city limits, or to construct sewer lines or extend sewer lines in a way that affects the sewer service provided by the City.

3. PLAN REVIEW PROCEDURE

Before any connection is made to a sewer line of the Department of Public Services, the Developer or other party through his engineer shall submit and receive approval of his proposed plan. Plans will not be deemed approved until the City of Lebanon Engineering Department's stamp of approval has been affixed to the cover sheet of the drawings and specifications.

The approval of the Engineering Department must be obtained before submittal of the plans and specifications to the State Regulatory Authority, and both approvals must be obtained before construction is started. Evidence of State Regulatory Authority approval must be furnished to the Engineering Department before beginning construction. A copy of the City & State approved plans must be present at the project site during construction.

Approval of plans for proposed sewer line construction for new subdivisions and other developments must be obtained from the Engineering Department before final approval for such developments will be granted. Approval of plans shall be valid for one (1) year from the date of approval.

Plan submittal procedure shall be as follows:

A. All plans and other required documents shall be submitted to the City of Lebanon Engineering Department through the City's electronic plan review portal – IDT Plans. Submissions shall include, as a minimum:

- Transmittal letter
- Plans including vicinity map
- Preliminary plat showing the plan development if applicable
- Engineering reports including design criteria used in sizing mains and/or pumping stations, as required.
- A $300.00 plan review is required for gravity sewer mains as well as a $300.00 plan review fee for pump station and/or force main review as applicable. This will need to be submitted before the plan review process is started in IDT.

B. The City Engineering Department will review the plans and specifications. Should the proposed water line plan need corrections, a comment list will be generated and sent through the IDT Portal to the Design Engineer for applicable changes.

C. Once the proposed water line plan meets the City of Lebanon's current specifications, it will be stamped approved through the IDT Portal and sent to the Design Engineer electronically. The Design Engineer is responsible for providing one (1) City approved hard copy of the water line plan to the City of Lebanon Engineering Department as well as submitting to the Tennessee State Regulatory Authority for their approval.

4. PLAN SHEET REQUIREMENTS

A. All plans shall be stamped by a Tennessee Licensed Professional Engineer.

B. Plans shall be drawn on a standard 24" x 36" sheet.

C. A cover sheet shall be made a part of all plans, and shall incorporate a location map on an approximate scale not less than 1" = 1000', the name of the project, and the names, address, telephone numbers, and fax numbers of the Developer and the Engineer.

D. The plan scale will be: Plan 1" = 50' or 1" = 100', profile where applicable 1" = 5' or 1" = 10' vertical. Show profiles of all waste water lines (for all force mains and gravity lines). Profiles should be included on the same sheet as the corresponding plan view.

E. The direction of North should be clearly shown on all sheets.

F. Show all existing and proposed utilities, including septic drain fields, wastewater, gas, electric, telephone, cable TV, and storm sewers on the plans with measurements and/or details of proposed clearances of same.

G. Show all topographic features such as driveways, pavements, rights-of-ways, property lines, storm drainage, structures, etc., especially those which may conflict with the proposed wastewater main.

H. Submitted plans shall include, besides the sewer main plans, plans showing finished grades for the roadways, curbs, gutters, sidewalks and ground as well as the location, size and invert elevation of other utilities and drainage structures.

I. Provide detailed drawings for unusual conditions such as stream crossing, railroad crossings, highway crossings, etc.

J. Hydraulic calculations and data shall be submitted for the proposed system including estimated flow demands, hydraulic profile, system curves, system head, proposed pump curves and wet well calculations, based on State design criteria.

K. Show the limits of all existing and proposed easements.

L. The plans shall also include the latest revision date if applicable.

M. The City of Lebanon reserves the right to have wastewater lines relocated on the construction plans to facilitate maintenance and to provide service for adjacent properties.

N. <u>All</u> final construction plans shall be based on <u>field run survey information</u> and shall include the name and stamp of the registered surveyor.

O. Onsite benchmark: All sewer plans must include one (1) <u>onsite</u> benchmark based on U.S.G.S. datum. Additional bench marks shall be shown at approximately 1,500' intervals. The use of manhole invert elevation an assumed invert elevation will not be acceptable.

5. DESIGN FEATURES

Sewer system design features shall generally conform to good municipal practice and to requirements of the Tennessee Department of Environment and Conservation.

A. The following criteria will generally apply:

Per Capita Wastewater Flow (PE) 100 GPCD

Peak Flow Factors (PFF)

PE	PFF
0 – 500	5
500 – 1000	4
1000 – 10000	3.25
10000 – 50000	2.5
Over 50000	2

	GRAVITY	PRESSURE
Minimum velocity at design flow	2.0 fps	2.0 fps
Maximum velocity at design flow	15.0 fps	5.0 fps
Basis of Hydraulic Design: Kutter's Formula with "n" =	0.013	Hazen-Williams w/C=140
Minimum Size		
Collector	8"	1 ½"
Service *	4"	1 ¼"

Distances between Manholes shall not be greater than 400 LF.

* The minimum size service line (lateral line running from the collector sewer to the point at which the sewer customer is to tie in) shall be 6" diameter.

B. All conventional gravity sewers shall be designed and constructed to give mean velocities when flowing full of not less than 2.0 feet per second. The following minimum slopes should be provided; however, slopes greater than these are desirable:

Sewer Size (inches)	Minimum Slope (feet per 100 feet)
8	0.40
10	0.28
12	0.22
14	0.17
15	0.15
16	0.14
18	0.12
21	0.10

24	0.08
27	0.07
30	0.06
36	0.05

C. Sewer system design shall allow a drop in elevation through each manhole of at least 0.1 feet unless approved otherwise by the Engineering Department.

D. An outside drop connection shall be provided for a sewer entering a manhole at an elevation of more than 1.9 feet above the manhole invert. Where the difference in elevation between the incoming sewer and manhole invert is 1.9 feet or less, the invert should be filleted to prevent solids deposition. Drop Connections shall be built in manholes at the locations and in conformance with the details shown on the Standard Detail Drawing. The minimum size drop shall be eight (8") inches. Generally, drop pipes shall be one size smaller than the sewer which they serve. Precast outside drop connections shall be used unless otherwise approved by the Department. Where manufactured precast manholes are used, they outside drop must be poured simultaneously with and anchored to the manhole. It is not acceptable for the outside drop to be poured separately and anchored onto the outside of the manhole after curing. It is acceptable to use a precast outside drop manhole utilizing PVC with a ductile iron sewer main extension, only if a rigid coupling is used to transition between PVC and ductile iron. If and outside drop is built and poured in the field, then the pipe material used to build the drop must be of the same material as the mainline sewer. For example, if the sewer main is approved to be ductile iron pipe, the outside drop must be built from ductile iron pipe as well.

E. Generally sewage pumping facilities shall be designed to maintain the quality of the waters of Tennessee and shall conform to good municipal practice and to the "Design Criteria for Municipal Facilities Section" as established by the Tennessee Department of Environment and Conservation, Division of Water Pollution Control. No lift station shall be subject to flooding.

F. Lift stations shall be so located such that the site will meet the requirements for sanitary protection of the water quality as well as the hydraulics of the system. All stations shall be located within a site prepared, landscaped, fenced area and provided with a permanent asphalt drive and turnaround area, accessible at all times. The site must also be equipped with a switch operated security light.

G. Pumping stations shall, where possible, be designed to utilize equipment similar to that already utilized by the Department of Public Services. At least 2 pumping units shall be provided for each station with each pumping unit having the capability of pumping the peak demand. Design discharge velocities shall be such as to create self-cleansing conditions in the force main. Suitable air release valves shall be utilized at all points in the force main to an accumulation of air or gases released from the sewage.

H. Pumping facilities will be required to have full standby capacity, high water – power failure alarm system, either dual power source or generator (when directed by the City) flow meters in some cases and elapsed time meters for all pumps in all cases, water

supply for maintenance and other items as determined in reviews for individual installations.

I. Pump operation shall be accomplished by the use of a bubbler system. The bubbler system shall consist of dual air compressors.

J. All wet well mounted pump enclosures shall be insulated fiberglass enclosures and supports, including heat, ventilation, and locking hasp.

K. Provide electrical phase monitoring for the power supply to the wastewater pumps utilizing 3-phase power.

L. Electrical to the pumping station shall be placed underground. All pumping stations shall include an influent cut-off valve outside the pumping station and an effluent force main cut-off valve outside the pumping station. The influent cut-off and effluent cut-off valves shall be contained within a lockable valve pit or lockable valve box to prevent tampering by unauthorized personnel.

M. In some pumping stations odor control facilities will be required. The method for odor control shall be approved by the Engineering Department.

N. For sewage pumping installations the following pumps are generally approved for use in the System (subject to detailed design review of each project):

- Gorman-Rupp
- Smith and Loveless
- HFE

O. For Submersible Pumps:

- Submersible pumps are limited to small area grinder type package pumping stations and will only be allowed if specific approval is granted by the Commissioner of Public Services.

P. In general, the combined weight of the pump and motor shall not exceed 1000 pounds; suitable lifting devices must be furnished with the pump station; pump station depth shall not exceed 20 feet; and all items inside the pump chamber shall be made of corrosion resistant material or specially coated.

Q. Preliminary discussions concerning pump station design are encouraged before preparation of preliminary plans so specific design requirements can be established.

R. All wet well mounted pump station enclosures shall be hinged on one end or clam shell type hinged on both ends or fully sliding type on a concrete slab such that the enclosure opens or slides completely out of the way for easy access to facilitate maintenance by the Owner.

S. A Mission M-800 series SCADA Real Time Monitoring and Control System is required on all pump stations.

T. All pump stations, wet well mounted and grinder types, are required to have an emergency pumping connection per standard detail S37. Wet well mounted pumping stations should be equipped with an integral emergency pumping connection inside the pump enclosure.

U. Generally the following locations should be utilized for location of new wastewater lines unless field conditions such as other utilities, etc. make it impractical to do so:

1. New Subdivisions – New mains to be in the center of the roadway where practical unless otherwise approved by the Engineering Department and shall not be located under sidewalks.

2. Along older roads in existing subdivisions that have open ditches, the mains shall be located in easements unless otherwise approved by the Engineering Department.

3. Service lines shall be generally located 20’ from the downstream side of the property line and/or out of the way of driveways, landscaping, headwalls, etc.

4. Where gas lines exist or are proposed there must be at least 10’ horizontal separation between the wastewater line and gas line and a minimum 18” vertical separation between the lines.

5. Separation of Water Mains and Sewers shall be maintained in accordance with the following guidelines:
    a. Where water lines exist or are proposed, line separation is to be at least 10 feet edge to edge. If this cannot be obtained, the bottom of the water line shall be at least 18 inches above the top of the sewer. If this condition is also unobtainable, the sewer line is to be constructed of materials and have a joint design equivalent to water main standards as approved by the Department of Public Services and shall be pressure tested to 50 psi to assure watertightness.
    b. Such sewer lines shall be pressure tested to 50 psi to assure watertightness. When water lines do have to pass under sewer lines the water main shall be sleeved to a point of 10’ on each side of the sewer. Water mains passing under sewers shall be protected (in addition to the above sewer line construction) by providing: at least 18 inches between the bottom of the sewer and the top of the water line; adequate structural support of the sewer to prevent excessive joint deflection or damage to the water line; centering of the water line section to result in the water line joints being removed from the sewer line to the maximum possible extent.
    c. No water line shall pass through or come into contact with any part of a sewer or sewer manhole.

V. Pipe Material shall be as designated on approved construction drawings and shall conform to applicable specifications included in Section 2 of these Standard Specifications. The Engineer shall, therefore, designate pipe materials on all construction drawings.

W. Provide concrete cap or ductile iron pipe for mains that, when completed, have less than 2.5 feet of cover in non-traffic areas and 4 feet of cover in traffic areas.

X. Sanitary Sewer Services – Sewer services shall not enter manholes except in the cases of terminal manholes.

Y. Where Force Mains Connect to the Gravity system that manhole must have a protective coating against H2S installed. If the force main is a major line with extended run times the next two downstream manholes must also be coated.

6. EASEMENTS

A. When sanitary sewers are constructed outside a public right-of-way, easements must be provided using the following:

1. 0' –12' depth requires 20' easement.

2. 12' – 20' depth requires a 30' easement.
   * No sewer allowed deeper than 20 feet without special approval by the City Engineer and Commissioner of Public Services. Also, any sewer over 12 feet deep must be constructed using SDR-26 PVC. In addition, Ductile Iron Pipe shall be required for sewer lines in engineered fill sections.

   Gravity interceptor sewers 12-inch in diameter and over 12 feet deep (to the invert of sewer) and sewer services of these mains shall be minimum thickness equal to ASTM D3034 Class SDR-26; ASTM F679 SDR-26 equivalent (115 psi stiffness) or greater and approved by the Owner.

B. Easements for wastewater line extensions may be provided in either of two ways:

1. Easement Document on forms provided by the Department, which must include legal description of the easement(s), exhibit map, legal Owners name, map and parcel, and must be signed by the Owner; and then notarized and recorded.

2. Record with Subdivision Plat.

C. All easements for work on property not owned by the Developer must be obtained and recorded before final plans approval.

D. Special permits such Aquatic Resource alteration, Railroad crossings, T.V.A. crossings and State Highway crossings must be prepared by the Developer's Engineer and must be in hand, with a copy submitted to the City of Lebanon, prior to final plans approval

by the City of Lebanon. Any costs associated with these permits will be paid for by the Developer.

7. PERMITS

Before beginning any construction the Contractor shall obtain all necessary permits as required by law. Such permits include, but are not limited to, those from State and County Highway Departments and the City.

8. PRECONSTRUCTION CONFERENCE

Before beginning any construction, and after the plan approval process is complete, the Developer or his Engineer shall schedule a Pre-construction Conference to be held between the Contractor, Developer, Developer's Engineer, and the City of Lebanon personnel. At this meeting, the contractor will be informed of the City's policies and any special requirements. Listed below is a Checklist of items relating to the pre-construction conference:

A. Developer, or his Engineer, is to schedule and coordinate the conference at least 3 days prior to the requested conference date.

B. Developer, or his Engineer, is to have project plans approved by all agencies prior to the conference.

C. Contractor is to have shop drawings approved by the Department prior to the pre-construction conference.

D. When submitting plans and shop drawings to the Department, the Department will retain three (3) copies. Shop drawings, including but not limited to, pipe, manholes, castings, service pipe and other major appurtenances, will not be reviewed unless they have been checked by the Contractor and stamped by him to indicate that they meet the specifications.

E. Shop drawings for pipe, manholes, etc. shall be submitted to the Department a minimum of seven (7) calendar days prior to the pre-construction conference for review and approval after being thoroughly checked by the Contractor and dated and stamped with his approval.

F. Upon request by the Department, laboratory test reports shall be provided on all pipe to assure that it meets the requirements of these specifications.

G. The Developer must have plans and specifications that have been approved by the Department and the Tennessee Department of Environment and Conservation, and the State's approval letter. These must all be submitted to the City Engineering Department prior to scheduling the preconstruction meeting.

H. All outstanding fees (plan review, inspection, etc.) must be paid prior to scheduling the preconstruction meeting.

9. ABILITY TO PERFORM

The Developer may be asked to establish, to the satisfaction of the Department, that the Contractor proposed to be used on any project, is to be approved by the Department as one who has the ability to perform the Contract and meets at least the minimum standards set forth below. Such factors as judgment, skill, and integrity will play an important part in the overall determination. Although additional criteria may be used, a responsible Contractor must at least:

A. Have adequate financial resources or the ability to secure such resources to successfully perform the proposed Contract safely, with minimum impact on the general public in a reasonable time frame;

B. Have the necessary experience, organization, and technical qualifications and have or show proof that he can acquire the necessary equipment to perform the proposed Contract;

C. Be able to comply with all required performance schedules or completion dates, taking into account Contractor's existing commitments;

D. Have a satisfactory record of performance, integrity, judgment, and skills;

E. Be otherwise qualified and eligible to receive an award under applicable laws and regulations;

F. Maintain a permanent place of business.

The Developer may be required to furnish the Department information sufficient to show that the proposed Contractor and it's subcontractors and supplies currently meet these minimum standards.

10. INSPECTION

The City Engineer shall be notified at least 48 hours before construction is to begin.

All projects shall be subject to inspection during and upon completion of construction by an authorized representative of the Engineering Department. Inspection may consist of full-time resident inspection or part-time inspection at the sole discretion of the Engineering Department. Presence or absence of the inspector during construction does not relieve the Developer and/or Contractor form adherence to approved plans and specifications.

Contractor must coordinate with the City of Lebanon GIS Department (Office 615-444-3647 ext. 2312 or 2313) to collect the following data points. A 30 min to 1 hour notice is required.

1. Every manhole, clean out, and valve needs to be collected.

2. On force mains that bend or have a significant change in elevation, we need enough points to accurately show the force main location (horizontally and vertically) on a flat map. The ditch can be filled, as long as these points are still exposed.
3. On force mains that do not bend or have a significant change in elevation, a point every 100 feet or so should be sufficient. The ditch can be filled, as long as these points are still exposed.
4. Points on sewer mains do not need to be collected as long as the pipe only bends at manholes.
5. Every joint on sewer services need to be collected. The ditch can be filled, as long as these points are still exposed.

The work shall, at all times, be subject to the inspection of authorized representatives of the City Engineering Department. Materials and/or workmanship found not meeting requirements of approved plans and specifications shall be immediately brought into conformity with said plans and specifications.

An authorized representative of the City Engineering Department shall make a final inspection of the project after completion to determine acceptability of the work. Before this final inspection can be made, the Engineer responsible for the Project shall notify the Engineering Department in writing that the work has been completed in accordance with approved plans and specifications.

The Developer must pay the cost of the inspection provided by the City Engineering Department. Inspection costs shall be $2.25 per foot of gravity sewer line and $1.50 per foot of force main actually installed. Footage shall include main lines only with service lines not included in the computation. Before construction begins, the Developer shall make a deposit on the inspection fee equal to an amount calculated by multiplying the sewer inspection fee, $2.25 per foot, times the linear feet of gravity sewer lines and $1.50 per foot, times the linear feet of force main as scaled or otherwise taken from the plans. The total amount of the deposit shall be made to the Engineering Department before construction begins. Upon completion of the project, the Engineering Department shall refigure the inspection fee on the basis of sewer lines actually constructed and shall make whatever adjustment is necessary to correct the amount of the original deposit.

A minimum inspection fee of $1,000.00 shall be charged for each gravity sewer project. A minimum inspection fee of $500.00 shall be charged for each force main.

Authorized representatives of the Tennessee Department of Environment and Conservation shall have the right to inspect the construction work and shall be notified of the final inspection date on the work.

11. <u>WORKMANSHIP</u>

A. The work shall at all times be subject to the inspection by authorized representatives of the City Engineering Department. Materials and/or workmanship found not meeting requirements of approved plans and specifications shall be immediately brought into conformity with said plans and specifications.

B. All wastewater construction shall be in accordance with the latest specifications of the City of Lebanon Public Services Department.

C. Contractor shall provide competent, suitably qualified personnel to survey, layout and construct the work. Contractor shall at all times maintain good discipline and order at the site. Except as otherwise required for the safety or protection of persons, the work or property at the site or adjacent thereto, shall be performed during regular working hours. Regular working hours shall be considered to be 7:30 a.m. to 4:30 p.m., Monday through Friday. Contractor will not permit overtime work or the performance of work on Saturday, Sunday or any legal holiday without the Department's approval. A request to work outside regular working hours must be made two (2) working days prior to the time they proposed to do the work.

D. The Contractor shall be responsible for locating and verifying the elevations of existing utilities prior to construction.

E. The Developer and his contractors shall protect all utilities whether existing or new from damage by other utility installers. The Developers shall replace any water service/wastewater service in its entirety, (for water lines from the main to the meter and for wastewater lines, from the main to the easement line/right-of-way) should it be damaged.

12. FINAL INSPECTION

An authorized representative of the Department shall make a final inspection of the project after completion to determine acceptability of the work.

Before a final inspection is scheduled, the following must take place:

A. When the Developer completes the construction of lines, a semi-final inspection will be held by the Department and the Contractor. Upon completion of the "punch list" by the Contractor from this semi-final inspection, a final inspection with the Developer or his representative, the Contractor, and the Department will be held.

B. Binder pavement must be in pace in road sections where water and/or wastewater lines are installed.

C. When the list of deficiencies, if any, is corrected, the Contractor will arrange for a final inspection.

D. The City at its discretion may require additional surveys by a licensed surveyor or engineer to verify placement of lines or other facilities within the easement.

13. RECORD DRAWINGS

13.1 GENERAL REQUIREMENTS

A. A record of all deviations from the construction plans shall be recorded in the field by the projects superintendent, and submitted to the Design Engineer who shall, upon completion of the project, generate Final Record Drawings (As-Builts). As-Builts are generated by revising the original design information and adding the corrected data. Therefore, the Final As-Builts will depict the constructed information.

B. The Design Engineer shall provide a complete set of As-Builts (including private developments), 2 sets of prints, and in digital format compatible with the City's geographic information system software, upon completion of construction. As-Builts shall include actual field angles between lines, all actual service lines and meter locations. These As-Builts must be completed and submitted prior to acceptance of any facilities into the public system and any connections being made thereto.

C. The completed As-Builts shall be submitted to and reviewed by the Department for verification of information. The plans will be either accepted as As-Builts or rejected and the above process is repeated.

13.2 DRAWING INFORMATION

The drawings shall depict the Design Engineer's verification of the pipe sizes, lengths, slopes and angles, inverts, manhole covers, flow lines, changes in offset distances of structures, and location and elevation of existing utilities. Each drawing shall have the following shown on each sheet:

A. The Engineer shall stamp and sign **ALL SHEETS** of the As-Builts.

B. The Engineer shall affix a note on each sheet identifying the Drawings as As-Builts.

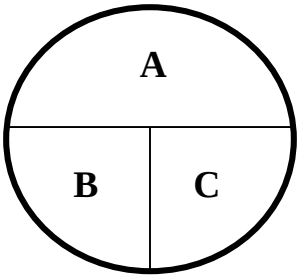
C. A statement affixed on the lower right-hand corner stating: I hereby certify that these construction drawings represent a true and accurate depiction of the as-Built conditions.

D. Any unverified data shall show +/-, thereby indicating that information has not been verified. This shall only apply to information that could not be field verified by reasonable methods as approved by the Field Representative.

E. For Wastewater Lift Stations

   a. All revisions in pipe sizes
   b. All revisions to electrical controls
   c. All revisions to ventilations systems
   d. Pump modifications
   e. Changes in elevation for level controls
   f. Equipment layout modifications
   g. Building modifications
   h. Location and elevation of existing utilities

F. Property Service Connections for sanitary sewer laterals shall be shown as follows:



Whereas:

A = The horizontal distance from the center of the wye or tee to the center of the downstream manhole.

B = The horizontal distance from the center of the wye or tee to the end of the lateral.

C = The vertical distance from the top of the ground to the top of the lateral at the plug or property line.

14. FINAL ACCEPTANCE

When facilities qualify as public facilities, the Department of Public Services will accept ownership of the completed facilities when the work has passed the final inspection and when final drawings are submitted to the Engineering Department reflecting actual "As Built" conditions. The City Engineering Department will review the prints and, if acceptable, will begin the one (1) year warranty period.

Final acceptance by the Department of Public Services will be made in writing, by the City Engineer's office, upon satisfactory completion of the project including final inspection, submittal of "As Built" drawings and payment of all fees due. The Developer shall guarantee the work for a period of one year from the date of final acceptance by posting an applicable Letter of Credit and shall immediately correct any deficiencies in the work due to materials and/or workmanship, which occur during the guarantee period. The Letter of Credit amount will be determined by the Engineering Department and will be an amount equal to 10% of the total estimated project cost.

PROCESS

STEP 1: The Developer shall obtain final approval from the Planning Commission for any proposed extensions to be located within a new subdivision, development, etc.

STEP 2: The Developer will contract with an Engineer to design the proposed wastewater extension.

STEP 3: Developer and Engineer prepare construction drawings.

STEP 4: Initial plan submittal of construction drawings to City of Lebanon for review. Initial submittal should include all necessary permits and easements needed from any agency and/or person having jurisdiction in the project area.

STEP 5: City of Lebanon Engineering Department reviews the plan and returns any comments for corrections to be made to the Design Engineer.

STEP 6: The Developer returns the plans and specifications for City of Lebanon approval.

STEP 7: The Developer's Engineer submits approval copies of the plans and specs to TDEC for approval.

STEP 8: The Developer's Engineer submits one (1) hard copy of the approved plans to the City of Lebanon Engineering Department.

STEP 9: Developer and/or his contractor sets up a PRECONSTRUCTION CONFERENCE with City representatives and pays all fees.

STEP 10: BEGIN CONSTRUCTION: Provide minimum 48 hour notification.

STEP 11: Developer and Contractor set up final inspection.

STEP 12: Developer's Engineer submits "As-Builts".

STEP 13: Developer posts one-year maintenance Letter of Credit.

STEP 14: City of Lebanon TV's sewer lines. Any issues will be addressed by the Developer.

STEP 15: City of Lebanon accepts project, issues letter of acceptance.

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