

LEWISBURG WATER & WASTEWATER

P.O. BOX 2787 - 100 WATER STREET

LEWISBURG, TENNESSEE


STANDARD

WATER LINE SPECIFICATIONS

REVISED OCTOBER 31, 2002

REVISED MARCH 27, 2008

TO: Contractors, Developer, Any Persons Involved with the Installation of
Water/Sewer Mains Whereas Such Mains are Requested to Become Property
of this Department

FROM: Larry E. Jones, Superintendent 

RE: Standard Specification for Water Lines

DATE: October 31, 2002

1. You are reminded that any and all lines (mains), appurtenances which are requested to be accepted by and/or dedicated to this Department shall conform to the standard specifications and policies as have been adopted and whereby regulates such construction.
2. All policies are available for public inspection and you are advised to familiarize yourself with those policies and specifications which may pertain to your construction prior to commencement of work.
3. The following policies are specifically noted:

Construction Policy #2	SUBDIVISION
Construction Policy #5	UTILITIES ENCROACHMENT
General Policy #2	INSTALLATION OF LINES
General Policy #3	FIRE HYDRANTS
4. Construction Policy #6--development within subdivisions shall require a **contract/agreement** to be signed between the developer and the utility.
5. Any questions regarding policies and/or specifications should be directed to the Superintendent.
6. No person nor persons shall authorize any modification to such policies until such approval is first obtained by action of the Water and Sewer Board.

Revised specifications for extending the water distribution system of the LEWISBURG, TENNESSEE, WATER AND WASTEWATER DEPARTMENT, hereinafter referred to as the "DEPARTMENT".

I. MATERIALS

- A. Pipe: Pipe size and location determine the category or class into which each extension or addition to the system falls. The Department describes below its three classes, as it defines them. Determination of acceptability of Class B or Class C pipe will be made in consultation with the Department.
1. CLASS A: Mains 10" or larger. The engineers of the Department will prepare specifications for each individual project under Class A. Pipe shall normally be no less than thickness 51 Ductile Iron, cement lined with slip joint connections.
 2. CLASS B: Piping shall be Ductile Iron of at least thickness 51, cement lined. All pipe, fittings excepted, may be slip joint (push-on) type. No leaded joints will be allowed. Class B pipe is to be used where the lines crosses a creek or drainage ditch, a street, under a parking or storage lot, or in any other location where high compression stresses from loads above ground might reasonably be expected.
 3. CLASS C: Pipe may be plastic, PVC, Class 200, SDR 21 or less, integrated bell or double hub coupling. Please note that any plastic, PVC, SDR number above 21 is not allowed. Class C pipe may be used in those locations where high compression stresses from loads above ground can not reasonably be expected.
- B. Fittings: All fittings except double hubs shall be mechanical joint, cast iron, of at least 200 PSI test, cement lined, with bituminous coating outside, and shall conform to the current issue of ASA Spec. A21.10 where applicable.
- C. Gate Valves: All valves shall meet the requirements of the latest specifications of AWWA for working pressures up to and including 200 PSI. Valves shall be iron bodied, bronze mounted, gate valves with double disc parallel seats, non-rising stems, with connecting fittings as described above. Valves shall be provided with two-inch operating nuts marked to show the direction of opening which shall always be counterclockwise (OPL).

Gate valves shall be installed at all outlets of any tee or cross (except on the main at hydrants--see "hydrants") with valve boxes of the appropriate size in place. The piping connecting the fitting to the valve shall never be less than 3 feet in length.

- D. Valve Boxes: Valve boxes shall be cast iron with an inside diameter of not less than 5 inches, with the top section adjustable for elevation. The base shall be of sufficient size that it will not contact the valve nor the pipe near any joint. Valve boxes shall be suitable for installation on mains laid at depths specified and shall be M & H 2602 or approved equal. All valve box covers shall have "Water" cast in raised letters on their tops.
- E. Thrust Blocks: Thrust blocks of Class B Concrete (3000 lb. test) of adequate size and proper shape shall be provided at each hydrants, bend, plugged tee and cross, dead-end, and at reducers and fittings where changes in pipe diameters or directions occur. At hydrants, thrust blocks shall be so located that they will not prevent the speedy draining of the hydrant, nor ready access to the drain. Thrust blocks should always bear against an undisturbed trench face.
- F. Hydrants:
1. Hydrants will be so located that no reasonably expected building will be more than 500 feet from a hydrant, measured along the route fire-fighting equipment would move between the building and the hydrant. A 6" gate valve shall be installed between the hydrant and the water main.
 2. Fire hydrants shall be iron bodied, fully bronze mounted, suitable for working pressures of 200 PSI, and shall meet all requirements of the latest AWWA specifications. They shall have a 6" MJ connection to 6" and larger mains, two 2 ½ brass nozzles with threads for hose connections and one brass nozzle with threads for steamer coupling together with caps fastened securely to each hydrant and threaded to fit the nozzles. The bottom valve of the hydrant shall be not less than 5 1/4" in diameter with a 7" ID riser barrel. All connection threads shall comply with standard specifications of the National Board of Fire Underwriters and the City of Lewisburg. Operating nuts shall comply with the standard of the City of Lewisburg. The main valve of the hydrant shall be of the compression type the valve shall be faced with heavy impregnated water proof gaskets. The hydrants shall have a safety "breakable flange" section located above ground line. The distance from the ground line at the hydrant to the top of the hydrant shall

not to be less than 30". Exposed unpainted surfaces shall be painted with one coat of red lead and two coats of Sonneborn's hydrant enamel. Approved brands: M & H Mueller, American Darling and American AVK. ("Fire hydrants accepted by the department will be pre-painted manufacturers "red" to include barrel and bonnet. The bonnet will be "color coded" and painted by the department following acceptance and proper flow testing to meet department policy."

3. Hydrant thrust block must bear against an undisturbed trench face. Care must be taken that the drain (weep-hole) is not obstructed but can drain into the crushed rock bedding (see drawing No. 1).

CONSTRUCTION

(See Note "B", page 12)

- A. Trenching must be done in a neat and workmanlike manner, maintaining proper alignment except where necessary to make deviations to miss obstructions. Trenching shall be such that the pipe will have a minimum cover of 30 inches and the deflection between joined sections of pipe shall not exceed the allowable recommended by the manufacturer. The Contractor shall deepen the trench when approaching creeks, roadways, or sub-surface obstructions to avoid the unnecessary use of fittings. The bottom of trenches must be shaped with bell holes so that the full length of the pipe is resting on the trench bottom. Blocking shall not be used. When sub-surface obstructions are encountered, the contractor may lay around or above or below the obstruction if the pipe and the obstruction can be separated with 6" of padding. If 6" of padding can not be obtained, the obstruction must be moved. Where rock is encountered in trenches, the excavation shall be carried to a depth of 6" below the bell or sleeve of the pipe and the excess excavation shall be backfilled with #7 or #67 TDOT crushed rock bedding material firmly compacted. Crushed rock shall be used to backfill 6" above the top of the pipe, and this backfill must be properly tamped. The Department may approve this portion of backfill (above the bedding) to be made with chert or granular earth, which includes no rock over 3" in any dimension, under certain conditions.
- B. Where rock is encountered, the contractor shall use all precautions necessary to protect adjacent property against damage resulting from this operations, any and all damage caused by rock removal shall be promptly repaired by the contractor at his expense. A written statement that no claims are outstanding against the contractor may be required by the Department before the work is accepted.
- C. All pipe shall be laid according to the manufacturer's recommendations concerning handling, jointing and deflections.
- D. In backfilling trenches, #7 or #67 crushed rock will always be used to bed the pipe (6" minimum) and will be used to 6" above the top of the pipe, and be properly

tamped. The remaining depth of the trench may be filled with dirt, free of rock no more than 3" in any dimension, pushed into the trench by power equipment and then properly compacted. Where the trench crosses streets and other places of possible high stress, the trench shall be machine tamped for the entire depth and width of the trench in 4"-6" layers.

- E. Trenches alongside streets and roads and across private property should be overfilled (mounded), and it shall be the responsibility of the contractor to see that the mounding is sufficient to maintain normal ground level after 12 months. All trenches in State and Federal roadbeds shall be backfilled and tamped in 6" layers up to the top of the trench. It shall be the responsibility of the contractor to see that such crossings are regularly inspected and crushed stone used to fill any "chuckholes" that develop until the paving removed during the trenching operation can be replaced.
- F. When work is suspended for the night, or for any other reason, open ends of the pipe shall be securely plugged to prevent entrance of water and foreign materials. The contractor shall take precautions to prevent flotation of the plugged or capped pipe in case the trench is flooded.

III. TESTING AND DISINFECTION

All water lines shall be subjected to a hydrostatic pressure of 150 PSI, Class C pipe, or 200 PSI, Class B pipe, for a period of one hour. Leakage exceeding 10 gallons per inch of pipe diameter per mile per day shall be corrected by the contractor. For these tests, which must be witnessed by an inspector of the Department, the contractor shall furnish all necessary equipment, pumps, gauges, labor and services. All water lines, including pipe, valves, meters, etc., shall be disinfected prior to being placed in use with a solution of HTH, liquid chlorine, or other approved disinfectant containing not less than 50 parts per million of available chlorine. For this work, the contractor shall furnish suitable plugs or caps for the pipe, pipe connections and other equipment together with all labor required. While the disinfectant is being applied to any section of the system, the water shall be allowed to escape at all extremities of this section until an orthotolidin test shows a deep orange color or 50 ppm dosage of chlorine. The disinfectant shall be allowed to remain in the pipe for 24 hours, with a residual of at least 25 ppm present, after which the lines shall be thoroughly flushed, refilled and a bacteriological sample taken. When a **negative** sample is obtained, the line shall be thoroughly flushed and then may be connected to the water system. The cost of the bacteriological test will be borne by the developer. The City shall pay for water required for initial filling and first refill after flushing. The developer/owner shall pay for any other water required. If tests indicate that the lines are not completely disinfected, the disinfection procedure shall be repeated on that part of the system until a negative test is obtained.

IV. INSPECTION OF WORK IN PROGRESS

All lines, valves, etc., must be inspected by an inspector of the Department before backfilling begins.

V. EASEMENTS

Proper easements for right-of-way across private property must be obtained and recorded before construction work begins. Copies of final drawings submitted for Department approval must include designation of classes of pipe, either on the drawing or in attached specification sheets.

VI. SEPARATION OF WATER AND SEWER LINES AND MAINS

- A. Horizontal Separation: Whenever possible, sewers should be laid at least 10 feet horizontally, from any existing or proposed water main. Should local conditions prevent a lateral separation of 10 feet, a sewer may be laid closer than 10 feet to a water main if it is laid in a separate trench and if the elevation of the top (crown) of the sewer is at least 18" below the bottom (invert) of the water main.
- B. Vertical Separation: Whenever sewers must cross under water mains, the sewer shall be laid at such elevation that the top of the sewer is at least 18" below the bottom of the water main. When the elevation of the sewer cannot be varied to meet the above requirement, the water main shall be relocated to provide this separation or reconstructed with mechanical-joint pipe for a distance of 10 feet on each side of the sewer. One full length of water main should be centered over the sewer so that both joints will be as far from the sewer as possible.

When it is impossible to obtain proper horizontal and vertical separation as stipulated above, both the water main and sewer main shall be constructed of mechanical-joint cast-iron pipe and shall be pressure-tested to assure water-tightness.

VII. SLOPE PROTECTION AND EROSION CONTROL

A. GENERAL

1. DESCRIPTION

- a. This Section shall consist of temporary control measures as shown in the Plans or directed by the Engineer during the life of the Contract to control erosion and water pollution through the use of berms, dikes, dams, sediment basins, fiber mats, netting, mulches,

grasses, slope drains, temporary silt fences and other control devices.

- b. The temporary pollution control provisions contained herein shall be coordinated with the permanent erosion control features, to assure economical, effective and continuous erosion control throughout the construction and post-construction period.

2. MATERIALS

- a. Temporary Berms: A temporary berm is constructed of compacted soil, with or without a shallow ditch, at the top of fill slopes or transverse to centerline on fills. These berms are used temporarily at the top of newly constructed slopes to prevent excessive erosion until permanent controls are installed or slopes stabilized.
- b. Temporary Slope Drains: A temporary slope drain is a facility consisting of stone gutters, fiber mats, plastic sheets, concrete or asphalt gutters, half-round pipe, metal pipe, plastic pipe, sod or other material acceptable to the Department that may be used to carry water down slopes to reduce erosion.
- c. Sediment Structures: Sediment basins, ponds, and traps, are prepared storage areas constructed to trap and store sediment from erodible areas in order to protect properties and stream channels below the construction areas from excessive siltation.
- d. Check Dams:
 - (1) Check dams are barriers composed of logs and poles, large stones or other materials placed across a natural or constructed drain way.
 - (2) Stone creek dams shall not be utilized where the drainage area exceeds fifty (50) acres. Log and pole structures shall not be used where the drainage area exceeds five (5) acres.
- e. Temporary Seeding and Mulching: Temporary seeding and mulching are measures consisting of seeding, mulching, fertilizing, and matting utilized to reduce erosion. All cut and fill slopes including waste sites and borrow pits shall be seeded when and where necessary to eliminate erosion.

- f. Brush Barriers: Brush barriers shall consist of brush, tree trimmings, shrubs, plants, and other approved refuse from the clearing and grubbing operations. Brush barriers are placed on natural ground at the bottom of fill slopes, where the most likely erodible areas are located to restrain sedimentation particles.
- g. Baled Hay or Straw Checks: Baled hay or straw erosion checks are temporary measures to control erosion and prevent siltation. Bales shall be either hay or straw containing five (5) cubic feet or more of material. Baled hay or straw checks may be used where the existing ground slopes toward or away from the embankment along the toe of slopes, in ditches, or other areas where siltation erosion or water run-off is a problem.
- h. Temporary Silt Fences: Silt fences are temporary measures utilizing woven wire or other approved material attached to posts with filter cloth composed of burlap, plastic filter fabric, etc., attached to the upstream side of the fence to retain the suspended silt particles in the run-off water.

3. EXECUTION

- a. Project Review: Prior to the construction the Contractor shall meet with the Department Superintendent or his designer and go over in detail the expected problem areas in regard to the erosion control work. Different solutions should be discussed so that the best method might be determined. It is the basic responsibility of the Contractor to develop an erosion plan acceptable to the Department.

B. CONSTRUCTION REQUIREMENTS:

- 1. The Superintendent has the authority to limit the surface area of erodible earth material exposed by clearing and grubbing, the surface of erodible earth material exposed by excavation, borrow and fill operations and to direct the Contractor to provide immediate permanent or temporary pollution control measures to prevent contamination of adjacent streams or other watercourses, lakes, ponds, or other water impoundment. Such work may involve the construction of temporary berms, dikes, dams, sediment basins, slope drains, and use of temporary mulches, mats, seeding or other control devices or methods as necessary to control erosion. Cut and fill slopes shall be seeded and mulched as the excavation proceeds to the extent directed by the Superintendent.

2. The Contractor shall be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in his accepted schedule. Temporary pollution control measures shall be used to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent pollution control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.
3. Where erosion is likely to be a problem, clearing and grubbing operations should be so scheduled and performed that grading operations and permanent erosion control features can follow immediately thereafter if the project conditions permit; otherwise erosion control measures may be required between successive construction stages. Under no conditions shall the surface area of erodible earth material exposed at one time by clearing and grubbing, exceed 750,000 square feet without approval of the Department.
4. The Superintendent will limit the area of excavation, borrow, and embankment operations in progress commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other such permanent pollution control measures current in accordance with the accepted schedule. Should seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified.
5. Under no conditions shall the amount of surface area or erodible earth material exposed at one time by excavation or fill within the project area exceed 750,000 square feet without prior approval by the Superintendent.
6. The Superintendent may increase or decrease the amount of surface area of erodible earth material to be exposed at one time by clearing and grubbing, excavation, borrow and fill operations as determined by this analysis of project conditions.
7. In the event of conflict between these requirements and pollution control laws, rules or regulations, or other Federal, State or Local agencies, the more restrictive laws, rules or regulations shall apply.

C. CONSTRUCTION OF STRUCTURES:

1. Temporary Berms: A temporary berm shall be constructed of compacted

soil, with a minimum width of 24" at the top and a minimum height of 12" with or without a shallow ditch, constructed at the top of fill slopes or transverse to centerline on fills. Temporary berms shall be graded so as to drain to a compacted outlet at a slope drain. The area adjacent to the temporary berm in the vicinity of the slope drain must be properly graded to enable this inlet to function efficiently and with minimum ponding in the area. All transverse berms required on the downstream side of a slope drain shall extend across the grade to the highest point at approximately a 10-degree angle with a perpendicular to centerline. The top width of these berms may be wider and the side slope flatter on transverse berms to allow equipment to pass over these berms with minimal disruptions. When practical and until final roadway elevations are approached, embankments should be constructed with a gradual slope to one side of the embankment to permit the placement of temporary berms and slope drains on only one side of the embankment.

2. Temporary Slope Drains:

- a. Temporary slope drains shall consist of stone gutters, fiber mats, plastic sheets, concrete or asphalt gutters, half-round pipe, metal pipe, plastic pipe, flexible rubber, or other materials which can be used as temporary measures to carry water accumulating in the cuts and on the fills down the slopes prior to installation of permanent facilities or growth of adequate ground cover on the slopes.
- b. Fiber matting and plastic sheeting shall not be used on slopes steeper than 4:1 except for short distances of 20 feet or less.
- c. All temporary slope drains shall be adequately anchored to the slope to prevent disruption by the force of the water flowing in the drains. The base for temporary slope drains shall be compacted and concavely formed to channel the water or hold the slope drain in place. The inlet end shall be properly constructed to channel water into the temporary slope drain. Energy dissipators, sediment basins, or other approved devices shall be constructed at the outlet end of the slope drains to reduce erosion downstream. An ideal dissipator would be dumped rock or a small sediment basin which would slow the water as well as pick up some sediment. All temporary slope drains shall be removed when no longer necessary and the site restored to match the surroundings.

3. Sediment Structures:

- a. Sediment structures shall be utilized to control sediment at the foot of embankments where slope drains outlet; at the bottom as well as in the ditch lines atop waste sites; in the ditch lines or borrow pits. Sediment structures may be used in most drainage situations to prevent excessive siltation of pipe structures. All sediment structures shall at least twice as long as they are wide.
- b. When use of temporary sediment structures is to be discontinued, all sediment accumulation shall be removed, and all excavation backfilled and properly compacted. The existing ground shall be restored to its natural or intended condition.

4. Check Dams:

- a. Check dams shall be utilized to retard stream flow and catch small sediment loads. Materials utilized to construct check dams are varied and should be clearly illustrated or explained in the Contractor's erosion control plan.
- b. All check dams shall be keyed into the sides and bottom of the channel a minimum depth of 2 feet. A design is not needed for check dams but some typical designs are shown in the standard plans.
- c. Stone creek dams should generally not be utilized where the drainage area exceeds fifty (50) acres. Log and pole structures should generally not be used where the drainage area exceeds five (5) acres.

5. Temporary Seeding and Mulching: Seeding and mulching shall be performed in accordance with normal practices as outlined by the Superintendent.

6. Brush Barriers: Brush barriers shall consist of brush, tree trimmings, shrubs, plants, and other approved refuse from the clearing and grubbing operations. The brush barriers shall be constructed approximately parallel to original ground contour. The brush barrier shall be compressed to an approximate height of 3 to 5 feet and approximate width of 5 to 10 feet. The embankment shall not be supported by the construction of brush barriers.

7. Baled Hay or Straw Erosion Checks: Hay or straw erosion checks shall be embedded in the ground 4 to 6 inches to prevent water flowing under them.

The bales shall also be anchored securely to the ground by wooden stakes driven through the bales into the ground. Bales can remain in place until they rot, or be removed after they have served their purpose, as determined by the Superintendent. The Contractor shall keep the checks in good condition by replacing broken or damaged bales immediately after damage occurs. Normal debris clean-out will be considered routine maintenance.

8. Temporary Silt Fences:

- a. Temporary silt fences shall be placed on the natural ground, at the bottom of fill slopes, in ditches, or other areas where siltation is a problem. Silt fences are constructed of wire mesh fence with a covering of burlap or some other suitable material on the upper grade side of the fence and anchored into the soil.
- b. The Contractor shall be required to maintain the silt fence in a satisfactory condition for the duration of the project or until its removal is requested by the Superintendent. The silt accumulation at the fence may be left in place and seeded, removed, etc., as directed by the Superintendent. The silt fence becomes the property of the Contractor whenever the fence is removed.

D. MAINTENANCE:

1. The temporary erosion control features installed by the contractor shall be acceptably maintained by the contractor until no longer needed or permanent erosion control methods are installed. Any materials removed shall become the property of the contractor.
2. In the event that temporary erosion and pollution control measures are required due to the contractor's negligence, carelessness, or failure to install permanent controls as a part of work as scheduled, and are ordered by the Superintendent, such work shall be performed by the contractor as his own expense.
3. Where the work to be performed is not attributed to the contractor's negligence, carelessness, or failure to install permanent controls and falls within the specifications for a work item that has a contract price, the units of work shall be paid for at the proper contract prices.

E. EROSION CONTROL OUTSIDE PROJECT AREA: Temporary pollution control shall include construction work outside the project area where such work is necessary as a result of construction such as borrow pit operations, haul road

and equipment storage sites.

- F. MEASUREMENT AND PAYMENT: No separate measurement and payment will be made for this work. It will be considered a subsidiary obligation of the contractor.

NOTE: The above Section VII, SLOPE PROTECTION AND EROSION CONTROL shall apply and be enforced by the Department's inspector only when work is under contract directly with Lewisburg Water and Wastewater. Developers/contractors working on private property not associated with Department property or under private contract with the Department shall conform to such regulations as are required by other State and Federal Agencies.

NOTE "B"

TRENCH BACKFILLING

MAINS:

When mains are installed in non-pavement areas, selected earth and/or selected rock backfill will be allowed in the 24" section as shown in diagram DWG NO 1.

When mains are installed in pavement or areas to be paved (roadway), trench shall be completely filled with TDOT #7 or #67 crushed stone.

Mains installed in existing pavement where cutting of pavement is permitted, shall comply with the City of Lewisburg ordinance for "open cut trenching, backfilling and pavement replacement of streets and alleys".

The trench shall be straight and uniform to permit laying pipe to the proper lines and grades.

If wet, mucky and/or unstable or unsuitable material is encountered in trench bottom, it shall be excavated and backfilled as specified to ensure a firm foundation for the pipe.

SERVICE LINES:

Copper service lines as listed in specifications shall be trenched below the frost line depth of 18 inches. The trench shall be backfilled with dirt or approved material. Cutting in existing pavement or roadways shall comply with the City "open cut trenching" as noted

above.

LOCATOR TAPE:

Detectable underground utility marking tape shall be installed in the ditch approximately 12" below the finish grade of the ditch for both water and sewer utilities. Tape shall be colored as follows:

Water line:	safety precaution blue
Sanitary sewer line:	safety green

SHOP DRAWINGS:

The developer/contractor shall submit shop drawings for all materials, appurtenances to be installed within subdivisions, etc., approval of shop drawings must be signed off by the Department Superintendent prior to order. The Department inspector shall approve all materials on site prior to installation.

SPECIFICATIONS:

All specifications contained herein are considered standard for "**normal conditions**". If specific conditions exist which would require modifications greater than listed within the standard specifications, approval must be received from the Superintendent prior to continuance of utility construction.

TRACER WIRE:

Metal tracer wire shall be installed within the ditch line above pipe during pipe line installation. Specifications must be obtained from owner if not contained within this booklet or supplemental plans. This wire will permit the owner to attach locating equipment to the wire for future locating of the water main.

SPECIFICATIONS FOR METER SETTER

5/8" X 1/2" FORD SERIES 70 COPPER SETTER MODEL VHH-717W4133-PJ .

3/4" COUPLING INLET SIDE

3/4" DOUBLE PURPOSE OUTLET SIDE

(THE ABOVE SETTERS CONTAIN A DOUBLE CHECK VALVE FOR BACK FLOW PREVENTION)

SPECIFICATIONS FOR PLASTIC METER BOX

12" HIGH

TOP: 16" X 10 3/4"

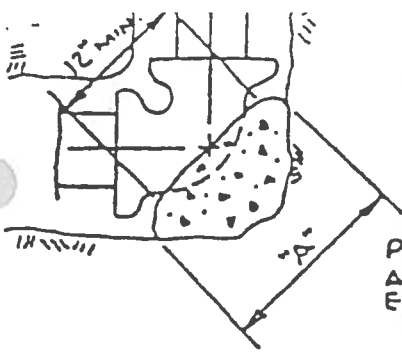
BASE: 18 1/2" X 13 1/4"

COLOR: BLACK

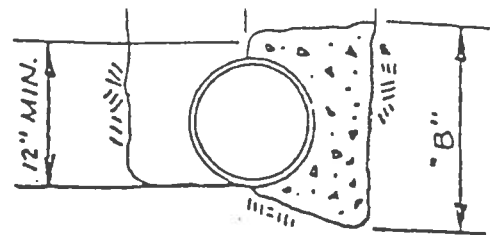
COVER: STANDARD PLASTIC COVER-NO READER LID

SPECIFICATIONS FOR SERVICE TAP ON PVC MAIN

FORD SADDLE #S70603 OR APPROVED EQUAL WITH FORD 600 CORP. STOP OR EQUAL 3/4" TYPE "K" COPPER SERVICE LINE FOR STANDARD 3/4" RESIDENTIAL TAP.



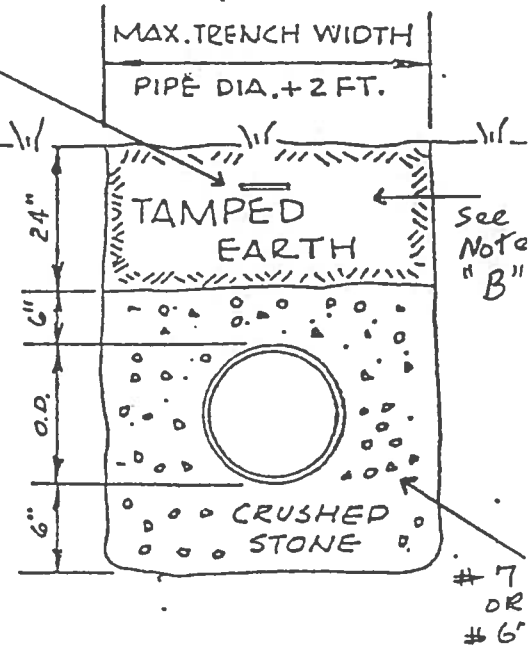
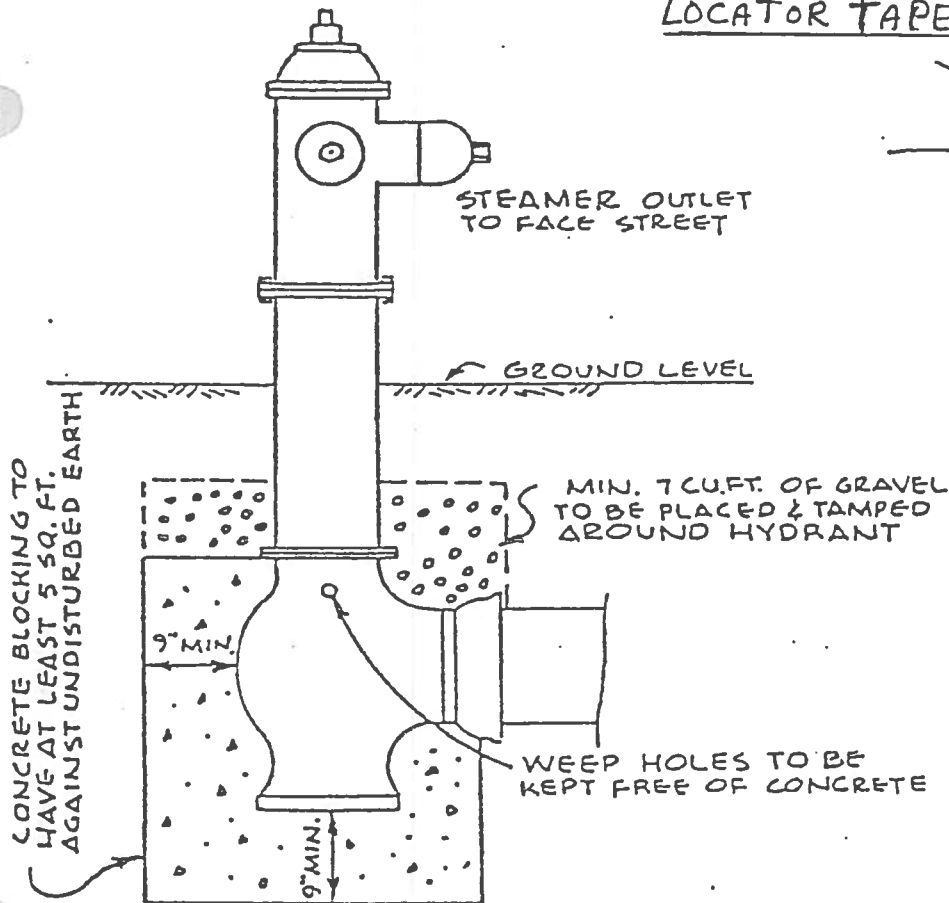
PIER MUST BE POURED AGAINST UNOBTURBED EARTH.



CONCRETE THRUST BLOCK NOT TO SCALE

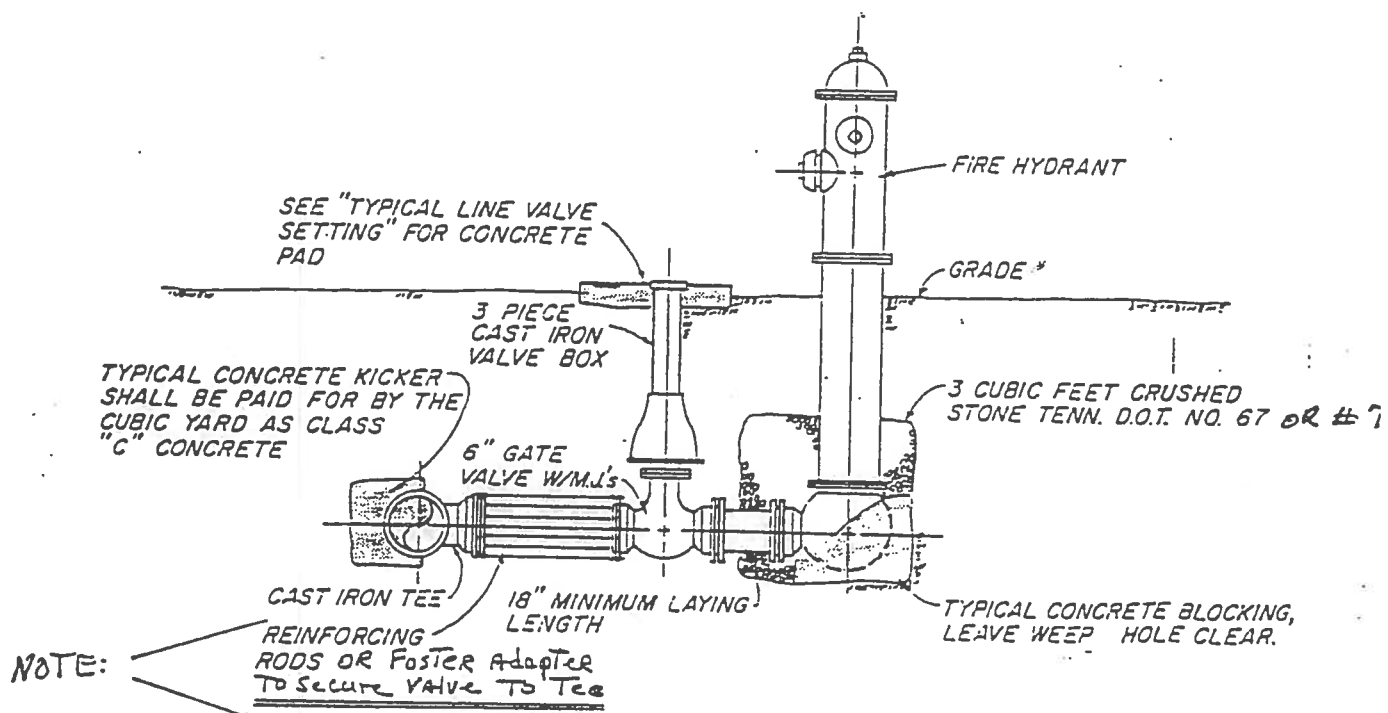
THRUST BLOCK DIMENSION SCHEDULE								
PIPE SIZE	90° BEND		TEE		45° BEND		22 1/2° BEND	
	A	B	A	B	A	B	A	B
12"	4'-0"	4'-0"	4'-0"	3'-0"	3'-0"	3'-0"	2'-6"	2'-0"
10"	4'-0"	3'-0"	3'-0"	2'-9"	3'-0"	2'-0"	2'-0"	1'-6"
8"	3'-0"	2'-6"	2'-6"	2'-0"	2'-0"	2'-0"	2'-0"	1'-0"
6" & UNDER	2'-0"	2'-0"	2'-0"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"

LOCATOR TAPE



TYPICAL TRENCH SECTION NOT TO SCALE

TYPICAL FIRE HYDRANT INSTALLATION



TYPICAL FIRE HYDRANT SETTING

DWG. NO 1-A

Highway Crossings – Water/Sewer Standard Specifications

a. General

Where shown on the Plans, highway crossings for water and sewer lines shall be bored to prevent interruption to traffic and to prevent later settlement of the roadway or roadbed.

The contractor must be fully equipped and experienced in the installation of pipelines using approved boring methods. Road bore will not be accepted by the utility until the proper road-way owner has given approval noting that no damages have resulted from boring construction.

Should the awarded Contractor choose to use a sub-contractor for highway boring, such sub-contractor shall be prior approved by the Utility before construction commences.

A MINIMUM OF 3 SETS OF S.S. BANDED CASING SPACERS PER PIPE JOINT WILL BE INSTALLED ON CARRIER PIPE. REFERENCE DETAIL SHEET FOR BORED HIGHWAY CROSSING. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SIZE AND INSTALL IN ADEQUATE QUANTITY THE CASING SPACERS TO PREVENT PIPE FLOATATION AND BUCKING.

b. Bored Highway Crossings

(1) General

Where shown on the Plans and/or where open cutting of roadways are not allowed, crossing of U.S., State of Tennessee, City of Lewisburg or Marshall County Highways shall be made by boring with a steel casing pipe as specified in Subparagraph b. (2) hereinafter. The pipe shall be jacked through a bored hole. Holes shall be bored under the highway at least four (4) feet below the surface with no disturbance to the surface.

(2) Steel Casing Pipe

Black steel casing pipe shall be manufactured and tested in accordance with ASTM Designation A 139-84 or A 53-84a, Grade B, 35,000 psi yield strength, and shall meet the American Railway Engineering Association (AREA) Specification for Metal Pipe and Arches, Chapter 1, Part 5. Steel casing pipe where shown shall be as follows:

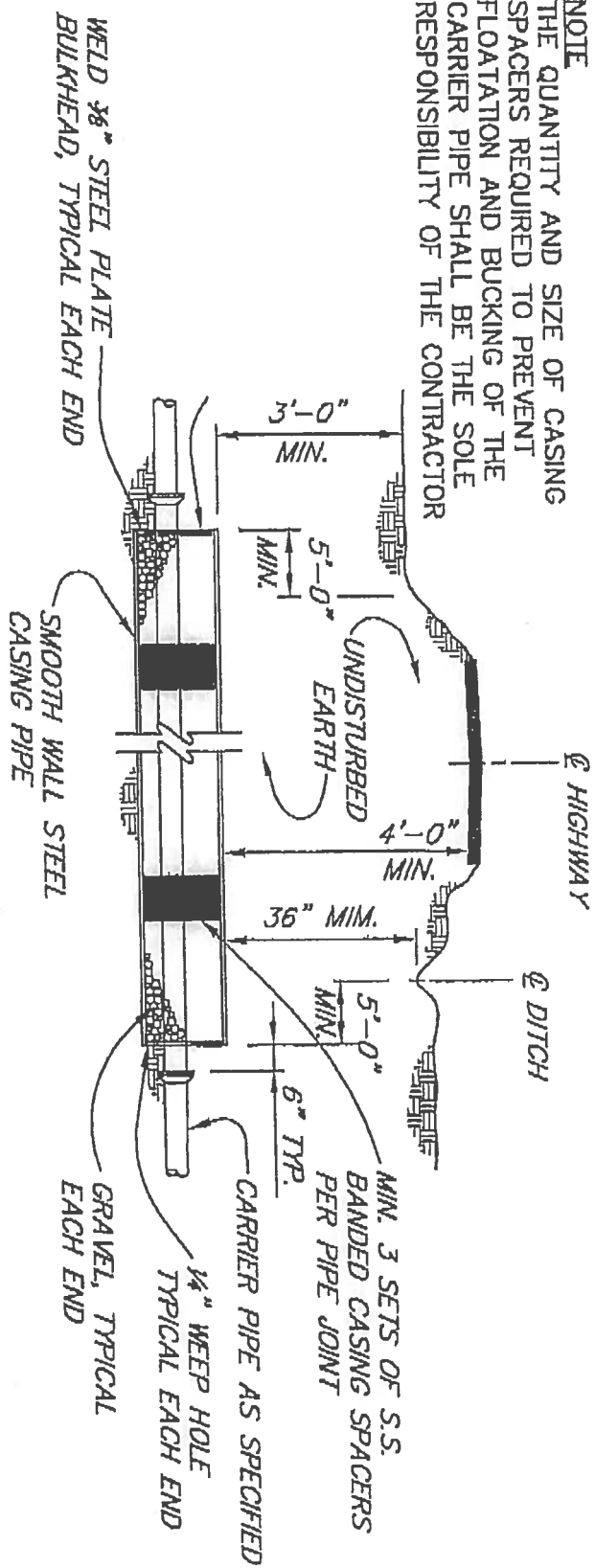
<u>Diameter Carrier in inches</u>	<u>O.D. Diameter Casing in inches</u>	<u>Minimum Wall Thickness of Casing in inches</u>
4	12-3/4	0.219
6	12-3/4	0.219
8	16	0.250
10	18	0.281
12	20	0.312

Note: Published tap fees do not include the boring and casing of public roadways. When any water or sewer extension project undertaken by a private company, person and/or developer requires highway boring, such cost shall be borne by persons other than the named utility.

The utility (Lewisburg Water and Wastewater) will assist the Developer, Company or Persons in applications for all required permits for bores within state, city and county roadways/Right-of-Ways when the subject project has been approved by the utility. The Contractor when using the utilities permit will provide proof of liability insurance with the "City" named as additional insured.

Any or all fees of any nature required by governmental agencies in connection with the road bore project shall also be borne by the Developer, Contractor and/or persons desiring the project to be constructed. Shop drawings/material identification will be submitted and approved by Lewisburg Water and Wastewater prior to commencement of boring/construction. The utility will assign an inspector to co-ordinate and ensure compliance.

NOTE
THE QUANTITY AND SIZE OF CASING
SPACERS REQUIRED TO PREVENT
FLOATATION AND BUCKING OF THE
CARRIER PIPE SHALL BE THE SOLE
RESPONSIBILITY OF THE CONTRACTOR



BORED HIGHWAY CROSSING

LEWISBURG WATER & WASTEWATER
100 WATER STREET - P.O. BOX 2787
LEWISBURG, TENNESSEE 37091