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CH11 11 .5 - Municipal Water - Water Mains

Amendments and Repeals

Sections of this ordinance have since been Amended By - 8-2010 9-2010

1. **DESCRIPTION:** The Contractor shall furnish and install all piping and fittings required for the water main system as shown on the plans. Work shall include but not be limited to both mains, service connections and related appurtenances.
2. **GENERAL**:

A. Safety

- For the security and safety of person in and adjacent to trenches or construction operations, the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America and the safety regulations of the appropriate state or local agency shall be followed when specifically applicable or by similarity of operation or as necessary for adequate protection.

B. Handling

- Pipe fittings and accessories shall be loaded and unloaded by lifting with hoists or skidding so as to avoid shock or damage. Under no circumstances shall such materials be dropped. Pipe handled on skidways shall not be skidded or rolled against other pipe.

C. Protection of Trees

- Special care shall be taken to avoid damage to trees and their root systems. Machine excavation shall not be used when, in the opinion of the Engineer, it would endanger the tree. In general, when the line of trench falls within the limits of the limb spread, headers are required across the trench to protect the tree. The operation of all equipment (particularly when employing booms), the storage of materials, and deposition of excavation shall be conducted in the manner which will not injure trees, trunks, branches, or their roots unless such trees are designated for removal.

D. Dewatering

- Should water be encountered, the Contractor shall furnish and operate suitable pumping equipment of such capacity adequate to dewater the trench. The trench shall be sufficiently dewatered so that the laying and joining of the pipe is made in the day. The Contractor shall convey all trench water to a natural drainage channel or storm sewer without causing any property damage.

E. Noise and Dust Control
   - The Contractor's construction activities shall be conducted so as to eliminate all unnecessary noise, dust and odors. The use of oil for dust control shall not be permitted.

F. All materials provided shall be manufactured similar to other materials in this system where the utility has preference.

G. The Contractor shall be responsible to determine the conditions of all easements and permits and comply with those terms.

3. **SHOP DRAWINGS**
   - Shop drawings shall be submitted to the Engineer for approval. Drawings shall include pie material type and certification, compaction methods, hydrants, valves and granular backfill material analysis. Fabrication and installation shall be in accordance with the approved shop drawings.

4. **STANDARDS**
   - The standards in this section are abbreviated as follows:
     A. American Water Works Association (AWWA)
     B. American Society for Testing and Materials (ASTM)
     C. American Standards Association (ASA)
     D. Commercial Standards (CS)
     E. National Sanitation Foundation (NSF)
     F. American National Standards Institute (ANSI)

5. **RELATED WORK**

A. Pavement and Street Repair shall be in accordance with Section 2500, Pavement Drives and Walkways.

B. Grading and Seeding shall be in accordance with Section 2400, Landscaping.

C. Highway crossings shall be in accordance with Section 17250, Water Mains, Special Construction.

6. **MATERIALS**

A. Granular Backfill and Bedding Stone - Where granular backfill is required, it shall meet the material requirements of B Borrow as defined in Section 211.02 of the Indiana Department of Transportation Standard Specifications. Granular backfill shall be paid as a separate item as shown on the bid schedule.

B. Where pipe bedding is required, it shall be provided as shown in the typical trench details in the drawings and as required by these specifications. All bedding shall be coarse aggregate Size No. 9 or 11 as defined by Indiana Department of Transportation Section 903.02. In lieu of No. 9 or 11 stone bedding, Contractor may use B Borrow. The cost of pipe bedding shall be included in the cost of the pipe pay item.

C. Connections - Connections to different water pipe materials shall be as shown on the plans or with adaptors or couplings approved by the Engineer.

D. Fittings for all types of pipe shall be ductile iron of the mechanical joint type in accordance with ANSI specification A21.10. To be class 250 and cement lined. Contractor shall use tie rod joint restraints in addition to concrete kicker blocking Fittings shall be manufactured by Clow, Tyler or Mueller.

E. Wedge valves shall be Waterous (AFC 2500) and shall conform to AEEA C-509, latest issue. Wedge shall be ductile iron, fully encapsulated in synthetic rubber. Synthetic rubber shall be molded in place and bonded to the wedge; mechanical fasteners are not allowed. Stem shall be sealed by a t least two O-rings; contained within the stuffing box (grooving of stem for o-rings Is not allowed). All stem seals shall be replaceable with the valve wide open and while subjected to full rated pressure. Valve body an bonnet shall b e coated inside and out, with fusion-bonded epoxy. Bonnet and body and stuffing box bolts and nuts shall b e type 18-8 stainless steel and must be installed by the manufacturer. Wedge valves shall have a full ten (10) year money back warranty.
    - Valves shall have a 3 piece, round type, adjustable, cast iron road box with 5-1/4" shaft, with water cast in the lid. Boxes to be for normal 4.5 cover, but shall be as required to suite each particular setting depth. Road boxes shall be manufactured by Tyler.

F. Tapping Valves - Tapping valve to be equal to equipment specified for wedge valves. Valves to be Waterous. Sleeves shall be Waterous with mechanical joints. Class of pipe and O.D. of mains to be tapped is uncertain. Contractor to furnish sleeves as required to suite the conditions found in the field.

G. Hydrants - Shall be Waterous Pacer Model WB-67). Hydrant details to be as follows:
    - Shall conform to AWWA C-502 "Standard for Dry-Barrel Fire Hydrants". Shall be of the traffic model design. Main valve opening shall be a minimum of 51/4". The bronze valve seat shall thread into a bronze sub-seat. The all bronze drain plunger shall be positively operated by main operating rod. A stop nut shall be used to provide a positive limit to the travel of main rod. Shall have a two piece operating nut for durability and low maintenance. Nozzle section shall have 360 degree rotation capability by loosening four bolts.
    - Nozzles to be mechanically attached with ductile iron retainer and sealed with 0-ring. Barrel shall be of ductile iron with a minimum inside diameter of 71/4". Shoe and lower valve washer shall be coated, inside and out, with fusionbonded epoxy. Show shall be attached to lower barrel with stainless steel bolts and nuts. Shoe shall have a flat bottom, ribbed back and strapping lugs. Design shall allow for plugging of drains without excavating. Nozzle threads shall match Town of Lapel Fire Department specifications.

H. Service Meters - Meter 3/4" in size shall be furnished and installed by the Town. All meters over 3/4" shall be furnished and installed by Contractor. Each residence shall have its own meter and corporation cock.

I. Meter Pits & Vaults - For meters 3/4" through 1", the box shall be 20" diameter. Meter pits and vaults for meters over 1" in size shall be shown in attached details.

J. Meter Box Covers - For 3/4" through 1" meters, box cover shall be C32T Ford or Tyler, with cast iron lids for 20" diameter box and having a small operating nut. It shall be standard weight construction.

K. Corporation Cocks - Cocks to be pack joint and of bronze construction. Sizes 3/4" and 1" to suite service size.

L. Curb Stop

1. For all services greater than 1", provide a curb stop at the main. Stops to be bronze and ball with Buna-N rubber "o" rings. Connections to be for pack joints. Any service greater than 1" see meter pit details.
2. Furnish 5 1/4" cast iron valve box for 48" setting by Tyler.

M. Service Tubing

1. Customer service tubing from the main to the meter and from the meter into the shut off valve inside the utility room shall be seamless type CTS200 P.E. Tubing in conformance with ASTM Specification D1248 and D2737.
2. Tubing for single service 3/4" meters shall be 3/4" size, unless noted otherwise on the meter pit detail.
3. Tubing for double service meter setting shall be 1" size unless noted otherwise.

7. **INSTALLATION**

A. Trench Excavation - trenches for water pipe shall be excavated to the widths as shown on the plan details and the pipe shall have a minimum of 4'-6" cover unless otherwise noted on the drawings. If rock is encountered, the cover may be reduced but shall not be less tan 3'-6". Water services (3/4" and 1") shall have 4 feet cover. Excavation work and pipe installation shall include the necessary clearing, grubbing and preparation of the site; removal and disposal of all debris; excavation and trenching as required; the handling storage, transportation and disposal of all excavated materials; all necessary sheeting, shoring and protection work; preparation of subgrades; pumping and dewatering as necessary or required; protection of adjacent property; backfilling; pipe embedment; laying of pipe; construction of fills and embankments; surfacing and grading; and other appurtenant work.

- Contractor shall do all excavation necessary for and incidental to the proper completion of work called for by the drawings and specifications. He shall furnish all labor, materials, tools and equipment necessary for the work contemplated. Power shovel or excavation machine may be used, and care shall be taken at all times to keep said machine out of electric or telephone lines passing across or along the site of the work.
- The maximum cross sectional area which shall be allowed for trenches is shown in the typical trench details in the plans. Unless permitted by the Engineer, the excavation shall not be continued below the depth indicated by the trench details and the profile drawings. All excavations shall be leveled off at the exact depths required to insure that bedding for pipe and other structures maybe placed on the specified thickness of bedding. Should the Contractor excavate below the depth indicated without being so authorized by the Engineer, he shall at his own expense, fill such excavated spaces with appropriate bedding material and shall bear the cost of all extra labor and materials required for such filling.
- Unless permitted by the Engineer, no trench shall be excavated more than one hundred feet (100') in advance of the end of the built water main.

B. Unstable Material - It is the intent of these specifications that all pipe shall have a stable foundation. Any materials encountered at the bottom of the trench which are not stable and

cannot be made so, shall be removed as directed by the Engineer and replaced with crushed stone bedding material.

C. Sheeting - Wherever necessary, the sides of the trenches and excavations shall be firmly supported by suitable sheeting, planking and bracing. The Contractor will be held accountable and responsible for the sufficiency of all sheeting and bracing used, and for all damage to persons or property resulting from the improper quality, strength, placing and maintaining or removing of the same. this includes damage to trees, sidewalks, and other property in the excavation area, as well as on private grounds. In on case shall sheeting be removed until the trench backfill has breached within two feet (2') of the top of the trench, except that lower course of sheeting may be removed from a double sheeting trench. Excavation shall, in no case, be carried below the bottom edge of the sheeting.
    - When ordered by the Engineer, or as necessary, the sheeting shall be left in place for the protection of pipes, buildings, streets and other structures. If sheeting is left, all cavities between the sheeting and the trench wall shall be backfilled with the same material used to backfill the trench. The backfill for these activities shall be solidly tamped in place to insure all cavities are filled and shall be subject to the Engineers approval.
    - A box or movable sheeting, which is drawn by power equipment ma be used. Again, the Contractor will be held accountable and responsible for all damages as stated above.

D. Existing Structures - All existing structures, such as piles, fences, sewer, gas, water or other pipes, wires, conduit, manholes, railroad tracks and buildings shall be protected, supported and maintained from damage during construction. Proper installation of all timbers, cables or concrete for support shall be the responsibility of the Contractor, but may be subject to the Engineer's approval. Any damages to such existing structures, while excavating or backfilling a trench or any other excavation, shall be thoroughly repaired by the Contractor at no expense to the Owner. Some structures or utilities may be removed and replaced by the Contractor at no expense to the Owner, if written permission of the structure's or utility's owner is first obtained. Repairs or replacement shall be completed on a prompt and timely basis. As noted in the drawings, the Contractor shall have the responsibility of locating existing underground structures to protect them from damage. Excavating of the trench shall proceed at a pace and with enough caution to insure this protection. Also, water mains shall be provided protection from sewers by providing the minimum clearances as noted in the drawings as follows: 10 feet horizontally or 18" vertically with sewer joints as far as possible from water main joints.
    - All excavated material shall be piled in a manner that will not endanger the work and will avoid obstructing sidewalks and driveways. Hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire and police call boxes, or other utility controls shall be left unobstructed and accessible while construction progresses. Gutters shall be kept clear or other satisfactory provisions made for street drainage, and natural water courses shall not be obstructed.

E. Street Closures - No drive, road or street shall be blocked except when the contractor is actually working, and such drives, roads and or streets shall be opened to use as soon as ordered by the Engineer, but such opening or using of the street shall not be held as acceptable for any part of the

work. Every alternate street crossing shall be kept open for the use of the public at all times. Street cut permits are required prior to excavating a street.

F. Rock Excavation

1. Definition - Rock excavation without blasting; or the use of modern power shovel of no less than one cubic yard capacity, properly used, having adequate power and in good running condition; or the use of other equivalent powered equipment.
2. Trench - Where rock is encountered in the trench, the Contractor shall open the trench to the full depth for at least fifty feet (50') in advance of the pipe. Full depth shall be as indicated by the typical trench details and the sewer profile sheets of the plans. The depth shall allow for the specified amount of bedding to be placed continuously under the No rocks shall be allowed to protrude into the bedding material.
3. Use of Explosives - where rock must be removed with explosives, the blasting operations must be executed in strict accordance with existing laws, ordinances and regulations.
    - Unless existing laws require more stringent procedures, the following specifications shall be used for all blasting operations. For trench excavations, the rock shall be stripped in all sections of not less than fifty feet (50') in length. All pipe laid in rock trenches shall be covered with at least twelve inches (12") of suitable backfill immediately after laying. The end of the last pipe, together with as much of the barrel as cannot be conveniently covered, shall be protected with sand bags to prevent flying debris from damaging sections of pipe already installed.
    - The site of any blast shall be covered with heavy timbers, mat or other devices to prevent flying rock or earth from damaging adjoining property. Any blasting within five feet (5') of a water or gas main or electrical conduit shall be done with light charges of explosives, and the utmost care shall be used to avoid disturbing such utilities.
    - Sufficient warning shall be given to all persons in the vicinity of the work before blasting. Also, at least two men with red flags shall be advantageous stationed to warn approaching persons that a blast is about to occur. Finally, the Engineer or his representative shall be notified before each blast occurs to insure that all precautions are taken. Also, the Engineer or his representative may revoke or change the number and size of charges to be set or change the time a blast may occur.
    - Solid ledge rock may be removed by use of air operated jackhammers or by use of air/hydraulic operated backhoe attached power chisel.

G. Pipe Bedding and Installation

1. Common Method of Bedding Pipe - The common method of pipe bedding may be utilized when water lines are not located within roadway limits, sidewalk areas and driveways unless otherwise directed by the Engineer.
    - The common method of bedding shall consist of installation of the pipe directly, on a firm trench bottom. Bell holes shall be excavated so the pipe will be uniformly supported along its entire length.
2. Bedding Under Roadways, Sidewalk Areas, and Driveways- Unless otherwise authorized by the Engineer, all bedding under or within 2 feet of any roadway, driveway, shoulder or

sidewalk shall be "bedding stone" material as specified in Section 6B.

- After preparation of trench bottom, a pipe bed shall be prepared using bedding stone as shown on the eh drawings. The bedding stone shall be spread over the full width of the trench and carefully placed around the pipe.
- After installation of the pipe, bedding stone shall be placed around the pipe and to a point 3" above the top of the pipe. Voids around and under the pipe shall be filled to prevent settlement and to provide fill support for the pipe.

3. Laying Pipe - Pipe shall be laid with bell ends facing in the direction of laying. Pipe ends shall be cleared of dirt and debris before the connection is made. Whenever pipe laying operations are not in progress, a watertight plug or bulkhead shall be provided to protect the entrance from foreign material. Deflection of pipe joints shall not exceed the recommendation of the manufacturer.
    - The cutting of pipe for installing valves or fittings shall be done in a neat, workmanlike manner without damage to the piping or lining. The end shall be smooth and at right angles to the axis of the pipe. Flame cutting of pipe by means of an oxyacetylene torch shall not be permitted.
    - When the project consists of laying new mains which will be connected into existing mains, there may be necessary interruptions to the water service to customers. The Contractor shall plan ahead and arrange his work so that any such interruptions are kept o a minimum. Where possible, these instances shall be scheduled during the time periods of less water usage. The Contractor shall notify the Utility Superintendent of necessary shutdowns at least 24 hours in advance of the work.

H. ...

1. Trench Backfill - Backfill shall be subject to the approval of the Engineer and shall be free of sticks, wood scrap, frozen materials, sod and other deleterious material. Backfill within the limits of a roadway shall be "B" Borrow material as specified in Part 6 of this Section.
2. Common Method
    - The common method of backfilling trenches may be utilized when water lines are not located within roadway limits, sidewalk areas and driveways unless otherwise directed by the Engineer.
    - The common method of backfilling shall consist of reusing existing excavated materials for the remainder of the trench a along as approved by the Engineer and mounded above finished grade to allow for settlement until final grading and restoration is accomplished. Rock with maximum dimension smaller than 2 inches may be used in the trench backfill above an elevation 12 inches over the top of the pipe, except that the top 4 inches of backfill shall contain no stone or object large than 1 inch maximum dimension.
    - Backfill Under Roadway, Sidewalk Areas, and Driveways. Unless otherwise authorized by the Engineer, all backfill under or within 2 feet of any roadway, driveway, shoulder or sidewalk shall be Granular Backfill material as described in Section 6B.

- The method of backfilling under a roadway shall consist of placing granular backfill (B Borrow) in maximum 8" layers, loose measurement, and then each layer shall be mechanically compacted to required density. The method of granular backfill (B Borrow) installation shall be as defined in Section 211.03, 211.04 and 211.05 of the Indiana Department of Transportation Standard Specifications, latest edition. All backfill shall be compacted to 95% of maximum density by "Modified Proctor Method". If open cut inspection show the existing soil to be equal to granular backfill (B Borrow) as determined by the Engineer, then the existing soil may be substituted and the Engineer will delete this item.

I. Valves

1. Valves shall be set vertically and bedded solidly on trench bottom. Flanged valves shall be securely bolted utilizing red rubber or asbestos gaskets and high strength cast iron bolts and nuts.
2. Valve boxes shall be set squarely over the wrench nut and vertical. Leave valve box flush with finish grade and re-adjust as necessary to reconform with surface until final settlement or paving is complete.
3. All valves shall be buried and have road boxes unless otherwise specified.

J. Fire Hydrants

1. Fire hydrants shall be rigidly blocked and braced against thrust. Contractor shall back up hydrant base with concrete and support base as detailed on the plans. Hydrants are required to have rods with "Aduc lugs" and a thrust block. Grip rings can be used instead of "duc lugs".
2. A generous envelope of washed, coarse gravel around the drain ports of the hydrants shall be provided to sure barrel drainage of the hydrants. Gravel to be a minimum 2 feet diameter and to 6 inches above ports.
3. Set ground line mark on hydrant 2 inches minimum and 4 inches maximum above finish grade. All hydrants shall have one prime coat and two field coats of a suitable exterior machinery enamel of color used in this system. Prime coat shall be touched-up prior to application of finish coat.

K. Tapping Valves

1. Tapping valve connections to existing mains shall be made at the locations shown on the plans. Exact location of existing mains are somewhat in doubt in some areas; therefore, some variation of valve locations from plans may be required. Contractor shall be required to locate tapping valve on the main at the best location at the time of installation, and no extra payment will be allowed for any such relocating. Tapping valves and sleeve installations or crosstaps shall be made in accordance with the detail on the plans.
2. Tapping valves shall be installed and tap made in accordance with manufacturer's recommended procedures and good practice. Valve shall be securely supported in vertical position during tapping operations. Tamp fill thoroughly around and under valve after installation. Installation shall be checked for leaks before backfilling.

L. Inserting Valves

1. At location shown on the plans, the Contractor shall furnish and install an inserting type valve, as specified, in the existing m mains. The valve shall be located where directed by the Engineer.
2. The main shall be excavated and then thoroughly cleaned off on the outside before installing the valve body. Final wash shall be with chlorinated water (50 PPM) to sterilize the pipe.
3. After installing the valve, earth material shall be thoroughly compacted under and around the body before backfilling.
4. The valve shall be fitted with a standard road box as specified for standard gate valves.

M. Service Connections - At locations shown on the plans or where designated by the Engineer or Owner, the Contractor shall furnish all materials and labor to connect water services to mains. Any piping or fittings required to make the connection and provide service shall be furnished by the Contractor. Meter pits and settings shall be installed plumb and true according to good construction practices.

8. **STERILIZATION AND TESTING**

A. Sterilization

1. Under this section, Contractor shall fill and sterilize all new mains, services, leads and appurtenances constructed under this contract.
2. This work shall be done in accordance with all applicable provisions of AWWA Standard C-600-64, Installation of Cast Iron Water Mains.

B. Filing the Mains

1. The new system shall be slowly filled with water from the utility distribution system. Where pressure is insufficient to raise water into mains at higher elevation, Contractor shall furnish booster pumping equipment to complete the filling and flushing to the Utility Superintendent and Engineers satisfaction.
2. All air shall be expelled from the mains as they are filled. Air valves and hydrants at high purpose. Where permanent vents are not provided, Contractor shall install corporation cocks at high points to assure removal of air. Such cocks shall be left in place and location noted by dimension ties on the field record set of drawings.

C. Disinfection

1. Sterilization of mains shall be accomplished by the use of chlorine solution fed into the main at a point of entry during the main filling operation.

D. Requirement of Chlorination

1. Before being placed in service, all new mains and repaired portions of, or extensions to, existing mains shall be chlorinated so that a chlorine residual of not less than 25 PPM remains in the water after 24 hours standing in the pipe.
2. A chlorine gas-water or hypochlorite mixture shall be applied by means of a solution-feed chlorinating device. Chlorinating devices for feeding solutions of chlorine gas must provide means of preventing the backflow or water into the chlorine cylinder.
3. The preferred point of application of chlorinating agent is ahead of the beginning of the pipeline extension or any valve section of it and through a corporation stop inserted by the Contractor, in the tope of the pipe. The water injector for delivering the chlorine bearing

water into the pipe should be supplied from a tap on the pressure side of the gate valve controlling the flow into the pipeline extension.

4. Water from the existing distribution system or other source of supply shall be controlled so as to flow slowly into the newly laid pipeline during the application of chlorine. The rate of chlorine mixture flow shall be in such proportion to the rate of water entering the pipe that the chlorine dose applied to the water entering the newly laid pipe shall produce at least 25 PPM after 24 hours standing.
5. Treated water shall be retained in the pipe long enough to destroy all nonspore-forming bacteria. This period should be at least 24 hours and should produce no less than 25 Ppm at the extreme end of the line at the end of the retention period.
6. If the circumstances are such that a shorter retention period must be used, the chlorine concentration shall be increased accordingly.
7. In the process of chlorinating newly laid pipe, all valves or other appurtenances shall be operated while the pipeline is filled with the chlorinating agent.
8. Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipeline at its extremities until the replacement water throughout its length shall, up test, be proved comparable in quality to the water served the public from the existing water supply system and approved by the Indiana Department of Environmental Management. This satisfactory quality of water delivered by the new main should continue for a period of at least two full days as demonstrated by laboratory examination of samples taken from a tap located an installed in such way as to prevent outside contamination.
9. Before system is placed in use, the Contractor shall obtain, from new mains two successive water samples 24 hours apart, and have them tested for bacteria content by the Indiana Department of Environmental Management. Samples shall be drawn in accordance with the Boards procedures. Copies of submittals shall be provided to Engineer or Water Operator. The Water Operator of the Lapel Water Company shall observe all samplings.
10. If samples do not prove satisfactory, the system shall be rechlorinated and resampled until safe water is approved.
11. The system shall be left filled with satisfactory water before final approval by the Water Operator and the Engineer will be made.

E. Testing the Main

1. Under this section, the Contractor shall perform a combination pressure and leakage test on the new mains after they have been filled with water as previously specified. This work shall be done after all of the main is backfilled. The Water Operator of the Lapel Water Company shall observe all pressure testing.
2. The test procedure shall be as herein specified and in accordance with applicable provision s of AWWA Standard C-600-64.
3. The mains shall be subjected to a test pressure of 150 PSI in the reach of main being tested. The duration of each test shall be at least one hour. If the pressure does not decrease during the test period, then the leakage test is not required. Each valved section of pipe shall be so tested.

4. A test pressure shall be developed by a pump, connections, test gauges, and all unnecessary apparatus, to be furnished by the Contractor.
5. A leakage test under pressure shall be made after the main has been filled and if the pressure test fails. The test shall be carried out in the following manner:
    a. Record time and line pressure (Example: 60 PSI 10:00 A.M.) (See P.W.U. - Form #P.T. 1-22-79).
    b. Pump water into new main line until pressure reaches 105 PSI, record time and reading of gauge (Example: 150 PSI - 10:05 A.M.).
    c. After pressure has reached 150 PSI, stop pumping.
    d. For an hour, remain at the site and not if any changes are made to the pressure gauges or equipment. None should be made by anyone. Test void if adjustments are made, with the exception of tightening fittings to prevent loss of pressure on test equipment provided.
    e. At the end of one hour, open valve to gauge and record time and pressure reading (Example: 140 PSI-11:05 A.M.)
    f. Using a pre-measured amount of water (container should measure pints and gallons), proceed to pump line pressure back-up to 150 PSI.
    g. Record timeline pressure, and amount of water used to pump line pressure back up to 150 PSI (Example: 10:10 A.M. - 150 PSI - 1 gallon loss).
    h. Leave line alone for another hour.
    i. At the end of the second hour, again record the time and line pressure (Example: 12:05 P.M. - 135 PSI).
    j. Using a pre-measured amount of water (container should measure pints and gallons), proceed to pump line pressure back up to 150 PSI.
    k. Record time, line pressure, and amount of water used to pump line back up to 150 PSI (Example: 12:10 P.M. - 150 PSI - 1.5 gallon loss).
    l. A line is considered satisfactory if it meets the following specifications:
        - Reference AWWA Spec - #C600-64
        - Leakage Test: Apply 150 PSI # pressure for two (2) hours.
        - Allowable Leakage:
            - 1.1 gal/hr. allowed for 6 in. pipe per 1,000 ft. of pipe.
            - 1.47 gal/hr. allowed for 8 in. pipe per 1,000 ft. of pipe.
            - 1.84 gal/hr allowed for 10 in. pipe per 1,000 ft. of pipe.
            - 2.20 gal/hr allowed for 12 in. pipe per 1,000 ft of pipe.
6. If the leakage from a test section shall be greater than permitted under these specification, the Contractor, at his own expense, shall locate and repair the defective joints or other defects. The leakage test shall then be repeated until no defects or evidence of leakage are found. All material for this work shall be at the Contractor's expense.

F. Granular Backfill - The Contractor shall employ a soils testing laboratory, approved by the Engineer to determine the moisture-dry density relationship of the materials to be compacted in accordance with ASTM D 1557. The approved soils testing laboratory shall make field moisture and density

tests to verify the degree of compaction being obtained. Tests shall be made at least once for every 250 cubic yards, or fraction thereof, of compacted material. Tests shall be made at locations selected by the Engineer under paved areas. Two copies of all test reports shall be sent directly to the Engineer.

DEVELOPERS AND NEW USERS OF THE SEWAGE FACITILIES – CONTRIBUTION REQUIREMENTS

Whereas the Town of Lapel operates and maintains a water system and collection system and whereas the town has and will expend public monies for improvement of the water system and collection system for the benefit of future customers to the system, and Whereas the Town wants to be fair to the present and future users of the system now therefore the Town hereby adopts the following ordinance:

Definitions.

For the purpose of this sub-chapter the following definitions shall apply unless the context clearly indicates or requires a different meaning.

Application Fee: A fee charged at the time application for sewage service is made, which in non-refundable and which represents the cost to the town of processing such application.

Availability: Charge A payment which shall be required for the privilege of connecting a service line or lateral sewer from a residence, commercial user for tract of ground into the towns local sewers or interceptor as a capital contribution for the availability of service, present or future.

Connection Charge: A payment required to cover the cost to inspect the connection of a service line to the local sewer. This payment shall be charged and paid at the time the application for connection is made. This charge applies to the single family residence and all equivalent dwelling units. i.e., residential, commercial, industrial, et. Seq.

Developer: Any person, individual, corporation or entity engaged in developing a property, tract of ground or improving a lot or group of lots or structures thereon for the use of occupancy, owning or selling the property to be connected or served by the sewage facilities.

Equivalent Dwelling Unit (EDU): The single family resident situated upon a single lot, and also the sewage contribution from that residence being 300 gallons per day.

Equivalent Dwelling Unit Revenue: That monthly revenue charged the resident based upon the then current schedule of rates and charges.

Interceptor Sewer: The sanitary sewer, usually located within the streets, alley or easements, which normally receives the sewage from the local sewers. This sewer usually conveys the sewage to the treatment plant or point of ultimate disposal.

Lateral Sewer: The sanitary sewer, usually located with the street, alley or easements, which normally receives the sewage from the local sewers. Service lines are not excluded from connecting directly to this sewer.

Local Sewer: The sanitary sewer, eight inches minimum, usually located within the street, alley or easements, which receives the sewage from the individual service lines.

Over sizing Costs: The costs or over sizing sewers or the sewage treatment plant or other facilities in anticipation of the need to serve future customers.

Ratio of Equivalent Dwelling Unit Revenue: That monthly revenue charged a user or customer, or the sewage facility, divided by the Equivalent Dwelling Unit Revenue.

Service Area: That area to be served by the town sewage treatment plant and collection sewers. Such area will usually include the drainage area permitting the use of gravity sewers, and certain adjacent areas that may be readily pumped into such sewers.

Service Lateral: A branch, from the local or collecting sewer, between that sewer and the property line of the intended user. Usually installed by the developer or in certain cases the lot owner or user.

Service Line: The sewer line, six inches minimum, installed between the residence or structure for the purpose of conveying the sewage discharge to the service lateral on the local or collecting sewer. This line is installed by the individual owner or builder.

Expansion and Connection Policy.

A. All local and lateral sewers to be connected directly or indirectly into the towns sewer facility or collection system shall, at the owners or developers expense, be designed, constructed and installed by the owner or developer to the towns specifications. The new sewers shall be located in such streets, alleys, right-of way, and easements as are approved by the town.
B. All interceptor sewers shall be designed and built by the town. They shall be funded by a combination of the above defined charges, plus the use of state and federal funds, if available.
C. The sewage treatment plant expansions shall be designed and built by the town. The expansions shall be funded by a combination of the above defined charges, plus the use of state and federal funds, if available.
D. No sewer collection facilities shall be extended, nor shall any connections be made to the towns sewage treatment facility unless and until such area to which facilities will be extended ins within the town limits, or has agreed to be annexed to the town or has agreed not to remonstrate against such annexation.
E. Prior to the commencement of construction of any sewer, the Indiana Department of Environmental Management's approval shall be furnished to the town.
F. Prior to the commencement of construction of any sewer or collection facility, the plans shall be approved in writing by the Town Engineer.

Contributions; Method of Payments and Reimbursement

A. Contributions and Charges: When the towns sewage facilities are capable of serving an area of property within two miles of the town, and such area or property is to be connected, contributions and charges on behalf of the unconnected property shall be required as follows for the application situation:

1. Application: An application for connection shall be submitted on a form approved by the town.
2. Availability Charge: A charge of $2,000 per EDU, based upon the use proposed for said property. The equivalent number of dwelling units in the case of users of units other than single family residences, shall be determined in accordance with the following table. The number of equivalent units for situations not covered by the table will be determined by the Town Council. Notwithstanding any other provisions contained herein to the contrary, the town may contract with the owner or developer for an additional availability charge for treatment plant capacity to be collected in advance by the town for purposes of expanding the capacity of the sewage treatment plant to meet such owners or developers needs.
    a. Ratio of sewer usage of single family residence to other types of uses. A single family residence is equivalent to 300 gallons per day.
        - Type of Service - Ratio
        - Single family residence - 1.0
        - Two family residence - 1.8
        - Multi-family and apartments - .7 per unit
        - Mobile homes and parks - .8 per unit
        - Motels and hotels - .4 per unit
        - Service clubs and churches - per 200 members or fraction hereof:
            - Without kitchen - 1.0
            - With kitchen - 2.0
        - Office buildings - per 1,000 sqft - .25
        - Health service offices - .6
        - Personal care - per chair - .4
        - Restaurant - per seat - .1
        - Food drive in - per car space - .2
        - Food and club retail service - per employee - .2
        - Laundry - per washer - 1.3
        - Car wash - per bay - 2.0
        - Automatic car wash - set by Town Council
        - Service station - 1.5
        - Retail sales and service - each three employees or fraction thereof - 1.0
        - Manufacturing or warehouses - sanitary use only, eight employees - 1.0
        - Manufacturing - other use - set by Town Council
        - Bars and coctail lounges - per seat - .05
        - Bowling alley - per alley - .4
        - Bowling alley - with bar - per alley - 2.0
        - Dentist office - per chair - 1.4
        - Physician's office - per examining room - .6

- Schools with gym and cafeteria - per student - .6
    - Without gym and cafeteria - per student - .04
- Speculative commercial industrial - per acre - 1.0
    - At base, actual when building permit received.
- Other uses - set by Town Council

b. Method of Payment. The availability charges, where applicable, shall be paid in cash at the time so designated by the Town. This will usually be either at the time of the application for a construction permit or at the time of application for a building permit.

50.40 Connection Charge

It is the intention of this sub-chapter that there will be an application for a service line connection to the local sewers. The application is to be submitted by the individual builder, lot owner or customer at the time of application for a building permit.

At this time there will not be any charge for this application.

Further Information

Ord. No. 3, passed 3/20/2003.