

ORDINANCE NO. 368

UTILITY ORDINANCE TO PROVIDE A COMPREHENSIVE PROGRAM FOR THE OPERATION OF A WATER UTILITY, SPECIFICALLY INCLUDING A PROGRAM FOR PROTECTING THE PUBLIC WATER SYSTEM FROM BACKFLOW OF CONTAMINANTS THROUGH THE WATER SERVICE CONNECTION INTO THE PUBLIC WATER SYSTEM; SPECIFICATIONS FOR WORKMANSHIP AND MATERIALS; AND A PROCEDURE FOR THE ENFORCEMENT AND SHUTOFF OF DELINQUENT WATER SERVICE CHARGES.

WHEREAS Indiana Code Sections 36-1-3-1 et. seq. permit any town in the State of Indiana to exercise any power or perform any function necessary to the public interest in the context of its municipal or internal affairs, which is not prohibited by the Constitution of the United States or of the State of Indiana, or denied or pre-empted by any other law, or is not expressly granted by any other law to another governmental entity; and

WHEREAS the Town Council of the Town of Middlebury is the Town legislative body and is by law authorized to adopt ordinances and resolutions for the performance of functions for the Town of Middlebury; and

WHEREAS the Plumbing Code, as adopted by the State of Indiana, requires protection of the public water supply from contaminates due to backflow of contaminants through the water service connection; and

WHEREAS the Indiana Department of Environmental Management endorses the maintenance of a continuing program of cross connection control which will systemically and effectively prevent the contamination of all potable water systems;

WHEREAS Indiana law requires that all public water supplies be continuously operated and maintained so that the water is safe in

quality, clean and adequate in quantity, and chemically satisfactory for ordinary domestic consumption;

NOW, THEREFORE, BE IT ORDAINED by the Town Council of the Town of Middlebury, State of Indiana, as follows:

1.00 General.

1.01. This Ordinance may be referred to as the "Town of Middlebury Comprehensive Utility Ordinance."

1.02. This Ordinance shall become effective June 1, 1998.

2.00 Cross Connection Control and Backflow Prevention.

2.01. The regulations located at 327 IAC 8-10 et seq. entitled "Cross Connections; Control; Operation," as amended or replaced from time to time as promulgated by the Indiana Department of Environmental Management and 675 IAC 16-1.2 et seq. entitled "Indiana Plumbing Code, 1991 Edition," as amended or replaced from time to time as promulgated by the Indiana Fire Prevention and Building Safety Commission are hereby incorporated and adopted by reference as a part of this Ordinance. One copy of these regulations shall be on file with the Town of Middlebury Water Utility.

2.02. That the Town of Middlebury Water Utility may cause inspections to be made of all properties served by the public water system. The frequency of inspections and reinspections shall be based on potential health hazards involved and shall be as established by the Town of Middlebury Water Utility.

2.03. That upon presentation of credentials, a representative of the Town of Middlebury Water Utility shall have the right to

request entry at any reasonable time into or upon any property served by a connection to the public water system of the Town of Middlebury in order to inspect connections. On request, the owner, lessee, or occupant of any property shall furnish to the inspector any pertinent information regarding the connections, piping systems, water systems, and hazards on such property. It shall be assumed that a cross connection and hazard is present if access or requested information are refused.

2.04. That the Town of Middlebury Water Utility is hereby authorized and directed to discontinue water service to any property wherein any connection in violation of this Ordinance exists, and to take such other precautionary measures deemed necessary to eliminate any danger of contamination of the public water system. Water service shall be discontinued only after ten (10) days' written notice is served on the owner, lessee, or occupants of the property or premises where a violation is found or suspected to exist. Water service to such property shall not be restored until the violation(s) have been eliminated in compliance with the provisions of this Ordinance.

2.05. That, if it is deemed by the Town of Middlebury Water Utility Superintendent that an emergency endangers public health, safety, or welfare and requires immediate action, and a written finding to that effect is filed with the Clerk of the Town of Middlebury and delivered to the user's premises, water service may be immediately discontinued. The user shall have an opportunity

for hearing before the Town Council of the Town of Middlebury, or its designated hearing officer, of such emergency discontinuance.

2.06. As a condition of new or continued water service, an approved reduced-pressure-principle backflow preventer shall be installed and maintained by the user in the principal water line servicing each connection to the Town of Middlebury water system. In the discretion of the Town of Middlebury Water Utility Superintendent, a double-check valve backflow preventer may be used in lieu of a reduced-pressure-principle backflow preventer. For existing facilities, the required backflow preventer shall be installed within three (3) years after the effective date of this Ordinance; provided, however, residential connections to the Town of Middlebury water system shall have five (5) years after the effective date of this Ordinance for such installation. For purposes of this Ordinance, "residential" shall mean of or pertaining to a place used primarily as a private dwelling or primarily for living purposes. In the event the Town of Middlebury Water Utility Superintendent determines that an increased risk or hazard exists to the Town of Middlebury water system at a connection where a double-check valve backflow preventer was originally allowed to be utilized pursuant to this section, the Town of Middlebury Water Utility Superintendent may require the replacement of the double-check valve backflow preventer with a reduced pressure-principle backflow preventer.

2.07. The backflow preventer used must be an approved assembly as found on the List of Approved Backflow Prevention Assemblies

published by the University of Southern California Foundation for Cross Connection Control and Hydraulic Research, which list is available for inspection at the Town of Middlebury Water Utility. The backflow preventer must be installed in an easily accessible location not subject to flooding or freezing.

2.08. As a condition of continued service, all users shall arrange for the inspection of all cross connection and backflow preventer control assemblies by an inspector registered by the Indiana Department of Environmental Management. These inspections shall occur at time intervals specified in 327 IAC 8-10-8(b), as amended, or as otherwise required by any applicable statute, regulation, or ordinance. Completed test reports shall be submitted to the Town of Middlebury Water Utility by the user within thirty (30) days after the user's receipt of the test reports. Tests and inspections may be required on a more frequent basis at the discretion of the Town of Middlebury Water Utility Superintendent.

2.09. That this Ordinance does not supersede the Indiana Plumbing Code as amended or replaced from time to time or any plumbing ordinances, sewer use ordinances, or other ordinances currently in force and effect in the Town of Middlebury, but rather is supplementary to such. In the event of any conflict with this Ordinance, the requirements which are stricter and more protective of the public health and safety shall control.

3.00 Water Turn On and Shutoff Procedures.

3.01 Other than by authorized representatives of the Town of Middlebury, no one shall turn on or shall turn off Town of Middlebury mains, hydrants, gate valves, curb stop valves, or other valves of the Town of Middlebury Water Utility. No person shall maliciously, willfully, or negligently break, damage, uncover, deface, or tamper with any structure, appurtenance, or equipment which is part of the Town of Middlebury Water Works. Any person violating this provision shall be subject to immediate arrest.

3.02. Each month, the Middlebury Water Utility shall generate a customer balance sheet showing the amount owed per customer, not including the amount owed from the most recent billing.

3.03. Accounts showing a balance of over \$50.00 without a payment to the water utility in the previous thirty (30) days shall receive a letter from the Middlebury Water Utility which states the total amount owing, the amount of the last payment, and which requests payment. Such customers will also receive from the Middlebury Water Utility a "Statement of Intent to Pay" allowing the customer to arrange for payment of past due balances.

3.04. If within the thirty (30) days following the mailing of the letter described in Section 3.03, the Statement of Intent to Pay is not returned to the water utility, but payment is made, the water utility shall send a letter requesting that the Statement of Intent to Pay be returned to the water utility and requesting that payments continue.

3.05. When any account or statement for services provided by the Town of Middlebury Water Utility is sixty (60) days past due,

the water utility may send a letter demanding payment within ten (10) working days and stating that the water service may be terminated if all delinquent payments are not made within the ten (10) days.

3.06. If payment is not received within the ten (10) working days described in Section 3.05, the Town of Middlebury Water Utility may terminate water service to the customer. Water service shall not be restored until the customer pays the past due amounts and the customer makes satisfactory arrangements with the Town of Middlebury Water Utility to avoid future delinquencies. In order to re-commence water service after termination, the customer shall pay to the Town of Middlebury Water Utility a re-instatement fee of Fifty Dollars (\$50.00).

4.00. Water Meters.

4.01. To confirm and ratify historic policy of the Town of Middlebury Water Utility, water meters shall be initially provided by the user at the user's expense. All water meters used shall meet the requirements of and be subject to the approval by the Town of Middlebury Water Utility Superintendent.

4.02. To confirm and ratify historic policy of the Town of Middlebury Water Utility, the repair and/or replacement of water meters for water lines of one inch (1") or less in size shall be provided by the Town of Middlebury at its expense; the repair and/or replacement of water meters for water lines greater than one inch (1") in size shall be provided by the user at the user's expense.

5.00. Specifications for Workmanship and Materials.

5.01. The attached Exhibit A entitled "Specifications for Workmanship and Materials (Pages A-0-1 through A-7-1) are hereby incorporated by reference and made a part of this Ordinance to govern all public work projects of the Town of Middlebury, Indiana as well as private projects affecting water facilities, sewer facilities, park facilities, roads and streets, buildings, and other facilities of the Town of Middlebury, Indiana.

6.00. Fire Protection and Water Connections.

6.01. Any fire protection system utilizing water from the Town of Middlebury Water Utility which is installed or becomes operable from and after the effective date of this Ordinance shall have its own tap and be connected to a Town of Middlebury water line separate and apart from any other water tap or connection to the Town of Middlebury water system.

7.00. Authority of Superintendent.

7.01. In the event of unforeseen circumstances or developments or emergency situations, the Superintendent of the Town of Middlebury Water Utility is hereby vested with such authority and discretion as is needed in order to protect the public health, safety, and welfare in connection with the operation of the Town of Middlebury Water Utility.

7.02. A person shall not institute, permit, or maintain any conditions that may jeopardize or threaten the public health and safety with respect to the Town of Middlebury water system. The Superintendent, upon hearing of the existence of such conditions,

shall order the abatement of those conditions. The order must be in writing, specify the conditions that may jeopardize or threaten the public health and safety, and name the shortest reasonable time for abatement. If a person refuses or neglects to obey an order issued under this provision by the Superintendent, the Town of Middlebury attorney may, upon receiving the information from the Superintendent, institute proceedings in the courts for enforcement. An order may be enforced by injunction. If the action involves a criminal offense, a law enforcement authority with jurisdiction over the location where the offense occurred shall be so notified for further enforcement.

8.00. Enforcement.


8.01. Any person violating this Ordinance shall be guilty of an ordinance violation and on conviction thereof shall be fined in an amount not exceeding Two Thousand Five Hundred Dollars (\$2,500.00) for each such violation. Each day in which any violation shall continue shall be deemed a separate offense under this Section. For any continuing violation, the Town of Middlebury shall also be entitled to an injunction against the violator for the actions involved. If the violation involves the Town of Middlebury water system, the injunction may also include a shut-off order allowing the Town of Middlebury to shut-off the violator's supply of municipal water from the Town of Middlebury Water Utility until all violations cease and are corrected.

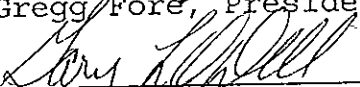
8.02. Any person violating any of the provisions of this Ordinance shall be liable to the Town of Middlebury for any

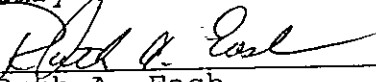
expense, loss, or damage suffered by the Town of Middlebury by reason of such violation, including but not limited to, the costs and expenses of locating the source of the violation, repairing any damage caused by the violation, attorney fees, court costs, engineering fees, administrative time and expense, labor, and all other costs associated with enforcement and compliance with this Ordinance.

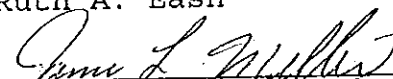
ORDAINED AND ADOPTED the 20th day of April, 1998.

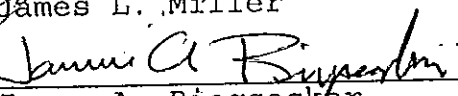
TOWN COUNCIL OF THE TOWN OF MIDDLEBURY, INDIANA

By 
Gregg Fore, President and Presiding Officer

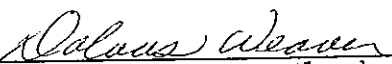
By 
Gary O'Dell

By 
Ruth A. Eash

By 
James L. Miller

By 
James A. Riegsecker

Attest:


Dolores Weaver, Clerk-Treasurer

SPECIFICATIONS FOR WORKMANSHIP AND MATERIALS

INDEX

0.00	General
1.00	Excavation and Backfill
2.00	Temporary Roadway Surfacing, Pavement Replacement and Site Restoration
3.00	Pipe
4.00	Installing Pipe
5.00	Sewer and Water Main Appurtenances
6.00	Testing
7.00	Cleanup and Guarantee

Exhibit A

GENERAL

0.01 Scope of the Work: The Contractor shall furnish all labor, materials, necessary tools, equipment, and all utility and transportation services and construct all mains and appurtenances complete and ready for continuous operation, including all pipe, manholes, excavations, backfill, pavement removal and replacement, site restoration, the protection of all existing structures and utilities, and all other items as required by the Contract Documents.

0.02 Water and Power for Construction Purposes: The Contractor shall furnish all water and power for construction purposes. Construction water connections shall be temporary, to be broken when not in use.

0.03 Changes Caused by Material Purchased by the Contractor: The Contractor shall make any and all necessary changes in construction and piping to install materials approved for installation at no additional cost to the Town.

0.04 Shop Inspection: All materials furnished by the Contractor are subject, at the discretion of the Town, to inspection and approval at the plant of the manufacturer.

0.05 Field Inspection: All pipe and appurtenances shall be laid, jointed and tested for defects and leakage in the manner specified and in the presence of and as approved by the Town.

0.06 Material Furnished by the Contractor: The Contractor shall be responsible for all material furnished by him and shall replace at his own expense all such material found defective in manufacture or damaged in handling after delivery by the manufacturer. Installed material discovered to be defective shall be removed and replaced with acceptable material. The Contractor shall be responsible for the safe storage of material furnished by him or to him, and accepted by him, and intended for the work, until it has been incorporated in the completed project. The interior of all pipe, fittings and accessories shall be kept free from dirt or foreign matter at all times.

0.07 Material Furnished by the Town: The Contractor's responsibility for any material furnished by the Town shall begin at the point of delivery thereof to the Contractor. Material already on the site shall become the Contractor's responsibility. The Contractor shall examine all material furnished by the Town at the time and place of delivery to him and shall reject all defective material. Material furnished by the Town that becomes damaged after acceptance by the Contractor shall be replaced by the Contractor at no expense to the Town.

0.08 Disposition of Defective Material: All material found during the progress of the work to have cracks, flaws or other defects will be rejected by the Town. All defective materials shall be promptly removed from the site of the work by the Contractor.

0.09 Protection of the Work: The Contractor shall take all necessary precautionary measures as may be required to prevent damage to the work, including furnishing and maintaining barricades and flares. Any damage caused by lack of proper caution on the part of the Contractor is to be made good at no cost to the Town.

0.10 Existing Utilities: The location of existing utilities are to be verified by the Contractor, prior to initiation of construction.

0.10 Permits for Construction: All permits that may be required shall be the complete responsibility of the Contractor.

0.11 References: Whenever 'State Highway Specifications' are mentioned, it shall mean the Indiana Department of Transportation (INDOT), Standard Specifications or latest revision thereto.

EXCAVATION AND BACKFILL

1.01 Excavation: All earth excavation shall be open cut from the surface, except where otherwise shown on the drawings. Excavation shall be interpreted to mean: clearing the site; pavement removal where required; excavation of the material encountered in the proposed grade of the conduit; furnishing and placing all sheeting, trenching, trimming and bracing; supporting of structures above and below ground; removal and disposal of water; repairing damage to structures, conduits, and utilities encountered; backfilling, tamping or jetting; temporary surfacing of roadways; disposal of surplus materials; providing barricades and lighting; and restoration of the site. During the progress of excavation, care shall be exercised to reserve sufficient material for backfilling around the pipe and cleanup.

1.02 Excavation to Grade: The Contractor shall proceed with caution in the excavation and preparation of the trench so that the exact location of underground structures and utilities, both known and unknown, may be determined, and he shall be held responsible for the repair of such when broken or otherwise damaged. The trench shall be excavated to the depth required and unless otherwise shown on the drawings shaped so as to provide a uniform and continuous bearing on the lower 90 degrees of the pipe, on solid earth at every point between bell holes, or shall be excavated to a point four inches (4") below the bottom of the pipe and backfilled with compacted sand or bank run gravel.

Any part of the bottom of the trench excavated below the specified grade shall be backfilled and compacted to design grade with sand or gravel material as directed by the Town. Bell holes shall be provided at each joint to permit joints to be made properly.

Open trenches shall be properly protected and guarded by the Contractor in such manner as to prevent accidents, casualties, or damage of any nature whatsoever to persons, vehicles and abutting property.

The trench shall be excavated so that the pipe can be laid to the alignment and grade required. The trench shall be so braced and drained that the workmen may work therein safely and efficiently. It is essential that the discharge of any trench dewatering pumps be conducted to natural drainage channels, drains or sewers.

The Contractor shall thoroughly familiarize himself with OSHA Rules and Regulations Relating to the Construction Industry, with specific attention being given to the sections devoted to trench construction.

1.03 Exploratory Excavation: The Contractor will be required to excavate and locate existing underground improvements in advance of proceeding with the excavation for the conduit or carry the excavation sufficiently in advance of pipe laying operations that changes in line and grade may be accommodated in order to avoid such existing underground improvements.

Various underground conduits, and other structures are shown on the drawings, as taken from the records of the respective utilities, but other

structures not shown on the drawings may be encountered. The Contractor shall be held responsible for the repair of all improvements broken or otherwise damaged.

On the basis of the information obtained from the exploratory excavation, the Town may order certain changes in line or grade of the conduit. In any case, changes in the new conduit, or in existing improvements, shall be made only with approval of the Town.

1.04 Pipe Clearance in Rock: Ledge rock, boulders and large stones shall be removed to provide a clearance of at least six (6) inches below and on each side of all pipe and appurtenances.

The specified minimum clearances are the minimum clearance distances which will be permitted between any part of the pipe and appurtenances being laid, and any part, projection or point of such rock, boulder or stone.

1.05 Unstable Soil: In areas where unstable soil is encountered below the bottom of the pipe, the Contractor shall contemplate removing all such unstable soil. The length and depth to which unstable soil is to be excavated shall be as determined by the Town. All unstable soil shall be completely removed from the site of work.

Where unstable soil has been removed the excavation shall be backfilled with compacted sand, gravel or limestone to the bottom of the pipe.

1.06 Width of Trench: The width of trench shall be the minimum which will permit the pipe to be laid and jointed properly, the backfill to be placed and compacted as specified, and shall be as shown by the following table, unless approved otherwise.

<u>Nominal Pipe Diameter Inches</u>	<u>Allowable Trench Width Decimal Foot</u>	<u>Cu. Yds. Excavation* Per Ft. Depth Per Lin. Foot</u>
4-6	2.75	0.102
8-10	3.50	0.130
12	4.00	0.148
15	4.00	0.148
18	4.00	0.148
21	4.00	0.148
24	4.50	0.167
30	4.75	0.176
36	5.50	0.203
42	6.00	0.222
48	6.75	0.250

Excavation for changes in grade of appurtenances will be allowed on the basis of the outside dimension of the structure to which an additional 30 inches will be allowed parallel to each outside wall.

1.07 Sheeting, Bracing and Shoring: Where required to properly protect the construction work, adjacent property, work or workmen, sheeting, bracing and shoring shall be provided. If the Town is of the opinion that at any point sufficient or proper supports have not been provided, he may order additional supports, but neither the placing of such additional supports by the order of the Town nor the failure of the Town to order such additional supports placed, shall release the Contractor from his responsibility for the sufficiency of such supports for protection of the work and adjacent property.

1.08 Sheeting Left in Place: Sheeting, bracing and shoring shall not be left in place after completion of the work except as required by written order of the Town. Where required to protect the work, adjacent structures or property, sheeting, bracing and shoring shall be left in place, but shall be cut or left not less than two feet below the established surface grade.

1.09 Removal of Water: The Contractor shall provide and maintain during construction, adequate equipment to properly remove and dispose of all water entering the trench or other part of the work where conduits are being placed. In water bearing strata, well points or underdrain material may be required to effect a dry trench or pit. No pipe shall be laid in water or when, in the opinion of the Town trench conditions are unsuitable.

1.10 Piling of Excavated Material: In general it is contemplated that material excavated from trenches will not be allowed to be piled on adjacent walks and driveways. The amount of public street which may be occupied by the construction work at any time shall be subject to the requirements of the use of the street by the public.

The Contractor shall cooperate with the municipal street department to maintain traffic at necessary intersections and other areas. The Contractor shall notify and arrange with the municipal police, fire and EMS departments before closing any street. Where it is necessary to maintain one-way traffic, the Contractor shall provide necessary watchmen and flagmen to insure safety.

1.11 Disposal of Excavated Materials: All suitable excavated material shall be used in backfilling over and around the pipe and appurtenances or distributed otherwise by the Contractor. All excavated material in excess of the quantity required for backfilling and subsequent settlement shall be removed by the Contractor and disposed of in a timely and appropriate manner. The Contractor shall be responsible for securing disposal site(s), and any grading or seeding required at same.

1.12 Blasting: If blasting is required, then the Contractor shall employ such methods and equipment including mats, as to effectively protect life and property. Permission to blast must be secured from the Town and all regulations and conditions promulgated by public authorities shall be strictly enforced.

1.13 Backfilling: All trenches and excavations shall be backfilled to at least the original surface of the ground or pavement subgrade with allowances made for subsequent settlement. Backfill material shall be deposited in the trench for its full width simultaneously. For rigid conduits, care shall be exercised to work the backfill material completely around the pipe and

appurtenances filling all voids. For flexible conduits, embedment material shall be placed and compacted initially to the spring line of the pipe, thence to a minimum depth of 6" above the pipe. For nonpavement areas the backfill shall be placed in 8" layers to the original grade level. For pavement areas special backfill shall be placed in 8" layers and compacted as per specifications.

1.14 Backfilling in Freezing Weather: Backfilling shall not be completed in freezing weather except by permission of the Town. No backfilling shall be made with frozen material, nor shall backfilling be made when the material in the trench is already frozen.

1.15

1.15 Embedment Material: Embedment materials for flexible gravity conduits shall be as recommended by the pipe manufacturer. As a minimum, this material shall be Class II or III fine sand, coarse sand or gravel.

1.16 Special Backfill: If the material removed from the trench is not suitable for reuse as backfill the Town on an "As Ordered" basis will require the Contractor to remove the existing material and utilize sand, or bank run gravel for the backfill material. All special backfill material shall be placed in 8" layers as set forth in Section 1.13 and compacted where required in accordance with Section 1.17.

1.17 Compaction: Compaction will be required of all embedment material in accordance with the pipe manufacturer's recommendations. The Contractor shall maintain on the job site with each crew, a copy of the manufacturer's recommendations with respect to pipe embedment material and compaction. With respect to special backfill material, the Contractor shall place the material in 8" layers and utilize a mechanical compactor to compact each lift to 95% of its maximum density at optimum moisture content all in accordance with ASTM D-1557. The Contractor will be permitted to submit in writing an alternate detailed plan for achieving adequate compaction prior to commencing construction.

1.18 Construction in Highway Rights-of-Way: All construction within the road rights-of-way is to be carried out in complete accordance with the requirements of the respective highway authority; Local, INDOT and/or County.

2.00

TEMPORARY ROADWAY SURFACING, PAVEMENT
REPLACEMENT AND SITE RESTORATION

2.01 Temporary Surfacing: Where sewer and/or water mains have been installed in existing streets, the Contractor shall provide all temporary roadway surfacing and maintenance of the temporary surfacing until the backfill has properly settled, to permit pavement replacement. Temporary roadway surfacing shall consist of not less than a six (6) inch depth of #73 gravel over the entire area of surface where pavement has been removed.

2.02 Site Restoration: The Contractor shall restore all sidewalks, street pavement, curbing, gutters, drives, fences, poles, property survey stakes, top soil, grass, or other property and surface structures removed or disturbed as a part of the work to a condition equal to that before the work began. Payment for all such restoration shall be included in the unit price bid per lineal foot of pipe complete in place.

2.03 Pavement Replacement: The Contractor shall replace all roadway pavement removed with the same type and depth of material or materials as removed. All materials for pavement replacement shall conform to the applicable requirements of the Indiana Department of Transportation Standard Specifications latest revision thereto, unless otherwise specified.

No permanent roadway pavement shall be replaced until the condition of the backfill is such as to properly support the pavement. Types of pavement indicated on the drawings refer to the wearing surface only except as may be otherwise indicated.

The edges of the existing pavement shall be sawed, cut with a wheel or other approved manner in a neat and straight line along the edges of the backfilled trench before placement of any permanent pavement replacement.

All pavement replacement and other work required within the right-of-way of State Highways shall be done in complete accordance with the requirements of Indiana Department of Transportation as to materials and methods used and time of making such repairs.

In the preparation of the subgrade for pavement replacement, the temporary surfacing shall be removed to the subgrade of the pavement replacement and any loose or cracked pavement adjacent shall be cut and removed. The subgrade shall be accurately graded and compacted. Where the subgrade under the undisturbed pavement has fallen away, the Contractor shall provide properly compacted material under the pavement or remove such pavement as may be necessary to provide a firm supporting pavement subgrade foundation.

In no case shall the pavement replacement material be less than the minimum specified for new pavement construction.

2.04 Sub-Grade for Base: The Contractor shall prepare the subgrade for the new pavement base material by fine grading, rolling and compacting to the lines and grades as set out in the Contract Drawings. All subgrade shall be compacted to 95% Proctor Density.

2.05 Gravel Base: When gravel base is specified, it shall be constructed to the line, grade, cross section and depth as indicated on the Drawings.

Gravel Base shall consist of all new #53 or #73 aggregate, placed and compacted in layers not exceeding four inches (4") in depth, to the full depth specified.

Each lift or layer shall be smoothed and initially compacted with a three (3) wheeled or tandem roller, weighing not less than ten (10) tons. The smoothed surface shall then be rolled with a pneumatic tire roller weighing at least 25 tons and capable of exerting an average contact pressure from 60 to 90 psi uniformly over the surface by adjusting ballast and tire inflation pressure until compacted to the satisfaction of the Engineer. In places inaccessible to rolling equipment the required compaction may be obtained with mechanical tamps single-shoe vibrators or other equipment approved by the Town.

2.06 Penetration, Prime and Tack Coats: Before placing any asphalt surfaces, the existing pavement or the pavement base shall receive a penetration or tack coat, except that "Asphalt Base" shall not be so primed, if surface is placed within 10 days of the base construction.

- A. Preparation: Existing paved surfaces shall be thoroughly clean, dry and free of foreign materials prior to application of the liquid asphalt mixture. The prime coat shall be allowed to cure after application is made and before the surface material or mixture is applied.
- B. Equipment: The penetration or tack coat material shall be applied with a pressure distributor similar to that required by the Indiana Department of Transportation Specifications and shall be equipped with hose and nozzle for hand spray operation.
- C. Materials: On "Gravel Base", the type of prime shall be hot liquid asphalt MC-70, MC-250, RC-70, RC-250, applied at the rate of 0.30 to 0.50 gallons per square yard.

On portland cement or asphaltic concrete surface or base, the type of prime or tack coat shall be hot liquid asphalt RC-70 applied at the rate of 0.10 to 0.20 gallons per square yard.

2.07 Hot Asphaltic Concrete Paving:

- A. Preparation of Surfacing: The Contractor shall adjust all manholes, valves, catch basins, etc., to finish grade. Contractor may make such adjustments by using an approved adjustment ring or by raising the valve or casting and backfilling around same with lean concrete.
- B. Mixing Hot Asphaltic Concrete: Hot asphaltic concrete shall be prepared in a plant which substantially conforms to the requirements of the Indiana Department of Transportation Specifications for the production of hot mixed, hot laid asphaltic concrete.

C. Hauling: Hot asphaltic concrete must be laid hot. When hauling hot asphaltic concrete over 25 miles trucks shall be required to cover the material with tarps and take other precautions to assure the proper temperature of the mix. Any material which falls below the temperature requirements of the mix, as set out in the Indiana Department of Transportation Specifications shall not be used in the work.

D. Asphaltic Concrete Material:

1. Base Course: The Contractor shall furnish and lay at the rate of 110#/SY at the thickness specified, a Base Course of #5 Hot Asphaltic Concrete material in accordance with the Indiana Department of Transportation Specifications.
2. Binder Course: The Contractor shall furnish and lay at the rate of 280#/SY a Binder Course of #8 or #9 Hot Asphaltic Concrete material in accordance with the Indiana Department of Transportation Specifications.
3. Wedge Course: The Contractor shall furnish and lay as required to properly shape the existing pavement a wedge course of #11 Hot Asphaltic Concrete binder material in accordance with Indiana Department of Transportation Specifications.
4. Surface Course: The Contractor shall furnish and lay at the rate of 165#/SY a #11 Hot Asphaltic Concrete Surface material in accordance with Indiana Department of Transportation Specifications.

E. Spreading and Rolling: Spreading, rolling and tamping shall be similar to that specified in Section 403 of the Indiana Department of Transportation Specifications, except that when laying the surface course, not more than 800 feet (2 blocks) shall be laid in a single strip until the entire width to be surfaced is completed.

2.08 Concrete Pavement: Concrete utilized for driveways, sidewalks, curbs, curb and gutters and street pavements shall be "Ready-Mixed" conforming to ASTM Standard Specification C-94, utilizing "potable" quality water. The cement shall conform to ASTM Standard Specification C-175 for air entrained cement with the entrained air within the limits of 4% to 9%. All aggregate shall conform to ASTM Standard Specification C-33. All concrete shall be of such design and mix as to conform to the following:

- (a) Minimum cement content of 6 sacks per cubic yard.
- (b) Minimum compressive strength, 4000 psi @ 28 days.
- (c) Minimum flexural strength, 550 pounds @ 28 days.
- (d) Maximum water-cement ratio, 5.5 gallons per sack.
- (e) Maximum slump, 3 inches.

All forms shall be of metal or wood, straight and free of warps and of sufficient strength to resist springing. These forms shall be to the full depth, securely staked, braced and held firmly to the required line and grade with all walks a minimum of 4" in depth.

Expansion joints shall be placed at intervals of approximately ninety (90) feet. Expansion joint material shall be preformed asphaltic impregnated material 1/2 inch in thickness and placed the entire width or depth of the walk or curb. Expansion joints shall also be placed where any sidewalk joins with any curb or curb and gutter and around all valve boxes, poles, etc., which may fall within the walk.

When placing the concrete the subgrade shall be wetted before the concrete is placed thereon. Concrete shall be leveled off and tamped sufficiently to bring mortar to the surface after which it shall be finished by a wood float or trowel. Transverse joints shall be cut at intervals not greater than the sidewalk or not greater than twenty (20) feet on all curbs and pavement. When completed, concrete shall be covered and kept wet or sprayed with an approved curing agent. Concrete shall not be allowed to freeze. All concrete pavement shall receive a broom finish.

The edges of the existing driveways shall be sawed, cut with a wheel or other approved manner in a neat and straight line along the edges of the backfilled trench before placement of any permanent replacement material. All sidewalks shall be removed to the nearest joint.

2.09 Stone and Gravel Drives: All stone and gravel drives shall consist of eight (8) inches of compacted #73 crushed limestone upon a compacted sub-base.

2.10 Grading and Seeding: The project site shall be rough graded to a uniform and level grade prior to fine grading and seeding. Fine grading shall mean the furnishing and placing of a minimum of 4" of top soil (i.e. soil capable of supporting a healthy stand of normal vegetation), leveling, hand raking to a uniform surface and rolling with one pass of a flat roller. The Contractor shall then sow all areas which have received new top soil or disturbed by construction with grass seed at the rate of three (3#) pounds per 1000 S.F. with a mixture consisting of the following:

	<u>Percent By Weight</u>	<u>Percent Germination</u>
Perennial Ryegrass	60	90
Kentucky Bluegrass	28	80
Creeping Red Fescue	12	85

Maximum Weed Content 1k%

No seeding shall be done during windy or freezing weather or when the ground is wet or otherwise non-tillable. Immediately following seeding the seed shall be covered by stirring the soil not deeper than 1/4 inch. All areas that have been seeded shall also be fertilized with a standard commercial fertilizer with an analysis of 10-10-10 spread at the rate of 20 pounds per 1,000 square feet.

3.01 General Requirements: The Contractor shall furnish and install, complete and ready for continuous operation, all new pipe and appurtenances as shown on the drawings and/or herein specified.

Complete installation shall include materials, labor, all special features, appurtenances, supports, transitions between different types of pipe and structural modifications for the type of pipe furnished.

3.02 Replacement of Existing Pipes and Appurtenances: Unless shown or noted otherwise on the drawings, all existing sewer lines, water lines, drainage tile, culverts, or other pipes or appurtenances that are disturbed by construction shall be repaired or replaced with the same type and size as encountered.

3.03 Concrete Pipe: Concrete pipe for storm sewer conduits shall conform in all respects to ASTM Standard Specification C-76, latest revision thereof. Strength requirements shall be minimum as shown on the drawings. The use of concrete pipe shall be limited to 12" diameter and larger.

Concrete pipe joints shall be of the bell and spigot type with rubber "O" ring joints in accordance with ASTM C443, latest revision thereof.

3.04 PVC Gravity Pipe: Polyvinyl chloride (PVC) gravity sewer pipe and fittings shall be type PSM solid wall conforming to ASTM D 3034 with minimum wall thickness SDR-35. The use of PVC pipe shall be limited to 6" diameter and larger.

All PVC gravity pipe shall be installed in accordance with ASTM D-2321 and/or the pipe manufacturer's recommendations.

PVC gravity sewer pipe joints shall be of the bell and spigot type with rubber ring gaskets meeting the requirements of ASTM D-3212.

All gravity pipe entering and leaving manholes shall have a manhole waterstop gasket, as furnished by the manhole manufacturer, firmly clamped around the pipe exterior at the manhole.

3.05 High Density Polyethylene (HDPE) Pipe: High Density Polyethylene Pipe for storm sewers shall conform to the requirements of ASTM Standard D1248 and shall be installed in accordance with the manufacturer's recommendations.

HDPE pipe shall be joined by split corrugated couplings to match the pipe corrugations with the width not less than 1/2 the nominal diameter of the pipe.

All HDPE pipe entering a manhole shall have a manhole waterstop gasket firmly clamped around the pipe exterior at the manhole.

3.06 PVC Sewage Force Main Pipe: The size of all PVC pipe for sewage force mains is as shown on the drawings. All pipe shall be Class 200 pressure pipe (Minimum SDR-21) in accordance with ASTM D-2241, Polyvinyl chloride (PVC) plastic pipe.

PVC pipe joints for force mains shall be rubber ring joints in general accordance with ASTM D-1869.

Fittings shall be compact, (SSB) ductile iron, coated Pressure Class 350 manufactured in accordance with ANSI/AWWA specification C153/A21.53 latest revisions. Joints shall be mechanical joints with suitable set screws and furnished with solid molded rubber gaskets. All bolts, nuts and set screws shall be corrosion resistant.

All joints and fittings shall be installed in accordance with the recommendations of the pipe manufacturer.

3.07 Ductile Iron Water Pipe and Fittings; Unless otherwise designated on the drawings or specified, the following type of materials and fittings shall be used for the respective service specified:

- (a) Mechanical Joint Ductile Iron Pipe: Unless indicated otherwise underground water pipe shall be Pressure Class 350 mechanical joint ductile iron pipe, coated and cement-mortar lined, manufactured in accordance with ANSI/AWWA/C150/A21.50. The pipe shall be furnished with suitable solid rubber gaskets and corrosion resistant bolts, nuts and set screws. Details of the joint shall conform to ANSI/AWWA/C111/A21.11 specifications. Joints shall be made in strict accordance with the recommendations of the pipe manufacturer. All bolts, nuts, set screws and threads shall receive not less than two (2) coats of asphaltic paint after the joint is tightened and approved.
- (b) Mechanical Joint Ductile Iron Fittings: All fittings on underground lines shall be coated and cement-mortar lined Pressure Class 350 ductile iron pipe manufactured in accordance with ANSI/AWWA/C150/A21.53 Specifications. All fittings shall be furnished with suitable solid rubber gaskets and corrosion resistant bolts, nuts, and set screws. Details of the joint shall conform in all respects to ANSI/AWWA/C111/A21.11 Specifications. All bolts, nuts, set screws and threads shall receive not less than two (2) coats of asphaltic paint after the joint is tightened and approved.
- (c) "Slip" Joint Ductile Iron Pipe: The Contractor may use "slip" jointed ductile iron pipe on underground lines in lieu of the mechanical joint pipe specified. Slip jointed pipe shall be coated and cement-mortar lined Pressure Class 350 manufactured in accordance with ANSI/AWWA/C150/A21.50.

3.08 House Water Service Lines: Service taps to a water main shall include the furnishing and installing of a brass corporation stop, service line, and curb stop and box. Curb stops shall include a cast iron curb box with lid marked "water". Service lines shall be Type K soft temper copper ASTM D-88 of the flareable type.

All joints and fittings for service lines shall be of brass and either the flare or compression type design.

3.09 House Sewer Laterals: All laterals from the main sewer line in the street, alley or easement to the approximate right-of-way or property line of the customer shall be six inch diameter pipe.

Where the main line sewer is PVC or clay pipe, the house lateral shall be PVC ASTM connected to the main sewer by means of a tee, wye or saddle D-3034 with a wall thickness of SDR-35.

3.10 Water and/or Sewage Meters: The superintendent of the waterworks reserves the right to approve the size and type of meter installed on all water service and sewage service lines.

LAYING PIPE

4.01 **Handling Sewer Main Materials Into Trench:** Pipe and fittings shall be distributed along the line of the trench with "Bells" in the direction of laying. Each piece shall be opposite or near the place where it is to be laid in the trench. Proper implements, tools and facilities shall be provided and used by the Contractor for the safe and convenient prosecution of the work. All pipe and fittings shall be carefully put into the trench piece by piece by means of a crane, rope or other suitable tools or equipment, in such a manner as to prevent damage to sewer main materials and to protective coatings and lining. Under no circumstances shall sewer main materials be dropped or dumped into the trench.

4.02 **Field Inspection of Materials:** While suspended above grade, all pipe and fittings shall be inspected for defects. Ductile iron pipe and fittings, while suspended, shall be rung with a light hammer to detect cracks.

4.03 **Cleaning Pipe and Fittings:** All lumps, blisters, and excess coatings shall be removed from the bell and spigot end of each pipe, and the outside of the spigot and the inside of the bell shall be wiped clean and dry and free from oil and grease before the pipe is laid.

4.04 **Laying Pipe:** Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. If the pipe-laying crew cannot put the pipe into the trench and in place without getting earth into it, the Engineer may require that before lowering the pipe into the trench, a heavy, tightly woven canvas bag of suitable size be placed over each end and left there until the connection is to be made to the adjacent pipe. During laying operations, no debris, tools, clothing or other material shall be placed in the pipe.

After placing a length of pipe in the trench, the spigot end shall be centered in the bell and the pipe forced home and brought to correct line and grade. Pipe and fittings which do not allow a sufficient and uniform space for joints shall be removed and replaced with pipe and fittings of proper dimensions to insure such uniform space. Precautions shall be taken to prevent dirt from entering the joint space.

At times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug or other means approved by the Town. This provision shall apply during the noon hour as well as overnight. If water is in the trench, the seal shall remain in place until the trench is pumped completely dry.

4.05 **Cutting Pipe:** The cutting of pipe for inserting fittings or closure pieces shall be done in a neat and workmanlike manner without damage to the pipe, coating or lining, and so as to leave a smooth end at right angles to the axis of the pipe.

All cutting of pipe shall be performed utilizing a saw. No breaking of the pipe with any type of hammer will be permitted.

4.06 Jointing Pipe: All pipe joints shall be made up in strict accordance with the pipe manufacturer's recommendations. Joints not tight shall be disassembled, thoroughly cleaned, and remade. Under no conditions shall bolted joints be made tight by overstressing the bolts, or tightening the bolts beyond the manufacturer's recommended range of torque. The Contractor shall provide and have available for the use of the Town on the job at all times, properly calibrated indicating torque wrenches to fit all joint bolts being used. Joints found to have bolts tightened above the manufacturer's recommended maximum torque shall be disassembled, cleaned, and properly remade as directed by the Town.

"Slip Joints" and other rubber gasket type pipe joints shall be installed in strict accordance with the manufacturer's recommendations. Lubricants other than those recommended by the pipe manufacturer shall not be used. Joints found to be not tight, or with the plain end not sufficiently inserted in the socket shall be disassembled, thoroughly cleaned and properly remade.

4.07 Permissible Deflection at Joints: Wherever it is necessary to deflect water main pipe from a straight line, either in the vertical or horizontal plane, or where long radius curves are permitted, the amount of deflection allowed shall not exceed the manufacturer's recommendations.

4.08 Setting Valves and Fittings: Valves, fittings, plugs and caps shall be set and jointed to pipe in the manner above specified for cleaning, laying and jointing pipe.

4.09 Unsuitable Conditions for Laying Pipe: No pipe shall be laid in water, or when trench conditions are unsuitable.

The Contractor shall take all precautions necessary to prevent floatation of the pipe due to water coming into the trench. Any damage from floatation or water entering the trench shall be corrected by removing that section which becomes damaged and repairing or replacing it at no additional cost to the Owner.

4.10 Records: The Contractor shall keep accurate and complete records of the actual location of house taps and other appurtenances, and turn said records over to the Town at the completion of the project, and before acceptance. All house tap locations shall be measured from the downstream manhole.

4.11 Special Installation Instruction: In recognition of the fact that there are currently many different pipe materials available from many different manufacturers, the Contractor will be required to obtain from the pipe manufacturer his published recommendations for installation of his pipe; and nothing in these specifications shall preclude compliance by the Contractor with the manufacturer's recommendations.

4.12 Grade and Alignment: All gravity sewer conduit pipe shall be installed using a laser and target system through the pipe. A ground surface laser and target system will not be permitted.

5.00

SEWER AND WATER MAIN APPURTENANCES

5.01 General Requirements: Manholes and other appurtenances are to be constructed of the materials as shown on the drawings and/or as may be specified hereafter.

5.02 Concrete: All concrete shall be 4000 psi at 28 days and contain a minimum of 6 sacks of cement per cubic yard.

5.03 Manhole And Inlet Castings: Shall be of the type and size, weight and dimensions as specified on the drawings, or approved equal. All covers shall be fully coated with asphalt paint.

5.04 Precast Manhole Units: Shall be circular with circular reinforcement and shall conform to the requirements of the current specifications for precast reinforced concrete manholes, ASTM Designation C-478.

Openings for pipe inlets and outlets shall be provided in the precast units at the locations shown on the drawings, at the place, and time of manufacture. Openings shall be made true to form and shall be approximately one inch larger in diameter than the outside diameter of the inlet or outlet.

If it becomes necessary to cut a manhole on the job site, same shall be accomplished utilizing a saw. No changes in the openings in a manhole utilizing a hammer will be permitted. All patching of openings in a manhole shall be accomplished using non-shrink grout.

The unit for the top of the structure shall be constructed to provide for the use of standard covers as shown on the drawings.

To install precast manholes the groove of the receiving pipe shall be carefully cleaned and a mastic sewer joint material troweled on the perimeter. The tongue of the next section shall be cleaned and placed in the groove end of the first pipe. The inside surface of the pipe at the joint is then troweled smooth. Mastic joint material shall be as recommended by the manhole manufacturer.

In the event that the Contractor is of the opinion that mastic joint material will not provide a suitable joint to meet the infiltration limits, the use of "O" ring rubber gaskets will be permitted.

Each manhole shall be provided with steps spaced at 12" center to center with the first step a maximum of 24" below the top of the manhole casting. These manhole steps shall be constructed of cast iron or steel reinforced fiberglass.

5.05 Mortar Materials: Cement shall conform to the following specifications:

Portland Cement - ASTM C150-42

Masonry Cement - Federal Spec. SS-C-181, Type II

Sand used throughout the work shall be well screened, clean, hard, sharp, silicious, free from loam, silt, or other impurities. Sizes or grains shall be as follows:

#8 Sieve - passing 100%
16 Sieve - retained 5%
100 Sieve - retained 97%

Water shall be clean, fresh, and free from oil, acids, alkalis, or organic materials.

5.06 Reinforcing Steel: Shall be ASTM A615-GD.60. Fabrication to be in accordance with the "Code of Standard Practice" of the Concrete Reinforcing Steel Institute.

5.07 Gate Valves: Gate valves for underground water service shall conform to the American Water Works Association Standard Specifications for Gate Valves, C509 latest edition, 150 psi, working pressure, iron body, resilient wedge, non-rising stem and standard operating nut. Valves shall be hydrostatically tested at twice the working pressure. All gate valves shall open by turning counterclockwise and shall be coated inside and out in accordance with the A.W.W.A. Standard Specification.

5.08 Hydrants: Fire hydrants are to be located at a maximum spacing of 500 feet. Minor deviations will be permitted to locate the hydrant tee so as to minimize the cutting of pipe. The steamer connection shall be placed in a position to permit ease of connection by a fire department pumper truck.

All hydrants shall be A.W.W.A Standard with a minimum barrel diameter of 7 inches, a 6 inch inlet, drain outlet, and compression shut-off. Verify the type and size of hose threads with the Town prior to ordering. All hydrants shall have two 2½ inch hose connections, one 4½ inch steamer connection, and a 5-1/4 inch main valve.

Hydrant assemblies shall be complete with ductile iron tee in the main, cast iron extension piece if required, gate valve, and fire hydrant, complete, with approved tie rods, harness, reaction blocking and drainage stone.

5.09 Valve Boxes: All underground gate valves shall be fitted with an approved cast iron roadway box. Roadway boxes shall have a two piece 5-1/4 inch diameter shaft with either a round or oval base, and shall be of the screw type. The cover shall be cast with the word "water" or "sewer" for the appropriate main on the top.

5.10 Standardization: In order to keep parts stock to a minimum, and not limit competition, all Fire Hydrants and valves shall be either "Kennedy" or "Waterous".

6.00

TESTING

6.01 General: All testing shall be witnessed and certified to by a qualified independent firm in accordance with IDEM standards and regulations.

6.02 Low Pressure Air Test: Each new gravity sewer, or any isolated section thereof, may be subjected to a low pressure air test. The Contractor shall furnish all special plugs, compressor, gages, relief valves, etc. as required to isolate and air test each isolated section of the sewer.

6.03 Procedure for Low Pressure Air Testing: After the pipe is laid, the joints completed, and the trench backfilled, the section of sewer to be tested is to be cleaned and suitably isolated with test plugs securely braced in place.

Add air slowly to the sewer under test through a suitable connection to one of the test plugs, until the internal air pressure is raised to 4.0 psig plus any additional pressure as may be required to offset any backpressure due to ground water submergence of the sewer. Contractor's test equipment shall include a pressure relief valve designed and located in such manner as to prevent the test pressure from exceeding 10.0 psig.

After the internal pressure of 4.0 psig is obtained, allow a minimum of two minutes for air temperature to stabilize, adding only the amount of air to maintain a pressure near 4.0 psig.

When the stabilization period is over the test pressure shall be allowed to drop from the 4.0 psig level. When the pressure decreases to 3.5 psig, the time shall be checked by means of a stop watch to determine the time in seconds for the test pressure to drop from 3.5 psig to 2.5 psig.

6.04 Allowable Air Loss: It is intended that the sewer pipe and joints be of tight construction. The minimum time for the test pressure to drop from 3.5 psig to 2.5 psig per 100 feet of sewer shall be not less than the following:

<u>Pipe Diameter</u>	<u>Time (Seconds)</u>	<u>Pipe Diameter</u>	<u>Time (Seconds)</u>
4"	18	10"	110
6"	40	12"	158
8"	70	15"	248

6.05 Deflection Testing: Following installation, bedding, backfilling and compaction of flexible (non-rigid) material gravity sanitary sewer conduits, the Town will require all of these conduit sections tested for vertical ring deflection. The Contractor shall arrange at his expense for the tests to measure the internal deflection of these conduits. Maximum ring deflection of the conduit underload shall be limited to 5 percent of the vertical internal pipe diameter. This testing shall be accomplished using a deflectometer, a rigid go/no-go device or equal in accordance with ASTM D 2412. This test shall not be performed until after the pipe has been in place for a minimum of 30 days.

6.06 Pressure Testing of Force Mains: All force mains shall be pressure tested with water after installation at 100 psi, held for a minimum of 2 hours. The Contractor shall furnish all necessary apparatus for performing the test under the observation of the Engineer.

Leakage is defined as the quantity of water to be supplied into the newly laid pipe or any valved section thereof, necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled.

No pipe installation will be accepted until the leakage is less than the number of gallons per hour as determined by the formula:

$$L = \frac{S \times D \text{ times square root of "P"}}{133,200}$$

in which L equals the allowable leakage in gallons per hour, S is the Length of the pipe line tested in feet, D is the nominal diameter of the pipe in inches, and P is the average test pressure during the leakage test in pounds per square inch gage.

Should any test of pipe laid disclose leakage greater than that specified, the Contractor shall, at his sole expense, locate and repair all defective joints until the leakage is within the specified allowance.

6.07 Infiltration Test: Each new gravity sewer, or any isolated section thereof, may be subjected to an infiltration test. The Contractor shall furnish all weirs, bulkheads, catchments and other appurtenances as required for performing the test under the observation of, and subject to the approval of, the Town.

6.08 Procedure for Infiltration Testing: After the new main line pipe has been installed and the new house service laterals connected in a reach of conduit between two manholes, this reach of sanitary sewer shall be tested for infiltration. This testing shall be performed through the use of a bulkhead in the upstream manhole and a calibrated sharp-edged weir installed at the downstream manhole. The infiltration flow from the reach undergoing testing shall be measured over a sufficiently long period of time to establish the rate of infiltration but in no case shall the test duration be less than two (2) hours. Where the reach being tested was installed through ground that required dewatering, the infiltration test shall not be performed until a sufficient period of time has elapsed after the dewatering equipment has been removed to permit the ground water table to return to its natural level.

6.09 Allowable Infiltration: Practically water tight work is required and the sewer shall be tested carefully to determine the amount of leakage. The total infiltration into the system, from the ground water during wet weather or from water from creeks, rivers, springs or other sources shall not exceed two hundred gallons per inch diameter of sewer, per mile, per twenty-four (24) hours (0.00263 gallon per inch diameter, per 100 feet, per minute).

6.10 Water Pipe Pressure Test: All water pipe shall be subjected to a hydrostatic pressure test. The hydrostatic test pressure shall be 150 pounds per square inch, based on the elevation of the lowest point of the line or section of line under test and corrected to the elevation of the test gauge. The duration of each pressure test shall be at least two hours. It will be the contractor's decision whether to perform the tests prior to completing the backfill or not.

After the pipe is laid and the joints completed, and the newly laid pipe or any valved section thereof shall be slowly filled with water and the specified test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer. The pump, pipe connection and all necessary apparatus shall be furnished by the Contractor. The Contractor shall furnish all gauges for the test and shall make all taps into the pipe.

Before applying the specified test pressure, all air shall be expelled from the pipe. If hydrants or blowoffs are not available at high places, the Contractor shall make the necessary taps at points of highest elevation before the test is made and insert plugs after the air has been released and before the pressure test.

All exposed pipe, fittings, valves, hydrants and joints will be carefully examined during the test. Any cracked or defective pipes, fittings, or valves discovered as a result of this pressure test shall be removed and replaced by the Contractor at his expense, and the test shall be repeated.

6.11 Water Pipe Leakage Test: A leakage test shall be conducted after the pressure test has been satisfactorily completed. The Contractor shall furnish the pump, pipe, connections and all other necessary apparatus including the gage and measuring device, and shall furnish all necessary assistance to conduct the test. The duration of each leakage test shall be two hours and during the test the main shall be subjected to a pressure of 150 pounds per square inch.

Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved section thereof, necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled.

No pipe installation will be accepted until the leakage is less than the number of gallons per hour as determined by the formula:

$$L = \frac{S \times D \text{ times square root of "P"}}{133,200}$$

in which L equals the allowable leakage in gallons per hour, S is the length in feet of the pipe line tested, D is the nominal diameter of the pipe in inches, and P is the Average test pressure during the leakage test, in pounds per square inch gage.

Should any test of pipe laid disclose leakage greater than that specified, the Contractor shall, at his sole expense, locate and repair all defective joints until the leakage is within the specified allowance.

6.12 Water for Tests: The Town will furnish all water for the water main tests.

6.13 Sterilization of Water Mains: After the water lines are completed and before they are placed in service, the Contractor shall thoroughly sterilize the entire system with chlorine solution or other chemical in a manner satisfactory to the Indiana Department of Environmental Management. Before disinfecting, the new pipes shall be thoroughly flushed, drained and refilled, care being taken to insure all entrapped air is expelled. The Contractor shall furnish all chlorine and equipment or other apparatus required for the complete sterilization operation.

All new mains shall be disinfected according to "A procedure for disinfecting water mains," AWWA C601. Following the disinfecting, the mains shall be thoroughly flushed and refilled with pure water.

At least two successive sets of satisfactory bacteriological results must be reported from samples collected at 24 hour intervals from each section of the system being sterilized, before that section is placed in service.

All bacteriological sampling, analysis and cost associated therewith shall be the responsibility of the Contractor. The analysis shall be performed by a recognized, qualified laboratory with a copy of each result forwarded by the laboratory to the superintendent of utilities.

6.14 Pavement Testing: The following tests may be required to verify the conformance with these specifications.

1. Asphalt extraction from job mix.
2. Percent asphalt.
3. Asphalt mix gradation (sieve analysis).
4. Core testing of new pavements for depth.
5. Concrete compression tests.
6. Compaction test on subgrade

Should any test indicate that materials are not in conformance with the Specifications the Town may upon agreement with the Contractor have additional tests performed by the independent testing lab to establish the full extent of such non-conformance.

As a result of such testing the Contractor shall be directed to remove such material or materials as found to be deficient or non-conforming and replace same with acceptable material. Under certain conditions the Town and Contractor may negotiate an adjustment.

CLEANUP AND GUARANTEE

7.01 Cleanup: The Contractor shall maintain the site of work in a neat and clean condition at all times and shall not allow surplus construction materials, tools, rubbish, excess soil and other foreign matter to accumulate in a nuisance fashion and/or hazardous or unsightly manner. The timely disposition or disposal from the site of any such item shall be the complete responsibility of the Contractor.

Final acceptance will not be made until after all cleanup, site work including restoration of all fences, lawns, drives, poles, signs, sidewalks, etc., pavement replacement, repair work and all other miscellaneous items disturbed during construction have been completed to a condition equal to that before construction began, and to the satisfaction of the Town and/or any other public body that may have jurisdiction.

7.02 Guarantee: In general all materials, labor, equipment, miscellaneous accessories and their installation shall be guaranteed to be free from all defects for a period of one year from the date of start-up and continuous use by the Town. Any defects found during this one year period shall be repaired or replaced at no cost to the Town and any such defect that has been repaired or replaced shall thenceforth be guaranteed for an additional 12 months from the date of such repair or replacement.

The Contractor shall assume complete responsibility for the guarantee of all facets of construction and is hereby cautioned that individual manufacturer's guarantees of equipment or other appurtenances will not be recognized unless they exceed the requirements of the previous paragraph.

The required lubrication, start-up and adjustment of equipment and other appurtenances shall be performed at the appropriate time by or under the direct supervision of the Contractor with all equipment and appurtenances left in proper working order for use by the Town.

Each manufacturer of equipment supplied on this project shall assemble all his drawings and operational and maintenance instructions into one manual and furnish the Town or his representative three (3) copies of said manual.

ORDINANCE NO. 368-A

ORDINANCE AMENDING THE TOWN OF MIDDLEBURY UTILITY ORDINANCE

WHEREAS Indiana Code Sections 36-1-3 et seq. permit any town in the State of Indiana to exercise any power or perform any function necessary to the public interest in the context of its municipal or internal affairs, which is not prohibited by the Constitution of the United States or of the State of Indiana, or denied or pre-empted by any other law, or is not expressly granted by any other law to another governmental entity;

WHEREAS the Town Council of the Town of Middlebury, Indiana adopted on April 20, 1998 Ordinance 368 known as the "Town of Middlebury Comprehensive Utility Ordinance;"

WHEREAS the Town Council of the Town of Middlebury, Indiana has deemed it reasonable, appropriate, and in the best interests of the Town of Middlebury, Indiana to amend the Town of Middlebury Comprehensive Utility Ordinance in accordance with the terms and provisions of this Ordinance;

NOW, THEREFORE, BE IT HEREBY ESTABLISHED, ORDERED, ADOPTED, AND ORDAINED by the Town Council of the Town of Middlebury, Indiana to amend Ordinance Number 368 as follows:

Section Five (5) entitled "Specifications for Workmanship and Materials" of Ordinance 368 is amended by adding Section 5.02 to read as follows:

5.02. Before acceptance of any water facilities, sewer facilities, park facilities, roads and streets, buildings, and other facilities to be dedicated to the Town of Middlebury, Indiana by a private developer, builder, and/or owner, the private developer, builder, and/or owner shall file with the Town Council of the Town of Middlebury a written certification duly executed by a professional engineer licensed in the State of Indiana pursuant to Indiana Code §25-31 et seq. certifying that construction review and inspection services have been performed and that the dedicated facilities have been designed, engineered, and constructed in accordance with the requirements of the Town of Middlebury Comprehensive Utility Ordinance.

This Ordinance amendment shall be effective January 1, 2003 and shall govern all projects performed on and after that date.

IN WITNESS WHEREOF, the Town Council of the Town of Middlebury, Indiana has adopted this Ordinance the 21st day of October, 2002.

TOWN COUNCIL OF THE TOWN OF
MIDDLEBURY, INDIANA

By Gary L. O'Dell
Gary L. O'Dell, President

Attest:

Sally A. Nusbbaum
Sally A. Nusbbaum, Clerk-Treasurer
Town of Middlebury

ORDINANCE NO. 368-B

ORDINANCE AMENDING THE TOWN OF MIDDLEBURY UTILITY ORDINANCE

WHEREAS Indiana Code Sections 36-1-3 et seq. permit any town in the State of Indiana to exercise any power or perform any function necessary to the public interest in the context of its municipal or internal affairs, which is not prohibited by the Constitution of the United States or of the State of Indiana, or denied or pre-empted by any other law, or is not expressly granted by any other law to another governmental entity;

WHEREAS the Town Council of the Town of Middlebury, Indiana adopted on April 20, 1998 Ordinance 368 known as the "Town of Middlebury Comprehensive Utility Ordinance;"

WHEREAS the Town Council of the Town of Middlebury, Indiana adopted on October 21, 2002 Ordinance 368-A entitled "Ordinance Amending the Town of Middlebury Utility Ordinance;"

WHEREAS the Town Council of the Town of Middlebury, Indiana has deemed it reasonable, appropriate, and in the best interests of the Town of Middlebury, Indiana to further amend the Town of Middlebury Comprehensive Utility Ordinance in accordance with the terms and provisions of this Ordinance;

NOW, THEREFORE, BE IT HEREBY ESTABLISHED, ORDERED, ADOPTED, AND ORDAINED by the Town Council of the Town of Middlebury, Indiana to amend Ordinance Number 368 as follows:

Section Five (5) entitled "Specifications for Workmanship and Materials" of Ordinance 368 is amended by adding Section 5.03 to read as follows:

5.03. Before acceptance of any water facilities, sewer facilities, park facilities, buildings, and other facilities to be dedicated to the Town of Middlebury, Indiana by a private developer, builder, and/or owner, the private developer, builder, and/or owner shall file with the Town Council of the Town of Middlebury a maintenance bond in appropriate form in an amount equal to ten percent (10%) of the contract price for such water facilities, sewer facilities, park facilities, buildings, and other facilities to be dedicated to the Town of Middlebury, Indiana. Such maintenance bond shall be effective for a period of three (3) years from the date of acceptance of such facilities.

This Ordinance amendment shall be effective immediately and shall govern all dedications after that date.

IN WITNESS WHEREOF, the Town Council of the Town of Middlebury, Indiana has adopted this Ordinance the 4th day of November, 2002.

TOWN COUNCIL OF THE TOWN OF
MIDDLEBURY, INDIANA

By Gary L. O'Dell
Gary L. O'Dell, President

Attest:

Sally A. Nusbaum
Sally A. Nusbaum, Clerk-Treasurer
Town of Middlebury

ORDINANCE NO. 368-C

ORDINANCE AMENDING THE TOWN OF MIDDLEBURY UTILITY ORDINANCE

WHEREAS Indiana Code Sections 36-1-3 et seq. permit any town in the State of Indiana to exercise any power or perform any function necessary to the public interest in the context of its municipal or internal affairs, which is not prohibited by the Constitution of the United States or of the State of Indiana, or denied or pre-empted by any other law, or is not expressly granted by any other law to another governmental entity;

WHEREAS the Town Council of the Town of Middlebury, Indiana adopted on April 20, 1998 Ordinance 368 known as the "Town of Middlebury Comprehensive Utility Ordinance;"

WHEREAS the Town Council of the Town of Middlebury, Indiana adopted on October 21, 2002 Ordinance 368-A entitled "Ordinance Amending the Town of Middlebury Utility Ordinance;"

WHEREAS the Town Council of the Town of Middlebury, Indiana adopted on November 4, 2002 Ordinance 368-B entitled "Ordinance Amending the Town of Middlebury Utility Ordinance;"

WHEREAS the Town Council of the Town of Middlebury, Indiana has deemed it reasonable, appropriate, and in the best interests of the Town of Middlebury, Indiana to further amend the Town of Middlebury Comprehensive Utility Ordinance in accordance with the terms and provisions of this Ordinance;

NOW, THEREFORE, BE IT HEREBY ESTABLISHED, ORDERED, ADOPTED, AND ORDAINED by the Town Council of the Town of Middlebury, Indiana to amend Ordinance Number 368 as follows:

1. Section 3.07 of the "Specifications for Workmanship and Materials" attached as Exhibit A to Ordinance 368 is amended to read as follows:

3.07. Ductile Iron Water Pipe and Fittings: Unless otherwise designated on the drawings or specified, the following type of materials and fittings shall be used for the respective service specified:

- (a) Mechanical Joint Ductile Iron Pipe: Unless indicated otherwise underground water pipe shall be Pressure Class 50 mechanical joint ductile iron pipe, coated and cement mortar lined, manufactured in accordance with ANSI/AWWA/C150/A21.50. Minimum pipe size for new water mains shall be eight inches (8").

The pipe shall be furnished with suitable solid rubber gaskets and corrosion resistant bolts, nuts and set screws. Details of the joint shall conform to ANSI/AWWA/C111/A21.11 specifications. Joints shall be made in strict accordance with the recommendations of the pipe manufacturer. All bolts, nuts, set screws and threads shall receive not less than two (2) coats of asphaltic paint after the joint is tightened and approved.

- (b) Mechanical Joint Ductile Iron Fittings: All fittings on underground lines shall be coated and cement-mortar lined Pressure Class 50 ductile iron pipe manufactured in accordance with ANSI/AWWA/C150/A21.53 Specifications. All fittings shall be furnished with suitable solid rubber gaskets and corrosion resistant bolts, nuts, and set screws. Details of the joint shall conform in all respects to ANSI/AWWA/C111/A21.11 Specifications. All bolts, nuts, set screws and threads shall receive not less than two (2) coats of asphaltic paint after the joint is tightened and approved.
- (c) "Slip" Joint Ductile Iron Pipe: The Contractor may use "slip" jointed ductile iron pipe on underground lines in lieu of the mechanical joint pipe specified. Slip jointed pipe shall be coated and cement-mortar lined Pressure Class 50 manufactured in accordance with ANSI/AWWA/C150/A21.50.

2. Section 5.07 of the "Specifications for Workmanship and Materials" attached as Exhibit A to Ordinance 368 is amended to read as follows:

5.07. Gate Valves: Gate valves for underground water service shall conform to the American Water Works Association Standard Specifications for Gate Valves, C509 latest edition, 150 psi, working pressure, iron body, resilient wedge, non-rising stem and standard operating nut. Valves shall be hydrostatically tested at twice the working pressure. All gate valves shall open by turning counterclockwise and shall be coated inside and out in accordance with the A.W.W.A. Standard Specification. All gate valves will have a gate valve adaptor included to center the buffalo box to the gate valve.

3. Section 5.08 of the "Specifications for Workmanship and Materials" attached as Exhibit A to Ordinance 368 is amended to read as follows:

5.08 Hydrants: Fire hydrants are to be located at a maximum spacing of 500 feet. Minor deviations will be permitted to locate the hydrant tee so as to minimize the cutting of pipe. The storz connection shall be placed in a position to permit ease of connection by a fire department pumper truck.

All hydrants shall be A.W.W.A. Standard with a minimum barrel diameter of 7 inches, a 6 inch inlet, drain outlet, and compression shut-off. Verify the type and size of hose threads with the Town prior to ordering. All hydrants shall have two 2½ inch hose connections, one 5 inch storz connection, and a 5¼ inch main valve.

Hydrant assemblies shall be complete with ductile iron tee in the main, cast iron extension piece if required, gate valve, and fire hydrant, complete, with approved tie rods, harness, reaction blocking and drainage stone. All fire hydrants are to be red in color.

4. Section 5.10 of the "Specifications for Workmanship and Materials" attached as Exhibit A to Ordinance 368 is amended to read as follows:

5.10 Standardization: In order to keep parts stock to a minimum, all fire hydrants and valves shall be "Kennedy."

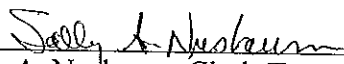
5. This Ordinance amendment shall be effective September 1, 2003.

IN WITNESS WHEREOF, the Town Council of the Town of Middlebury, Indiana has adopted this Ordinance the 4th day of August, 2003.

TOWN COUNCIL OF THE TOWN OF
MIDDLEBURY, INDIANA

By 
Gary L. O'Dell, President

Attest:


Sally A. Nusbaum, Clerk-Treasurer
Town of Middlebury