ATTACHMENT #1

THE MILESBURG BOROUGH WATER AUTHORITY

Developer's Handbook for Waterline Extensions

The Milesburg Borough Water Authority
P. O. Box 282
Milesburg, PA 16853
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Adopted: April 2006

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DEVELOPER'S HANDBOOK

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INTRODUCTION

The Developer's Handbook is provided by The Milesburg Borough Water Authority for the sole purpose of assisting developers through the process of extending waterlines and appurtenances within the Authority's service area. A Procedural Flow Diagram has been provided to assist developers in understanding the service request process. The Handbook contains three sections: Rules and Regulations, Sample Developer's Agreement, and Construction Specifications. The user should become familiar with the entire Handbook before entering into the service request process. Furthermore, no sections of the Handbook should be utilized separately.

1.0 Rules and Regulations for Waterline Extensions is the section of the Authority's Rules and Regulations pertaining to waterline extensions. This section of the Handbook covers administrative, legal, and regulatory aspects of the service request process. It outlines drawing quality, fiscal responsibility, and the developer's agreement.

2.0 Sample Developer's Agreement is simply a copy of a standard Developer's Agreement. No two projects are identical therefore no two developer's agreements are identical. The agreement is provided as an example only.

3.0 General Specifications for Waterline Construction covers the Authority's construction requirements. These Specifications should be used as a guideline for preparation of construction contract documents.

PROCEDURAL FLOW DIAGRAM FOR WATERLINE EXTENSIONS

Milesburg Borough Water Authority

Section 1.0

Rules and Regulations for Waterline Extensions

THE MILESBURG BOROUGH WATER AUTHORITY

WATERLINE EXTENSIONS AND APPURTENANCES

General – No water extension from existing Authority lines shall be installed, no distribution systems and/or pumping or storage facilities shall be constructed or such other work done, without approval first having been obtained from the Authority and where required a permit obtained from all agencies involved, and written applications on the forms furnished by the Authority shall have been submitted, requesting approval thereof and the appropriate agreements fully executed. The work shall be in accordance with these Rules and Regulations, requirements of the municipality and other applicable requirements. All work shall be in accordance with these Rules and Regulations and any higher standards as established by the municipality in which the work is located. All such facilities shall be conveyed at no cost to the Authority.

Prior to any detailed design review work occurring, the applicant shall deposit $500.00 for all proposed waterline extensions over 500 L.F. with the Authority, unless the extension is for a single family, duplex or three apartment residence either existing or proposed. If an extension requires a highway restoration and maintenance bond from Penn Dot, then a deposit is required. The applicant must also furnish to the Authority a copy of the property deed/deeds indicating applicant ownership of land to be developed.

The applicant shall meet with the Authority and/or its Engineer to discuss water service, technical and administrative concepts, Authority's Rules and Regulations and to determine the required additional deposit to be made with the Authority. No work shall be commenced by the Authority until an initial deposit has been furnished to the Authority.

The applicant must prepare, at its cost, all Contract Plans and Specifications, Right-of-Way Plans, Contract Documents, Reports and other material, and shall prepare and file any applications relative thereto, and shall pay all fees.

Limit of Extension – The extension of a water line includes the entire quantity of pipe and appurtenances required to make a complete installation from the end of the existing Authority system to and across the entire frontage of the last property for which the applicant has requested service.

Applications for Approval of Extensions and Other Work and General Requirements Relative Thereto – A written application on the forms furnished by the Authority, unless otherwise indicated, must be submitted for the purpose of requesting approval of a water line extension, distribution system, pumping/storage facilities, and/or other work, and the obtaining or furnishing water service therefrom. This application is to be signed by the Authority and owners, to be subject to the terms and conditions set forth and included herein and municipal requirements, and to the execution of an agreement; and this application, together with the Rules and Regulations of the Authority and municipal requirements, shall regulate and control the construction of all facilities and water service therefrom.

All applications for water service must be accompanied by plans, specifications, and a report describing the system in detail. The plans must be stamped with the seal of a Pennsylvania Registered Professional Engineer and must be submitted in triplicate. A review submission must be made to the Authority. A final submission must be made and the plans must be approved by all agencies as required.

Subsequent to completion of the work, the applicant shall submit Record Drawings to the Authority. No service will be furnished until these drawings are submitted. Record Drawings shall consist of one (1) set of blueprints and one (1) set of reproducible mylars.

The plans shall be prepared on mylar sheets 24 by 36 inches in size, with a 1 inch border on the left hand side and a ½ inch border on all other sides. A 3 by 5 title box shall be located in the right-hand corner.

Responsibility for Cost – The entire cost of all work shall be borne by the applicant except, if approved, for the difference in cost of facilities required for the proposed use and the cost of more adequate facilities that will permit additional service for other areas, the difference to be determined by the Authority or its Engineer in accordance with Res. 2007-2 & 2011-5.

The cost of such work shall, at a minimum, include the following:

(a) The cost of all water lines, of the size required for the project, none to be less than 8 inches in size unless otherwise approved by the Authority, and of all other appurtenances.

(b) The cost of tie-in connections to existing watermains.

(c) The cost of all grading, landscaping, fencing, and other work if required and approved.

(d) The cost of all land and rights-of-way, the rights-of-way and land to be conveyed to the Authority.

(e) The payment of in advance for the Authority's cost involved in the review of the Contract Plans and Specifications, field work, if any, legal work, administrative and such other costs in connection with the project. The Authority will determine the amount of estimated advance costs.

(f) The cost of construction observation furnished by the Authority to observe the construction of the project or projects, such costs to be the per diem rate currently in effect.

(g) The payment of all tap and other fees in accordance with Res. 2007-2 & 2011-5.

Payment of Cost – After the initial $500.00 deposit, the applicant shall deposit with the Authority, prior to the execution of any further work by the Authority, a sum of money sufficient to pay all estimated costs of work to be done thereby. If the Authority approves the construction by the applicant, through a qualified Contractor, the monies to be deposited shall be sufficient

only to cover the cost of engineering, legal, and overhead, which costs shall not be less than 10% of the estimated total costs. When construction costs are shared by the Applicant and Authority, the applicant shall provide a Performance Bond in the amount of 100% of the cost of the work and a Maintenance Bond in the amount of 15% of the cost of the work. The Maintenance Bond shall be for a period of 18 months beyond the time the Authority accepts the construction work. All bonds must appear on the most recent listing of U. S. Treasury Circular 570. Letters of Credit in a form approved by the Authority are acceptable alternates.

The applicant shall deposit with the Authority, in advance, the estimated total cost of work, the amount to be adjusted at the end of each month, in connection with Engineering, Legal and/or construction observation. At no time shall the balance be less than $1,000.00.

Agreement – The Applicant shall enter into an agreement with the Authority, prior to the review of construction documents or the execution of any work. The agreement shall contain such pertinent conditions as the following:

A. The cost of all work to be borne by the Applicant, except as otherwise indicated.

B. The materials and workmanship to be in accordance with the requirements of the Authority.

C. The highway, streets, alleys, and lanes in which water lines extensions are to be located must be dedicated to public use, the lines and grades thereof established, and the rough grading completed.

D. The ownership title to all installations to be conveyed to and vested in the Authority with a Dedication Document except as otherwise indicated.

E. The Authority is to have the right to make further extensions beyond or laterally from the main extensions. Arrangements for connections to the waterlines constructed by the Applicant will be defined in the agreement.

Compliance with Design and Construction Standards – All work shall be in accordance with the General Specifications for Waterline Construction and other requirements of the Authority and the various agencies.

General Plans – In the case of a phased Subdivision, the applicant shall submit a general plan on a scale not smaller than 300 feet to 1 inch and, preferably, not larger than 100 feet to 1 inch, covering the entire area of the water district including any extension or modification of the existing water system. In the case of a phased development all future waterline locations should be indicated. Municipal site approval must be indicated on a site plan.

These plans must show the boundary line of the municipality or water district to be provided waterlines; all existing and proposed streets, watercourses, and other salient topographic features; contour lines for intervals of not less than 5 nor more than 10 feet; and the surface elevations at street intersections and at points where changes of slope occur. The plans must

show clearly the locations of all existing and proposed utilities. In all cases, the plans must clearly show the size of the waterline, the character of the pipe material, the grades, the elevation at all points, the location of all appurtenances, and such other data.

Detailed Plans – The applicant shall submit detailed plans accompanying the general plans.

The waterline plans shall consist of plan and profile. All topographic features, rights-of-way, property ownership, utility lines, service connections, construction details, etc. shall be shown on the contract drawings. The plan scale shall be 1" = 30' and the vertical scale shall be 1" = 10'.

All stream crossings shall be indicated. The applicant shall obtain all required stream crossing permits. The applicant shall also obtain all permits and approvals from the appropriate agencies relative to soil and erosion control. A soil and erosion control plan must be made part of the contract documents.

Particular attention shall be given to any pumping station, pressure reducing, storage tanks or any such facilities. Regardless of the project scope, it is mandatory the applicant hold a predesign meeting with the Authority and/or its Engineer. In the case of such facility design, the Authority and/or its Engineer at the expense of the applicant will prepare a preliminary design report to be followed by the applicant in the detailed design drawings for the facilities.

Construction specifications prepared in a bound 8½ x 11 booklet shall be submitted with the plans. The text shall be clear and in typed format. All aspects of construction/materials shall be addressed in the specifications. Construction specifications shall be in conformance with the Authority's General Specifications for Construction of Waterlines and Appurtenances.

All construction documents must be submitted to the Authority for review and approval. The Authority reserves the right to make modifications as required to the construction documents. Final approval drawings must bear the design engineer's stamp of the applicant. The review signature of the Authority or its Engineer and Municipal representative shall also appear on each drawing.

The submitted Construction documents must comply, as a minimum, with the following standards:

(a) 24 x 36 inch paper with 1 inch border, signed and sealed by a Pennsylvania Professional Engineer.

(b) Plan and Profile on same sheet. Plan at a scale of 1" = 30' and profile at 1" = 30' horizontal and 1" = 10' vertical.

(c) Indicate all utilities and compliance with Act 287 of 1974 as amended by Act 187 of 1996 – Underground Utility Line Protection Act.

(d) All topographic features with existing and proposed grades at no contours no less than 5 foot intervals.

(e) All proposed and existing property lines.

(f) Separate plan for recording right-of-way, streets, etc. that will be filed with the County.

(g) In the case of a subdivision, a master plan of the water utilities showing phased build out.

(h) In the case of a subdivision, a master plan of lots shall be provided to the Authority.

(i) If a facility such as tank pump stations is required, the contract documents must comply, at a minimum with the requirements of DEP. Drawing shall consist of grading plan, the layout, outside piping, flow diagram, hydraulic profile, erosion and control plan, mechanical plans and sections and details, architectural plans and sections and details, structural plans and sections and details, electrical plans and single line and control diagrams.

Report – In the case of a subdivision, application shall be accompanied by an Engineer's report giving a full description of the proposed water system and setting forth the basis of design, prepared in accordance with DEP requirements.

The report must include a statement and description indicating the extent of the area which is proposed to be within the system at the present time, and in the future; the estimated present and future population to be served; the estimated rates or volume of water to be provided for; and such other data and information necessary. Planning Modules, where required, shall be submitted with the report.

Special Services – Where private fire service, large water demands, high flow rates, etc. may exist in the opinion of the Authority, special facilities may be required. In these cases the Authority will conduct at no cost, fire hydrant flow tests to ascertain existing conditions.

Section 2.0

Sample Developers Agreement and Dedication

AGREEMENT

MADE and entered into this _____ day of _____, _____, by and between THE MILESBURG BOROUGH WATER AUTHORITY, CENTRE COUNTY, PENNSYLVANIA, (hereinafter referred to as the "Authority"),

AND

_____, (hereinafter referred to as the "Developer").

WHEREAS, the Authority owns, maintains and operates a public water supply system and is engaged in the business of supplying potable water to certain areas located in Centre County, in the Commonwealth of Pennsylvania; and

WHEREAS, Developer owns certain lands situate in the geographical area serviced as aforesaid by the Authority, which lands Developer intends to develop into _____; and

WHEREAS, Developer desires that the Authority agree to the alteration and extension of its water lines to service said development with potable water, all as generally described in plans submitted by Developer's engineer to the Authority; and

WHEREAS, the Authority is agreeable to the extension of its water line system as requested by the Developer upon the terms and conditions hereinafter set forth.

NOW, THEREFORE, for good and valuable consideration, the Authority and the Developer, intending to be legally bound hereby, agree as follows:

1. Developer shall cause to be constructed a(n) _____ inch main water line extension approximately _____ feet in length, and incorporating all necessary valves, hydrants, fittings and appurtenances, all of which shall be in accordance with the engineering

drawings and specifications submitted to the Authority and as approved by the Authority or its Engineer.

2. Developer covenants and agrees to pay all costs of constructing the aforesaid main water line extension, including the engineering review expense, construction observation costs, and legal fees of the Authority. The total estimated cost of the Authority, exclusive of tapping fees as specified in Paragraph 8 below, is itemized as follows:

$_____	Engineering review
_____	Construction Observation/Connection Costs
_____	Legal
$_____	Total

3. Contemporaneously with the execution of this Agreement, Developer shall furnish to the Authority the sum of $_____, which amount is intended to defray the Authority's estimated engineering review, construction observation, and legal costs.

4. Prior to commencement of construction and installation of the proposed extension, Developer shall furnish to the Authority:

(a) A certified copy of the fixed-price contract between Developer and its approved contractor for installation of said line extension, and all amendments or modifications thereto.

(b) Certificate(s) of insurance satisfactory to the Authority from the contractor and all subcontractors for the following coverage's:

(1) Comprehensive general liability insurance covering without limitation premise-operations, explosion and collapse hazard-underground hazard, products/completed operations hazard, contractual insurance, broad form property damage, independent contractors, and personal injury, with limits of coverage of not less than $2,000,000.00 per occurrence with a deductible amount thereunder not exceeding $500.00 per occurrence.

(2) Comprehensive automobile liability (including non-owned and hired vehicles) with limits of coverage of not less than $1,500,000.00 per occurrence with a deductible amount thereunder not exceeding $500.00 per occurrence.

(3) Worker's compensation and employer's liability as required by law.

(4) Builder's risk insurance which shall be written on the Builder's Risk completed value form including fire and extended coverage, the amount of which (unless otherwise authorized in writing by the Authority) shall not be less than the contract price of the line extension project.

All such policies of insurance shall name the contractor as the insured party, and shall name both the Developer and the Authority as additional insured thereunder. Such insurance shall also contain provisions that the same may not be canceled without thirty (30) days prior written notice to the Authority by certified mail.

(c) All permits necessary to extend the waterline are appurtenances as herein contemplated.

(d) Any other documents or things that may be required by the Authority's Developers Handbook for Waterline Construction, a copy of which has heretofore been provided to the Developer.

5. A final statement of all costs of the Authority, including engineering review expenses, construction observation and connection costs, and legal fees, will be provided to the Developer at the time of the completion of the proposed extension. If such costs are more than the total amount deposited by the Developer pursuant to Paragraph 2 of this Agreement, Developer will thereupon remit to the Authority the difference between the total amount previously deposited by Developer and the statement of all costs incurred by the Authority; if

such costs are less than the total amount deposited by Developer, the Authority shall refund the excess to Developer.

6. On completion of the proposed extension, and as a condition precedent to acceptance thereof by the Authority, Developer shall:

(a) Submit to the Authority evidence satisfactory to it, that the payment of all other costs of the line extension project, which evidence shall include without limitation a release of liens executed by all contractors and subcontractors who furnished labor and/or materials for the project.

(b) Where applicable, convey to the Authority a perpetual easement or right-of-way, twenty (20') feet in width, as generally determined by the Developer's and the Authority's respective engineers. Said right-of-way shall be conveyed by document satisfactory to the Authority's solicitor and recorded in the Office of the Recorder of Deeds of the appropriate County at the Developer's cost.

(c) Assign all applicable permits to the Authority by document satisfactory to the Authority's solicitor.

(d) Submit to the Authority "Record Drawings" for the water line extension, in form and content satisfactory to the Authority and/or its Engineer.

(e) Pay any monies determined to be due under Paragraph 5 of this Agreement.

(f) Submit to the Authority any other documents or things that may be required by the aforesaid Res. 2007-2 & 2011-5.

7. When the Authority accepts dedication of the water line extension following completion, Developer shall post financial security to secure the structural integrity and functioning thereof in accordance with the design and specifications as depicted on the plans

therefor for a term of eighteen (18) months from the date of acceptance of dedication. Said financial security shall be in the amount of fifteen (15%) percent of the actual cost of installation of said improvements. Said financial security may be in the form of cashier's check, a maintenance bond posted with a bonding company authorized to conduct business in the Commonwealth of Pennsylvania, and/or Federal or Commonwealth chartered lending institution irrevocable letters of credit and/or restrictive or escrow accounts in such lending institutions.

8. After acceptance of the water line by the Authority, all lots in the subject development may connect to the water line extension on payment of the fees established in the Authority's latest Act 203 Study then in effect.

9. For a period of ten (10) years from the date of dedication of the line extension to the Authority, when the owner of another property not in the development for which this extension was constructed connects a service line directly to this extension, the Authority shall reimburse to the Developer an amount equal to the distribution part of each tapping fee collected as a result of such subsequent connections, less an administrative expense charge of five (5%) percent of said distribution part; provided, however, that the total reimbursement to which the Developer shall be entitled hereunder shall not exceed the maximum amount allowable under the provisions of Act 203 of 1990, as amended from time to time, or any successor statute.

10. Developer agrees that upon acceptance thereof by the Authority the proposed water line extension shall be the property of the Authority, that the Authority shall have the right to extend the line or facilities therefrom, and shall have the future right to make any other extensions beyond or laterally from the proposed water line extension to be constructed under the terms of this Agreement; provided, however, that it is expressly agreed that such extensions are

not to be considered as connections subject to any refund or reimbursement heretofore mentioned.

11. Developer agrees that the right of water service from the line installed pursuant to this Agreement shall at all times be subject to and in strict compliance with the rates, rules and regulations of the Authority.

12. Where litigation is instituted by the Authority against Developer for any cause arising under this Agreement or in any manner related hereto, the Authority (if it is the prevailing party in such litigation) shall be entitled to recover in addition to all other legal damages, the reasonable expenses of such litigation including attorneys fees and other legal costs.

13. All notices, requests, demands and other communications required or permitted under this Agreement ("notices") shall be in writing, signed by or on behalf of the party giving notice and shall be deemed to have been given as follows: (a) if personally delivered: on the date of actual delivery to either party; or, (b) if mailed: on the date upon which any notice shall have been received as shown by Certified or Registered Return Receipts. The following addresses shall be used for the foregoing purposes:

AUTHORITY: P. O. Box 282
Milesburg, PA 16853

With copy to Solicitor: _____

With copy to Engineer: _____

DEVELOPER: _____

provided, however, that either party hereto may change its address for such purposes from time to time by giving written notice of such changed address to the other party.

If notice is given by Certified or Registered Mail and the same is returned by the U.S. Postal Service marked "Refused" or "Unclaimed," service shall be deemed to have been given on the first business day following the date of mailing the same.

14. Developer shall indemnify and save Authority harmless against any loss, damage or liability, including reasonable attorney fees, arising from or out of the water line extension contemplated herein.

15. Failure by either party to exercise any of their respective rights hereunder upon non-performance by the other party of any condition, covenant or provision herein contained shall not be construed as a waiver thereof, nor shall the defective performance or waiver of non-performance of any such condition, covenant or provision by the other party be construed as a waiver of the rights of the non-defaulting party as to any subsequent defective performance or non-performance hereunder.

16. This Agreement constitutes the entire contract between the parties hereto and there are no understandings, promises, representations or warranties, oral or written, relating to the subject matter of this Agreement, which exist or bind any of the parties hereto, their respective heirs, executors, administrators, successors or assigns, except as set forth herein. No amendment, change or addition to this Agreement shall be binding upon the parties unless reduced to writing and signed by both parties.

17. It is mutually understood and agreed that this Agreement shall be interpreted in accordance with the laws of the Commonwealth of Pennsylvania and that no presumption shall be deemed to exist in favor of or against either party hereto as a result of the preparation or negotiation of the same.

18. If any particular term, covenant or provision of this Agreement shall be determined to be invalid and unenforceable, the same shall not affect the remaining provisions of this Agreement which shall nevertheless remain in full force and effect.

19. This Agreement shall be binding upon and inure to the benefit of the parties hereto, and their respective heirs, personal representatives, successors and assigns.

20. This contract is being executed pursuant to a resolution of the Board of the Authority duly passed at its regularly scheduled monthly meeting held on the _____ day of _____, _____.

IN WITNESS WHEREOF, the parties have executed this Agreement the day and year first above written.

ATTEST: THE MILESBURG BOROUGH WATER AUTHORITY OF CENTRE COUNTY, PENNSYLVANIA

_____ By_____
Secretary Chairperson

(Seal)

WITNESS:

_____ _____

_____ _____

DEDICATION

WHEREAS, the undersigned is the owner of certain lands situated in _____ _____, _____ County, Pennsylvania, known as the _____ Plan, as of record in the Recorder's Office of _____ County in Plan Book Volume _____, Page _____; and

WHEREAS, the undersigned has entered into a certain Agreement, dated _____, with THE MILESBURG BOROUGH WATER AUTHORITY, CENTRE COUNTY, PENNSYLVANIA, regarding the installation of waterlines and appurtenances to service said plan; and

WHEREAS, construction of said water lines is completed and said Agreement contemplates the dedication of said lines and appurtenances to the Authority.

NOW, THEREFORE, for diverse advantages accruing to it, and intending to be legally bound, the undersigned, by virtue of proper resolution of its Board of Directors, does hereby dedicate forever to THE MILESBURG BOROUGH WATER AUTHORITY, CENTRE COUNTY, PENNSYLVANIA for potable water supply, the water lines, valves, hydrants, fittings and appurtenances, and including any easements or rights-of-way for the purpose of constructing, reconstructing, inspecting, maintaining, and adding to or removing all or part of said water system as may be necessary, all as are more particularly depicted on the "Record Drawings" filed by the undersigned with the Authority and which are incorporated herein by reference, and in consideration of acceptance of this dedication by the Authority, the undersigned hereby releases and forever discharges THE MILESBURG BOROUGH WATER AUTHORITY, CENTRE COUNTY, PENNSYLVANIA, and its successors and assigns, from any liability for

damages arising and to arise from the appropriation of said water lines for the supply of potable water.

Final project costs, size and length of waterline and appurtenances as follows:

WITNESS the due execution hereof this _____ day of _____, 20_____.

ATTEST:

_____ By_____

Secretary President

(Corporate Seal)

COMMONWEALTH OF PENNSYLVANIA)
) SS:
COUNTY OF CENTRE)

On this the _____ day of _____, A.D., 20_____, before me a Notary Public, the undersigned officer, personally appeared _____, who acknowledged himself to be the President of _____, a corporation, and that he as such President, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation as President.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

_____

My Commission Expires:

ACCEPTANCE

The foregoing dedication is hereby accepted pursuant to a resolution of the Board of the Authority duly passed at its regularly scheduled meeting held on _____, _____.

ATTEST: THE MILESBURG BOROUGH WATER AUTHORITY OF CENTRE COUNTY, PENNSYLVANIA

_____ By_____

Secretary Chairperson

(Official Seal)

Section 3.0

General Specifications for Construction of Waterlines and Appurtenances

THE MUNICIPAL AUTHORITY
OF THE BOROUGH OF MILESBURG

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INTRODUCTION

These General Specifications are to be utilized by the Applicant in the preparation of his/her construction documents for the extension/modification of Authority waterlines. The Applicant shall review the documents and revise them as required to conform with the specifics of the project. These General Specifications are to be used in conjunction with the Rules and Regulations of the Authority and with the terms and conditions of the Agreement between the Applicant and the Authority.

It is expressly understood that the Authority views all persons, firms, etc. working for the Applicant as being the Applicant.

CONTRACTOR/ CONTRACT INFORMATION

If Contactor is:

An Individual

By _____(Seal)
(Individual's Name)
doing business as _____

_____
(Business Address and Telephone Number)

A Partnership

By _____(Seal)
(Firm Name)

_____
(General Partner)

_____
(Business Address and Telephone Number)

A Corporation

By _____(Seal)
(Corporation Name)

_____
(State of Incorporation)
By _____
(Name of Person Authorized to Sign and Title of Same)

(Corporate Seal)

Attest _____
(Secretary)

_____
(Business Address and Telephone Number)

A Joint Venture

By _____
(Name)

_____
(Address)

_____
(Name)

_____
(Address)

(Each joint venturer must sign. The manner of signing for each individual, partnership and Corporation that is a part to the joint venture should be in the manner indicated above.)

Lump Sum Contract Price

BIDDER will furnish all equipment, tools, materials and labor required to install ductile iron pipe, valves, hydrants, fittings and appurtenances including restoration of surfaces, distribution system in accordance with the plans and specifications for the following lump sum price:

Lump Sum Contract Price _____
(Words)

$_____
(Figures)

GENERAL CONDITIONS

DEFINITIONS

Wherever used in these General Conditions or in the other specifications the following terms have the meanings indicated which are applicable to both the singular and plural thereof

Applicant
The private or public agency with whom the Authority has entered into an Agreement. The Applicant shall be the owner of the land being subdivided or to which a waterline extension is being requested.

Authority
The Municipal Authority of the Borough of Milesburg, Centre County, Pennsylvania.

Bonds
Maintenance and special bonds and other instruments of security.

Construction Observationist
The authorized representative of Authority or its Engineer who is assigned to the site or any part thereof.

Contract Price
The monies payable by the Applicant for construction of the waterline extension as stated in the Agreement.

Contract Time
The number of calendar days stated in the Bid Form and in the Agreement for the completion of the Work.

Drawings
The drawings, plans, details, supplemental details, graphics, diagrams, photo reproductions and other representations which show the character and scope of the Work to be performed and which have been prepared or approved by Engineer and/or the Authority.

Engineer
Any Professional Engineer so designated by the Authority.

General Conditions
Terms pertaining to the Contract and the performance of the Work thereunder that are of frequent and continuing applicability.

Laws and Regulations
Laws, rules, regulations, ordinances, codes appertaining to the conduct of and/or location of the work.

Insurance
Protection provided as required by the General Conditions and the Supplemental General Conditions and evidenced by either insurance policies or certificates of insurance coverages.

Project
The total construction of which the Work to be provided under the Agreement may be the whole, or a part as indicated elsewhere in the Documents.

Shop Drawings
All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for Applicant to illustrate some portion of the Work and submitted by Applicant.

Technical Specifications
Those portions of the documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

Supplemental Details
Certain drawings, plans, details, characteristic curves, graphics, diagrams, photo reproductions, tabular data or other representation respective to the Work and which are bound in the rear of this document

Supplemental General Details
The part of this document which amends or supplements these General Conditions.

Supplier
A manufacturer, fabricator, supplier, distributor, materialman or vendor.

Work
The entire construction or the various separately identifiable parts thereof required to be furnished under the Agreement. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Documents.

PRELIMINARY MATTERS

Starting the Project
Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Applicant shall submit to Engineer for review:

- a proposed progress schedule indicating the starting and completion dates of the various stages of the Work;

- a schedule of values for all of the Work. This will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction.

Before any work at the site is started, Applicant shall deliver to Authority certificates, and other evidence of insurance requested by Authority which Applicant is required to purchase and maintain in accordance with the Agreement.

AVAILABILITY OF LANDS; REPORT OF DIFFERING CONDITIONS; UNDERGROUND FACILITIES; REFERENCE POINTS

Availability of Lands

Applicant shall furnish the lands upon which the Work is to be performed and rights-of-way and easements, which, in the opinion of the Authority and/or its Engineer, are required for construction. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by Applicant. Applicant shall provide for all additional lands and access thereto that may be required for temporary construction facilities, specific access routes to the site of the work, or storage of materials and equipment.

BONDS AND INSURANCE

Liability Insurance

Applicant shall purchase and maintain such insurance as is appropriate for the work being performed and furnished and will provide protection from claims which may arise out of or result from Applicant's performance and furnishing of the Work and Applicant's other obligations under the Contract Documents, whether it is to be performed or furnished by Applicant, by any Subcontractor, by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable.

The insurance required shall include the specific coverage's and be written for not less than the limits of liability and coverage's provided in the Supplemental General Conditions. The Certificate of Insurance included in these documents shall be required to be completed prior to the commencement of any construction work. All of the policies of insurance required to be purchased and maintained shall contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least ten days' prior written notice has been given to Authority and/or its Engineer. All such insurance shall remain in effect until final payment and at all times thereafter when Applicant may be correcting, removing or replacing defective Work.

CERTAIN RESPONSIBILITIES OF THE APPLICANT

Supervision and Superintendence

Applicant shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Specifications. Applicant shall be solely responsible for the means,

methods, techniques, sequences and procedures of construction. Applicant shall be responsible to see that the finished Work complies with the requirements of the Specifications.

Applicant shall keep on the Work Site at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to Authority and/or its Engineer except under extraordinary circumstances. The superintendent will be Applicant's representative at the site and shall have authority to act on behalf of Applicant. All communications during construction, given to the superintendent, shall be as binding as if given to Applicant.

Labor, Materials and Equipment

Applicant shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Specifications. Applicant shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Specifications, all Work at the site shall be performed during regular working hours. The applicant must notify the Authority of any overtime work or work being performed on Sundays or any legal holiday.

Applicant shall furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water and sanitary facilities and all other facilities and incidentals necessary for the excavation, testing, start-up and completion of the Work.

All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required, Applicant shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment.

All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to impose on Engineer responsibility for the means, methods, techniques, sequences or procedures of construction or for safety precautions or programs incident thereto.

Indemnity

Applicant agrees to protect, defend, indemnify, exonerate and hold the Authority, its members, officers, employees, attorneys, agents and its Engineer harmless from and against any and all suits, claims, liability, losses, liens and demands, fines, costs, criminal and civil penalties, cause of action or any other obligations arising out of or in any manner connected with incidents involved in bodily injury, death, property damage or any violation or alleged violation of any federal, state, provincial or local law or regulation except as solely caused by the Authority and/or Engineer.

Permits

Unless otherwise provided, Applicant shall prepare and pay for all necessary permits and licenses. Said permits and licenses shall be obtained in the name of the Authority. Applicant

shall pay all governmental charges and construction observation fees necessary for the prosecution of the Work, which are applicable.

Laws and Regulations

Applicant shall give all notices and comply with all Laws and Regulations applicable to performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Authority nor its Engineer shall be responsible for monitoring Applicant's compliance with any Laws or Regulations.

Taxes

Applicant shall pay all sales, consumer, use, business and occupation and other similar taxes required to be paid by Applicant in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work. The applicant is hereby notified that permanent process piping which will become a part of the Authority's Plant, Property and Equipment at completion of the project is exempt from the Pennsylvania Sales and Use Tax, based on current rulings. Such tax exemption does not apply to expendable materials or equipment such as forming materials, excavation pumps, etc. On all such items, the applicant shall be responsible for the aforementioned tax and any other similar local or state taxes.

Use of Premises

Applicant shall confine its work on the Project site and land and areas to which the Applicant holds title, rights-of-way, permits, or easements. Applicant shall not unreasonably encumber the premises with construction equipment or other materials or equipment. Applicant shall assume full responsibility for any damage to any such land or area, or to the Authority or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against Authority or its Engineer or resulting from the acts and/or deeds of the Applicant, its agent and/or employees, or invitees, Applicant shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law. Applicant shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold the Authority, its members, officers, employees, attorneys, agents and its Engineer harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any such other party against Authority or its Engineer arising in whole, or in part, out of Applicant's performance of the work.

During the progress of the Work, Applicant shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work Applicant shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials, and shall leave the site clean and ready for occupancy by Authority. Applicant shall restore the original condition all property not designated for alteration by the Agreement.

Applicant shall not impose any load nor permit any part of any structure or pipeline to be loaded in any manner that will endanger said structures or pipelines, nor shall Applicant subject any part of the work or adjacent property to stresses or pressures that will endanger it.

Record Documents

In addition to any requirements imposed by law or regulations, Applicant shall maintain at the site one record copy of all Drawings, Specifications, Addenda, Change Orders, and written interpretations and clarifications in good order and annotated to show all changes made during construction. Said documents together with all approved Shop Drawings will be available to Applicant for reference. Upon completion of the Work, the documents, samples and Shop Drawings will be delivered to the Authority.

Safety and Protection

Applicant shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Applicant shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

- all employees on the Work and other persons who may be affected thereby.
- all the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, and
- other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

Applicant shall comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Applicant shall notify owners of adjacent property and utility owners when prosecution of the Work may affect them, and shall cooperate with utility owners in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by Applicant, any Subcontractor, or anyone for whose acts any of them may be liable, shall be remedied by Applicant at Applicant's sole cost (except damage or loss caused solely by the negligent acts or omissions of Authority or Engineer.). Nothing herein shall be construed to impose any obligation upon the Authority or its Engineer to supervise, inspect or otherwise police the Applicant's observance of these or *any* other safety standards or render either of them liable to third parties for any failure of the Applicant in observance of the requirements of this paragraph.

Emergencies

In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, Applicant, without special instruction or authorization is obligated to act to prevent threatened damage, injury or loss.

Shop Drawings and Samples

After checking and verifying all field measurements and compliance with applicable procedures specified in the Contract documents Applicant shall submit to the Authority or its Engineer for review and approval five copies of all Shop Drawings. The data shown on the Shop Drawings

shall be complete with respect to quantities, dimensions, specified performance criteria, materials and similar data to enable the parties to review the information with respect to requirements of the Documents.

All samples shall be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.

Before submission of each Shop Drawing or sample, Applicant shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Documents.

The Authority or its Engineer will review and approve within twenty-one calendar days of the receipt thereof all Shop Drawings and samples, but the Authority and/or its Engineer's review and approval will be only for conformance with the design concept of the Project and for compliance with the information given in the Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence, or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. Applicant shall make corrections required by the parties and shall return the required number of corrected copies of Shop Drawings and submit new samples as required for review and approval. Applicant shall direct specific attention in writing to revisions other than the corrections called for by parties on previous submittals.

The Authority and/or its Engineer's review and approval of Shop Drawings or samples shall not relieve Applicant from responsibility for any variation from the requirements of the Contract Documents unless Applicant has in writing called the parties attention to each such variation at the time of submission. Any approval by parties shall not relieve Applicant from responsibility for errors or omissions in the Shop Drawings or coordination with the detailed plans and/or other Shop Drawings.

OTHER WORK

Related Work at Site

Authority may perform other work related to the Project at the site by Authority's own forces, have other work performed by utility owners or let other direct contracts therefore which shall contain General Conditions similar to these.

Applicant shall afford each utility owner and other applicant who is a party to such a direct contract (or Authority, if Authority is performing the additional work with Authority's employees), proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work, and shall properly connect and coordinate the Work with theirs. Applicant shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate

with such other work. Applicant shall not endanger any work of others by cutting, excavating or otherwise altering their work.

Coordination

If Authority contracts with others for the performance of other work on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors (the "Coordinating Applicant") will be identified in the Supplemental General Conditions, and the specific matters to be covered by such authority and responsibility will be itemized and the extent of such authority and responsibilities will be provided in the Supplemental General Conditions. Notwithstanding any of the above, neither the Authority nor Engineer assumes any responsibility for the coordination of the activities or the work among the various prime contractors. In the event that any applicant is delayed by the coordinating applicant or any other applicant, it shall have no claim or cause of action against the Authority or its Engineer and its exclusive remedy for such delay shall be against the Applicant or coordinating applicant responsible for the delay.

WARRANTY AND GUARANTEE; ACCESS TO WORK; TESTS AND INSPECTIONS; OWNER MAY STOP WORK; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

Warranty and Guarantee

Applicant warrants and guarantees to Authority and its Engineer that all Work will be in accordance with the Documents and is not defective. Notice of all defects shall be given to Applicant after the same are detected. All defective Work, whether or not in place, shall be rejected and promptly corrected.

Access to Work

Engineer and Engineer's representatives, other representatives of Authority, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation and testing. Applicant shall provide proper and safe conditions for such access.

Tests and Inspections

Applicant shall give the Authority and/or its Engineer timely notice of readiness of the Work for all required observation, tests or approvals.

If Laws and Regulations of any public body having jurisdiction require any Work (or part thereof) to specifically be tested or approved, Applicant shall assume full responsibility therefore, pay all costs in connection therewith and furnish the Authority and/or its Engineer the required certificates of testing or approval. Applicant shall also be responsible for and shall pay all costs in connection with any testing required in connection with Authority's or its Engineer's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to Applicant's purchase thereof for incorporation in the Work.

Authority or Its Engineer or the Construction Observationist May Stop the Work

If the Work is defective or Applicant fails to supply sufficient skilled workmen or suitable materials or equipment, or fails to perform the Work in accordance with the specifications, Authority, its Engineer or the Construction Observationist may order Applicant to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Authority or its Engineer to stop the Work shall not give rise to any duty on the part of the Authority or its Engineer to exercise this right for the benefit of Applicant or any other party.

Correction or Removal of Defective Work

If required by the Authority or its Engineer, Applicant shall, as directed, either correct all defective Work, or work that does not comply with the Contract Documents, or remove it from the site and replace it with non defective Work or Work that does comply with the Contract Documents. Applicant shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby. _

Eighteen Month Correction Period

If within 18 months after the date of Substantial Completion, unless otherwise required by a Government Agency, any Work is found to be defective, or not in compliance with the Contract Documents, Applicant shall promptly, without cost to Authority and in accordance with Authority's written instructions, either correct such defective Work or work that does not comply with the Contract Documents or remove it from the site and replace it with non defective Work or work that does comply with the Contract Documents. If Applicant does not comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, Authority may have the defective Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) will be paid by Applicant. In special circumstances where a particular item of equipment is placed in continuous service before Substantial completion of all the Work, the correction period for that item may begin from an earlier date if so provided in the Specifications. The rights and remedies of the Authority hereunder are in addition to and not in limitation of all other rights and remedies of the Authority for any breach by the Applicant of any provision of the Contract Documents regardless of when detected.

SUPPLEMENTAL GENERAL CONDITIONS

REQUIRED CONTRACTORS INSURANCE COVERAGE'S

Under the General Conditions certain stipulations are set forth regarding Contractor's Liability Insurance, Property Insurance, Receipt and Application of Proceeds and Partial Utilization — Property Insurance. The specific coverage's required to be provided prior to commencement of construction by the Applicant and any and all subcontractors on this project shall be as follows:

PERSONAL INJURY LIABILITY		PROPERTY DAMAGE LIABILITY	
Each Occurrence	$2,000,000	Each Occurrence	$2,000,000
Aggregate	$2,000,000	Aggregate	$2,000,000

Shall be furnished for all damages arising during the life of the Contract, and shall include the following designated hazards:

- Premises-Operations
- Explosion and Collapse Hazard-Underground Hazard
- Products/Completed Operations Hazard
- Contractual Insurance
- Broad Form Property Damage
- Independent Contractors
- Personal Injury

Comprehensive Automobile Liability
(including non-owned and hired automobiles and trucks), having limits of liability not less than:

BODILY INJURY LIABILITY	PROPERTY DAMAGE
Each Person $1,500,000 Each Occurrence $1,500,000	Each Occurrence $1,500,000

Worker's Compensation and Employer's Liability:
A policy shall be issued in compliance with the Workers' Compensation Law.

Builder's Risk

The Applicant shall purchase and maintain Builder's Risk Insurance which shall be written on the Builder's Risk completed value form including "all risks", Special Extended Coverage endorsement. Unless specifically authorized by the Authority, the amount of such insurance shall not be less than the contract price stated in the Agreement. In the event that the Authority occupies or places in service all or any part of the completed construction facilities prior to issuance of the final payment for the construction work, the Applicant shall so notify the insurance company or companies.

All policies of insurance shall name the Applicant as the insured party. The Applicant and his insurance agent shall be required to complete the Certificate of Insurance to the Documents prior to, or at the time that the Agreement is executed and the surety bonds are posted by the Applicant. Authority shall be an additional insured with respect to liability arising out of and from the work performed by Applicant for Authority. Insurer waives all right of subrogation against Authority or its employees. The insurance coverage under the insurance contract is primary to any comparable liability insurance carried by the Authority.

Risk of Loss

Notwithstanding the above provisions relating to insurance and Builder's Risk coverage, as between the Authority and Applicant, the Applicant shall bear all risk of all loss or damage to the work and materials until the work is finally accepted by the Authority.

A Certificate of Insurance must be supplied wherein both the Authority and its Engineer are named as additionally insured.

PHOTOGRAPHS

Where required by Government Agencies the Applicant shall photograph all work areas prior to, during and at completion of project. Photographs shall be color televised tape camera recordings. 35mm 3" x 5" color still photographs or digital photographs will be acceptable substitute. They shall be submitted at the conclusion of the project to the Authority and will become the property of the Authority. They shall be labeled on the back (typewritten) as to the location of the tape or photograph.

CONSTRUCTION OBSERVATION

The day-to-day inspection work on this project will be performed by a Project Representative directly employed by the Authority and/or the Engineer. Each Applicant's superintendent shall coordinate all construction activities with that individual who shall refer such matters as s/he deems necessary to the Authority and/or the Engineer, or others, as circumstances may be required.

TECHNICAL SPECIFICATIONS

Location of Work

Work is located within The Municipal Authority of the Borough of Milesburg Water Service area.

Coordination of Work with the Authority

The applicant shall also coordinate its activities with those of the Authority to assure connection to the correct existing waterline and connection with the existing pipelines at times which are compatible with system operations. Connections to existing pipelines will be by AUTHORITY PERSONNEL ONLY. Shut down of waterlines must be by AUTHORITY PERSONNEL ONLY . The applicant is NOT permitted to operate any valve or fire hydrant in the Authority's system.

Rights-of-Way

The applicant, has, or will have, prior to commencement of construction, acquired the necessary rights-of-way where the line is located, however, if the applicant desires ingress or egress to the proposed pipeline location from other than public roads or streets, it shall be his responsibility to make the necessary arrangements therefore, with the respective property owners involved. The applicant shall make every effort possible to confine his construction activities to the limits of rights-of-way and is advised that he shall be solely responsible for any activities outside of the right-of-way limits. The applicant shall obtain and pay for both State and Township occupancy permits required to construct pipelines in their right-of-way.

Line and Grade

The drawings indicate certain bench marks and topographical features on which the location and construction of the proposed pipeline shall be based. The applicant shall provide any and all additional field surveying required to control either line and/or grade and to assure installation of the facilities according to plans, profiles, and details shown and described on the drawings. Inasmuch as the waterline will operate under pressure, exact control of gradient will not be required, however, pipes shall be installed along the alignment and at the elevations indicated on the drawings.

Erosion and Sedimentation Control During Earth Moving Activities

The detailed requirements pertaining to trenching and other earth moving activities are set forth elsewhere in the Specifications. Earth work will consist of trenching for new pipelines.

Prior to earth moving activities, the applicant shall install the necessary erosion protection devices required as outlined in the approved Erosion Sedimentation Control Plan.

- *Topographic Features of the Project*

  All relevant topographic features, including highways, streets, pipelines, structures, utility lines, fences, paving, and other significant items are to be indicated on the detailed plans.

- *Project Description*

  The work under this project consists of the construction of waterline and appurtenances in accordance with an approved Erosion and Sedimentation Control Plan.

  All work to be done is located in the Municipal Authority Service area.

- *General Statement*

  The proposed plan shall minimize erosion and subsequent sedimentation caused by construction.

  The following guidelines shall be followed by the Contractors during construction.

  1. Minimize the area and time of exposure.

  2. Save existing vegetation, especially trees.

  3. Install temporary or permanent measure to control storm water runoff in order to protect soil bared by construction.

  4. Practice proper line grading and excavation; hold line grading and excavation to a minimum.

  5. Establish permanent vegetation as soon as possible and no later than ten (10) days after project completion.

  6. Suitable protection (erosion netting, fibermats, etc.) will be laid over disturbed area when work will cease for a period greater than one day.

- *Type of Soil Disturbed by Construction*

  The soil information in the project area can be obtained from the Soil Survey Interpretations for Centre County, Pennsylvania as prepared by the U.S. Department of Agriculture Soil Conservation Service. The Applicant shall make his own interpretation of the information when necessary as to how it may or may not affect any or all work under this project, and shall be responsible for all construction activities relating thereto and resulting there from.

- *Right-of-Way Clearing and Grubbing*

Clearing and grubbing shall consist of the removal of all sapling, brush and other vegetation and old structures or obstructions from site of the work, which will be required to be removed so that the planned construction may be made. All live trees shall be protected and not removed unless permitted or ordered by the Authority's Representative. The method of clearing, including the use of bulldozers, shall be at the option of the Applicant. However, he shall not be permitted to cover up brush and similar debris with earth. All work under this heading shall be done sufficiently ahead of topsoil removal and excavating so as not to interfere with those operations. The Applicant shall remove stumps and large roots and refill the depression with suitable compacted earth fill where necessary to bring the grade back to its original elevation or final grade. The applicant shall protect exposed bare earth by mulch, or other appropriate measures if clearing and grubbing operations are completed two days prior to pipeline installations.

- *Staging of Earthmoving Activities*

The detailed requirements pertaining to trenching and other earthmoving activities are set forth in the Specifications. Earth work will consist of trenching for new pipelines.

The depth of trench for pipelines shall be such that the pipe in its installed position will comply with the line grades shown on the plans, or with the line and grades established by the Authority's Representative in the field. Unless otherwise indicated on the plans, the minimum cover for pipelines conveying potable water will be 4 ft.

- *Dewatering*

The Applicant will, at all times when necessary, or when so directed by the Authority's Representative, provide and maintain in operation suitable and adequate pumping equipment or well points to dewater excavations in such a manner as to permit successful installation of the proposed improvements. Pump discharge from dewatering operations shall not be allowed to flow directly into a stream unless the discharge is completely free of sediment. Discharge shall be directed into a sedimentation trap.

An intermittent water or dry gully shall be developed into a suitable sedimentation trap. The Applicant shall construct a trap by installing No. 2 gravel or crushed stone in the manner of a ditch check. Straw bales staked into the ground to a depth of at least one foot may be substituted for the gravel or crushed stone. The ditch check is to be no more than three feet nor less than one foot high and shall be installed perpendicular to the flow of water movement within the waterway.

The trap is temporary and shall be installed prior to dewatering activities. After dewatering is completed, the trap shall be removed and soil shall be revegetated as specified below.

This trap shall be no closer than 20 ft. away from any receiving stream. The Applicant shall position the trap within the dry gully or intermittent waterway so the water filtering out of the trap will flow a minimum distance of 10 ft. through a grassed area and then into the receiving stream. This grassed area shall consist of established vegetation and shall have a slope no greater than 8 deg. within 10 ft. of the trap. This grassed area will act as a vegetative filter. A substitute for the vegetative filter may be the straw filter. In a straw filter, loose straw is placed over an area so that water discharging from the trap will flow a minimum distance of 10 ft. The straw will be applied at the rate of two bales per 1000 sq. ft. and tied down with twine.

- *Grading*

Before beginning excavation and/or filling work, the topsoil from all areas to be affected shall be striped to a depth of 6 in. and shall be stored at a location approved by the Authority's Representative. After completion of the major construction work, the topsoil shall then be replaced as the upper layer of backfill to a depth of not less than 6 in. so that the final grade will be as required by the plans.

In general, the grade shall slope away from the installed or existing structures to drainage ditches or culverts. Those areas which are not occupied by structures or pavement shall be thoroughly loosened by harrowing or discing and then raking by hand and all stone over 1-1/2 inch, rubbish or debris shall be removed. Topsoil shall then be uniformly spaced in piles and distributed by an approved method.

The Applicant shall supply any additional topsoil required over and above that salvaged from the site in order to maintain a minimum of 6 in. depth over the entire area defined above if the area is to be seeded. Any surface irregularities shall be corrected to prevent formation of low places where surface water may pool. Topsoil shall not be placed when the subgrade is frozen or when it is excessively wet or dry, and shall not be handled when in a frozen or muddy condition.

If the Applicant borrows topsoil outside of the work site, he shall notify in writing the local County Conservation District five (5) days prior to topsoil removal from the borrow area. Also, five (5) days prior to disposing of excess earth outside of the work area, the Applicant shall notify the local County Conservation district.

- *Restoration*

All areas disturbed by construction shall be restored in the manner as described in the Specifications.

- *Vegetation*

All grounds disturbed by any of the operations necessary to complete the work for this project are to be permanently seeded, or if specified, sodded, unless occupied by

structures or paved. This is to be accomplished as soon as possible after construction and not later then ten (10) days.

If seeding cannot be completed within the ten (10) day period due to weather conditions, the disturbed area shall be mulched with straw at the rate of two bales per 1,000 sq. ft. This straw shall be anchored with mulch netting according to the manufacturer's recommendations or other appropriate means.

Temporary seeding will be used to protect exposed land surfaces which will not be permanently protected from a period more than two months, but less than 12 months. Temporary vegetation will provide short term rapid cover until permanent vegetation or other protection can be established.

• *Seeding*

Temporary Grass Cover

Purpose of temporary cover is to provide short term rapid cover for the control of runoff and erosion until permanent vegetation or other stabilization material can be established. Temporary cover shall be applied on all sediment producing areas where the period of exposure will be more than two months, but less than 12 months. Mulch cover shall be provided for less than two months. The site preparation and establishment of temporary cover shall be conducted according to the following guidelines:

a. Install needed surface water control measures.

b. Perform all cultural operations at right angles to the slope.

c. Apply ground limestone according to test or at the rate of 100 lb/1000 sq. ft.

d. Apply uniformly recommended analysis fertilizer according to soil test or 10-10-10 at the rate of 10 lb/1000 sq. ft.

e. Work in lime and fertilizer to a depth of 4 in. using any suitable equipment.

f. Temporary cover seed mixture shall consist of 100% annual ryegrass. Seed shall be applied uniformly at the rate of 10 lb/1000 sq. ft. during the recommended planting dates of March 1 to June 15 and August 15 to October 15.

g. Cover grass seed with $^{1}/_{2}$ in. of soil with suitable equipment.

Temporary grass cover shall be established in the following areas:

a. Where soil stockpiles are to be exposed for a period greater than thirty (30) days, the stockpile shall be seeded. When the soil stockpile will be exposed for a period greater than two (2) days, but less than thirty days, the stockpile shall be covered with mulch or protective erosion control fabric.

b. Where vegetative filters must be established below sedimentation traps, a minimum distance of 10 ft. shall be seeded downslope of the trap.

c. Where waterways or ditches will be used to divert storm waters entering the work area, these waterways shall be seeded along the bottom, sides and 3 ft. above and below the waterway. After construction is completed, permanent waterways or ditches will be seeded or sodded according to this plan. Temporary waterways or ditches will be restored to natural grade and permanently seeded according to this plan.

Waterways or ditches shall be installed on slopes above the work area as required.

• *Mulching*

The purpose of mulch is to reduce runoff of erosion, prevent surface compaction or crusting, conserve moisture, aid in establishing plant cover and control weeds. Mulch shall be applied on any area subject to erosion, or which has unfavorable conditions for plant establishment and growth. The practice may be used alone or in conjunction with other structural and vegetative conservation practices, such as waterways, ponds, sedimentation traps, or critical area planting. On sediment producing areas where the period of exposure is less than two (2) months, mulch materials shall be applied according to the following guidelines: areas subject to critical erosion, temporary erosion control devices such as furrows, diversions, etc., within or adjacent to area to be mulched shall be installed.

1. For areas subject to critical erosion, temporary erosion control devices such as furrows, diversions, etc., within or adjacent to area to be mulched shall be installed,

2. Straw or hay mulch shall be applied at the rate of two to three bales per 1000 sq. ft. Chemically treated or salted straw or hay is not acceptable as mulch.

3. Straw or hay mulch shall be anchored by either peg or twine, mulch netting or silt in the following manner:

Anchoring Method: Peg and Twine

How to Apply: After mulching, divide area into blocks approximately 1 sq. yd. in size. Drive four to six pegs per block to within 2 inc. to 3 inc. of soil surface. Secure mulch to soil surface by stretching twine between pegs in a criss-cross pattern on each block. Secure twine around each peg with two or more turns. Drive pegs flush with soil where mowing and maintenance is planned.

Anchoring Method: Mulch Netting.

How to Apply: Staple light weight paper, jute, wood fiber or plastic nettings to soil surface according to manufacturer's recommendations.

Anchoring Method: Silt

How to Apply: Cut mulch into soil surface with a square edged spade. Make cuts in contour rows spaced 18 in. apart.

4. Mulched areas shall be checked periodically and immediately after severe storms for damage until the desired purpose of the mulching is achieved. Damaged portions of the mulch or tie-down material shall be repaired as soon as discovered.

Protection of Stream Banks

1. Right-of-Way shall be cleared and grubbed according to the above procedures.

2. Earthmoving vehicles shall not discharge any petroleum product or accumulated sediment to the stream.

3. No more than 50 ft. of pipe trench shall be open, nor shall the pipe trench be open overnight.

4. Excavated soil shall be stored on the side of the trench farthest from the stream.

5. If a pipe trench is dewatered during construction, the water removed from the trench must be free of suspended sediment prior to entering any established drainage way. To remove suspended sediment, the water shall be pumped into a sedimentation trap. A sedimentation trap is a small detention structure used to trap sediment. The sides of the trap may be made of straw bales, sand bags or No. 4 size gravel or crushed stone which may be installed across intermittent drainage way. If no suitable drainage ways are available, the Applicant shall construct a trap. The detention structure shall be removed after completion of construction.

6. An alternative method of discharging trench water is to allow the water to flow to a storm sewer which is surrounded by straw bales or No. 3 size gravel or crushed stone.

7. The construction of the pipeline through channels of conveyance of surface water will utilize erosion control measures to protect the stream banks and stream bed.

• *Stream Crossing*

Streams are defined as any and all bodies or channels of conveyance of surface water whether natural or artificial or intermittent or constant flow.

• *Maintenance Program*

All temporary control maintenance during construction including cleaning and ultimate disposal of solids wastes shall be the responsibility of the Applicant.

• *Implementation of the Plan*

The foregoing procedure and all requirements of the Specifications are contractual obligations of the Applicant performing the actual construction work. Said requirements also apply to any and all subcontractors working on the project. The Applicant must schedule a meeting with the appropriate County Conservation District (Centre County) for the review and approval of the final Erosion and Sedimentation Control Plan. Said plan shall contain the final standards and specifications concerning seeding mixtures, cover requirements, barrier and sediment trap locations, stream crossing erosion control structures, and any other such items as may be required to complete the Contract work in accordance with the rules and regulations of that agency and in accordance with the laws, rules, and/or regulations of all other authorities having jurisdiction over the required construction work.

The requirements relative to temporary control measures, early permanent restoration, minimizing work areas, are some of the most important factors affecting construction performance. In view of those circumstances, it is believed that this particular plan, on this particular project, will be implemented throughout the course of work.

• *Use of This Plan*

As previously stated herein, this "Erosion and Sedimentation Control Plan" has been prepared in response to and in accordance with certain rules and regulations promulgated by the Pennsylvania Department of Environmental Protection. The handling of stormwater, the topographic and geological features described, the type and classifications of soils, the staging of earthwork, the temporary and permanent control measure, and the interpretations and opinions stated in the foregoing pages are to be used only for the purpose of eliminating, minimizing, and/or controlling pollution of

the streams and waterways from materials anticipated to be eroded from the earthwork to be disturbed as a result of construction.

The information contained in the plan will be specific to both scope and content. The Applicant shall not make his own interpretation of the information as to how it may or may not affect any or all work, and shall be responsible for all construction activities relating thereto and resulting therefrom.

Clearing and Grubbing

The areas along the alignment of the proposed waterline shall be cleared and grubbed to the extent necessary to accommodate the trenching, pipelaying, and backfilling operations, however, the area is not to exceed the limitations of rights-of-way. No trees shall be cut and/or destroyed unless absolutely necessary. Trees in lawn and/or landscaped areas shall not be removed without the consent of the proper Authority. The applicant shall make such arrangements as may be necessary for the removal and disposition of the various brush, trees, and other debris as are necessary. No such materials shall be included with trench backfill, and prior to completion of all contract work, all materials shall be cleaned up, transported and removed from the site.

Excavation and Backfill

All pipeline and appurtenances under this contract may be constructed by the open trench excavation method except where boring is called for on the contract drawings. All excavation shall be unclassified and no extra payment shall be made for hand excavation or for the removal of any rock, boulders, stumps, tree roots, shale, muck, masonry, curbing, driveway surfacing or other natural or man-made materials.

Exploratory excavations shall be made by the Authority at the commencement of construction to identify the elevations and/or configurations of the existing water lines to which connection of proposed pipes are indicated. After exposure at those critical locations or connections, the applicant shall submit changes in alignment or gradient which may require additional work or material to the Authority for approval before proceeding with the work.

The width of the trenches shall not exceed the outside diameter of the pipe, plus two feet, from the bottom of the respective pipe trench to a horizontal plane located one foot above the top of the pipe. In the event that the applicant's construction methods/activities result in a trench wider than the pipe diameter plus two feet within that pipe zone, he shall install concrete bedding or encasement or shall make such other provisions as may be directed by the Authority to protect the structural integrity of the pipe.

Where the trench bottom contains satisfactory material the pipe shall be laid on the flat bottom with holes for bells provided to insure that the pipe shall lie flat and be supported for its full length.

Where excavation exposes the bottom of proposed trenches where rock, very soft or other unsatisfactory pipe foundation materials exist, the applicant will be directed to overcut (in the

case of rock) or stabilize/overcut (in the case of soft material). The pipe shall be supported on bedding material with a minimum thickness of 6" below the bottom of the pipe barrel; said material shall also be placed on the sides of the pipe and to a horizontal plane located one foot above the top of pipe, identified as the pipe zone with the exception of backfill provisions under pavement areas as described hereinafter.

The excavated material from the trench may be stored along its alignment of rights-of-way obtained for construction purposes in accordance with the highway occupancy permit. It may not, however, impede traffic flow along the streets and roadways, access to private properties, or access to existing utility lines by the respective utility companies. The temporary storage of excavated material shall also not obstruct or alter the flow of surface water runoff to the detriment of the operation of existing surface water drainage facilities and ditches.

Backfill material utilized for restoration of open trenches excavated through permanent pavements, curbs, driveways or where such structures are undercut by the excavation, and roadway shoulder areas, shall consist of 2RC material for the entire backfill to the subgrade of the structure onto the roadway shoulder finish grade. It shall be thoroughly compacted in 6" lifts for the full depth of the trench. The material placed in the pipe zone shall be carefully compacted to avoid displacement of the pipelines, valves, fittings and appurtenances.

At locations outside the pavement areas or roadway shoulder along the pipeline, the backfill material for the full trench depth, shall be selected excavated material which shall be thoroughly compacted and placed in such a manner to avoid disturbance or displacement of the pipe, valves and/or other appurtenances. The backfill material shall contain no rocks or hand shale which have a maximum dimension exceeding two inches. The backfill material may be placed by machine and mounded over the trench width. After settlement has satisfactorily occurred and subject to a time approved by the Authority's representative on the site, the surface shall be restored as required hereinafter for lawns and other improved or cultivated areas.

No material shall be used for backfill at any location which, in the opinion of the Authority's representative, is too wet, frozen, mucky or contains debris, tree stumps, or an excessive amount of rock.

All excess excavated material resulting from the construction of the pipelines, structures and appurtenances shall be removed from the site and disposed at a location and in a manner which shall be the applicant's responsibility to determine.

No more than one hundred feet of trench shall be opened at any one time. Blasting

will not be permitted unless approved by the proper regulatory agency.

All open trenches for construction of the pipeline shall be constructed in accordance with the provisions of the Occupational Safety and Health Act Regulations, as the same pertain to the shape of trenches above the pipe zone, trench side-wall supports, the construction methods employed, the general protection requirements, the general excavation requirements, the general trenching requirements and the minimum requirements for trench shoring. Those excavations

for performance of the tunneling, boring and/or jacking operation shall be similarly constructed and shall be continuously sheeted with steel and/or timber which shall be adequately braced with walling or other supports from the respective pit bottoms to the tops. All sheeting and/or shoring shall be designed by the applicant for the conditions encountered and, shall be structurally adequate to withstand the loads to be imposed. Methods of installation shall be compatible with assuring the protection against disturbance of adjacent facilities and/or ground sand, the safety of construction and other personnel. Removal of the sheeting and bracing shall be reasonably and carefully performed to avoid displacement of the entrenched pipe and/or adjacent ground facilities.

Trenches at any and all locations where pedestrian or traffic hazards would result, shall not be left open during non-construction hours, unless they are suitably covered with a steel plate which is adequately anchored and reinforced to sustain loads which may be imposed. Rules and regulations of the local, State and County authorities respecting safety provisions shall be observed.

Disposal of Excess Material

All materials resulting from either the open excavation or the boring operation, which materials are not replaced as backfill, shall be hauled from the site of the work and shall be disposed of at an approved location by the Applicant.

Exploratory Excavations

The exact location and condition of the existing water lines to which connections are to be made may vary in some respects from the arrangements indicated on the Drawings. Therefore, in those areas where such connections are to be made the Authority shall make appropriate exploratory excavations for the purpose of locating said lines and confirm the materials to be furnished and installed. If realignment of the proposed pipelines or appurtenances appears possible and/or reasonable without conflicting with the terms set forth elsewhere, said alignment shall be made.

Minimizing Water Pollution from Soil Erosion

All Applicants shall conduct their activities and shall program trenching and restoration operations in such a manner as to minimize pollution of the creeks and ponds from erosion of the freshly excavated and/or backfilled material during periods of excavation and surface water runoff. Applicant shall reduce the area and duration of exposure of all erodible soils by the greatest extent practicable and to that end, hydromulching, reseeding and other specified surface restoration shall be required to closely follow backfilling operations. Where the Authority or its Engineer so directs in the field, sediment traps, hay bales and/or other means to retard runoff rates shall be installed. Similar holding basins or other sediment trap arrangements shall also be required to be installed at the discharge of dewatering pumps. Discretion shall be exercised in selecting the number and location of encroachments during construction both in and along the creeks and ponds such that a minimum of disturbance and erosion pollution results.

Warning Signs, Lights and Barricades

Among streets and at such other locations, a minimum of one lane traffic shall be maintained at all times during construction of this project in order to accommodate traffic as well as emergency fire, ambulance and similar vehicular traffic. Suitable and adequate barricades shall be erected and properly maintained by the applicant at all times during the course of construction work to clearly and properly caution and protect traffic and pedestrians from open excavations, unstable filled areas, obstructions and other hazards directly or indirectly resulting from the construction activities. Warning signs, barricades and handrails shall be erected and a sufficient number of high intensity warning lights shall be appropriately located for use at night and at other times when visibility is poor. An adequate number of flagmen shall be utilized to guide traffic along all areas where work is being performed or where hazardous driving conditions prevail. Applicant shall use PennDOT Publication 203, Work Zone Traffic Control for control of the work site.

No open excavations will be allowed overnight. It is mandatory that excavations be closed prior to the completion of the working day and that the roadways be free and accessible to travel. The applicant is required to maintain the level of the trench with the sub-base material until such time as paving is completed. The applicant shall coordinate providing two days advance notification to residents in those areas affected by his construction.

Dewatering

All trenches shall be dewatered thoroughly in advance of the pipe installation construction activities. The dewatering operation may be accomplished by the use of pumps, well-points, wells or any combination of those systems, but in any event, the pipeline shall be constructed in a trench which will be required to be free of ground, surface or any other source of water inflow and/or infiltration. The proposed water pipeline may not be used for dewatering purposes under any circumstances and particular care shall be exercised to keep open pipe ends sealed with plugs which are fabricated for that purpose and to prohibit the entrance of any extraneous water. Where dewatering pumps are required to be used sufficient discharge hose and other appurtenances shall be provided so that the water is discharged into storm drains, creeks, streams or other suitable water courses intended for such purposes.

Existing Utility Lines - Location, Protection and Hazards

The plans show those underground water lines, gas lines, electric lines, telephone lines, sanitary sewers, combined sewers, storm drains, conduits and other similar utility lines and appurtenances. Neither the number of such underground facilities nor their respective types, sizes and/or locations can be assured or guaranteed and it is, therefore, the responsibility of the applicant to obtain such additional information as required by Act 287 as amended by Act 187 of 1996 to properly complete the work in compliance with the specifications, and, to contact the owners of the various utilities in the area prior to starting and during performance of the work.

The appropriate location of many power and telephone poles along the route of the work is shown on the drawings and the overhead lines supported by all such poles shall be observed and located by the applicant prior to commencement of the work.

The applicant shall be completely and solely responsible and liable for any and all property damages, bodily injuries, financial losses and interruption of service that result from or are attributable to his construction activities and which affect water lines, gas lines, electric lines, telephone lines, drain lines, sanitary and storm sewer lines and all appurtenances and service facilities connected thereto. Restoration of all such damaged or disturbed facilities shall be accomplished immediately after incurrence thereto.

Water, sewer, gas, power, and telephone service to dwellings or places of business shall be maintained with a minimum of interruption throughout the construction of the contract work. No such service shall be intentionally interrupted without the approval of the respective utility company concerned, and without first giving due warning to the occupants of said dwelling or business establishment.

Attention is directed to the fact that much of the proposed work may be in close proximity to overhead power lines which transmit electric current at high voltages and which, if disturbed or contacted during construction, would be hazardous to construction personnel and/or other persons. The applicant shall, therefore, properly protect such wires, pole supports or other power line appurtenances to avoid disturbance to those facilities, and shall operate all machinery and conduct all other construction activities in a manner which will assure protection of all construction personnel and other persons against said hazards. Work in the vicinity of the existing underground gas lines and appurtenances is also hazardous because, under certain conditions, such materials are flammable and/or explosive and the applicant shall avoid disturbance and/or displacement of those facilities and shall provide all temporary and permanent supports and other required protection to prevent exposure of same to construction personnel and/or other persons. Where such lines are exposed during construction and leakage is detected, water line construction work in those areas shall be immediately suspended. The Authority shall be immediately advised of said condition, and the work shall not resume until all repairs have been properly completed.

General Requirements Relating to Construction Materials

NOTE: <u>For all parts</u> they must be similar and equal to those products listed in this attachment.

The applicant shall submit shop drawings to the Authority and/or its Engineer for approval of all proposed pipe, joints, gaskets, valves, hydrants and appurtenances prior to the fabrication and delivery of those products.

At delivery of the materials, the applicant shall deliver to the Authority three (3) sets of bound Operation and Maintenance Manuals for the materials. The manual shall include a complete part list and a name of all the various components making up the material item. A complete section on the maintenance and care of all material shall be included with the manual.

Ductile Iron Water Pipe

All pipe to be furnished under this contract shall be Ductile Iron Pipe, centrifugally cast in metal molds or sand-lined molds, for water or other liquids as described in the AWWA Standard C-151, latest revision. Fittings shall conform to the applicable provisions of AWWA C-110. The pipe shall be thickness Class 52 and furnished in 18'-6" lengths. Joints shall generally be of the push-on type, however the joints at the fire hydrant assemblies shall be restrained and shall be of the mechanical type. All fittings shall also be fitted with mechanical joint couplings. The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made and that the results comply with, the above stated specification standards.

All pipe and fittings shall be coated and shall be provided with a double cement lining in accordance with the AWWA Standard C-104, latest revision.

The push-on type joints shall be of the single rubber gasket type molded to be positioned in an annular recess in the pipe or fitting and shall compress radially to form a positive seal and shall be shaped so that the gasket is locked in place against displacement. Joints shall conform to those provisions set forth in the AWWA Standard C-111, latest revision. All lubricants and gaskets and any required special tools for construction of the pipeline shall be furnished by the pipe manufacturer. All necessary accessories including lock ring, bolts, etc., shall be furnished and installed to accommodate the restrained and mechanical joints.

Pipe shall be similar and equal to those products manufactured by Atlantic States Cast Iron Pipe Co., Clow Corporation, American Cast Iron Pipe Company, U.S. Pipe and Foundry Company or Griffin Pipe Co.

Fittings shall be similar and equal to those products as manufactured by the Tyler Pipe Company, Union Foundry or U.S. Pipe and Foundry Co.

When approved by the engineer or the Authority, ductile iron Megalugs will be utilized in conjunction with concrete blocking. Megalugs are as manufactured by EBAA Iron, Inc., series 1100, working pressure of 250 psi and a 2:1 safety factor.

Installation of the Ductile Iron Water Pipe

All pipe, valves and hydrants shall be installed in accordance with the alignments, profiles and elevations indicated on the drawings. Exploratory excavation at critical points of crossing and/or possible conflict with other utilities shall be made prior to laying any pipe.

The push-on type ductile iron pipe, shall be furnished and installed in general accordance with the applicable provisions of AWWA Standard C-600, latest revision. The trench bottom shall be true and even and bell holes no larger than that required to make connections of the joints shall be provided. Pipe plugs shall be used at all times to protect the pipeline from the entrance of extraneous water, animals, or other foreign material. Joints shall be deflected as required to conform with the alignments shown on the drawings, but in no event shall deflection angles exceed five degrees. Concrete thrust restraints and Megalugs shall be installed at all significant

changes in pipeline alignment and wherever pipe fittings are designated; concrete thrust blocks shall be cast in place in the trenches per the details and configurations shown on the details. If necessary, the pipe shall be cut in the field to accommodate the alignment and/or the locations of fittings shown on the Drawings.

Care shall be exercised to properly install the gate valves and boxes and hydrants so that they are readily accessible at the respective elevations of existing ground. The hydrants shall be located in the field where directed by the Authority's representative.

After completion of all pipe installation and after sterilization has been accomplished in accordance with procedures outlined for disinfection of the pipe lines, the lines shall be flushed so that all dirt and debris and the sterilization solution will be thoroughly cleaned out of the pipes. Flushing shall be accomplished at a time satisfactory to the Authority and the flushing water shall be conveyed to ditches or creeks in such a manner as to avoid traffic or other hazards, and erosion of public or private properties.

Boring and Casing

Where boring is employed, the applicant shall be responsible for construction to true line and grade and shall be held fully responsible for protecting against surface subsidence, damage or disturbance to adjacent property and facilities due to his construction operations and shall rectify resultant subsidence, damage or disturbance to the satisfaction of the Authority or its Engineer.

All sheeting, shoring, bracing, lining, etc., required for construction of shafts, portals, etc., shall be furnished and installed by the applicant and shall conform to the requirements set forth under "Open Excavation". All work relative to the installation of sewers by the boring method shall be performed in accordance with the regulations set forth under Subpart S, "Tunnels and Shafts, Caissons, Cofferdams and Compressed Air" published as part of the Safety and Health Regulations for Construction by the U. S. Department of Labor.

Where possible, boring operations shall be conducted from the high end of the pipe. The pipe shall at all times follow immediately behind the boring auger at a distance no greater than 2 feet. The method of augering the entire hole and then pushing the pipe through will not be permitted.

All steel carrier or casing pipe required for the installation of waterlines by the boring method shall be black steel pipe conforming to the specifications set forth under ASTM Designation A-53. All joints shall be welded. For eight inch diameter waterlines, the casing diameter shall be 16" inches.

Casing Spacers shall be bolt-on style with a two (2) piece solid shell made from T-304 stainless steel of a minimum 14 gauge thickness. The shell shall be lined with a ribbed P.V.C. sheet of a .090" thickness that overlaps the edges. Runners, made from UHMW polymer, shall be attached to risers of appropriate positions to properly locate the carrier within the casing and to ease installation. Risers shall be made from T-304 stainless steel of a minimum 14 gauge thickness and shall be attached to the shell by MG welding. All welds shall be fully passivated. All

fasteners shall be made from T-304 stainless steel. Casing spacers shall be Model CCS as manufactured by Cascade Waterworks Manufacturing Company of Yorkville, IL.

Casing end seals shall be rubber seals, virgin SBR with two (2) T-304 stainless steel bands. The rubber seals shall be cement bonded upon installation. Casing end seals shall be Model CCES as manufactured by Cascade Waterworks Manufacturing Company of Yorkville, IL.

Sheeting, Shoring and/or Bracing

All open trenches for construction of the pipeline shall be constructed in accordance with the provisions of the Occupational Safety and Health Act Regulations, as the same pertain to the shape of trenches above the pipe zone, trench side-wall supports, the construction methods employed, the general protection requirements, the general excavation requirements, the general trenching requirements and the minimum requirements for trench shoring. Those excavations for the proposed access pits for performance of the boring operation shall be similarly constructed except that all such access pits shall be continuously sheeted with steel and/or timber which shall be adequately braced with waling or other supports from the respective pit bottoms to the tops. All sheeting and/or timber which shall be adequately braced with waling or other supports from the respective pit bottoms to the tops. All sheeting and/or shoring shall be designed by the applicant for the conditions encountered and shall be structurally adequate to withstand the loads to be imposed. Methods of installation shall be compatible with assuring the protection against disturbance of adjacent facilities and/or grounds and the safety of construction and other persons.

Trenches, pits and/or any other excavated and/or backfilled areas where pedestrian or traffic hazards may result during construction or non-construction hours, shall be covered with anchored steel plates adequately reinforced for loads which may be sustained and shall be distinctively and clearly marked, barricaded, lighted and detoured to identify the respective hazards in accordance with PennDOT Publication 203.

Dust and Mud Control

Dust control palliatives shall be utilized where and when necessary to maintain roads, berms and other traveled ways. In addition, the accumulation of mud and/or dirt from the excavation, backfill or trenching operations shall be cleaned off the pavements by machine and/or by hand labor as frequently as is necessary in order to properly maintain the street and highways.

Gate Valves

All valves shall be furnished with mechanical joints, as indicated and shall conform to the specifications set forth in the AWWA Standard C-509, latest revision. The valves shall be installed in the vertical position and at the bury and locations shown on the Drawings. Valves shall be resilient seat, open counterclockwise, with 2" square operating nut, designed for a working pressure of 150 psi. Valves shall be Mueller Catalog No. A-2360-20 or equal. Each valve shall be equipped with a two piece screw type cast iron valve box and cover indicating "Water

Service." Lengths of the boxes shall be 36" – 52" in length, Series 6850, Item 662-S, as manufactured by the Tyler Pipe Company.

Fire Hydrants

The fire hydrants shall be manufactured in accordance with the Specifications of the American Water Works Association C-502, latest revision and shall be Catalog No. A-423, Super Centurion 200 Fire Hydrant as manufactured by the Mueller Company.

The hydrants shall be of the compression type and shall open counter-clockwise. The hydrants shall have an internal diameter of standpipe of at least 7 inches and 5-1/4 inch valve opening, shall have a 6 inch mechanical joint connection and shall be designed for a 4 foot 6 inch bury; that is the 6 inch inlet pipe shall have at least 4 feet of cover. The hydrant shall have two 2-1/2 inch hose nozzles and one 4 '/z" steamer nozzle opening with Pittsburgh Hose Coupling Threads except in Middlesex Twp. use National Standard Threads. Hydrant painting shall be federal safety yellow barrel and federal safety green bonnet and caps. Installation shall be in accordance with the appended Detail.

The hydrants shall be furnished with breakaway safety flanges for protection in case of collision. All bearings shall be fully bronze mounted and the hydrant shall be constructed so that all working parts can be removed without disturbing the barrel of the hydrants or making any excavation. The hydrants shall be designed so as to be frost-proof and be provided with drains which close when the hydrant is opened and open promptly when the hydrant is closed.

Each hydrant shall be subjected to a hydrostatic test of at least 400 pounds prior to shipment and shall be suitable for operating pressures of 200 pounds. The hydrant shall be given on shop coat of lead chromate primer and two coats of approved paint.

Blow Off Assembly

A blow-off assembly of the size and type indicated on the appended details shall be installed at locations approved by the Authority.

Thrust Restraints

Concrete blocks shall be cast in place in accordance with the configurations shown on the details. Such blocks shall be required to be poured, after installation of the adjacent piping at all fittings installed along the pipeline. The concrete to be used may conform with mix proportions of water, cement, and fine and coarse aggregates utilized locally, however, it shall have a minimum compressive strength of 3,500 pounds per square inch and a maximum slump of five inches. The concrete shall be placed such that it is supported against undisturbed earth along the excavated trench wall and the trench bottom and shall be thoroughly worked and vibrated to insure complete contact with the walls of the fittings being restrained. No trench backfill shall be placed at the locations of the thrust blocks until twenty-four hours after placement, and/or until the Authority's representative on the site has inspected the installation.

Hydrostatic Testing

After the pipeline has been properly constructed and flushed, a hydrostatic test shall be conducted at a pressure of a minimum 150 pounds per square inch or as directed by the Authority at any point of testing. The time period of said test shall not be less than two hours and the pressure shall not vary by more than plus or minus 5 psi during the duration of the test. All air shall be completely expelled from the section of line to be tested, prior to application of the test pressure. All testing will be done in accordance with AWWA Standard C-600, latest revision.

No section of pipeline will be accepted if, as a result of the aforementioned hydrostatic test, leakage is greater than an amount determined by the following formula:

$$L = \frac{SD\ (P).5}{133{,}200}$$

L: Allowable leakage, gallons per hour
S: Length of pipe, tested, feet
D: Diameter of pipe, inches
P: Average test pressure, pounds per square inch

At a test pressure of 150 psi, the above formula results in an allowable leakage of 0.74 gallons per hour per 1000 feet for 8" diameter pipe, 0.55 gph per 1000 feet of 6" diameter pipe.

If the testing of any section of line discloses leakage greater than that amount, the applicant shall, locate the problem and make all necessary repairs and retest until the pipeline conforms with the specified allowance. Any and all visible leaks which are detected shall also be repaired, regardless of the amount of leakage.

Disinfection

All pipelines constructed under this contract shall be disinfected in accordance with AWWA Standard C-651, latest revision. The tablet method shall be used wherein two 5-gram calcium hypochlorite tablets shall be affixed to each joint of ductile iron pipe installed.

The tablets shall be attached to the inside and at the top of the installed pipes by using an adhesive similar and equal to Permatex No. 1.

The pipeline shall be isolated from the existing system and shall, when the sterilization operation commences, be slowly filled with water at a rate where velocities shall not exceed one foot per second. After the pipeline has been completely filled and all air has been expelled, the water shall be permitted to remain in the pipe for a period of not less than 48 hours. The pipeline shall be flushed clean. The Authority will test the water and if the test indicates poor water quality the applicant will be required to redisinfect the water line at no cost to the Authority.

Clean-up

Clean-up work shall reasonably follow the progress installation of the pipe and appurtenances. After all work has been completed, thorough cleaning of the surface of the ground of all disturbed and occupied areas shall be done to the satisfaction of the Authority's representative on the site.

Roads, Walkways, Paving and Surface Restoration

It is intended that all surfaces occupied, disturbed, damaged or used to accommodate or perform construction work or for access to any part of the site shall be restored, as nearly as is practicable, to the condition existing prior to construction. Signs, drain pipes, curbs, storm ditches and any and all other existing public or private property items shall, where necessary be temporarily removed so that the work can be performed; said items shall, as soon as possible be properly replaced at a location and in accordance with the requirements of the respective owners. When necessary to temporarily remove mail boxes so that the work can be performed, the mail box shall be restored in the shortest time to the requirements of the U.S. Postal Services and at the original location together with unrestricted access.

The applicant shall confine his material storage, excavation, topsoil storage and other work within the rights-of-way provided except when by written agreement between the applicant and the Authority of the property through which the right-of-way passes, permission is granted to occupy areas beyond that designated. When working on public or private highways, streets and alleys, the applicant shall confine his operations as required by the authorities having jurisdiction.

The applicant shall make his own arrangements with private individuals relative to storing materials or equipment on private lands.

Where the construction work is across, along or through right-of-ways, roadways, streets or alleys, belonging to the State, County, Township, Borough or utility companies, the regulations and stipulations set up and required by those Agencies shall be observed and all work shall be in conformance with the requirements set forth by that Authority. Any and all permits required for opening roadways or streets shall be obtained by the applicant at his/her own expense. The cost of all inspection required by those Agencies shall be borne by the applicant. The expense of said permits and inspection shall be paid by the applicant even though the permits and inspection agreements may be issued to the Authority. If the Authority is billed for these permits, or inspection services, the applicant shall reimburse the Authority at the time the bills are rendered.

For bituminous paving, all materials and methods of construction shall comply with the requirements of Pennsylvania Department of Transportation Form 408. Section numbers listed in this specification refers to the appropriate section of that document.

Road Paving and Berm

All paving and/or berm areas disturbed or damages as a result of the waterline construction or by other activities of the applicant shall be replaced in a manner to equal or exceed the quality of the existing surfaces and, to the satisfaction of the Authority. The paving and berm restoration shall conform strictly to the standards of the permitting Agency.

All paving removed, damaged or destroyed during the construction of this work shall be replaced by one of the following methods at least equivalent to that existing before construction. Where damage is within two feet of the curb or edge of roadway, replacement shall be to that curb. The applicant shall guarantee all paving replaced against defect and settlement for a period of 18 months minimum after the date of the final acceptance. Longer periods could be required by the permitting Agency

a. Non-Rigid Paving. All non-rigid bituminous surface paving shall be restored by neatly and uniformly cutting the edges and placing a base course and a surface course over the trench fill in accordance with requirement of the Pennsylvania Department of Transportation Form 408, latest revision. The base course shall be a 6 inch bituminous concrete base course. The surface course shall be ID-2 installed in one wearing course totaling 1-1/2" after compaction. Seal edges with hot bituminous liquid.

Seeding

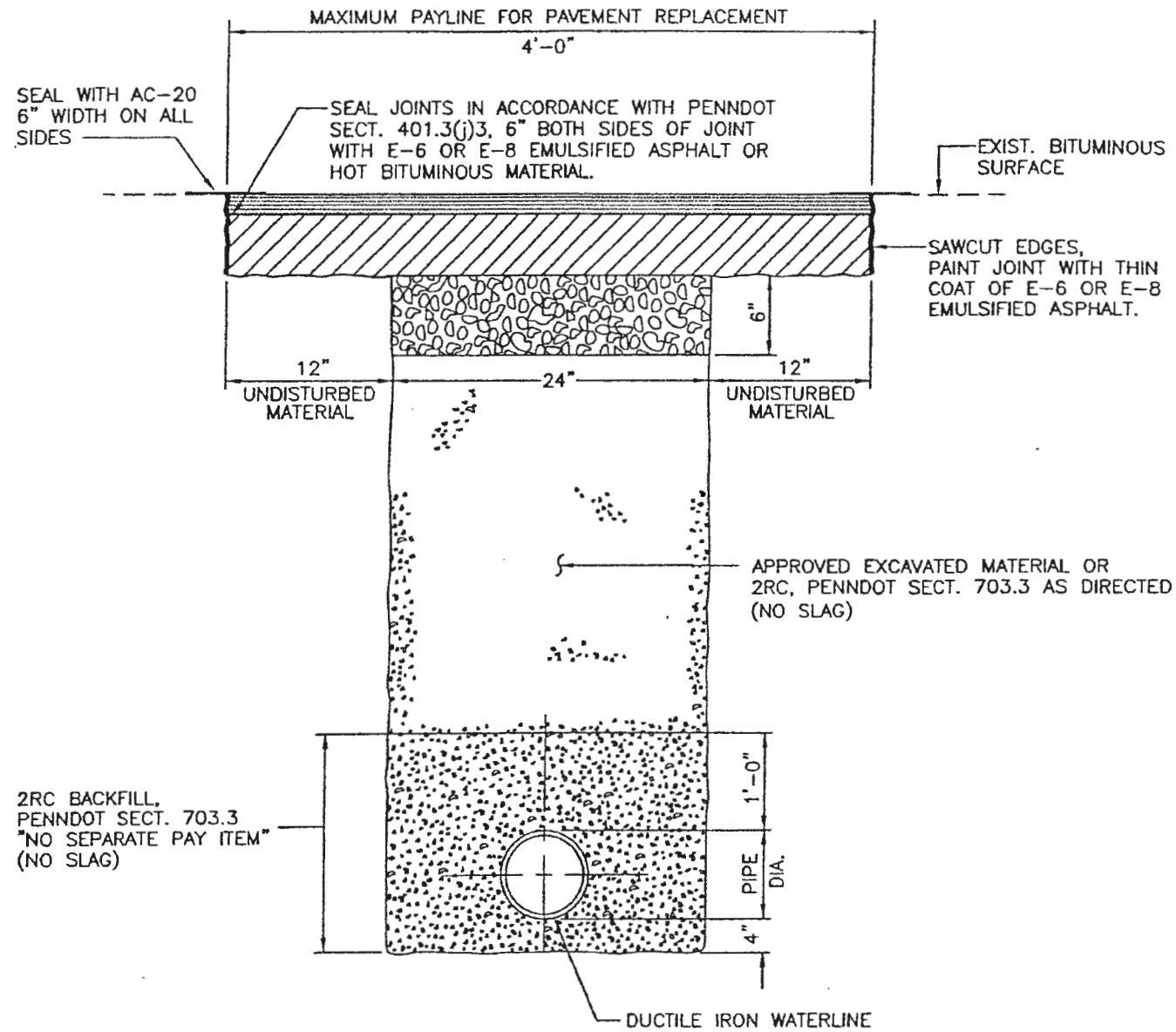
Applicant shall reseed all areas disturbed by construction after the topsoil has been properly distributed. The entire area shall then be properly tilled and hand-raked to a smooth, even grade. All seeded areas shall be kept constantly wet to a depth of 3" for 10 days immediately after seeding. All areas which do not show a prompt catch of grass shall then be reseeded as required. In any event, the applicant shall insure a good final stand of grass as specified above and he shall maintain the seeded areas until the lawn as such is free from bare spots and off-color areas and until final acceptance of the entire project.

All lawns and other improved or cultivated areas shall be restored by properly rolling, tilling and hand raking the area disturbed during construction and an application of an approved fertilizer at a rate of 30 lbs. per 1000 square feet shall be made. Grass seed of an approved variety shall be sown by a feeder on a calm day in accordance with suppliers' directions at a rate of not less that 7 lbs. per 1000 square feet. The area shall then be completely covered with peat moss, mushroom manure, or other approved mulch material. The applicant shall be responsible for restoration of all settlements and for properly preparing the topsoil, applying fertilizer and mulch and planting the seed, but will not be required to water those restored areas.

Applicant's Office Facilities

The applicant shall provide and make his own arrangements for his field office facilities, change trailers, storage areas, sanitary facilities, etc.

Section 4.0
Standard Details and Typicals



NOTE:

1. ALL BACKFILL SHALL BE COMPACTED IN 6" LAYERS, MECHANICALLY TAMPED.
2. TEMPORARY BITUMINOUS COLD PATCH SHALL BE USED IN ALL AREAS WHERE EXISTING FLEXIBLE-BASE PAVEMENT HAS BEEN REMOVED FOR INSTALLATION OF DUCTILE IRON WATER LINES OR SERVICE LINES. "NO SEPARATE PAY ITEM".

1 1/2" ID-2 BITUMINOUS WEARING COURSE, PENNDOT SECT. 420

5" BITUMINOUS CONCRETE BASE COURSE, PENNDOT SECT. 305

6" No. 2A SUBBASE, PENNDOT SECT. 350

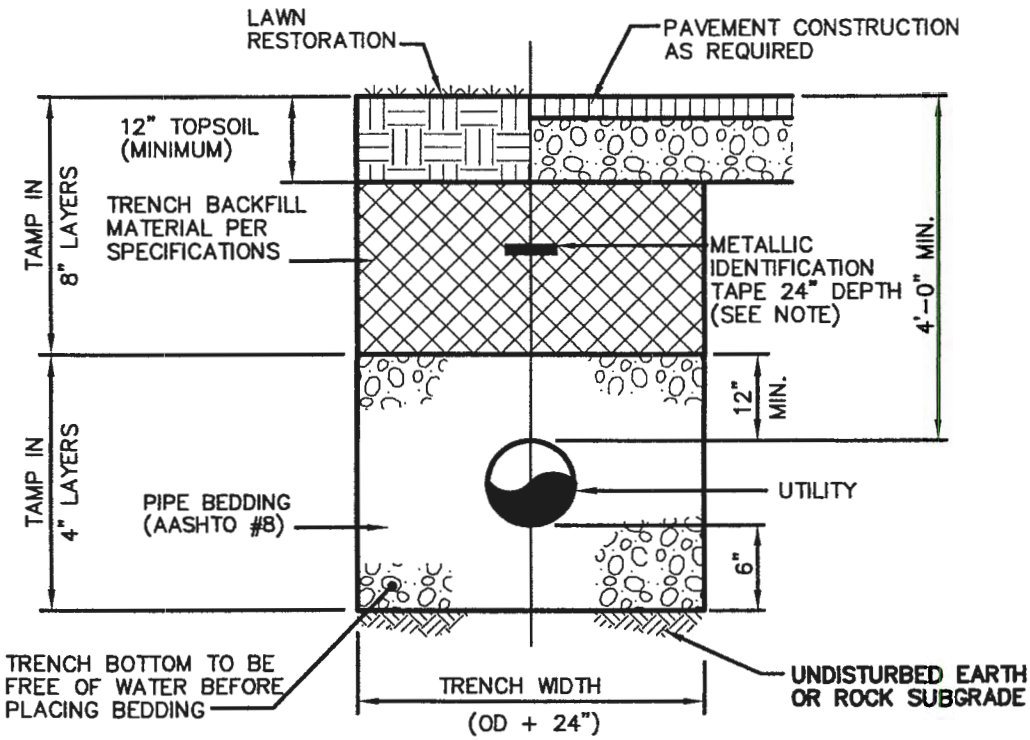
01.dwg

Milesburg Borough Water Authority

STANDARD TRENCH DETAIL AND PAVEMENT REPLACEMENT FOR BITUMINOUS PARKING AREAS; DRIVEWAYS; TOWNSHIP & STATE BERMS AND ROADS

NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



NOTES:

1. USE TAPE WITH NON-METALLIC UTILITIES.

PIPE TRENCH DETAIL

NOT TO SCALE

HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services

474 Windmere Drive
State College, PA 16801
(814) 238-7117
Fax (814) 238-7126
hrg@hrg-inc.com
www.hrg-inc.com

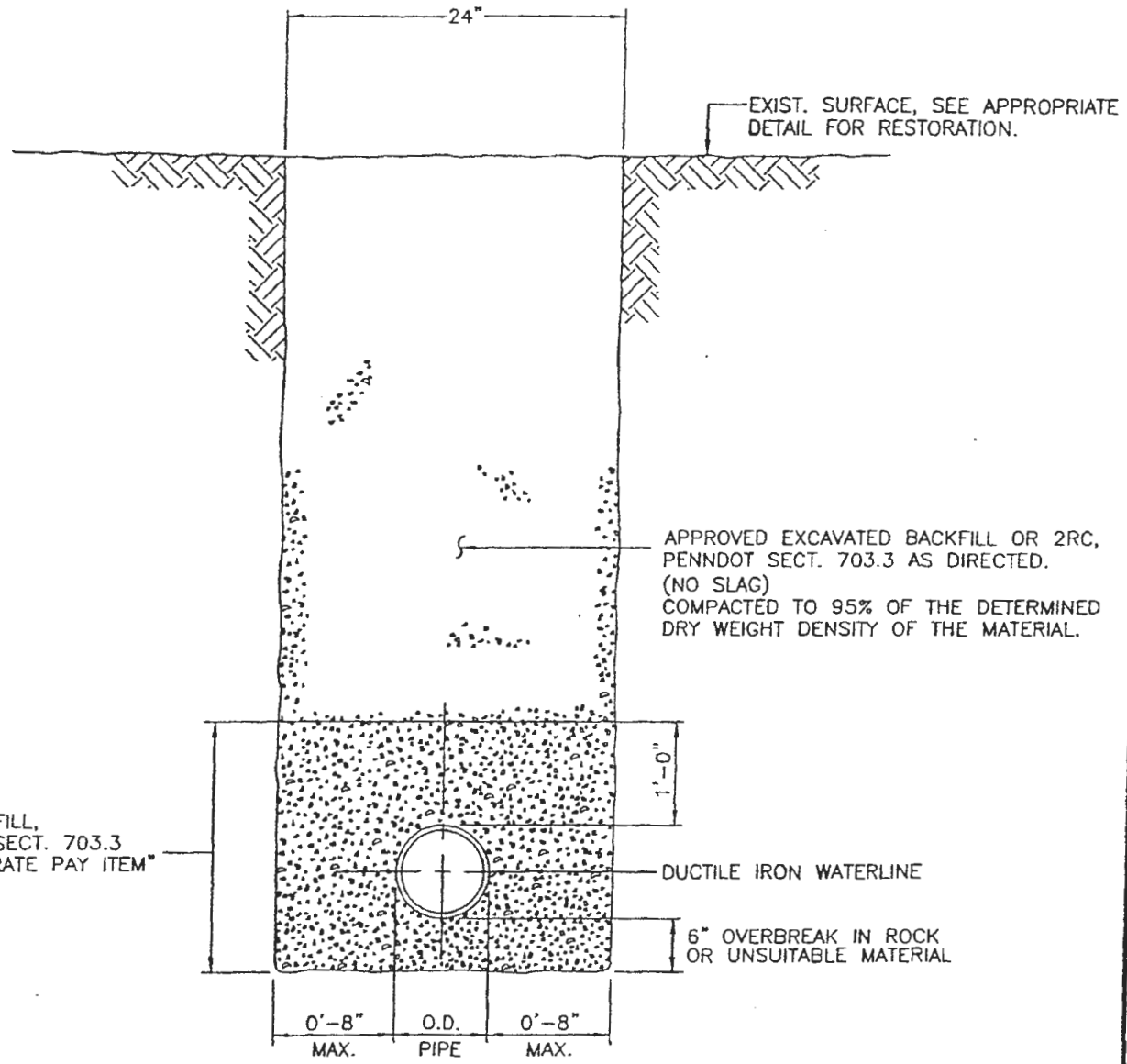
PIPE TRENCH DETAIL

PROJ. MGR. –	
DESIGN–	
CADD– MDS	
CHECKED–	
SCALE– N.T.S.	
DATE– 7-06	

DRAWING NO. 2

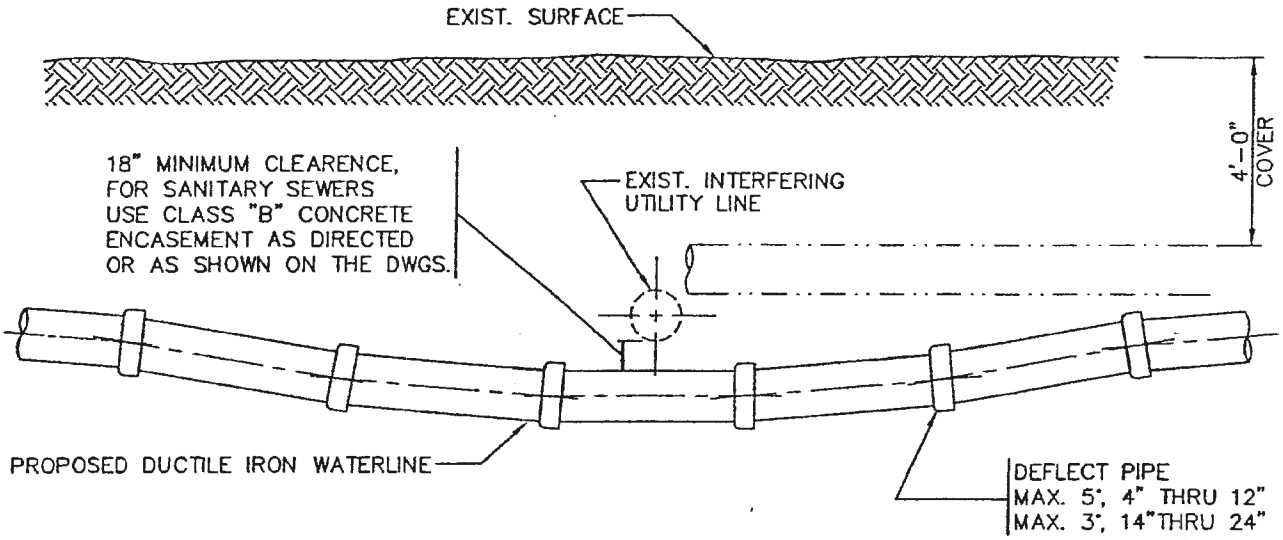
SHEET NO. 2 OF 3

PROJECT 2253.000



Milesburg Borough Water Authority	
STANDARD ROCK OR UNSUITABLE MATERIAL EXCAVATION AND REPLACEMENT	
02.dwg	NIRA Consulting Engineers, Inc.

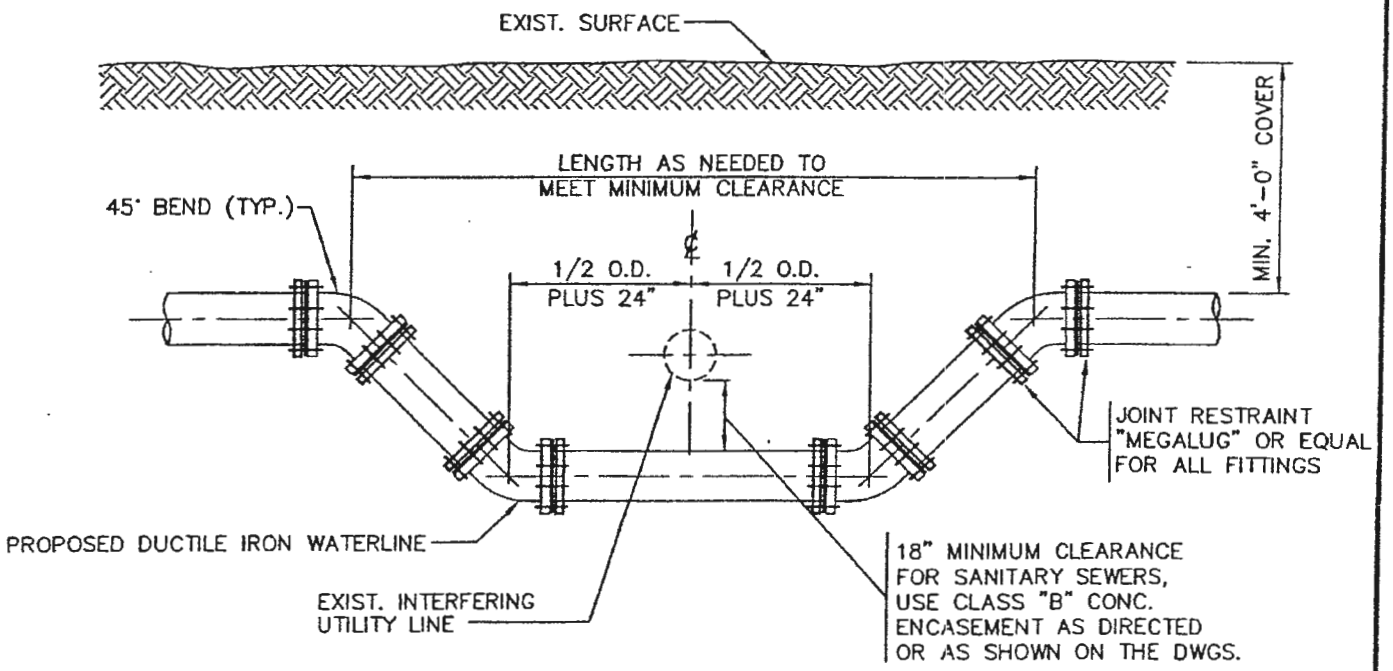
REVISED: FEBRUARY, 2001



NOTE:
PROVIDE 2'-0" MINIMUM HORIZONTAL AND VERTICAL CLEARANCE BETWEEN WATERLINE AND ALL EXISTING AND PROPOSED UTILITIES AND PIPELINES.

Milesburg Borough Water Authority	
STANDARD PIPE INTERFERING LAYING DETAIL	
03.dwg	NIRA Consulting Engineers, Inc.

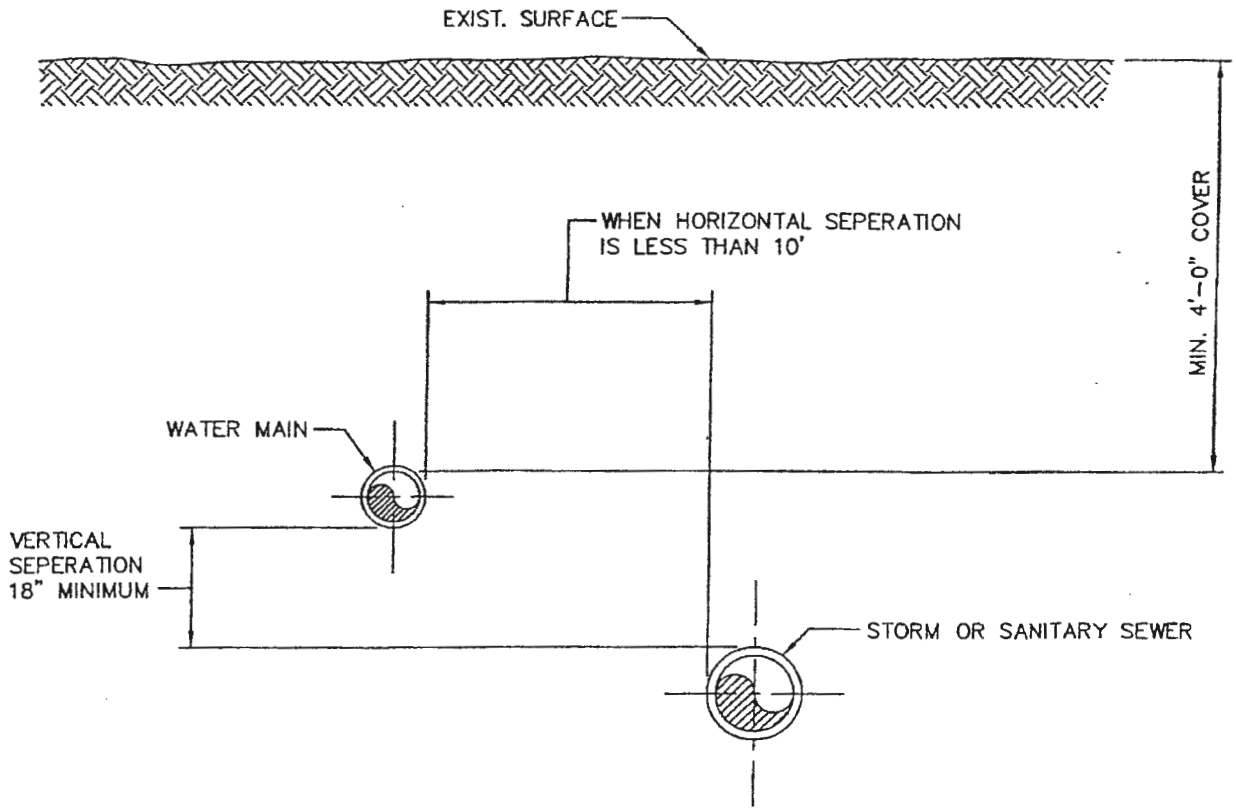
REVISED: FEBRUARY, 2001



NOTE:
PROVIDE 2'-0" MINIMUM HORIZONTAL AND VERTICAL CLEARANCE BETWEEN WATERLINE AND ALL EXISTING AND PROPOSED UTILITIES AND PIPELINES.

Milesburg Borough	Water Authority
STANDARD SPECIAL CONDITION UTILITY CROSSING	
04.dwg	NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001

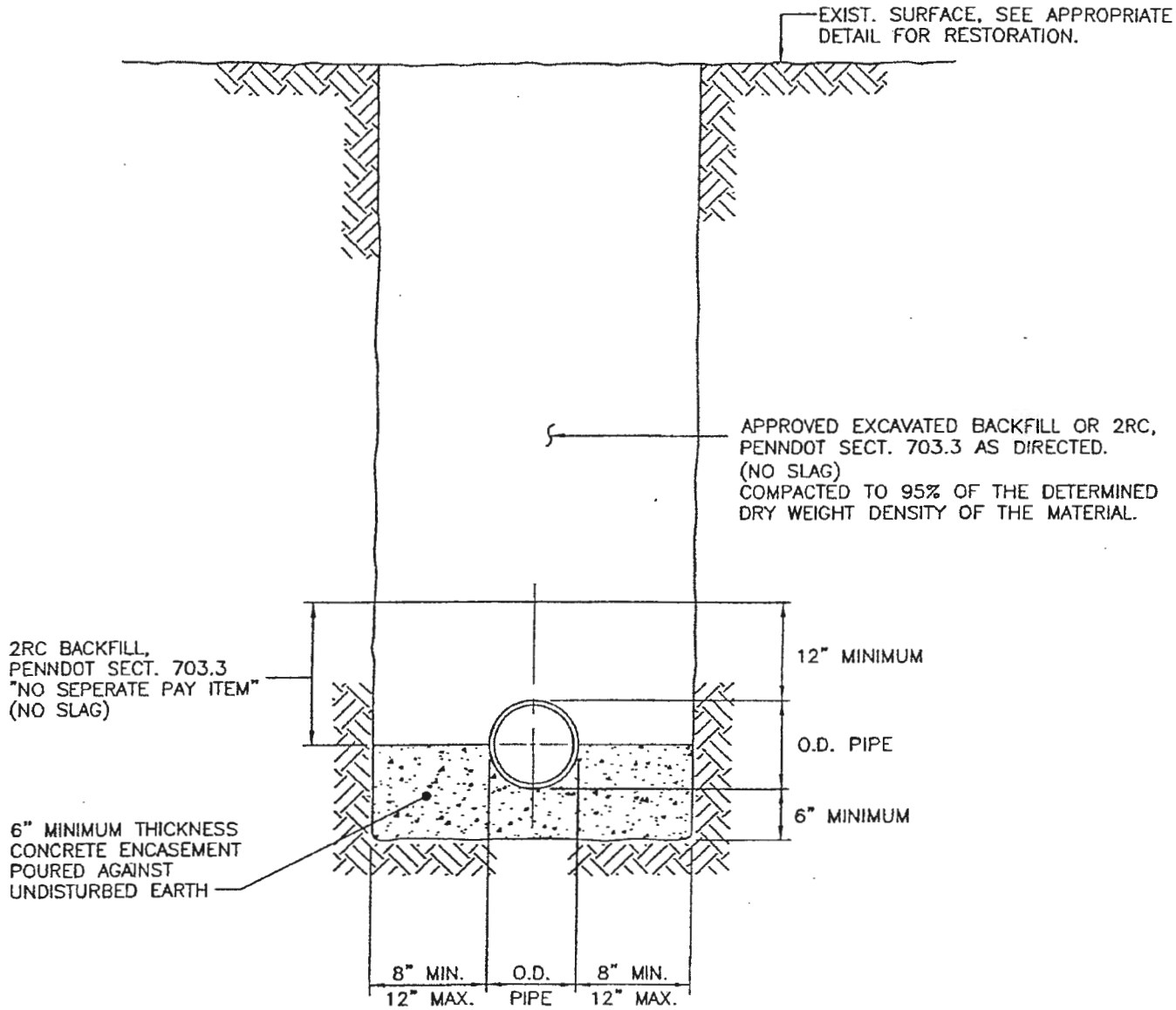


NOTE:

WHEN THE HORIZONTAL SEPERATION OF THE WATERLINE AND SEWERLINE IS LESS THAN 10', THE VERTICAL SEPERATION BETWEEN THE TOP (CROWN) OF THE SEWERLINE AND THE BOTTOM (INVERT) OF THE WATER MAIN SHALL BE AT LEAST 18". WATERLINE SHALL BE ENCASED IN CONCRETE WHERE CONDITIONS PREVENT LESS THAN 18" VERTICAL SEPERATION ABOVE THE SEWERLINE.

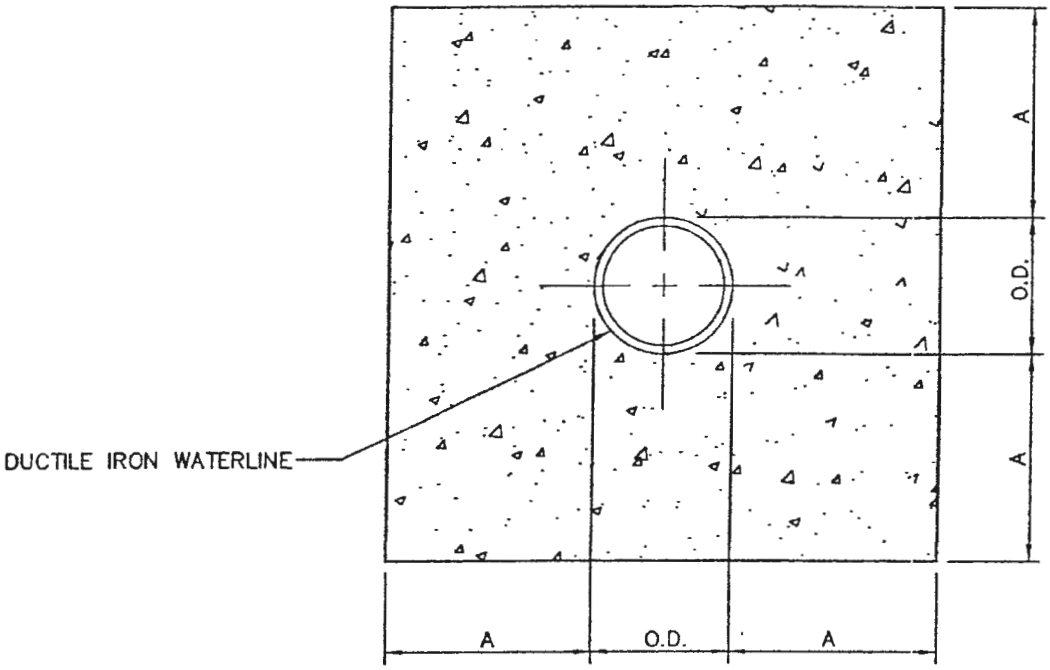
Milesburg Borough Water Authority	
STANDARD MINIMUM HORIZONTAL DISTANCES BETWEEN WATER AND SEWER LINES	
05.dwg	NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



Milesburg Borough	Water Authority
STANDARD CONCRETE CRADLE	
06.dwg	NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



PIPE SIZES (I.D.)	DIMENSION A
THRU 24"	8"
30"	15"
36"	18"
48"	24"

NOTES:

1. CONCRETE SHALL BE CLASS "B" 3000psi 28-DAY COMPRESSIVE STRENGTH.
2. O.D. = OUTSIDE DIAMETER OF PIPE.
3. LENGTH AS DIRECTED OR AS SHOWN ON THE DRAWINGS.

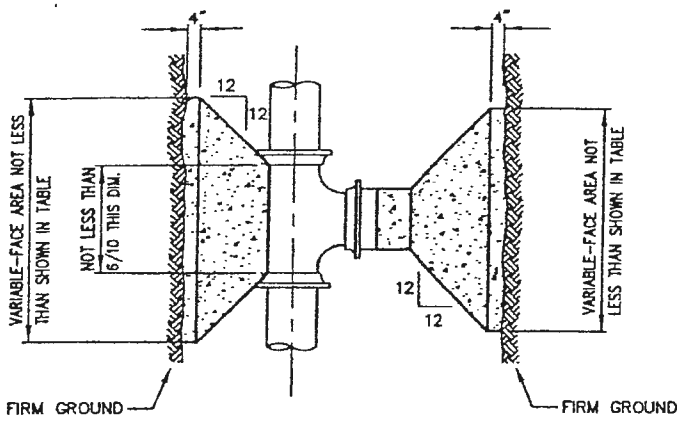
07.dwg

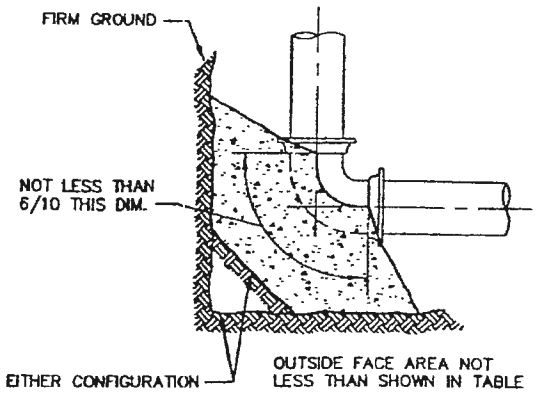
Milesburg Borough Water Authority

STANDARD CONCRETE ENCASEMENT DETAIL

NIRA Consulting Engineers, Inc.

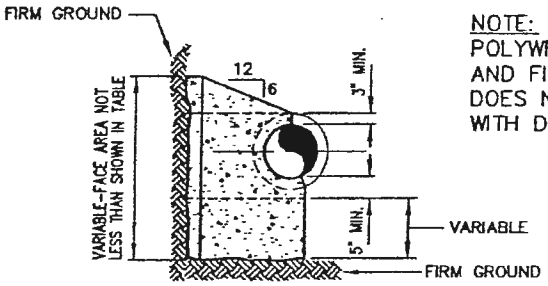
REVISED: FEBRUARY, 2001





BLOCKING FOR TEES AND PLUGS

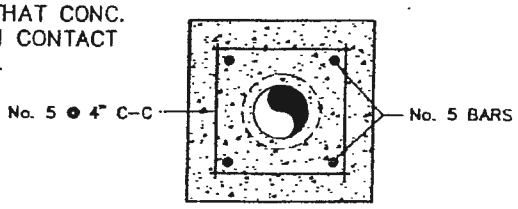
PLAN VIEW



NOTE:
POLYWRAP DUCTILE IRON PIPE AND FITTINGS SO THAT CONC. DOES NOT COME IN CONTACT WITH DUCTILE IRON.

BLOCKING FOR BENDS

PLAN VIEW



APPLICABLE TO TEES, WYES, AND BENDS

ALL TEES, WYES, CROSSES & PLUGS, AND BENDS OF 10" OR MORE SHALL BE BLOCKED AGAINST FIRM EARTH WITH CONCRETE.

NOTE:
EARTH PRESSURE FIGURED AT 4000 lbs/sq. ft. IF EARTH ENCOUNTERED WILL NOT WITH STAND THIS PRESSURE.
THE AREA OF THE BLOCK MUST BE INCREASED PROPORTIONATELY.

CALCULATIONS ARE BASED ON 225 lbs/sq. in. OR 150 lbs WORKING PRESSURE PLUS 50% WATER HAMMER FOR SIZES 4" TO 24" INCLUSIVE.

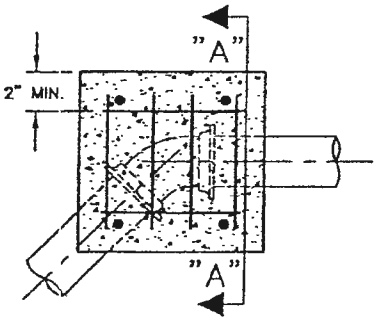
	PIPE SIZE (in.)	AREA SQ."	TOTAL FORCE (kips)	AREA OF BLOCK IN SQUARE FEET				
				TEES & PLUGS	90° BENDS	45° BENDS	22 1/2° BENDS	11 1/4° BENDS
	0-4	13	2.90	1.0	1.0	1.0	1.0	1.0
	6	29	6.50	1.7	2.3	1.3	1.0	1.0
	8	53	12.0	3.0	4.1	2.2	1.2	1.0
	10	82	19.0	4.8	6.3	3.4	1.8	1.0
	12	118	26.80	6.7	9.1	4.9	2.5	1.3
	14	168	37.80	9.5	12.3	6.7	3.4	1.8
	16	220	48.50	12.2	16.1	8.8	4.5	2.3
	18	276	82.20	15.6	20.4	11.0	5.6	2.9
	20	342	77.0	19.3	25.7	13.7	7.0	3.6
	24	486	109.50	27.4	36.3	19.7	10.0	5.2
*	30	706	84.80	21.2	30.5	18.5	8.4	4.4
*	36	1017	122.0	30.5	43.7	23.7	12.1	6.2

* FOR SIZES 30" AND 36" THE TABLE IS BASED ON 120 lbs/sq. in. OR 75 lbs. WORKING PRESSURE PLUS 50% WATER HAMMER.

CONTRACTOR RETAINS RESPONSIBILITY FOR ADEQUATE BLOCKING. THE TABULATION IS PROVIDED AS A CONVENIENCE TO AID IN THE CALCULATIONS OF REQUIRED AREA OF BLOCKING UNDER ACTUAL CONDITIONS. VALUES MUST BE INCREASED PROPORTIONATELY FOR TEST PRESSURES OVER 200psi AND BEARING CAPACITY LESS THAN 4000psf.

08.dwg

SECTION "A-A"



REINFORCED CONCRETE GRAVITY ANCHORS FOR VERTICAL BENDS

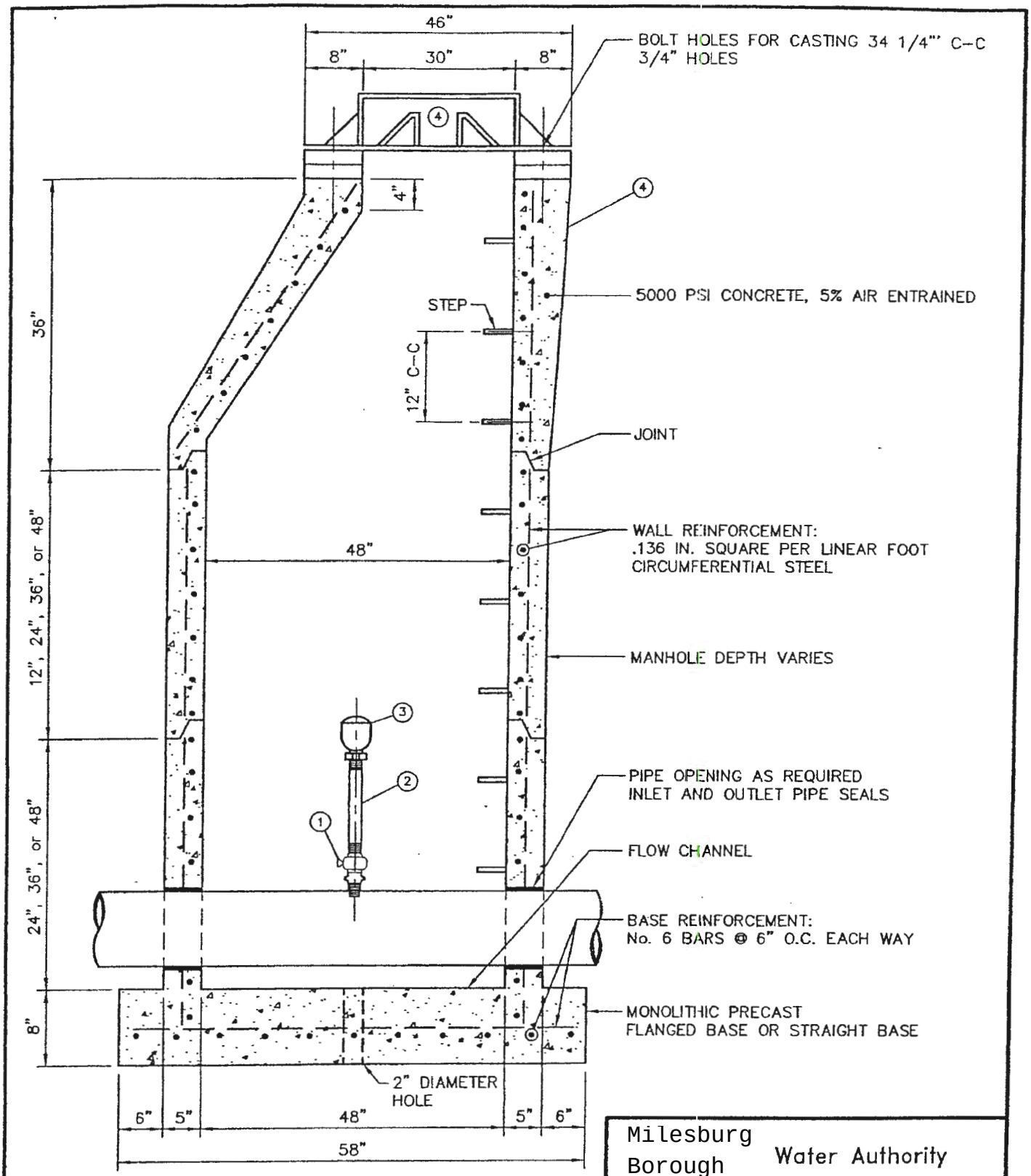
(A) WHERE INLET OR OUTLET IS HORIZONTAL. WEIGHT OF ANCHOR CAN BE DETERMINED BY MULTIPLYING AREA IN THE TABLE BY 4000lbs.
(B) OTHER CONDITIONS REQUIRE SPECIAL DESIGN.

Milesburg Borough Water Authority

STANDARD
DUCTILE IRON WATERLINE
THRUST BLOCKING DETAIL

NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



① 2" BALL-CORP. VALVE, MUELLER CAT. No. B-20045

② 2" x 8" BRASS NIPPLE

③ 2" COMBINATION AIR VALVE, VAL-MATIC CAT. No. 202C

④ 48" DIAMETER PRECAST CONCRETE MANHOLE, A.S.T.M., C-478 WITH CAST IRON FRAME AND COVER - ALLEGHENY FOUNDRY FRAME No. 109, COVER No. 110 LETTERED 'WATER'.

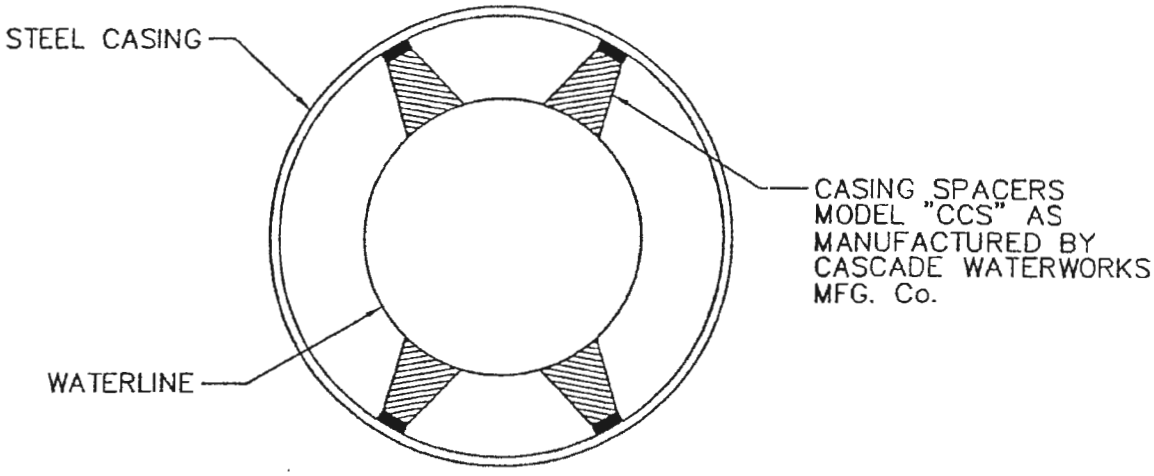
09.dwg

Milesburg Borough Water Authority

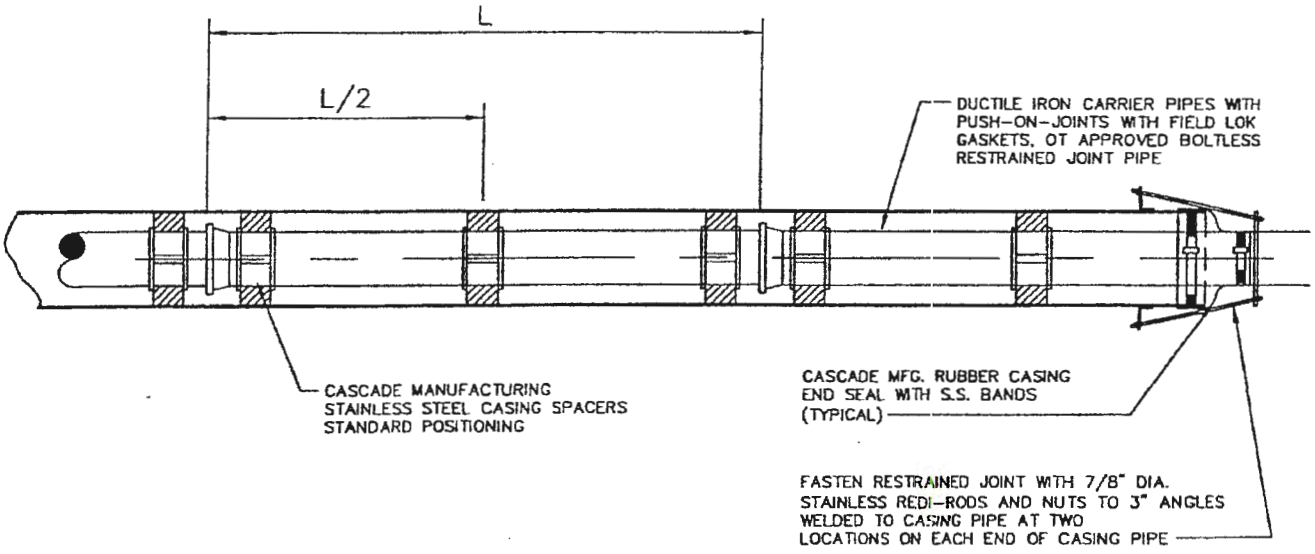
STANDARD 2" COMBINATION AIR VALVE ASSEMBLY DETAIL

NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



PIPE SIZE	6"	8"	10"	12"	14"	16"	18"	20"	24"
CASING SIZE	12"	16"	18"	24"	24"	30"	36"	36"	48"

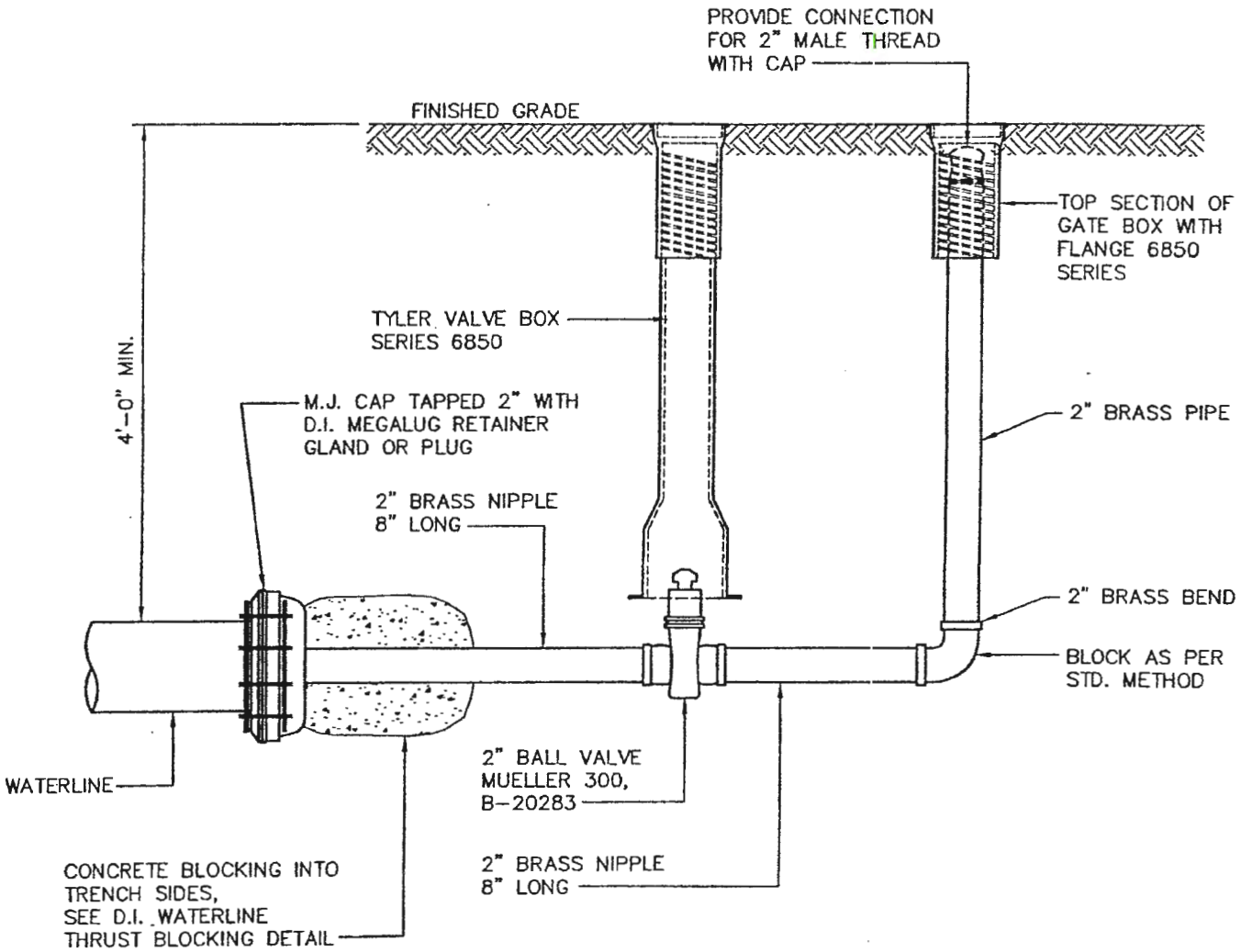


CARRIER PIPE SUPPORT AND CASING DETAIL

Milesburg Borough Water Authority
STANDARD STEEL CASING AND DUCTILE IRON OR PVC CARRIER PIPE INSTALLED BY BORING
NIRA Consulting Engineers, Inc.

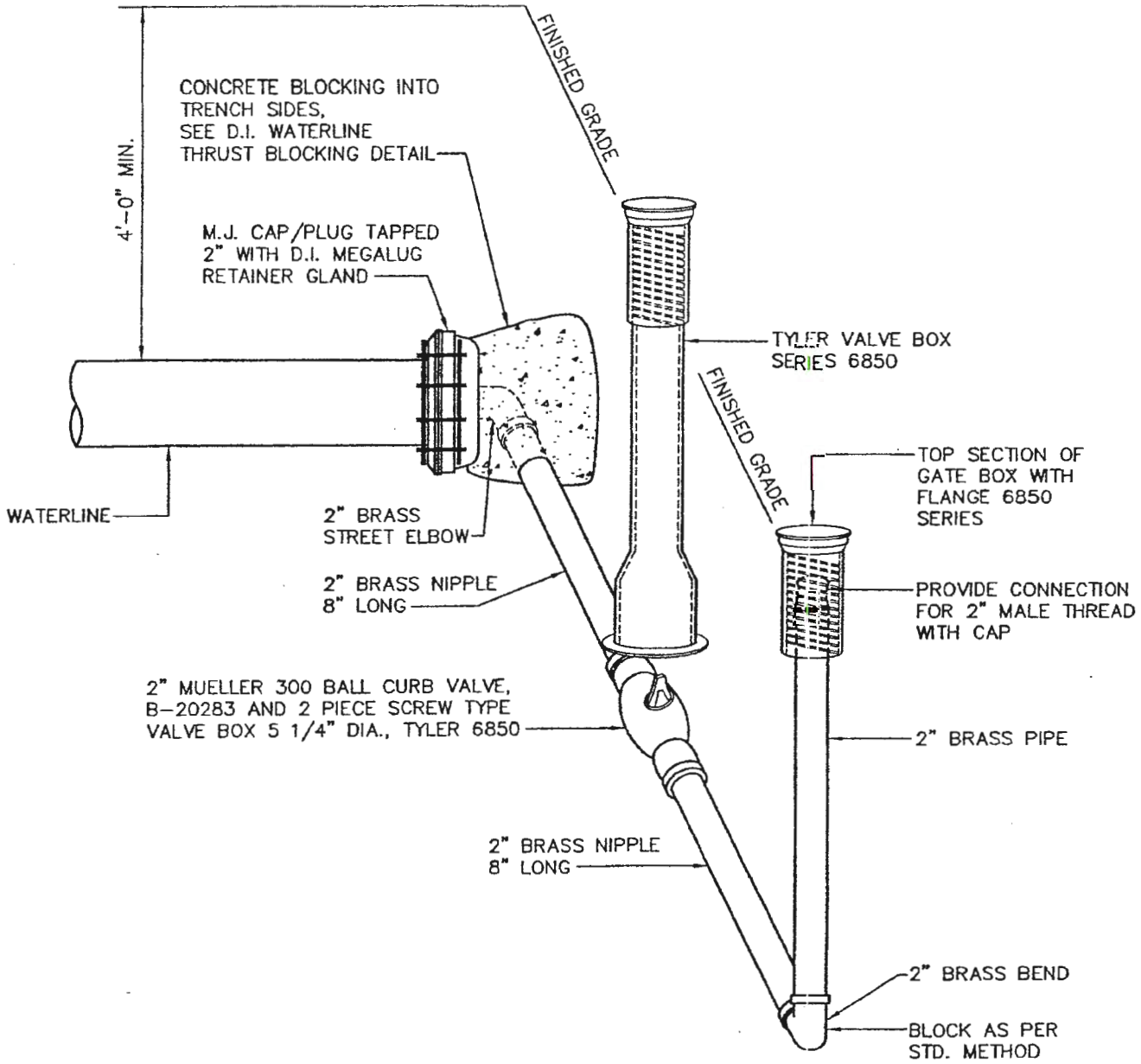
10.dwg

REVISED: FEBRUARY, 2001



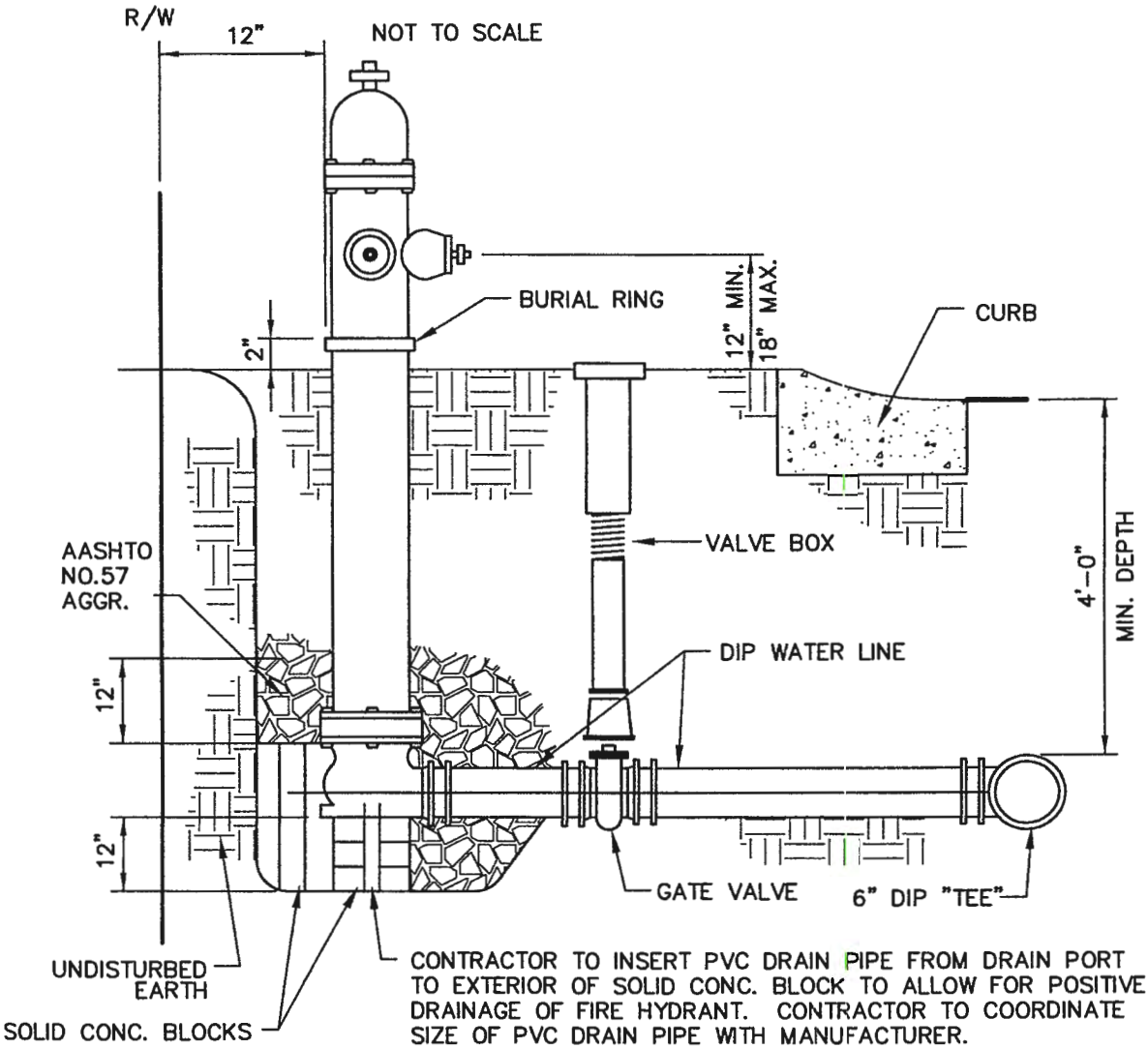
Milesburg Borough	Water Authority
TYPICAL BLOW-OFF ASSEMBLY	
11.dwg	NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



Milesburg Borough	Water Authority
TYPICAL ANGLE BLOW-OFF ASSEMBLY	
12.dwg	NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



SINGLE FIRE HYDRANT ASSEMBLY DETAIL

HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services
474 Windmere Drive
State College, PA 16801
(814) 238-7117
Fax (814) 238-7126
hrg@hrg-inc.com
www.hrg-inc.com

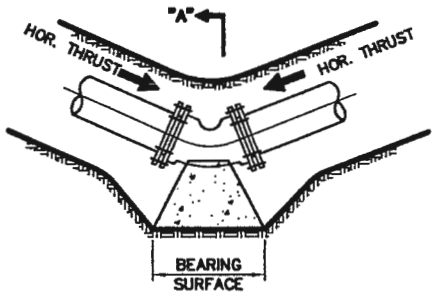
FIRE HYDRANT ASSEMBLY

PROJ. MGR. –	
DESIGN–	
CADD– MDS	
CHECKED–	
SCALE– N.T.S.	
DATE– 7-06	

DRAWING NO. 1

SHEET NO. 1 OF 3

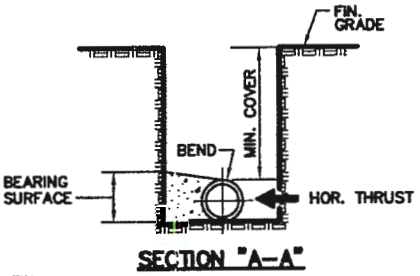
PROJECT 2253.000



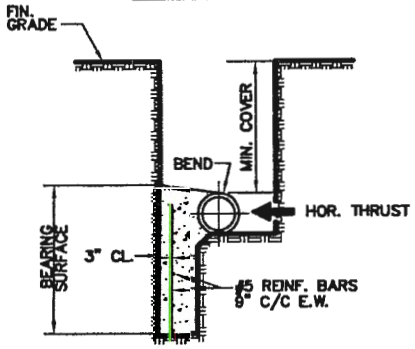
PLAN

VERTICAL THRUST DOWNWARD

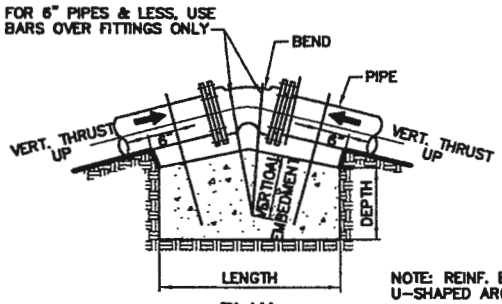
NOTES:
1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 P.S.I. AT THE END OF 28 DAYS.
2. ALL REINFORCING STEEL SHALL BE DEFORMED BARS.
3. NO COUPLINGS OR JOINTS SHALL BE COVERED WITH CONCRETE.



SECTION "A-A"



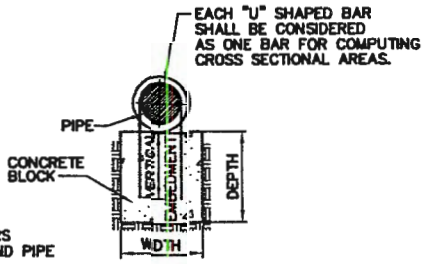
SECTION "A-A"



PLAN

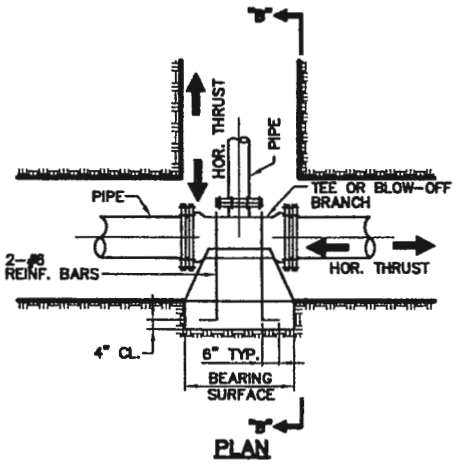
VERTICAL THRUST UPWARD

NOTE: REINF. BARS U-SHAPED AROUND PIPE

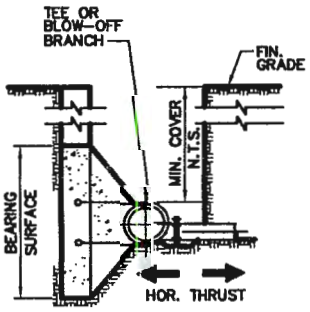


SECTION

VERTICAL THRUST UPWARD



PLAN



SECTION "B-B"

THRUST BLOCKING

NOT TO SCALE

HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services

474 Windmere Drive
State College, PA 16801
(814) 238-7117
Fax (814) 238-7126
hrg@hrg-inc.com
www.hrg-inc.com

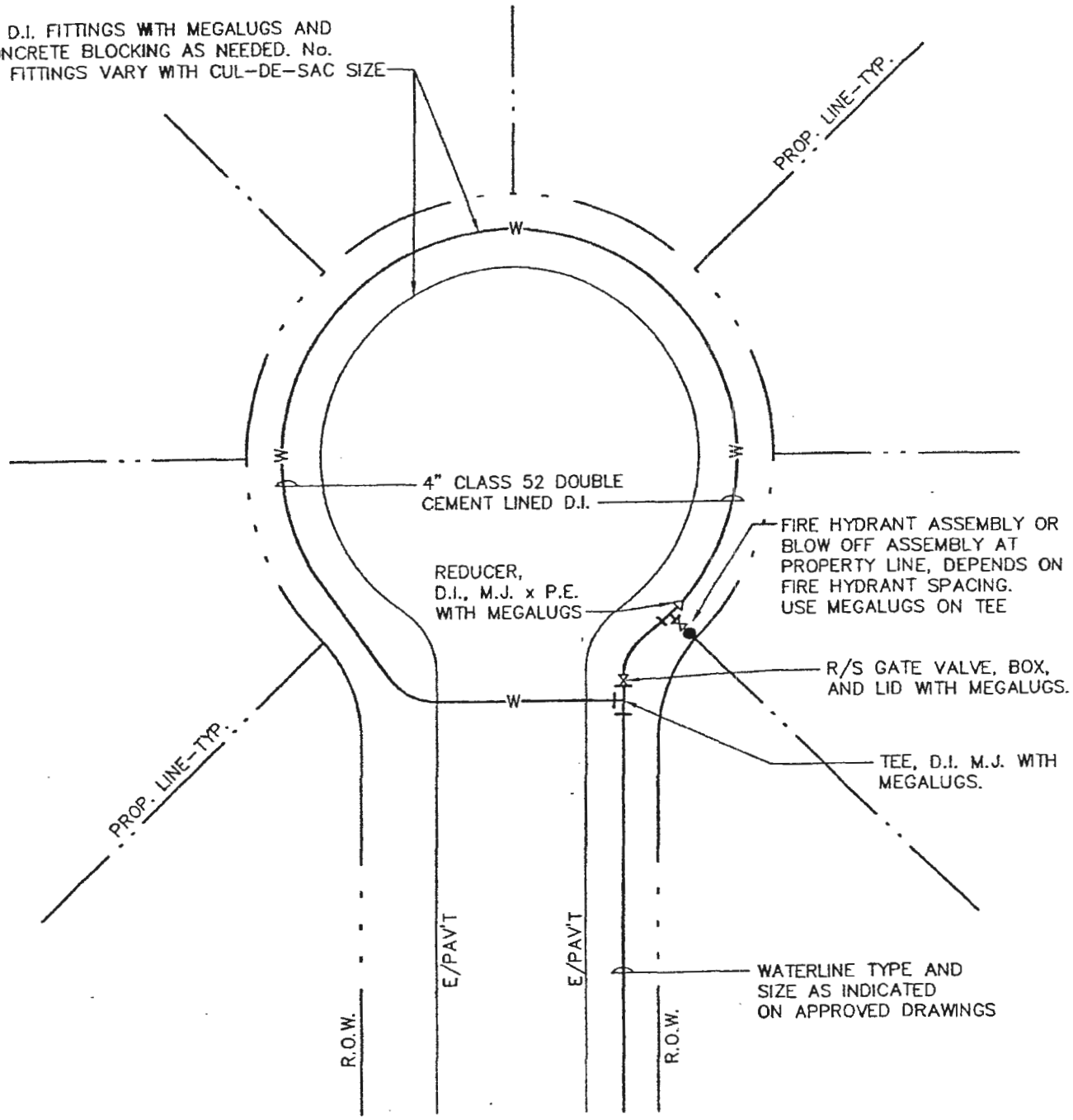
THRUST BLOCKING

PROJ. MGR. –	
DESIGN–	
CADD–	MDS
CHECKED–	
SCALE–	N.T.S.
DATE–	7-06

DRAWING NO. 3

SHEET NO. 3 OF 3

PROJECT 2253.000

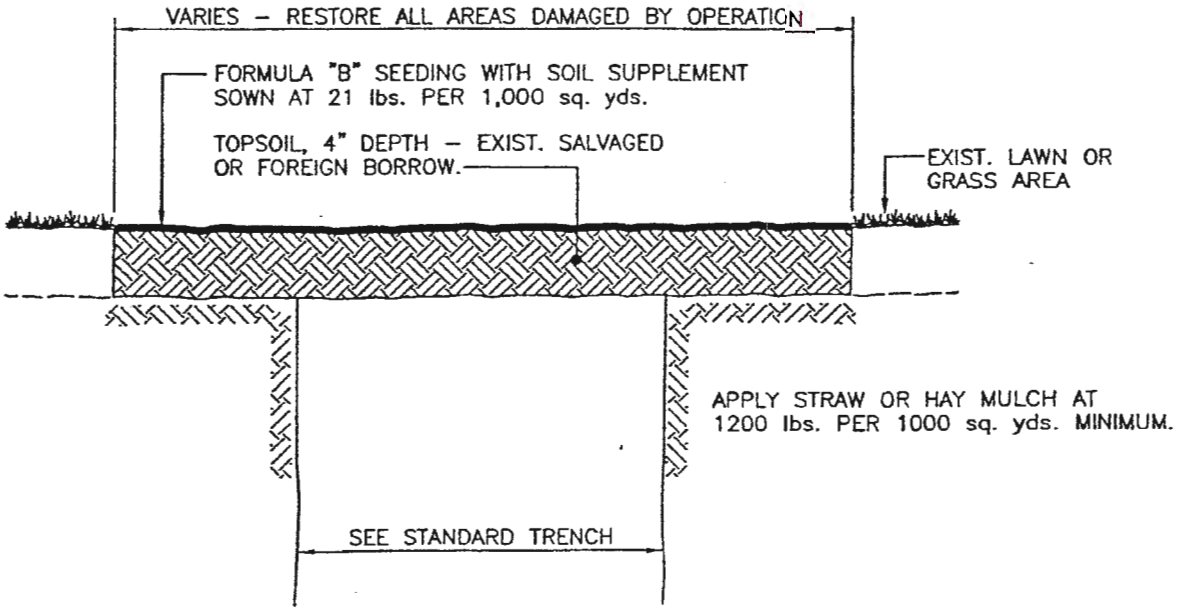


NOTE:
LINE SIZE FROM TEE TO FIRE HYDRANT OR BLOW OFF INCLUDING GATE VALVE AND INLET SIDE OF REDUCER TO BE TYPE AND SIZE INDICATED ON APPROVED DRAWINGS.

Milesburg Borough	Water Authority
TYPICAL WATERLINE INSTALLATION AT CUL-DE-SAC	
NIRA Consulting Engineers, Inc.	

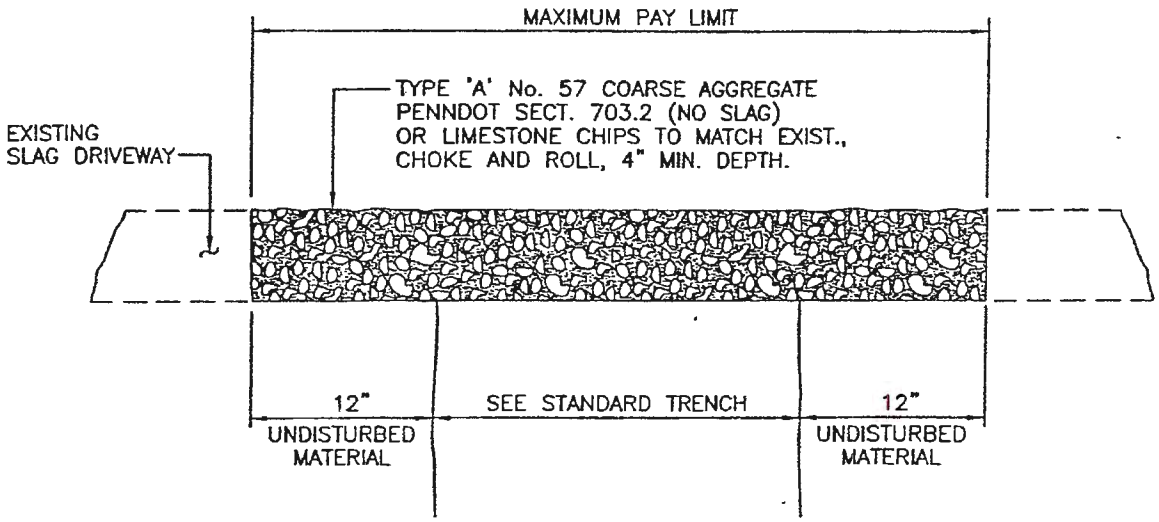
14.dwg

REVISED: FEBRUARY, 2001



Milesburg Borough	Water Authority
STANDARD LAWN AND GRASS AREA RESTORATION DETAIL	
15.dwg	NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



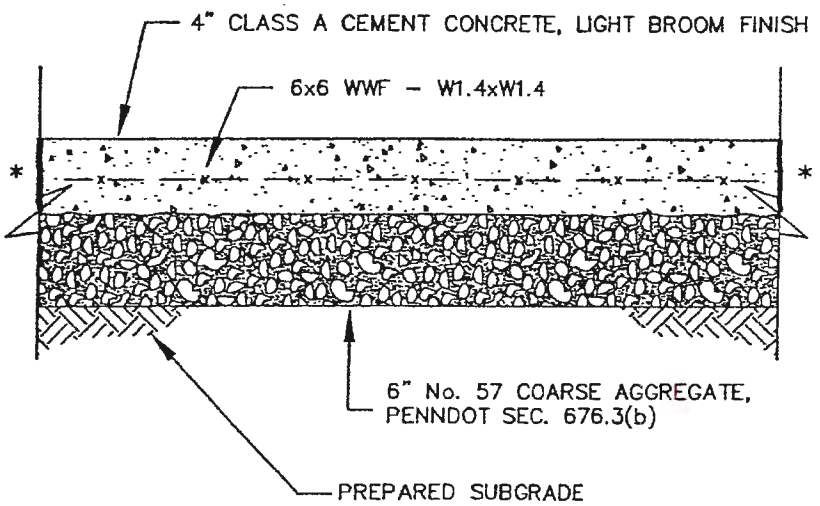
Milesburg Borough Water Authority

STANDARD AGGREGATE DRIVEWAY RESTORATION DETAIL

NIRA Consulting Engineers, Inc.

16.dwg

REVISED: FEBRUARY, 2001



NOTES:

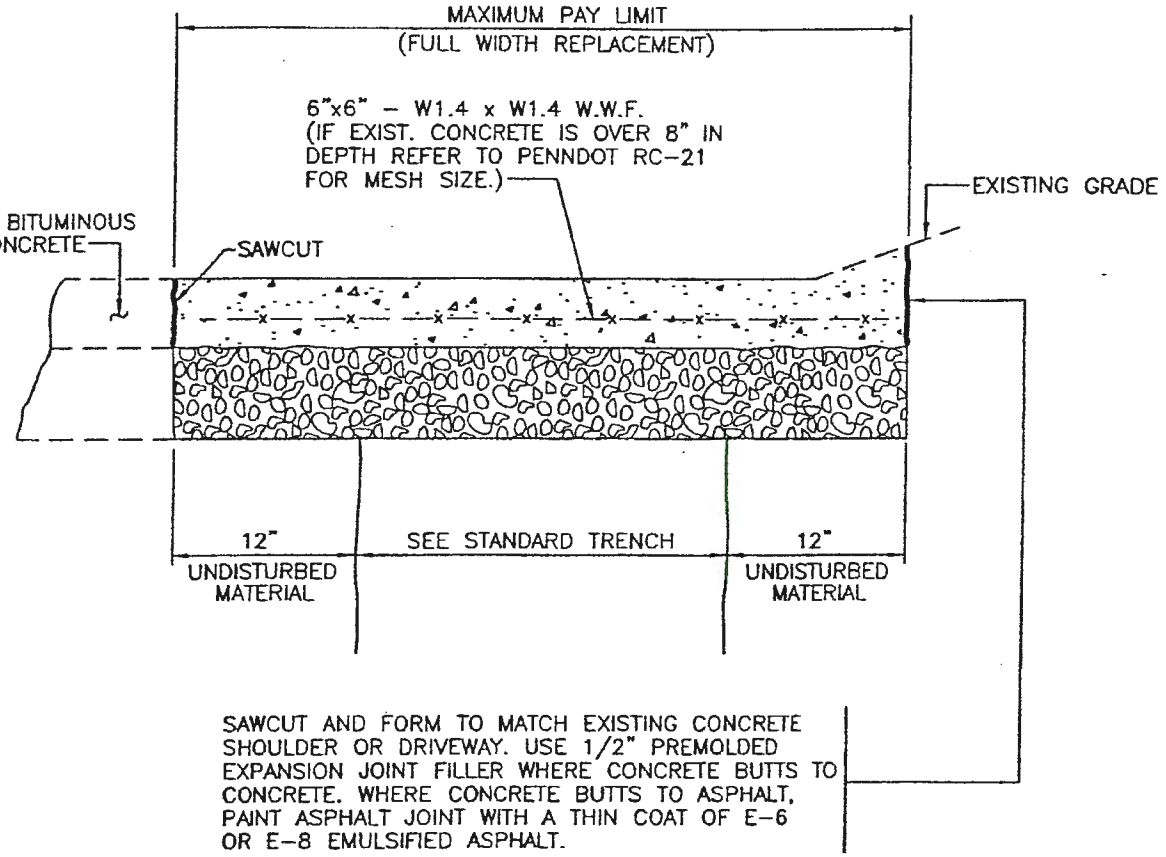
1. FORM OUTSIDE EDGES AND JOINTS WITH 1/4" RADIUS EDGING TOOL.
2. FORM TRANSVERSE DUMMY JOINTS @ 5 FOOT INTERVALS, APPROX. 1/8" WIDE AND AT LEAST 1 INCH DEEP.

*3. WHEN BUTTING INTO EXISTING BITUMINOUS, SAWCUT BITUMINOUS AND PAINT BITUMINOUS WITH A THIN COAT OF E-6 OR E-8 EMULSIFIED ASPHALT.

*4. WHEN BUTTING INTO EXISTING CONCRETE, SAWCUT CONCRETE AND USE 1/2" PREMOLDED EXPANSION FILLER FULL DEPTH OF SIDEWALK.

Milesburg Borough	Water Authority
STANDARD CONCRETE SIDEWALK REPLACEMENT DETAIL	
17.dwg	NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



NOTE:

TEMPORARY BITUMINOUS COLD PATCH SHALL BE USED IN ALL AREAS WHERE EXISTING RIGID-BASE PAVEMENT HAS BEEN REMOVED FOR INSTALLATION OF DUCTILE IRON WATER LINES OR SERVICE LINES. "NO SEPERATE PAY ITEM".

CLASS AA CEMENT CONCRETE, DEPTH TO MATCH EXISTING.

6" No. 2A COARSE AGGREGATE, PENNDOT SECT. 350

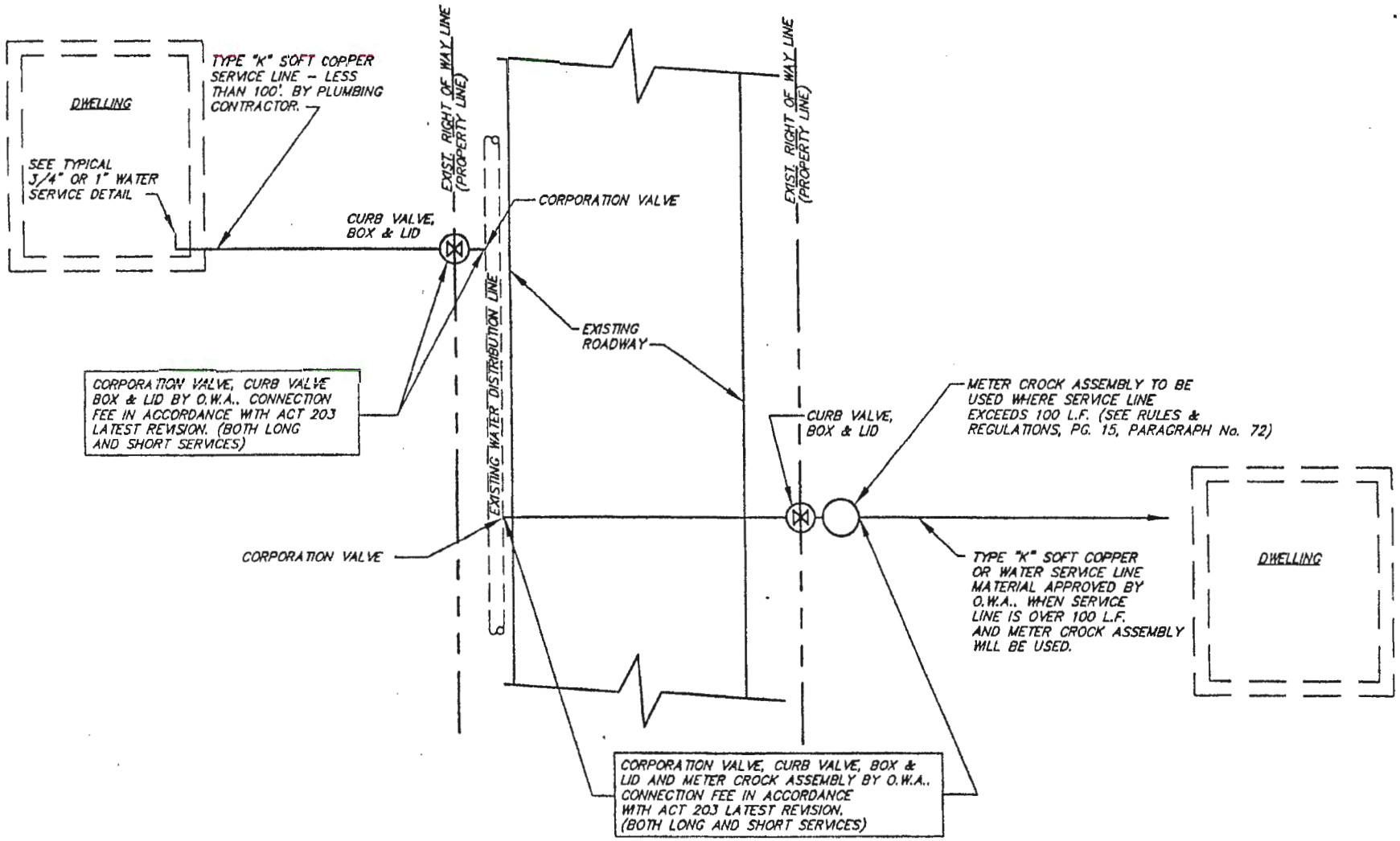
18.dwg

Milesburg Borough Water Authority

STANDARD CONCRETE SHOULDER AND DRIVEWAY RESTORATION DETAIL

NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001

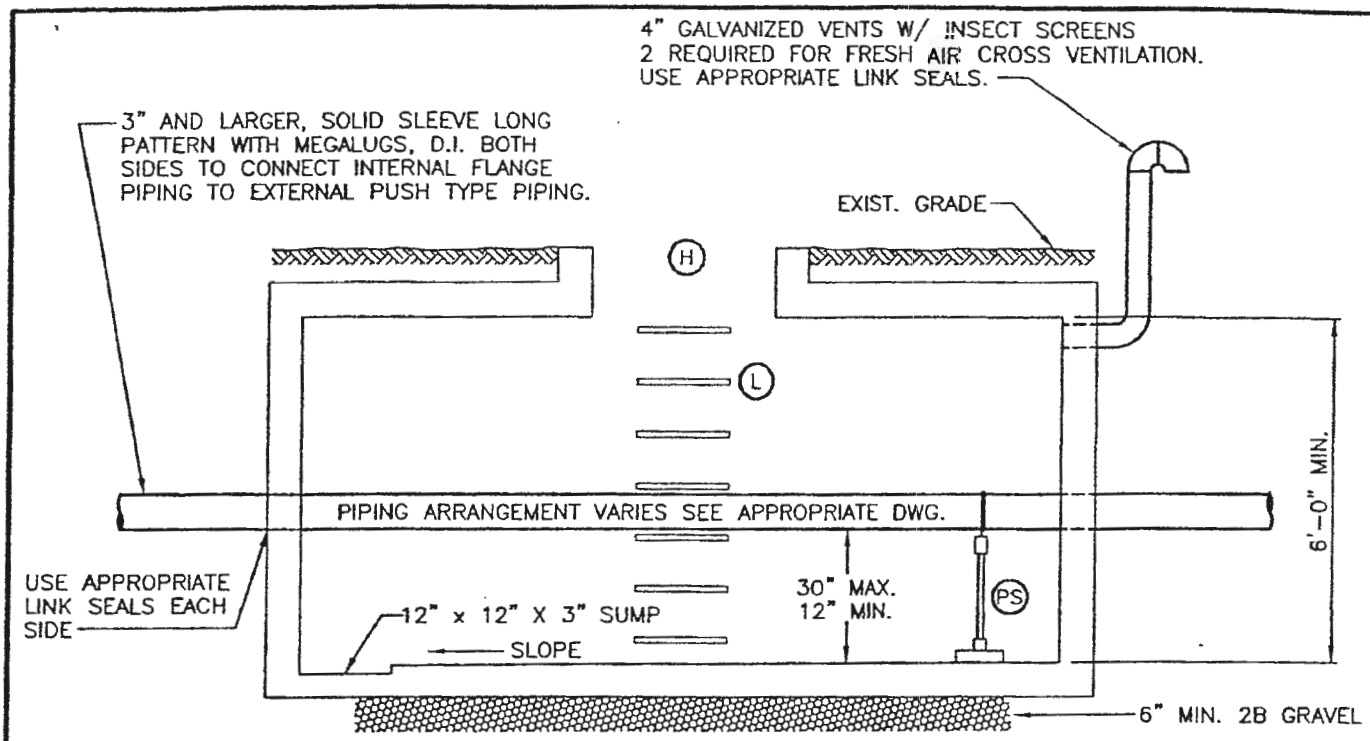


PLAN VIEW
N.T.S.

19.dwg

Milesburg Borough	Water Authority
STANDARD WATER SERVICE DETAIL PLAN VIEW	
NIRA Consulting Engineers, Inc.	

REVISED: FEBRUARY, 2001



(H): ALUMINUM ACCESS DOOR, BILCO. SIZE TO BE DETERMINED BY ENGINEER/ARCHITECT

(L): PSI-PF MANHOLE STEPS @ 12" C/C, M.A. INDUSTRIES INC. OR ALUMINUM LADDER WITH BILCO LADDER UP SAFETY POST.

(PS): "STANDON" ADJUSTABLE PIPE SUPPORTS, MODEL S-89. DRILL AND SET STAINLESS STEEL PIN, TOP AND BOTTOM AFTER ADJUSTING HEIGHT. NUMBER TO BE USED SHALL BE DESIGNED BY ENGINEER/ARCHITECT. (SEE PIPE SUPPORT DRAWING Oakmont 26.dwg)

SUMP: ADD 3" PVC DRAIN WHERE PIT DRAIN IS POSSIBLE. PIT SUMP LOCATION TO BE DETERMINED BY ENGINEER/ARCHITECT.

Milesburg Borough	Water Authority
ALL PITS WHERE METER SIZE EXCEEDS 1 1/2" - TYPICAL	
20.dwg	NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001

FIRE SERVICE

DCDCA:
DOUBLE CHECK DETECTOR CHECK BACKFLOW PREVENTER ASSEMBLY, TYPE AND SIZE TO BE DETERMINED BY THE ENGINEER/ARCHITECT AND APPROVED BY OAKMONT WATER AUTHORITY.
THE ASSEMBLY INCLUDES THE DCDC, GATE VALVES, BY-PASS WITH INVENSYS SR METER, DCV, BALL VALVES, AND PIPING.

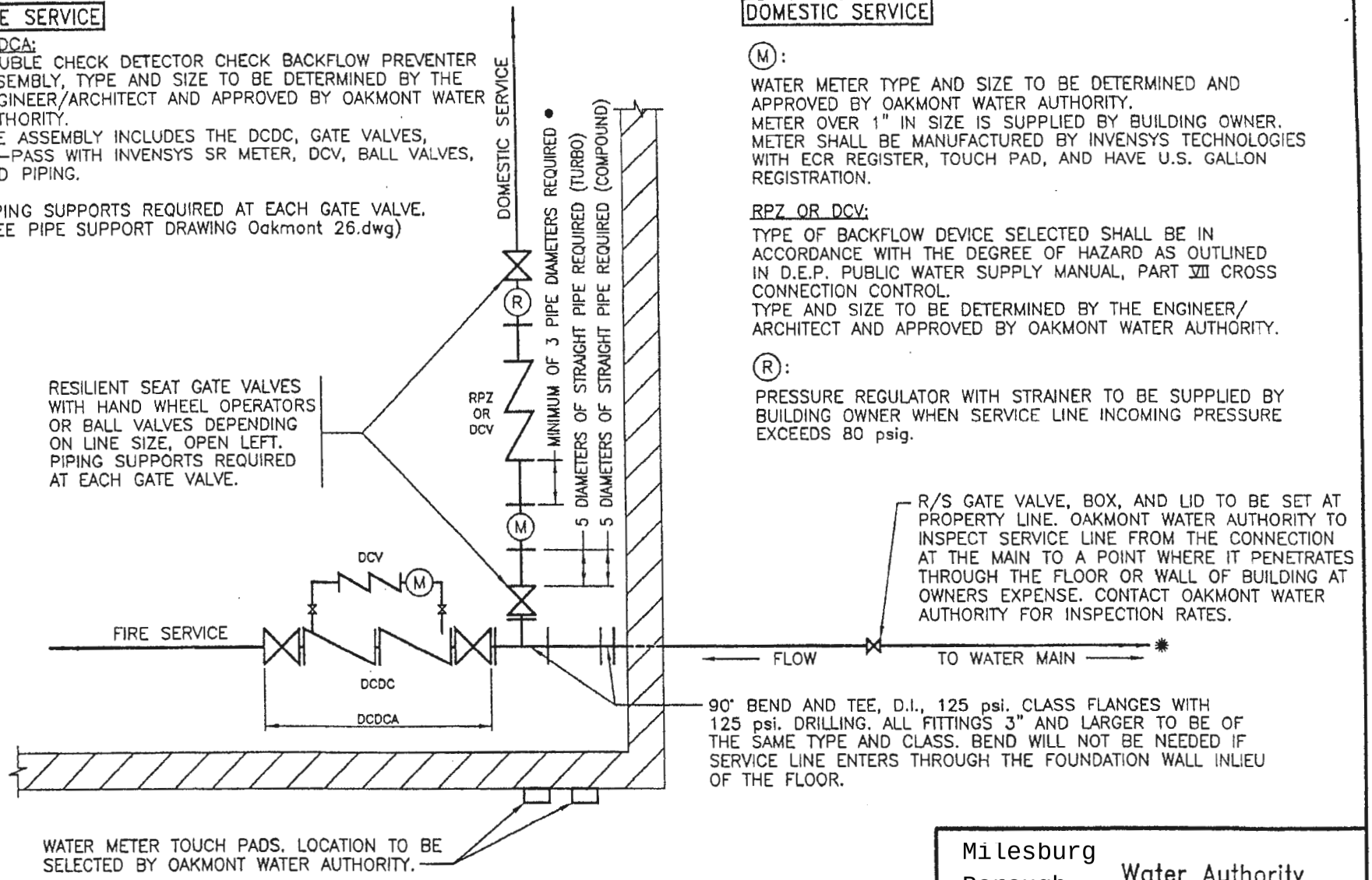
PIPING SUPPORTS REQUIRED AT EACH GATE VALVE.
(SEE PIPE SUPPORT DRAWING Oakmont 26.dwg)

DOMESTIC SERVICE

(M):
WATER METER TYPE AND SIZE TO BE DETERMINED AND APPROVED BY OAKMONT WATER AUTHORITY.
METER OVER 1" IN SIZE IS SUPPLIED BY BUILDING OWNER.
METER SHALL BE MANUFACTURED BY INVENSYS TECHNOLOGIES WITH ECR REGISTER, TOUCH PAD, AND HAVE U.S. GALLON REGISTRATION.

RPZ OR DCV:
TYPE OF BACKFLOW DEVICE SELECTED SHALL BE IN ACCORDANCE WITH THE DEGREE OF HAZARD AS OUTLINED IN D.E.P. PUBLIC WATER SUPPLY MANUAL, PART VII CROSS CONNECTION CONTROL.
TYPE AND SIZE TO BE DETERMINED BY THE ENGINEER/ ARCHITECT AND APPROVED BY OAKMONT WATER AUTHORITY.

(R):
PRESSURE REGULATOR WITH STRAINER TO BE SUPPLIED BY BUILDING OWNER WHEN SERVICE LINE INCOMING PRESSURE EXCEEDS 80 psig.



• UNWEIGHTED CHECK VALVES OR FITTINGS SHOULD NOT BE LOCATED CLOSER THAN THREE (3) PIPE DIAMETERS DOWNSTREAM OF THE METER.

✱ OAKMONT WATER AUTHORITY PERSONNEL TO CUT EXISTING WATER MAIN AND PROVIDE TEE, GATE VALVES, BOXES, AND LIDS, SOLID SLEEVE AND D.I. PIPE AT THE EXPENSE OF THE BUILDING OWNER IN ACCORDANCE WITH THE CONNECTION FEE, ACT 203 LATEST REVISION.

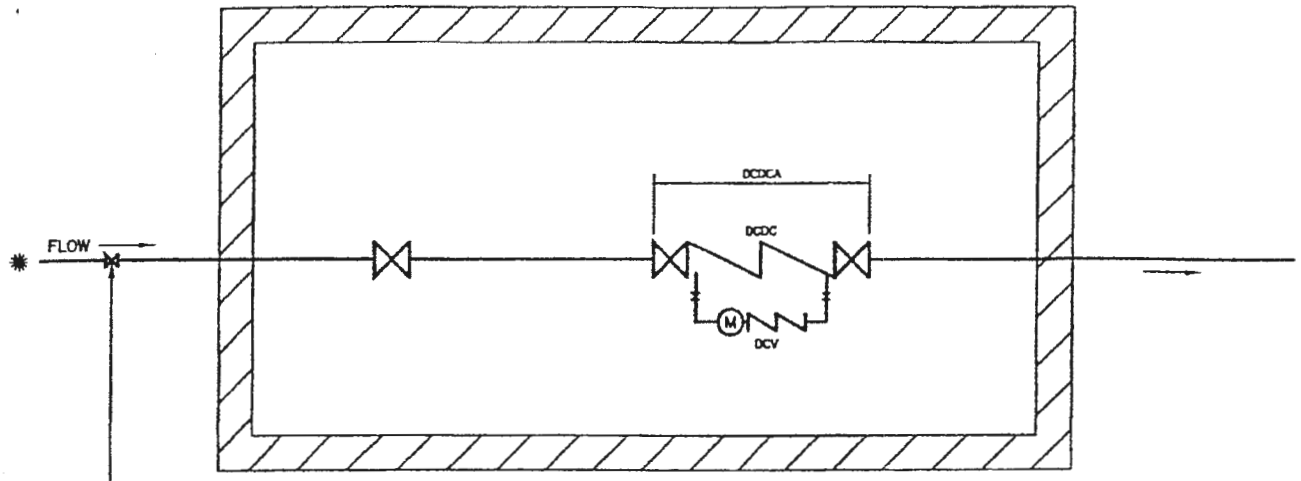
21.dwg

Milesburg Borough Water Authority

COMBINATION FIRE AND DOMESTIC MECHANICAL ROOM – TYPICAL

NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



R/S GATE VALVE, BOX, AND LID TO BE SET AT PROPERTY LINE. OAKMONT WATER AUTHORITY TO INSPECT SERVICE LINE FROM THE CONNECTION AT THE MAIN TO THE GATE VALVE AT THE PROPERTY LINE AND PERFORM A FINAL INTERNAL PIT INSPECTION, ALL AT THE OWNERS EXPENSE.
CONTACT OAKMONT WATER AUTHORITY FOR INSPECTION RATES.

DCDCA — DOUBLE CHECK DETECTOR CHECK BACKFLOW PREVENTER ASSEMBLY, TYPE AND SIZE TO BE DETERMINED BY THE ENGINEER/ARCHITECT AND APPROVED BY OAKMONT WATER AUTHORITY. THE ASSEMBLY INCLUDES THE DCDC, GATE VALVES, BY-PASS WITH INVENSYS SR METER, DCV, BALL VALVES, AND PIPING. ASSEMBLY SHALL BE IN ACCORDANCE WITH D.E.P. PUBLIC WATER SUPPLY MANUAL, PART VII CROSS CONNECTION CONTROL.

TEES AND BENDS TO BE D.I. 125 psi CLASS FLANGES WITH 125 psi DRILLING.

GENERAL NOTES:

PRECAST CONCRETE METER PIT DIMENSIONS WILL VARY DEPENDING ON DIMENSION OF SPECIFIED EQUIPMENT AND SHALL BE REINFORCED TO H20 LOADING AND 300 PSF ROOF LOAD. DESIGN OF PRECAST METER PIT SHALL BE SUBMITTED TO THE OAKMONT WATER AUTHORITY FOR REVIEW AND APPROVAL. (SEE PIT DETAIL DRAWING Oakmont 20.dwg)

ALL PIPING TO BE CLASS 52, DOUBLE CEMENT LINED D.I. PIPE. INTERNAL PIPING TO BE FLANGED AND EXTERNAL PIPING TO BE PUSH ON TYPE.

THE METER PIT SHALL MEET THE CONFINED SPACE REQUIREMENTS OF THE U.S. DEPT. OF LABOR, OSHA. AS DESCRIBED IN CFR 29, LATEST EDITION.

PIPING SUPPORTS REQUIRED AT EACH GATE VALVE, 90° BENDS ON BY-PASS AND APPURTENANCES. (SEE PIPE SUPPORT DRAWING Oakmont 26.dwg)

* OAKMONT WATER AUTHORITY PERSONNEL TO CUT EXISTING WATER MAIN AND PROVIDE TEE, GATE VALVES, BOXES, AND LIDS, SOLID SLEEVE AND D.I. PIPE AT THE EXPENSE OF THE BUILDING OWNER IN ACCORDANCE WITH THE CONNECTION FEE, ACT 203 LATEST REVISION.

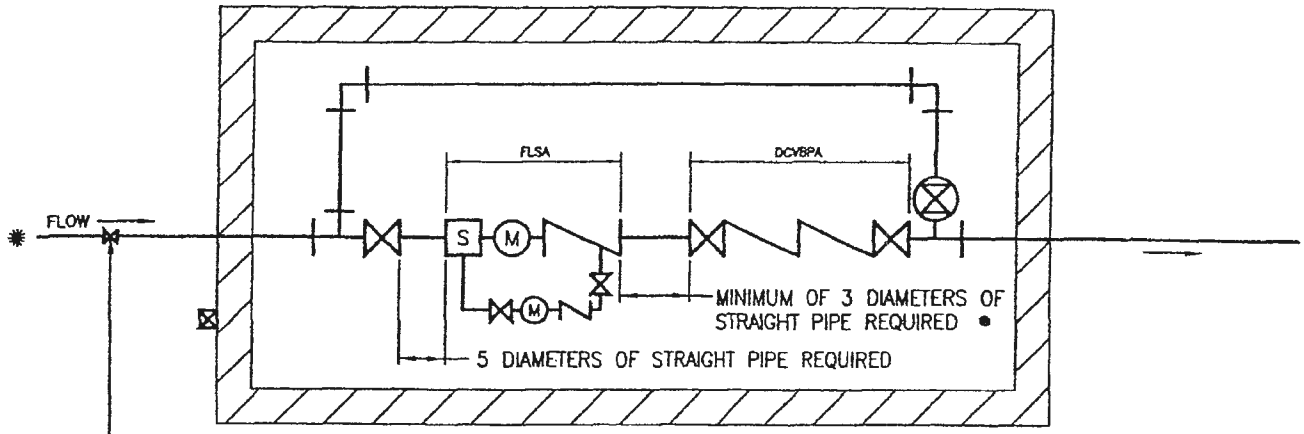
22.dwg

Milesburg Borough Water Authority

4" THRU 10" PIT FIRE SERVICE - TYPICAL

NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



R/S GATE VALVE, BOX, AND LID TO BE SET AT PROPERTY LINE. OAKMONT WATER AUTHORITY TO INSPECT SERVICE LINE FROM THE CONNECTION AT THE MAIN TO THE GATE VALVE AT THE PROPERTY LINE AND PERFORM A FINAL INTERNAL PIT INSPECTION, ALL AT THE OWNERS EXPENSE.
CONTACT OAKMONT WATER AUTHORITY FOR INSPECTION RATES.

FLSA — FIRE LINE SERVICE ASSEMBLY, INVENSYS TECHNOLOGIES, INC., SIZE TO BE DETERMINED BY THE ENGINEER/ARCHITECT AND APPROVED BY OAKMONT WATER AUTHORITY. THE ASSEMBLY INCLUDES A U.L. LISTED FIRE SERVICE STRAINER; 'W' SERIES TURBO METER, DETECTOR CHECK VALVE, SR OR TURBO (LOW FLOW) METER, CHECK VALVES, BALL VALVES AND APPURTENANCES. BOTH METERS SHALL HAVE TRPL REGISTERS, TOUCH PADS, AND U.S. GALLON REGISTRATION.

DCVBPA — DOUBLE CHECK VALVE BACKFLOW PREVENTER ASSEMBLY, TYPE AND SIZE TO BE DETERMINED BY THE ENGINEER/ARCHITECT AND APPROVED BY OAKMONT WATER AUTHORITY.
THE ASSEMBLY INCLUDES R/S GATE VALVES AND DOUBLE CHECK VALVE. ASSEMBLY SHALL BE IN ACCORDANCE WITH D.E.P. PUBLIC WATER SUPPLY MANUAL, PART VII CROSS CONNECTION CONTROL.

• UNWEIGHTED CHECK VALVES OR FITTINGS SHOULD NOT BE LOCATED CLOSER THAN THREE (3) PIPE DIAMETERS DOWNSTREAM OF THE METER.

BY–PASS VALVE TO BE RESILIENT SEAT GATE VALVE WITH HAND WHEEL OPERATOR OR WING STOP STYLE BALL VALVE DEPENDING ON LINE SIZE, OPEN LEFT. BY–PASS VALVE TO BE LOCKED OFF BY OAKMONT WATER AUTHORITY.

TEES AND BENDS TO BE D.I. 125 psi CLASS FLANGES WITH 125 psi DRILLING.

GENERAL NOTES:

PRECAST CONCRETE METER PIT DIMENSIONS WILL VARY DEPENDING ON DIMENSION OF SPECIFIED EQUIPMENT AND SHALL BE REINFORCED TO H20 LOADING AND 300 PSF ROOF LOAD. DESIGN OF PRECAST METER PIT SHALL BE SUBMITTED TO THE OAKMONT WATER AUTHORITY FOR REVIEW AND APPROVAL. (SEE PIT DETAIL DRAWING Oakmont 20.dwg)

ALL PIPING TO BE CLASS 52, DOUBLE CEMENT LINED D.I. PIPE. INTERNAL PIPING TO BE FLANGED AND EXTERNAL PIPING TO BE PUSH ON TYPE.

THE METER PIT SHALL MEET THE CONFINED SPACE REQUIREMENTS OF THE U.S. DEPT. OF LABOR, OSHA. AS DESCRIBED IN CFR 29, LATEST EDITION.

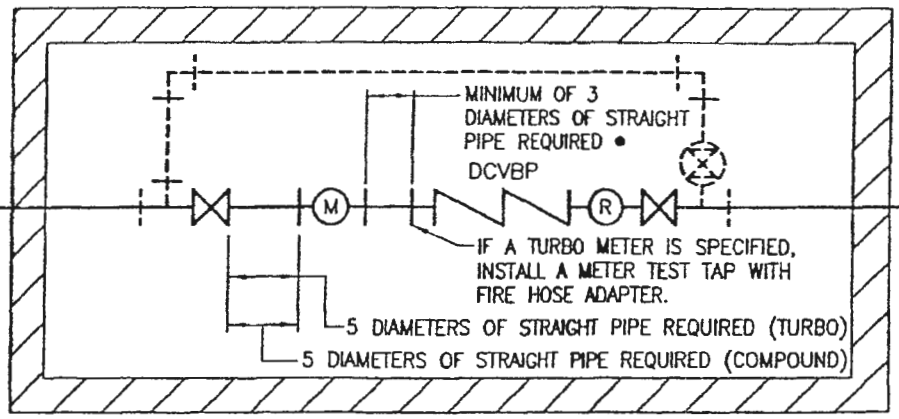
PIPING SUPPORTS REQUIRED AT EACH GATE VALVE, 90° BENDS ON BY–PASS AND APPURTENANCES. (SEE PIPE SUPPORT DRAWING Oakmont 26.dwg)

* OAKMONT WATER AUTHORITY PERSONNEL TO CUT EXISTING WATER MAIN AND PROVIDE TEE, GATE VALVES, BOXES, AND LIDS, SOLID SLEEVE AND D.I. PIPE AT THE EXPENSE OF THE BUILDING OWNER IN ACCORDANCE WITH THE CONNECTION FEE, ACT 203 LATEST REVISION.

23.dwg

Milesburg Borough Water Authority
4" THRU 10" PIT COMBINATION FIRE AND DOMESTIC SERVICE WITH UNMETERED BY–PASS – TYPICAL
NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



✱ 1 1/2" AND 2" BALL VALVE, BOX, AND LID BY OAKMONT WATER AUTHORITY. 3" AND LARGER R/S GATE VALVE, BOX, AND LID TO BE SET AT PROPERTY LINE, OAKMONT WATER AUTHORITY TO INSPECT SERVICE LINE FROM THE CONNECTION AT THE MAIN TO THE GATE VALVE AT THE PROPERTY LINE AND PERFORM A FINAL INTERNAL PIT INSPECTION, ALL AT THE OWNERS EXPENSE. CONTACT OAKMONT WATER AUTHORITY FOR INSPECTION RATES.

(M) COLD WATER DISPLACEMENT METER, INVENSYS TECHNOLOGIES, INC. TYPE AND SIZE TO BE DETERMINED BY THE ENGINEER/ARCHITECT AND APPROVED BY OAKMONT WATER AUTHORITY. METER SHALL HAVE TRPL REGISTER, TOUCH PAD, AND HAVE U.S. GALLON REGISTRATION.

DCVBP DCVBP DOUBLE CHECK VALVE BACKFLOW PREVENTER, TYPE AND SIZE TO BE DETERMINED BY ENGINEER/ARCHITECT AND APPROVED BY OAKMONT WATER AUTHORITY. ASSEMBLY SHALL BE IN ACCORDANCE WITH D.E.P. PUBLIC WATER SUPPLY MANUAL, PART VII CROSS CONNECTION CONTROL.

• UNWEIGHTED CHECK VALVES OR FITTINGS SHOULD NOT BE LOCATED CLOSER THAN THREE (3) PIPE DIAMETERS DOWNSTREAM OF THE METER.

(R) PRESSURE REGULATOR WITH STRAINER TO BE INSTALLED WHEN SERVICE LINE INCOMMING PRESSURE EXCEEDS 80 psig.

BY-PASS VALVE TO BE RESILIENT SEAT GATE VALVE WITH HAND WHEEL OPERATOR OR WING STOP STYLE BALL VALVE DEPENDING ON LINE SIZE, OPEN LEFT. BY-PASS VALVE TO BE LOCKED OFF BY OAKMONT WATER AUTHORITY.

TEES AND BENDS 1 1/2" THRU 3" IN SIZE SHALL BE BRASS, 3" AND LARGER 125 psi CLASS FLANGES WITH 125 psi DRILLING.

GENERAL NOTES:

PRECAST CONCRETE METER PIT DIMENSIONS WILL VARY DEPENDING ON DIMENSION OF SPECIFIED EQUIPMENT AND SHALL BE REINFORCED TO H20 LOADING AND 300 PSF ROOF LOAD. DESIGN OF PRECAST METER PIT SHALL BE SUBMITTED TO THE OAKMONT WATER AUTHORITY FOR REVIEW AND APPROVAL. (SEE PIT DETAIL DRAWING Oakmont 20.dwg)

ALL EXTERNAL PIT PIPING 1 1/2" THRU 3" TO BE TYPE 'K' SOFT COPPER, 3" AND LARGER TO BE CLASS 52, DOUBLE CEMENT LINED D.I. PIPE

IN SOME CASES, 1 1/2" AND 2" MUELLER/McCULLOUGH CUSTOM METER BOXES MAYBE USED WITH APPROVAL OF OAKMONT WATER AUTHORITY. SPACE REQUIREMENTS WILL NOT PERMIT THEIR USE WHEN A REGULATOR OR DCVBP IS REQUIRED.

THE METER PIT SHALL MEET THE CONFINED SPACE REQUIREMENTS OF THE U.S. DEPT. OF LABOR, OSHA AS DESCRIBED IN CFR 29, LATEST EDITION.

PIPING SUPPORTS REQUIRED AT EACH GATE VALVE, 90° BENDS ON BY-PASS AND APPURTENANCES. (SEE PIPE SUPPORT DRAWING Oakmont 26.dwg)

✱ OAKMONT WATER AUTHORITY PERSONNEL TO TAP EXIST. WATER MAIN AND PROVIDE ALL MATERIALS FOR 1 1/2" AND 2" CONNECTIONS FROM MAIN TO CURB VALVE AT PROPERTY LINE AT THE EXPENSE OF THE BUILDING OWNER IN ACCORDANCE WITH THE CONNECTION FEE, ACT 203 LATEST REVISION.

OAKMONT WATER AUTHORITY PERSONNEL TO CUT EXISTING WATER MAIN AND PROVIDE TEE, GATE VALVES, BOXES, AND LIDS, SOLID SLEEVE AND D.I. PIPE 3" AND LARGER AT THE EXPENSE OF THE BUILDING OWNER IN ACCORDANCE WITH THE CONNECTION FEE, ACT 203 LATEST REVISION. ALL OTHER PIPING AND APPURTENANCES FROM THE POINT OF CONNECTION BY THE OWNER.

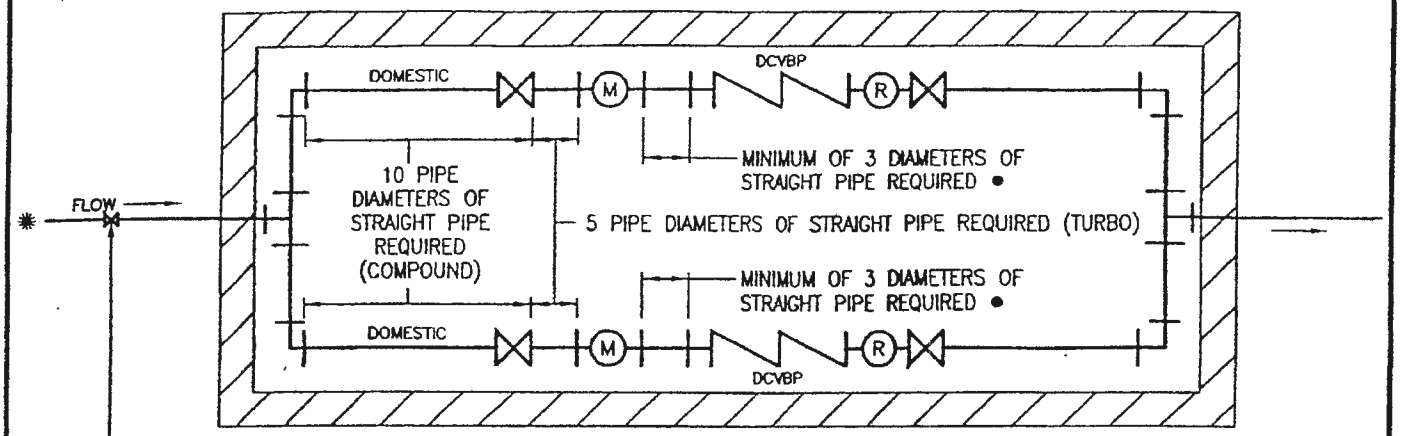
24.dwg

Milesburg Borough Water Authority

1 1/2" AND LARGER PIT DOMESTIC SERVICE WITH OR WITHOUT AN UNMETERED BY-PASS - TYPICAL

NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



✱ 1 1/2" AND 2" BALL VALVE, BOX, AND LID BY OAKMONT WATER AUTHORITY. 3" AND LARGER R/S GATE VALVE, BOX, AND LID TO BE SET AT PROPERTY LINE. OAKMONT WATER AUTHORITY TO INSPECT SERVICE LINE FROM THE CONNECTION AT THE MAIN TO THE GATE VALVE AT THE PROPERTY LINE AND PERFORM A FINAL INTERNAL PIT INSPECTION, ALL AT THE OWNERS EXPENSE. CONTACT OAKMONT WATER AUTHORITY FOR INSPECTION RATES.

(M) COLD WATER DISPLACEMENT METER, INVENSYS TECHNOLOGIES, INC. TYPE AND SIZE TO BE DETERMINED BY THE ENGINEER/ARCHITECT AND APPROVED BY OAKMONT WATER AUTHORITY. METER SHALL HAVE TRPL REGISTER, TOUCH PAD, AND HAVE U.S. GALLON REGISTRATION.

DCVBP DOUBLE CHECK VALVE BACKFLOW PREVENTER, TYPE AND SIZE TO BE DETERMINED BY ENGINEER/ARCHITECT AND APPROVED BY OAKMONT WATER AUTHORITY. ASSEMBLY SHALL BE IN ACCORDANCE WITH D.E.P. PUBLIC WATER SUPPLY MANUAL, PART VIII CROSS CONNECTION CONTROL.

• UNWEIGHTED CHECK VALVES OR FITTINGS SHOULD NOT BE LOCATED CLOSER THAN THREE (3) PIPE DIAMETERS DOWNSTREAM OF THE METER.

(R) PRESSURE REGULATOR WITH STRAINER TO BE INSTALLED WHEN SERVICE LINE INCOMMING PRESSURE EXCEEDS 80 psig.

RESILIENT SEAT GATE VALVES WITH HAND WHEEL OPERATORS OR BALL VALVES DEPENDING ON LINE SIZE, OPEN LEFT.

TEES AND BENDS 1 1/2" THRU 3" IN SIZE SHALL BE BRASS, 3" AND LARGER 125 psi CLASS FLANGES WITH 125 psi DRILLING.

GENERAL NOTES:

PRECAST CONCRETE METER PIT DIMENSIONS WILL VARY DEPENDING ON DIMENSION OF SPECIFIED EQUIPMENT AND SHALL BE REINFORCED TO H20 LOADING AND 300 PSF ROOF LOAD. DESIGN OF PRECAST METER PIT SHALL BE SUBMITTED TO THE OAKMONT WATER AUTHORITY FOR REVIEW AND APPROVAL. (SEE PIT DETAIL DRAWING Oakmont 20.dwg)

ALL EXTERNAL PIT PIPING 1 1/2" THRU 3" TO BE TYPE 'K' SOFT COPPER, 3" AND LARGER TO BE CLASS 52, DOUBLE CEMENT LINED D.I. PIPE

THE METER PIT SHALL MEET THE CONFINED SPACE REQUIREMENTS OF THE U.S. DEPT. OF LABOR, OSHA AS DESCRIBED IN CFR 29, LATEST EDITION.

PIPING SUPPORTS REQUIRED AT EACH GATE VALVE, 90° BENDS ON BY-PASS AND APPURTENANCES. (SEE PIPE SUPPORT DRAWING Oakmont 26.dwg)

✱ OAKMONT WATER AUTHORITY PERSONNEL TO TAP EXIST. WATER MAIN AND PROVIDE ALL MATERIALS FOR 1 1/2" AND 2" CONNECTIONS FROM MAIN TO CURB VALVE AT PROPERTY LINE AT THE EXPENSE OF THE BUILDING OWNER IN ACCORDANCE WITH THE CONNECTION FEE, ACT 203 LATEST REVISION.

OAKMONT WATER AUTHORITY PERSONNEL TO CUT EXISTING WATER MAIN AND PROVIDE TEE, GATE VALVES, BOXES, AND LIDS, SOLID SLEEVE AND D.I. PIPE 3" AND LARGER AT THE EXPENSE OF THE BUILDING OWNER IN ACCORDANCE WITH THE CONNECTION FEE, ACT 203 LATEST REVISION. ALL OTHER PIPING AND APPURTENANCES FROM THE POINT OF CONNECTION BY THE OWNER.

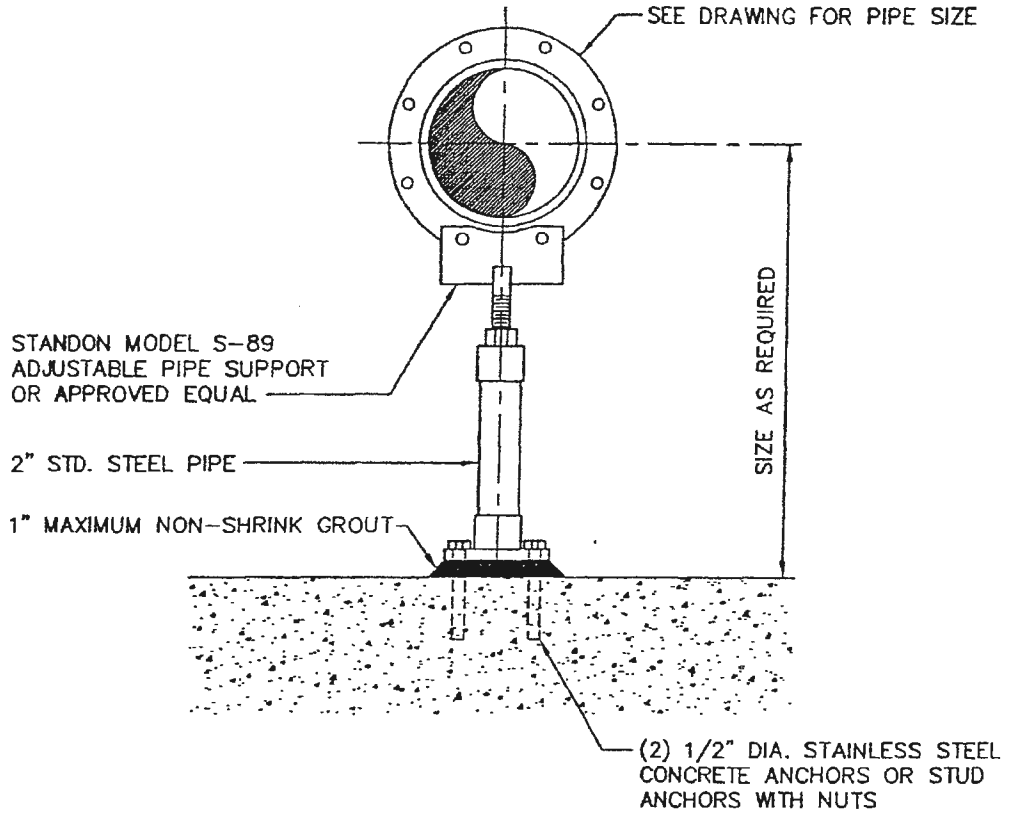
25.dwg

Milesburg Borough Water Authority

1 1/2" AND LARGER PIT DOMESTIC SERVICE WITH METERED BY-PASS - TYPICAL

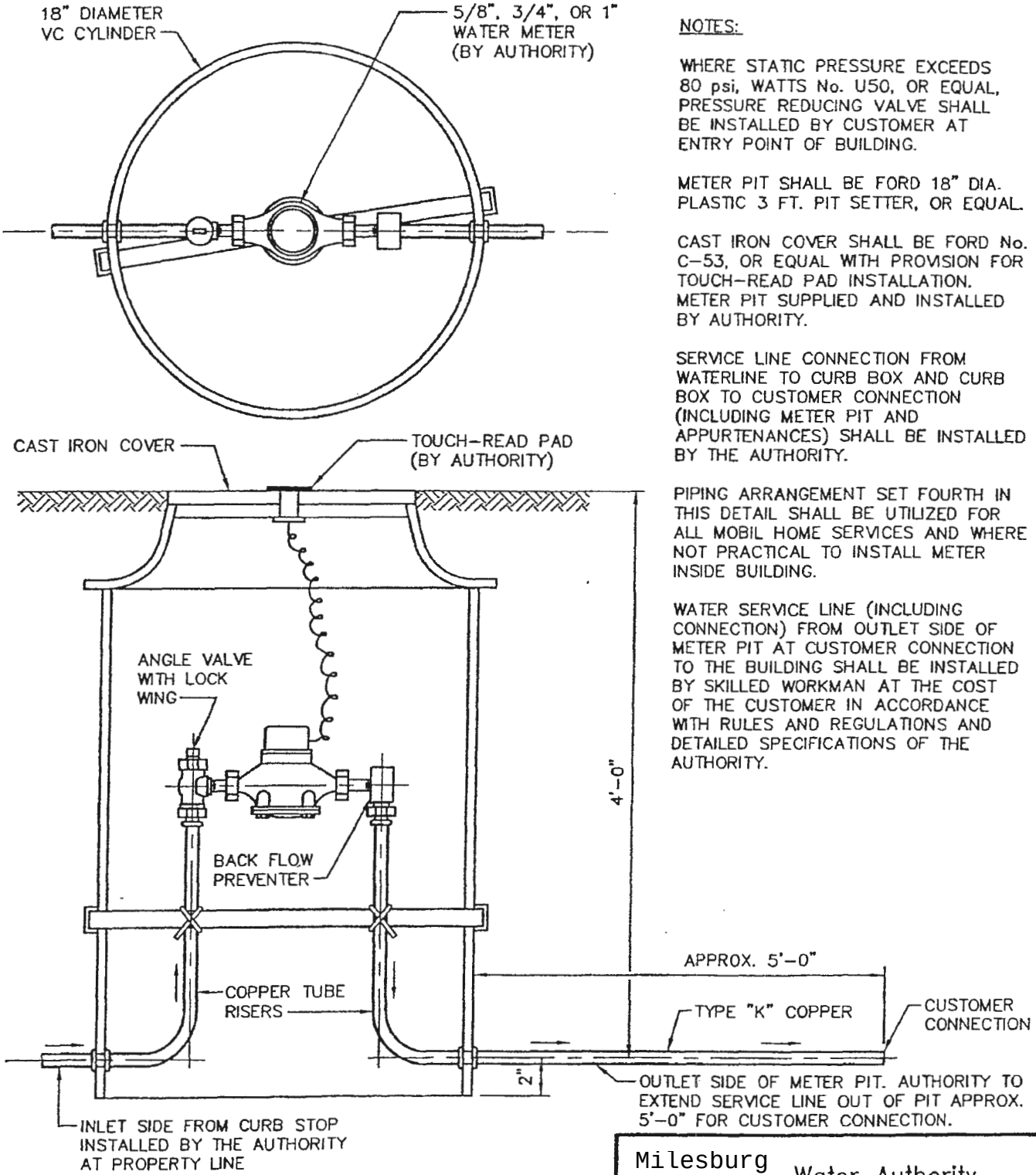
NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



Milesburg Borough	Water Authority
RECOMMENDED METER PIT CONCRETE FLOOR PIPE SUPPORT INSTALLATION-TYPICAL	
26.dwg	NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



NOTES:

WHERE STATIC PRESSURE EXCEEDS 80 psi, WATTS No. U50, OR EQUAL, PRESSURE REDUCING VALVE SHALL BE INSTALLED BY CUSTOMER AT ENTRY POINT OF BUILDING.

METER PIT SHALL BE FORD 18" DIA. PLASTIC 3 FT. PIT SETTER, OR EQUAL.

CAST IRON COVER SHALL BE FORD No. C-53, OR EQUAL WITH PROVISION FOR TOUCH-READ PAD INSTALLATION. METER PIT SUPPLIED AND INSTALLED BY AUTHORITY.

SERVICE LINE CONNECTION FROM WATERLINE TO CURB BOX AND CURB BOX TO CUSTOMER CONNECTION (INCLUDING METER PIT AND APPURTENANCES) SHALL BE INSTALLED BY THE AUTHORITY.

PIPING ARRANGEMENT SET FOURTH IN THIS DETAIL SHALL BE UTILIZED FOR ALL MOBIL HOME SERVICES AND WHERE NOT PRACTICAL TO INSTALL METER INSIDE BUILDING.

WATER SERVICE LINE (INCLUDING CONNECTION) FROM OUTLET SIDE OF METER PIT AT CUSTOMER CONNECTION TO THE BUILDING SHALL BE INSTALLED BY SKILLED WORKMAN AT THE COST OF THE CUSTOMER IN ACCORDANCE WITH RULES AND REGULATIONS AND DETAILED SPECIFICATIONS OF THE AUTHORITY.

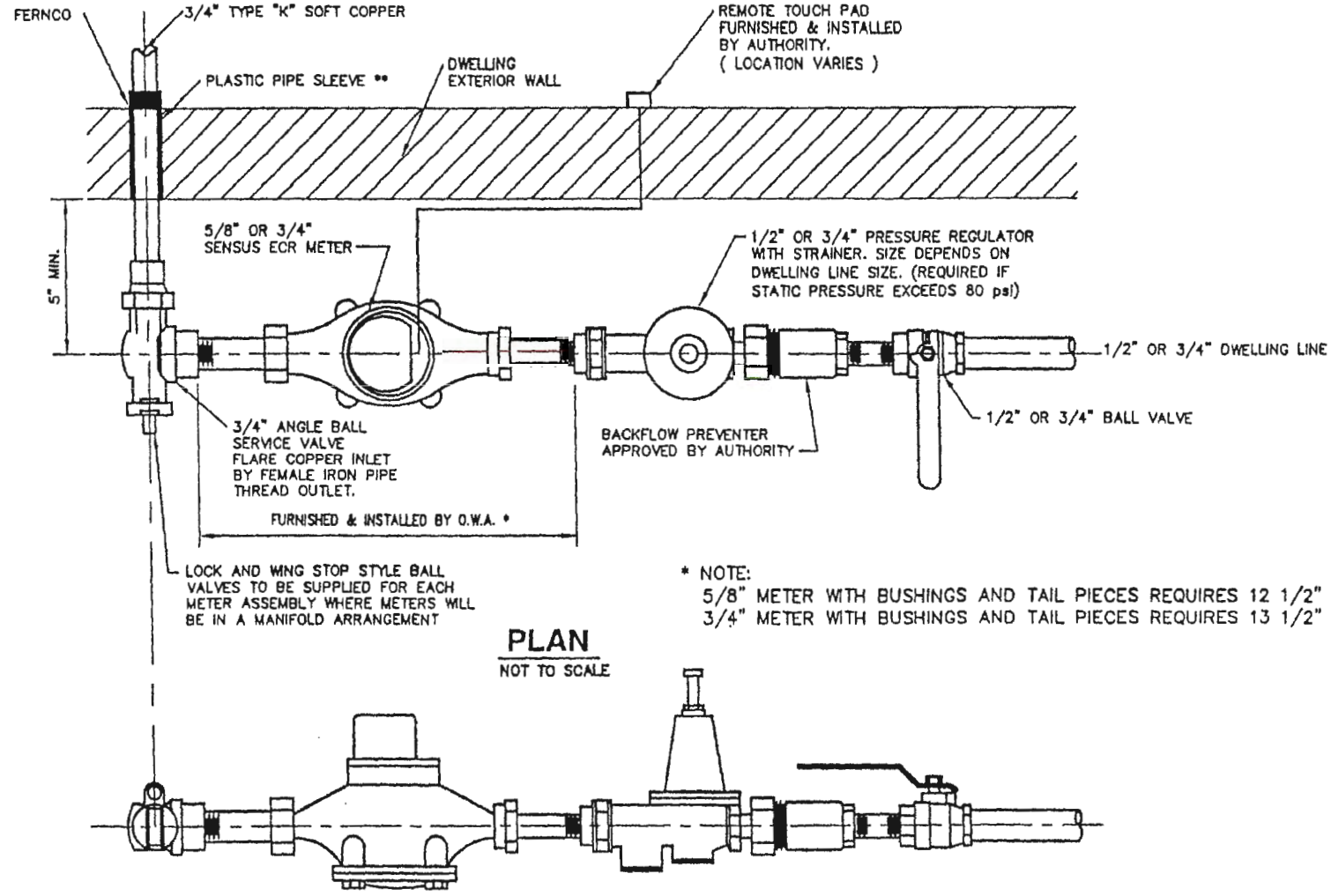
Milesburg Borough Water Authority

TYPICAL OUTSIDE METER PIT INSTALLATION FOR 5/8", 3/4", OR 1" METERS

NIRA Consulting Engineers, Inc.

27.dwg

REVISED: FEBRUARY, 2001



PLAN
NOT TO SCALE

ELEVATION
NOT TO SCALE

FERNCO PART NO.	** PIPE SLEEVE SIZE	CARRIER PIPE SIZE
DTC 110	1 1/2"	3/4" COPPER
DTC 210	2"	3/4" COPPER

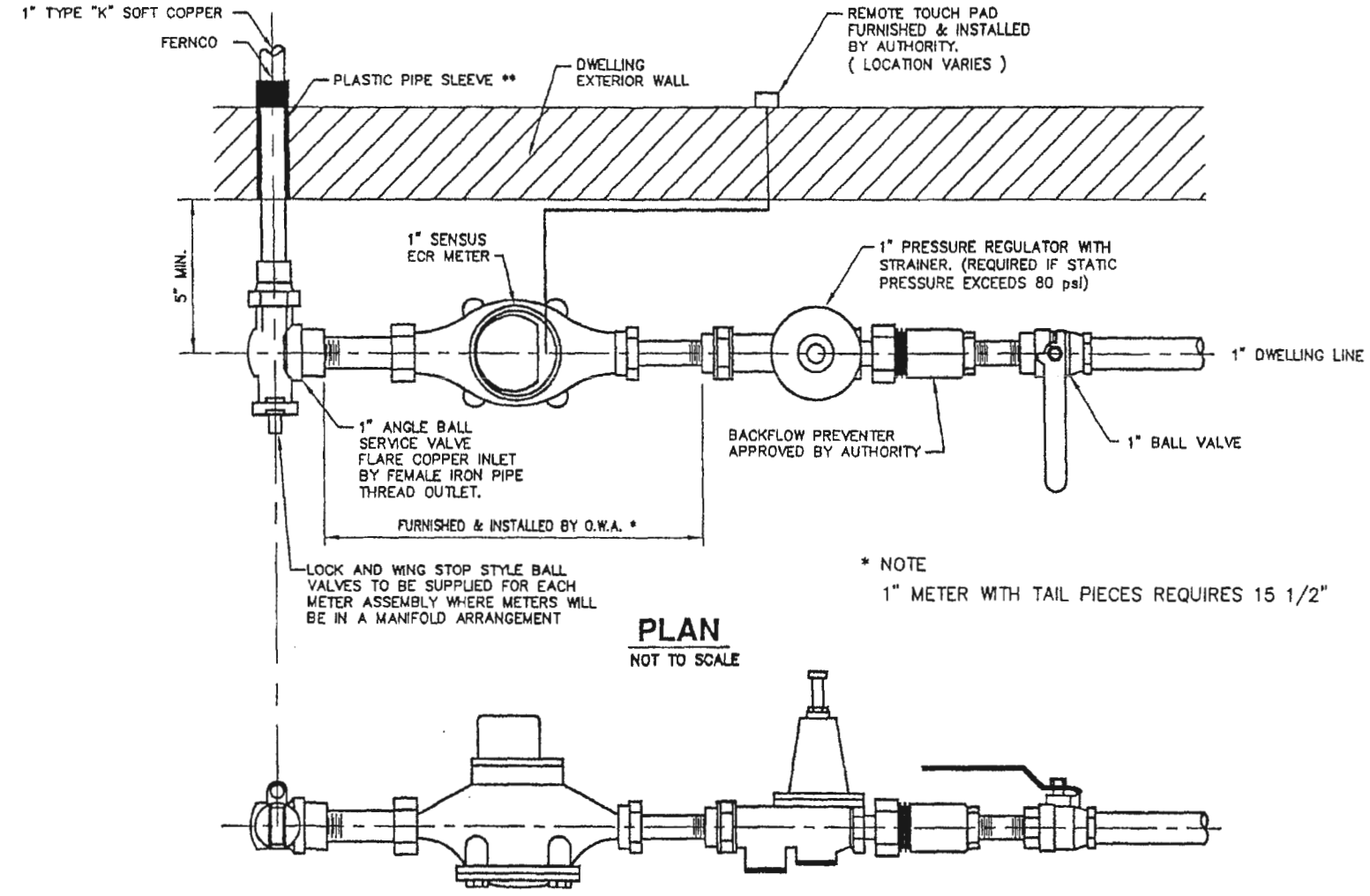
Milesburg Borough Water Authority

TYPICAL 3/4" WATER SERVICE DETAIL
ENLARGED 5/8" AND 3/4" METER INSTALLATION PLAN

NIRA Consulting Engineers, Inc.

28.dwg

REVISED: FEBRUARY, 2001



* NOTE
1" METER WITH TAIL PIECES REQUIRES 15 1/2"

PLAN
NOT TO SCALE

ELEVATION
NOT TO SCALE

FERNCO PART NO.	** PIPE SLEEVE SIZE	CARRIER PIPE SIZE
DTC 110	1 1/2"	1" COPPER
DTC 210	2"	1" COPPER

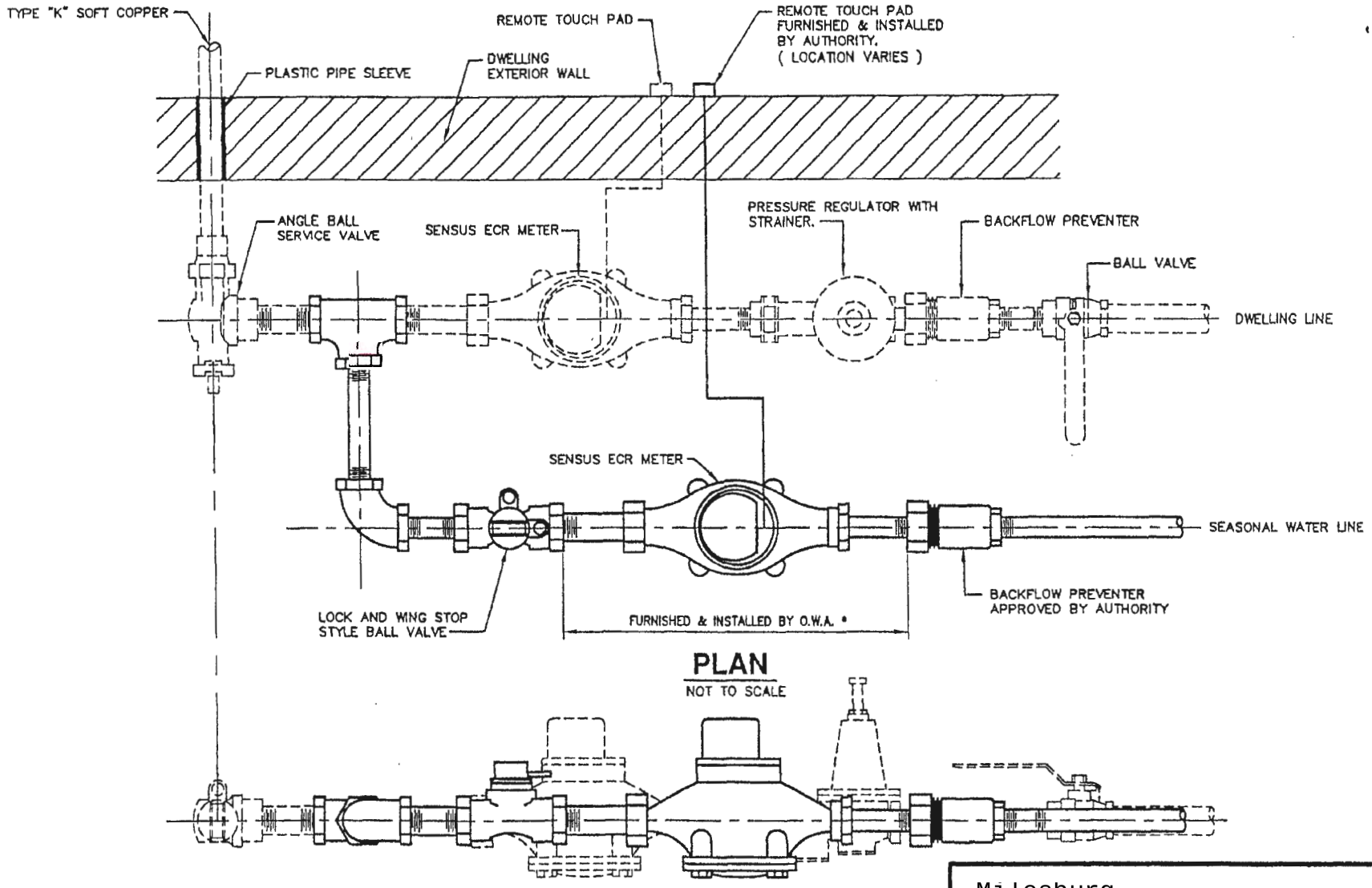
29.dwg

Milesburg Borough Water Authority

TYPICAL 1" WATER SERVICE DETAIL
ENLARGED 1" METER
INSTALLATION PLAN

NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



PLAN
NOT TO SCALE

ELEVATION
NOT TO SCALE

* NOTE:
5/8" METER WITH BUSHINGS AND TAIL PIECES REQUIRES 12 1/2"
3/4" METER WITH TAIL PIECES REQUIRES 13 1/2"
1" METER WITH TAIL PIECES REQUIRES 15 1/2"

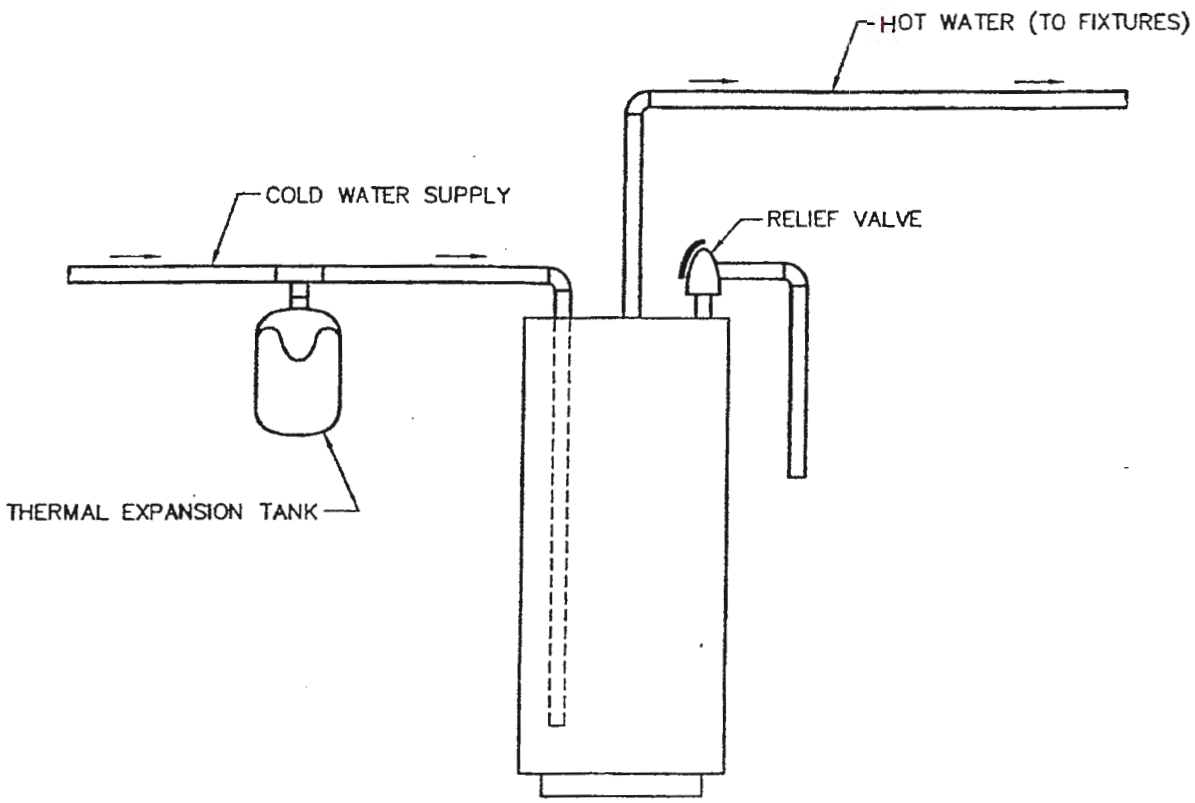
30.dwg

Milesburg Borough Water Authority

TYPICAL 5/8", 3/4", & 1" SEASONAL METER WATER SERVICE DETAIL INSTALLATION PLAN

NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001



EXPLANATION:

DURING NORMAL WATER USAGE, HOT WATER IS DRAWN FROM THE TANK AND IS REPLACED BY COLD WATER. THE COLD WATER IS THEN HEATED CAUSING THERMAL EXPANSION TO OCCURE. PRESSURE INCREASES UNTIL THE RELIEF VALVE OPENS AND THE EXPANDED WATER IS EXPELLED FROM THE TANK. THE INSTALLATION OF A THERMAL EXPANSION ABSORBER WILL ELIMINATE THIS PROBLEM. THE THERMAL EXPANSION ABSORBER IS A DIAPHRAGM–TYPE, PRE–PRESSURIZED, EXPANSION TANK. THE DIAPHRAGM IS FILLED WITH AIR. AS THE WATER EXPANDS, THE AIR IN THE DIAPHRAGM COMPRESSES MAINTAINING A LOWER SYSTEM PRESSURE.

Milesburg Borough	Water Authority
TYPICAL RECOMMENDED RESIDENTIAL THERMAL EXPANSION ABSORBER	
31.dwg	NIRA Consulting Engineers, Inc.

REVISED: FEBRUARY, 2001

PROCEDURAL FLOW DIAGRAM FOR WATERLINE EXTENSIONS

MILESBURG BOROUGH WATER AUTHORITY