

DEVELOPERS PACKAGE

FOR THE INSTALLATION OF WATER FACILITIES
WITHIN THE RIDGEWOOD WATER SYSTEM



prepared by
Ridgewood Water

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April 2009

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General

This package is a general guideline for the planning, approval, construction, testing, acceptance, and transfer of ownership of water facilities in the Boroughs of Glen Rock and Midland Park, the Village of Ridgewood, and the Township of Wyckoff, Bergen County, NJ. Properties in these communities are provided water service by Ridgewood Water with its main offices (administrative and Customer Service) located at 131 North Maple Avenue, Ridgewood, NJ 07451. Ridgewood Water has its Engineering, Distribution System (pipelines, valves, hydrants, and service lines) Maintenance, and Metering Divisions located at 205 East Glen Avenue, Ridgewood and its Operations (pumping, storage, water testing, etc.) Division located at 399 Godwin Avenue, Midland Park. The following are telephone numbers for the various Divisions:

Main Offices and Director	(201) 670-5521
Distribution System Maintenance	(201) 670-5524
Operations and 24 hour contact	(201) 670-5526
Chief Engineer	(201) 670-5509

This package includes information on Planning and Approval of Proposed Water Facilities; an Agreement for the Construction and Transfer of Ownership of Water Facilities; Technical Specifications; information on the Overall Schedule and Requirements and; information regarding Public Versus Private Ownership of Water System Facilities; and a Current Price Listing for various charges discussed herein (Note: the Current Price Listing likely post-dates the date of this package). Questions regarding the material included in this document should be directed to the Chief Engineer or the Water Distribution System Superintendent.

Planning and Approval of Proposed Water Facilities

Developers should contact the Ridgewood Water Chief Engineer at (201) 670-5509 to discuss prospective projects and overall system conditions and requirements, develop the parameters for and the design of the project, and obtain conceptual approval of the sizing and layout of the proposed facilities. It is suggested that this occur prior to Board (Zoning or Planning) application.

Approval by a Board does not constitute approval from Ridgewood Water. Developers are warned that Ridgewood Water may deny service or require significant changes to a project that has obtained Board approval that does not meet the requirements of Ridgewood Water.

Agreement for the Construction and Transfer of Ownership of Water Facilities

See enclosed Agreement form which is herein a part of this document. Additional pages may be required to be added to this form to describe and detail issues such as easement agreements, access agreements, maintenance issues, etc.

Technical Specifications

Enclosed in this document are Technical Specifications that need to be followed for the construction of the proposed water facilities. These specifications are general in nature and are not intended to be

all encompassing. They are intended to provide a good understanding of the requirements for most proposed water facilities. Specific conditions encountered in the field will govern alterations and additions to these specifications. Ridgewood Water will have to be notified in writing prior to any deviations from these specifications. Written approval of deviations from these specifications should be obtained from Ridgewood Water prior to the installation of material. Ridgewood Water reserves the right to alter these specifications to comply with variations in field conditions. Issues concerning materials and conditions not covered by these specifications shall be reviewed with Ridgewood Water prior to installation of materials. The determinations of Ridgewood Water will be final. Failure to comply with these specifications and the directives of Ridgewood Water will result in the water facilities not being approved and not being accepted by Ridgewood Water.

Overall Schedule and Requirements

The following is a general indication of the typical sequence of construction required for performing work on the installation of facilities that will eventually be turned over to Ridgewood Water.

- Submit plans and obtain approval from Ridgewood Water
- Submit Performance and Maintenance Bonds, and Submittals
- Provide proper notifications throughout construction of facilities
- Coordinate with Ridgewood Water for the installation of system isolation valve(s)
- Construct facilities while obtaining inspections
- Coordinate pressure and bacteriological testing
- Pay outstanding charges and submit as built drawing and any other information
- Final inspection and transfer of ownership of facilities
- Initiation of water service to new piping facilities
- Installation of Service Lines (see separate Water Service Package)

Some general notes and requirements on the process are presented below, while specific details and requirements are presented in the Technical Specifications.

Plans and Schedule: After reviewing the plans with Ridgewood Water, incorporating all Ridgewood Water's comments, obtaining approval from the appropriate Board (Planning or Zoning) or other agencies, and prior to the initiation of any work on the proposed water facilities; provide Ridgewood Water with four copies of the final approved plans and a construction schedule so that appropriate inspections and approvals can be scheduled and obtained.

Bonds: Performance and Maintenance Bonds are required **on the forms included herein** for a value of 120% and 25% of the proposed contract amount, respectively. Submit a written breakdown of the proposed facility costs to Ridgewood Water for review and upon notification supply the bonds. No work shall proceed until Ridgewood Water has the appropriate Bonds. Performance Bonds shall be released upon acceptance of the facilities by Ridgewood Water. Maintenance Bonds shall be released by request of the Developer no sooner than two years after the date of acceptance of the facilities by Ridgewood Water. In lieu of Bonds the Developer can provide a letter of credit (in a form acceptable to Ridgewood Water) or cash. Cash payments will require additional escrow fees to cover the expenses associated with their processing. Initial escrow fees will be set at \$500, this amount should cover expenses in most instances. Maintenance Bonds shall cover service line installations from the main to and including the curb stop and box for water main installations that include

domestic service connections.

Connection to Existing System: All connections to the existing piping system shall be performed by Ridgewood Water and will, at a minimum, consist of a system isolation valve (typically a wet tap) as determined by Ridgewood Water. The Developer shall provide all materials for the connection to the system and shall prepare the required excavations to perform the work of installing a system isolation valve. The Developer shall bear the costs of the installation of these facilities, on the existing piping system, by Ridgewood Water.

Installation of Facilities: The Developer shall be responsible to supply and install all proposed facilities (pipes, fittings, valves, hydrants, etc.) after the system isolation valve.

Notification/Inspection: Ridgewood Water shall be notified when water facility installation work is going to be performed.

Responsibility of New Facilities: All piping, fittings, valves, hydrants, etc. installed after the system isolation valve are the sole responsibility of the Developer until they have been accepted by Ridgewood Water.

Testing: Upon completion of construction it is the Developer's responsibility to provide pressure testing, perform disinfection, and to take water samples. Sample bottles can be obtained from Ridgewood Water and Ridgewood Water will perform the testing.

As-Built Drawings: It is the responsibility of the Developer to prepare as-built drawings that show the location of all facilities installed.

Transfer of Ownership: Upon the satisfactory completion of the pressure and bacteriological tests and removal of any temporary testing and sampling connections, the Developer shall pay any outstanding charges and present an acceptable copy of as-built drawings.

In situations where the facilities are being placed in a proposed public right of way (street or road) and ownership of said right of way has not been transferred to the municipality and the proposed facilities are ready to be turned over to Ridgewood Water, Ridgewood Water will require a separate Right of Entry Agreement prior to the final acceptance of the facilities. This agreement shall provide Ridgewood Water the ability to enter the Developers property to operate and maintain its piping until the right of way is transferred to the municipality.

Ridgewood Water will then operate each hydrant and valve to determine acceptability. Should these facilities be found to be acceptable, Ridgewood Water will provide the Developer with a formal written notification of the acceptance of the facilities. Receipt of this notification will enact the transfer of ownership of the water facilities from the Developer to Ridgewood Water.

Installation of Service Lines: Service connections to the water mains will be performed only after the transfer of ownership of the water mains and will be coordinated through the Water Service Package for the Connection of Water Services to the Ridgewood Water System, an attachment to and a part of this document, when applicable.

Easements and Piping on Private Property

Ridgewood Water typically accepts ownership of piping installed in public right of ways (streets and roads). Periodically, piping is required to be constructed through easements on private property. Some larger properties require more complex piping layouts to facilitate the needs of the Property Owners. The following descriptions and requirements should clarify most instances:

Easements - Special conditions are required to be met for the long term maintenance of easements through which water mains are laid as listed below:

No permanent structures (buildings, extensions of buildings, decks, in-ground pools, etc.) shall ever be placed within the limits of the easement without prior written approval of Ridgewood Water.

Ridgewood Water maintains the right to maintain the extent and degree of vegetative growth (trees, shrubs, bushes, brush, etc.) within the easement.

Alteration of the grade shall not be performed without the written consent of Ridgewood Water, which will want to review and approve plans of the alterations. This also applies to the installation of such semi-permanent features as patios, walkways, sheds, planters, retaining walls, driveways, fences, above ground pools, etc.

Ridgewood Water maintains the authority to enter the easement for the maintenance of its piping facilities within the easement and will provide for the basic restoration of the ground cover with topsoil and seed to establish growth to avoid soil erosion. Further restoration of vegetative growth and other features within an easement is the responsibility of the property owner. Additionally, should Ridgewood Water encounter such illicit features, as outlined above, within an easement, Ridgewood Water has the right to remove these features. The cost of such removal shall be borne by the property owner.

Developers are required to provide for easement agreements between Ridgewood Water and the eventual property owner for the longterm maintenance of easements. The form of the easement to be provided is included in this document. In addition to execution of the easement, the Developer shall provide title assurances to Ridgewood Water to guaranty that there are no prior liens or encumbrances which would or could affect the easement.

All documents, including the Deed of Easement, the title binder and assurance, and any other guarantees, including bonds or letters of credit are to be submitted to Ridgewood Water in adequate time to provide for legal review and approval. The responsibility for the completeness and accuracy of the package rests solely with the Developer.

Piping on Private Property - Isolation Valves (Curb Stops on 2" and smaller and Gate Vales on 4" and larger) are located on all Service (Domestic and Fire) Lines. The piping after such valves is owned by and the responsibility of the Property Owner and has the following requirements/restrictions:

Domestic Service Lines are required to run from the Ridgewood Water owned and operated water main (water system) directly to the meter location. They are not allowed to be tapped off of fire service lines or branch to multiple meter locations on a property. Each individual meter shall have its own dedicated service line.

Private Fire Hydrants can be located off of Fire Service Lines and such lines can be connected to multiple fire suppression systems on a property.

In most instances, conditions involving the installation of facilities on private lands with a singular piping connection to the water system will be considered a service line, Ridgewood Water will not accept ownership of these piping facilities. For conditions involving the installation of facilities on private lands with more than one connection to the water system, Ridgewood Water will accept ownership of the piping facilities. In these instances Developers are required to provide for easements.

If required by Board (Zoning or Planning) approval, the Developer will have to make arrangements with Ridgewood Water for the long-term maintenance of Private Fire Hydrants (see the Current Price Listing for Yearly Hydrant Maintenance Fee).

Escrow Charges and Accounts

Depending on the complexity of the project and requirements thereof, Ridgewood Water may impose escrow fees for the in-house review and approval of the project. Conditions or situations may also arise that require outside expertise from legal, engineering, or other professionals. In either of these situations, Ridgewood Water will notify the Developer that such charges are required to properly coordinate the agreement and direct the Developer to establish an escrow account of an appropriate amount to cover such expenses.

VILLAGE OF RIDGEWOOD
PERFORMANCE AND PAYMENT BOND
(N.J.S.A. 2A:44-147)

Bond No. _____

Know all men by these presents, that we, the undersigned _____
of _____ as principal and
_____ as sureties, are hereby held and firmly bound
unto the Village of Ridgewood, at 131 North Maple Avenue, Ridgewood, New Jersey, in the
penal sum of _____ dollars (\$ _____),
for the payment of which well and truly to be made, we hereby jointly and severally bind ourselves,
our heirs, executors, administrators, successors, and assigns.

The condition of the above obligation is such that whereas, the above named principal did on the
_____ day of _____, 20____,
enter into a contract with the Village of Ridgewood, which said contract is made a part of this the
bond the same as though set forth herein.

Now, if the said Principal shall well and faithfully do and perform the things agreed by the Principal
to be done and performed according to the terms of said contract, and shall pay all lawful claims of
beneficiaries as defined by N.J.S. 2A:44-143 for labor performed or materials, provisions, provendor
or other supplies or teams, fuels, oils, implements or machinery furnished, used or consumed in the
carrying forward, performing or completing of said contract, we agreeing and assenting that this
undertaking shall be for the benefit of any beneficiary as defined in N.J.S. 2A:44-143 having a just
claim, as well as for the obligee herein; then this obligation shall be void; otherwise the same shall
remain in full force and effect; it being expressly understood and agreed that the liability of the surety
for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein
stated.

The said surety hereby stipulates and agrees that no modifications, omissions, or additions in or to
the terms of the said contract or in or to the plans or specifications therefor shall in anyway affect the
obligation of said surety on this bond.

IN WITNESS WHEREOF, the said principal and surety having signed and sealed this instrument
this _____ day of _____, 20____.

VILLAGE OF RIDGEWOOD
PERFORMANCE AND PAYMENT BOND
(N.J.S.A. 2A:44-147)

Bond No. _____

(Corporate Name) (Corp. Seal)

Attest: _____
(Corporate Secretary)

By _____
(Principal Signature)

(Title)

Witness as to Surety:

(Surety Company)

(Signature)

By _____
(Attorney-in-Fact) (Seal)

By _____
(State Representative)

**VILLAGE OF RIDGEWOOD
MAINTENANCE BOND**

Bond No. _____

KNOW ALL MEN BY THESE PRESENTS: THAT WE, _____

(as principal) located at _____ and _____

a New Jersey Corporation located at _____,
licensed to do business in the State of New Jersey and as Surety, are held and firmly bound unto the

Village of Ridgewood as Obligee, in the full and just sum of _____
dollars lawful money of the United State of America to the payment of which sum, well and truly
made, the Principal and the Surety bind themselves, their successors and assigns, jointly and severally,
firmly by these presents.

SIGNED, SEALED, AND DATED THIS _____ day of _____,
20____

THE CONDITION OF THIS OBLIGATION IS SUCH THAT, WHEREAS the Principal entered
into a Contract with the Obligee for _____,
AND WHEREAS, the Obligee requires a guarantee from the principal against defective materials and
workmanship in connection with said maintenance.

NOW, THEREFORE, if the Principal shall make any repairs or replacements which may become
necessary during the period of _____
because of defective materials or workmanship in connection with said Contract of which
defectiveness the Obligee shall give the Principal and Surety written notice within ninety (90) days
after discovery thereof, then this obligation shall be void; otherwise it shall be in full force and effect.

(Corporate Name) (Corp. Seal)

Attest: _____
(Corporate Secretary)

By _____
(Principal Signature)

(Title)

Witness as to Surety:

(Surety Company)

(Signature)

By _____
(Attorney-in-Fact) (Seal)

By _____
(State Representative)

Prepared by:

SYDNEY V. STOLDT, JR., ESQ.

DEED OF EASEMENT

THIS DEED OF EASEMENT made this _____ day of _____, 20____, by and between _____, a Corporation of the State of New Jersey, with offices located at _____, New Jersey, hereinafter referred to as the "Owners", and the Village of Ridgewood, a Municipal Corporation of New Jersey with offices at 131 North Maple Avenue, Ridgewood New Jersey, hereinafter referred to as "Ridgewood";

WITNESSETH

1. Owner, for and consideration of the sum of ONE (\$1.00) DOLLAR lawful money of the United States of America to them in hand paid by Ridgewood, the receipt whereof acknowledged, and for other good and valuable consideration, have granted, bargained, sold, released, transferred and conveyed to Ridgewood, its successors and assigns, the right, privilege, authority and easement to install and reinstall, lay and relay, construct and reconstruct, operate, maintain, inspect, repair, remove, and replace, water lines, pipes, equipment, communications conduits and contents, meters, and fixtures, together with all necessary fittings, appurtenances and facilities, for the transmission and distribution of water in, under and through a strip of land of the Owners situate, lying and being

in the _____ in the county of Bergen and State of New Jersey and more particularly described on Schedule "A" attached hereto and made a part hereof. The easement and rights herein shall be perpetual and exclusive to Ridgewood.

2. Owners represent that they are the owners in fee of the easement hereby granted and have the absolute right and authority to execute this Deed of Easement with all the terms, covenants and conditions herein contained.

3. Owners hereby grant to Ridgewood the right of access to said property for the purposes herein stated at any time, without notice.

4. Owners themselves and their successors and assigns covenant and agree with Ridgewood, its successors and assigns, that no buildings or structures (structures are defined in the Uniform Construction Code) of any kind whatsoever shall be erected on the herein described strip of land.

5. No semi-permanent features shall be placed on the easement area without the prior written consent of Ridgewood. Examples of semi-permanent features include sheds, planters, additional driveways, fences, above ground pools and the like.

6. Ridgewood is granted the right to clear the easement of any buildings or structures violating this covenant and also to clear the property of any trees, shrubs or vegetative growth which may be placed or encroach thereon within the easement area.

CURRENT PRICING LIST
FOR THE
INSTALLATION OF WATER FACILITIES
WITHIN
THE RIDGEWOOD WATER SYSTEM

April 2009

<u>ITEM</u>	<u>COST</u>
Wet Taps 4", 6", and 8" Greater than 8" - performed by others, costs dependent on pricing	\$ 1500
Cost per 1000 Gallons of Water	\$ 2.86
Ridgewood Water Personnel - Hourly Rate	\$ 40
Water Sample Testing	\$ 50
Yearly Hydrant Maintenance Fee	\$ 65.04

TECHNICAL SPECIFICATIONS

FOR THE INSTALLATION OF WATER FACILITIES
WITHIN THE RIDGEWOOD WATER SYSTEM

January 2003

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GENERAL REQUIREMENTS

These technical specifications are a part of an overall package of information for the installation of water facilities within the Ridgewood Water System. This overall package provides numerous requirements not covered in these technical specifications.

Submittals: The Developer is required to submit information on the materials that are proposed to be installed. 2 sets of information shall be submitted for approval prior to installation. Failure to submit information shall cause Ridgewood Water to reject the work and deny water service.

Ductile iron pipe, fittings, valves, and hydrant assemblies: The following items shall be submitted before delivery of ductile iron pipe, fittings, valves, and hydrant assemblies:

1. Certification by the manufacturer or supplier that the pipe furnished for this project meets all pertinent AWWA Standards.
2. Catalog cuts and installation instructions.

Additionally, for valves and hydrants lubrication instructions and parts lists shall be furnished for each type and manufacture.

Chlorination: The method of chlorination shall be submitted to Ridgewood Water in writing along with information on the materials to be used (liquid, powder, tablets).

Bedding, Haunching, and Backfilling: Materials samples from each proposed source shall be submitted, for approval, to Ridgewood Water for Broken Stone and Gravel (SECTION 5), Bank-Run-Sand-and-Gravel (SECTION 6), Quarry-Process Stone (SECTION 7), and Sand (SECTION 8). Material samples shall be 30 pound samples.

2 sets of submittals shall be sent to the Ridgewood Water Engineer. Each set of submittals shall be in the form of a single bound and catalogued package of all proposed materials. Ridgewood Water may (verbally) waive these requirements if the materials supplied specifically conform to the specifications.

Approvals/Denials: Ridgewood Water will supply the Developer with an approval/denial of the information submitted for the proposed materials. It is the responsibility of the Property Owner to provide ample time for review and correspondence regarding submittals. Completeness of the information and adherence of the information to the specifications will greatly aide in obtaining timely approvals. Ridgewood Water reserves the right to request the aforementioned Submittals at any time during the Work, even if a verbal waiver of the requirements was previously supplied.

Materials: All materials proposed for installation shall be new and shall not have been previously installed. Materials required to be dismantled may be required to be removed from the work site and replaced with new materials.

Origin of Manufacture: All materials supplied for installation shall be manufactured and assembled in the United States.

As-Built Drawings: It is the responsibility of the Developer to prepare as-built drawings that show the location of all facilities installed. The following are the minimum requirements for the preparation of as-built drawings:

As-builts will be prepared on a copy of the development plans as submitted to Ridgewood Water.

All mains, fittings, valves, and hydrants shall be shown and labeled, inclusive of size.

Mains shall be located to show their general orientation within the right of way or easement. Lengths of piping between valves and fittings will be depicted.

In the case of piping installed in easements: The as-built drawings shall include a certification from the Developer's Engineer (signed and sealed) that the location of the facilities shown represent the location of all facilities installed and that they run to the benefit of Ridgewood Water.

At its discretion, for piping installed in future or existing public rights-of-way, Ridgewood Water may require the Developer to submit as-built drawings that include a certification from the Developer's Engineer (signed and sealed) that the location of the facilities shown represent the location of all facilities installed and that they run to the benefit of Ridgewood Water.

As-Built drawings shall be submitted to Ridgewood Water prior to the transfer of ownership of the piping. Ridgewood Water shall review these drawings for acceptability. If in the opinion of Ridgewood Water, the drawings are not acceptable, the Developer shall rectify the deficiencies and resubmit the drawings. Rectification might include the need to uncover piping facilities at the direction of Ridgewood Water to satisfy all parties of the orientation of the piping.

Drawings made by Ridgewood Water during the course of its inspection efforts of the piping installations do not relieve the Developer from the responsibility of preparing as-built drawings.

Notification/Scheduling: Failure to notify Ridgewood Water and obtain proper approvals and inspections prior to the construction of facilities will result in the facilities having to be uncovered and/or dismantled so that proper inspections can be obtained during the construction process.

In general, Ridgewood Water shall be notified when water facility installation work is going to be performed. Two days prior notice or notice on the prior Thursday that work will be ongoing during a week will constitute adequate notification. Notice may be provided by telephone to the Distribution System Maintenance Division at (201) 670-5524. Additionally and specifically, Ridgewood Water will require notice on the previous day of the installation of all valves, hydrants, and fittings. Once construction has begun, notice can be provided to Ridgewood Water field personnel of future construction activities. However, should there be a break in the construction activities, two days notice shall be given before the construction resumes. Verbal notification is for the convenience of the Developer, any mis-communications shall be the responsibility of the Developer.

All scheduling shall be coordinated through the Distribution System Maintenance Division, (201) 670-5524, Monday through Friday, 7:30 am to 4:00 pm.

Connection to Existing System: All connections to the existing piping system shall be performed by

Ridgewood Water and will, at a minimum, consist of a system isolation valve (wet tap) as determined by Ridgewood Water. The Developer shall provide all materials for the connection to the system and shall prepare the required excavations to perform the work of installing a system isolation valve. Excavations shall be prepared to and maintained to the requirements of Ridgewood Water. In certain instances (as solely determined by Ridgewood Water) fittings and/or additional valves on the existing piping may be required to provide adequate long-term operation of the piping system in conjunction with the proposed facilities. The Developer shall bear the costs of the installation of these facilities, on the existing piping system, by Ridgewood Water. Once installed and accepted, a system isolation valve and fittings and/or additional valves installed on the existing piping become the property of Ridgewood Water.

Developers will schedule for the installation of a system isolation valve into the existing Ridgewood Water system by providing Ridgewood Water with a written request at least one week prior to the desired date of the installation.

Ridgewood Water will operate all existing facilities (valves and hydrants). Developers are **NOT** permitted to operate Ridgewood Water facilities. System isolation valves between the Developers proposed piping and the Ridgewood Water system will be immediately accepted in the field by Ridgewood Water upon the proper installation and inspection by Ridgewood Water. Once accepted these valves shall not be operated by the Developer.

Excavations shall be prepared by the Developer for work to be performed by Ridgewood Water and shall be of sufficient width and depth to allow the work to be performed in a convenient manner and shall be of the following accord:

General - All excavations prepared by the Developer shall be the full responsibility of the Developer, including but not limited to shoring, side slopes, ingress and egress, and dewatering. Excavations shall be appropriately prepared in advance of the work and maintained during the course of the work. Should deleterious or substandard conditions exist when Ridgewood Water arrives at the project location or if they are allowed to degrade to such conditions during the course of the work, then Ridgewood Water personnel will leave the site and the work will need to be rescheduled. The Developer will be assessed a charge for the additional time spent by the personnel as a result of such conditions. The judgement of Ridgewood Water as to the conditions of the excavations shall be final. In the event that the excavation compromises personnel, equipment, and/or materials; Ridgewood Water might bring in its own equipment to correct the situation, based on the lack of appropriate response by the Developer. In such instances the Developer will be assessed charges for personnel and equipment to rectify the situation.

The Developer shall have machinery on hand to adequately lower Ridgewood Water's tapping machine into and out of the excavation.

For connection to the water main - The excavation shall uncover the existing main for a length of at least five feet, exclusive of bells, joints, fittings, clamps, couplings, etc. The depth of the excavation shall provide for the main being 12" to 36" above the base of the excavation. The excavation shall provide for a minimum of two feet of clearance behind the main and at least seven feet in front of the main, at the base of the excavation. The base of the excavation shall be level, dry, and stable. As conditions exist, the Developer may be required to dewater the excavation and bed the same with stone to provide a stable condition.

Traffic Control in the public right of way is the full responsibility of the Developer. Similar judgements and actions will be made/taken with regard to traffic control as with excavations to ensure the safety of personnel, equipment, and materials.

Responsibility of New Facilities: All piping, valves, hydrants, and fittings installed after the system isolation valve are the sole responsibility of the Developer until they have been accepted by Ridgewood Water.

Transfer of Ownership: Upon the satisfactory completion of the pressure and bacteriological tests, payment of any outstanding charges and the presentation of acceptable as-built drawings; the Developer will remove any temporary test and/or flushing connections under the direction of Ridgewood Water. Ridgewood Water will then operate each hydrant and valve to determine acceptability. Should these facilities be found to be acceptable, Ridgewood Water will provide the Developer with a formal written notification of the acceptance of the facilities. Receipt of this notification will enact the transfer of ownership of the water facilities from the Developer to Ridgewood Water.

Surface Restoration: These specifications do not cover surface restoration, except with regard to valve box locations. Restoration and stabilization of ground surfaces falls underneath other jurisdictions.

Cover Over Piping: These specifications provide for minimum and maximum cover over piping facilities. Alteration of grade after the installation of piping that compromises cover will require rectification to maintain proper cover.

Installation of Service Connections and Lines are to be coordinated through a separate document entitled Water Service Package for the Connection of Water Services to the Ridgewood Water System. Service connections to the water main shall be performed by Ridgewood Water after the transfer of ownership of the water main from the Developer to Ridgewood Water. The Developer has the responsibility to prepare and backfill the connection excavation. Service lines will be installed by the Developer, subsequent to the service connection, in the trench and through the foundation penetration, both prepared, backfilled, and repaired by the Developer. Ridgewood Water performs the meter installation.

Installation of Fire Service Connections and Lines: are to be coordinated through a separate document entitled Water Service Package for the Connection of Water Services to the Ridgewood Water System. If proposed as part of the Developers Package, the connection can be coordinated as part of the water main installation by the Developer, in lieu of a tapping sleeve and valve connection performed by Ridgewood Water. In either case, the Developer shall install the remainder of the fire service piping.

Un-Specified Conditions: These specifications are not all encompassing and are meant as a guide for the predominance of situations, items, and conditions (conditions) that should be encountered while installing piping facilities within the Ridgewood Water Service Area.

For conditions that present themselves in the field during the installation of facilities, Ridgewood Water will review these and make a reasonable determination. Determinations shall be made prior to the continuance of the installation work.

For conditions that present themselves prior to construction, the Developer shall provide

information for review by Ridgewood Water prior to the initiation of any installation work.

The failure of these specifications to cover a condition does not relieve the Developer from following the requirements of Ridgewood Water. Lack of planning, understanding of existing conditions, or unforeseen circumstances does not waive the requirements of Ridgewood Water. The determinations of Ridgewood Water on un-specified conditions is final.

END OF SECTION

SECTION 1

WATER MAINS

1.01 MATERIALS

General: All water mains shall be ductile iron pipe centrifugally cast cement-lined and shall conform with AWWA C151 (ANSI A21.51), Ductile-Iron Pipe, Centrifugally Cast for Water, latest revision thereof. Cement lining shall conform with AWWA C104 (ANSI A21.4-1985), Cement Mortar Lining for Cast Iron and Ductile-Iron Pipe and Fittings for Water, latest revision thereof, and shall include a bituminous seal coat. Pipe exterior for all pipe to be buried shall receive a standard foundry coal tar dip coating in accordance with AWWA C151; manufacturer shall meet with EPA approval. Pipe may be furnished in 18 or 20-foot nominal laying lengths.

Pipe Thickness: The minimum pipe thickness class for all pipe shall be Class 52 unless otherwise approved or required. Field conditions might require a greater class of pipe as determined by Ridgewood Water.

Marking Pipe: Each pipe delivered to the job shall have clearly marked, the weight, class designation and sampling period. In addition, each pipe shall have cast on the face of the bell the manufacturer's mark and the year the pipe was produced.

Push-On Joint: Joints shall typically be of the push-on type. Pipe plain ends shall be suitably beveled to permit easy entry into the bell. Pipe joints shall be "Tyton Joint" as manufactured by U.S. Pipe and Foundry Company, or approved equal.

Gaskets: Standard Gaskets shall be made of vulcanized synthetic rubber in accordance with AWWA C111 (ANSI A21.11) Rubber Gasket Joints for Cast-Iron and Ductile Iron Pressure Pipe and Fittings as supplied by U.S. Pipe and Foundry Company. Field Lok 350 gaskets shall be as supplied by U.S. Pipe and Foundry Company, or approved equal.

1.02 PIPE HANDLING AND STORAGE

General: Pipe shall be handled with care to avoid damage to the lining and coating and in a manner that will insure their installation in the work in a sound and undamaged condition. They shall be handled carefully and shall not be bumped or dropped. No hooks shall be permitted to come in contact with the joint surface.

Ductile iron pipe shall be handled and stored in accordance with AWWA C600, Installation of Ductile Iron Water Mains and their Appurtenances.

Examination and Rejection: All pipe shall be carefully examined for defects, and no pipe known to be defective shall be laid. If any pipe is found to be broken or defective after being laid, it shall be removed from the job site and replaced by sound pipe.

Protection: Precautions shall be taken to prevent entrance of dirt and debris into the pipe before and after laying. Exposed ends of all stored pipe and uncompleted lines shall be

provided with plugs or covers at all times except during the actual jointing and cutting processes.

Cutting: Cutting of pipe where required and allowed shall be done in a neat and workmanlike manner using an abrasive cutting wheel or other means which will produce a smooth end normal to the pipe axis with the cement lining undamaged. Cut ends shall be beveled to avoid damage to the gasket. The interior of cut sections shall be cleaned prior to installation.

1.03 EXCAVATION

Character of Material: The Developer shall, by inspection, by test pits or borings made by him or by other adequate methods, satisfy himself regarding the character and amount of the various classes of material to be encountered in the work to be performed.

Depth: Pipe of all sizes shall be provided with a minimum of 4' of cover from the top of the pipe to final grade and a maximum of 5' of cover between the top of the pipe and final grade. Prior written approval of Ridgewood Water is required to deviate from this requirement. Coordination and approval of the use of fittings and/or joint deflection to maintain the proper cover shall also be required and shall be accomplished by the Developer with Ridgewood Water with sufficient notice to insure proper installation. Failure on the part of the Developer to anticipate upcoming conditions does not constitute a requirement on the part of Ridgewood Water to accept a technically lesser solution. The Developer shall be required to remove installed piping and properly transition piping to maintain proper cover.

Clearances: Proper clearances shall be maintained between water mains and other utilities and structures. Under no circumstances shall piping be installed with less than 6" of vertical cover between the invert of the water main and the top of another utility or structure or between the top of the water main and the invert of the another utility. Water mains shall under no circumstances be placed through or below any structures or vaults. 6" of horizontal clearance shall be maintained between all water mains and all structures and vaults. Water mains shall not be placed in the same trenches as other utilities unless there is a proper vertical step and horizontal separation between the utilities. 18" minimum horizontal separation (and 12" vertical separation for utilities placed in the same trench) shall be maintained between water mains and other utilities. Regarding the separation between water mains and sewers, Developers are required to follow the standards set by the NJ Department of Environmental Protection.

Trimming: The bottom of all trenches to receive pipe shall be trimmed to final grade using hand methods. Pipe shall be provided with a solid uniform bearing throughout the entire length. Additional excavation shall be made under the pipe bells to allow for proper jointing.

Trench excavation shall have a width ample for jointing operations. If required by the type of joint used, the trench shall be widened at the joints as required to provide clearance for proper jointing.

Additional Excavation/Unsuitable Materials or Conditions: Wherever, in the opinion of Ridgewood Water, the material found at the bottom of excavations is not satisfactory, the Developer shall make any additional excavations as directed by Ridgewood Water to a level where suitable material is encountered. Where boulders, rock, masonry, or other similar materials are encountered, these materials shall be excavated to a level at least 6" below the invert of the pipe. Rock, boulders, etc. shall be removed from the sides of trenches to a plane

12" beyond the outside wall of the pipe, unless permission to do otherwise is expressly given. Should suitable conditions in the bottom of a trench not be found within practical limits, the Developer shall suspend installation of piping and seek the advise of a Professional Engineer on the proper methodology to adequately support the piping. Installation shall not resume until Ridgewood Water has reviewed and approved of the proposed methodology.

Removal of Water and Protection from Flooding: The Developer shall remove all water from the excavation promptly and continuously throughout the progress of the work and shall keep the excavation dry at all times by methods such as sumps, underdrains, or well points until the items to be placed therein are completed. Pumping shall be continuous where necessary to protect the work. The Developer shall convey all trench water away from the excavation.

Precautions shall be taken to protect uncompleted work from flooding during storms or from other causes. All piping not stable against uplift during construction or prior to completion shall be thoroughly braced or otherwise protected.

All necessary precautions shall be taken to prevent disturbance of and to properly drain the areas upon which concrete is to be poured, and upon which pipe is to be laid.

Developer's plant and equipment shall be adequate to keep all concrete work dry until properly set.

Under no conditions shall groundwater or stormwater be allowed to enter pipe that has been placed in a trench. Should there be the condition that threatens to allow water entry the end(s) of the pipe shall be sealed with a temporary water tight seal against such entry. If such water does gain entry, the affected lengths of pipe shall be removed from the trench and discarded until such time that they are acceptably cleaned.

1.04 PIPE BEDDING AND HAUNCHING

(As used herein, bedding refers to material placed in the trench below the pipe invert. Haunching refers to material placed between the pipe and the trench wall, from the invert to the pipe springline.)

Dry, Stable Trenches with Suitable Material: Under these conditions the trench bottom shall serve as the required bedding for the pipe. Any minor adjustments to the pipe bedding surface shall be made by hand placing and trimming quarry-processed stone or sand. Quarry-processed stone or sand shall be placed as haunching around the pipe up to the springline.

Wet or Unstable Trenches, Unsuitable Material: Where groundwater is encountered in amounts requiring trench dewatering, or where the trench bottom is not sufficiently firm, or where the material in the bottom of the trench is unsuitable (all in the opinion of Ridgewood Water) and the trench excavation extends below the pipe invert a layer of broken stone shall then be placed, graded, and compacted up to the proposed depth of pipe. After providing joint clearance, pipe shall then be laid directly on the stone. Support around the pipe haunches shall then be placed, consisting of broken stone placed to the springline.

1.05 PIPE JOINTING

General: Jointing shall be done in strict conformance with manufacturer's recommendations. Pipe ends and gaskets shall be thoroughly cleaned prior to jointing and only approved lubricants shall be used. Installation and assembly of push-on joints shall be in accordance with AWWA C-600. Deflection of push-on joints shall not exceed that specified in AWWA C-600, or the manufacturer's instructions, whichever is less.

Gaskets: Pipe joints shall be made up with a combination of standard gaskets and Field Lok 350 gaskets. Ridgewood Water shall determine the location of the placement of standard gaskets versus Field Lok gaskets. As a minimum, Field Lok gaskets shall be used on joints at the following locations:

8" Piping

All joints within 95' of a plug or cap,
All joints within 80' of the branch of a tee,
All joints within 45' of a 90° bend,
All joints within 20' of a 45° bend, and
All joints within 10' of a 22° bend.

8" x 6" Reducer

All joints within 40' of the reducer, only on the 8" side of the reducer.

6" Piping and Smaller

All joints within 75' of a plug or cap,
All joints within 60' of the branch of a tee,
All joints within 35' of a 90° bend,
All joints within 15' of a 45° bend, and
All joints within 10' of a 22° bend.

For piping larger than 8", Ridgewood Water will provide specific requirements on a case by case basis.

Cleaning, Lubricating, Jointing: As a minimum, the last 12" of the outside of the spigot piece and inside of the bell shall be thoroughly cleaned to remove oil, grit, tar (other than the standard coating) and other foreign materials from the joint. The rubber gasket shall be placed in the bell end and painted with a manufacturer's approved lubricant. The spigot end shall also be painted with this lubricant. The entire section of the pipe shall then be pushed forward to seat the spigot end into the bell. The gasket shall then be pressed into place within the bell being careful to have the gasket evenly located around the entire joint.

Orientation of Pipe Joints: The Developer shall plan the work and perform the installation so as to lay all pipe in one general direction so that orientation of the piping is spigot to bell. Where necessary couplings will be permitted as specified herein to joint two spigot ends. However, lack of planning on the part of the Developer that leads to an excessive number of spigot to spigot connections shall cause Ridgewood Water to find the installation unacceptable.

Solid Sleeves and Flexible Couplings: Where new ductile iron mains are to be joined to existing cast iron pipe or where a spigot to spigot connection is required a ductile iron mechanical joint

solid sleeve shall be used to make the joint. Solid sleeves shall conform to the specifications for ductile iron fittings.

Unless approved by the Ridgewood Water, flexible couplings shall not be used to make piping connections. Flexible couplings, where approved, shall be Style 38 couplings as manufactured by Dresser Industries, Smith-Blair, Inc., or equal. Couplings shall be installed in accordance with the recommendations of the manufacturer. All flexible couplings are to be adequately harnessed to withstand the test pressures in the lines unless other means are provided to take the thrust. Steel couplings shall be furnished with a factory applied epoxy.

1.06 BACKFILLING

Materials: Selection of materials to be used for backfill in various locations shall be as directed by Ridgewood Water. In general, material excavated from the pipe trench, if suitable, can be placed back into the trench as backfill. In cases where this material is not suitable, bank-run-sand-and-gravel shall be imported for fill. Bank-run-sand-and-gravel is specified elsewhere in these specifications.

Methods: All lumber, rubbish and braces shall be carefully removed from the excavation unless ordered left in place by Ridgewood Water. Backfill above the springline of the pipe, and up to a cover of at least 12" over the top of the pipe shall be placed by a combination of machine and hand in 6" layers, each layer to be thoroughly compacted to 95% of maximum dry density by mechanical tampers of an approved type. Puddling of trenches as a method of compaction is not acceptable to Ridgewood Water. Backfill shall not be allowed to drop from a height of more than 2' until a cover of 6" is obtained over the top of the pipe.

The backfilling shall be done as completely as possible in such manner as to prevent after-settlement around the pipelines. No stones or boulders shall be allowed to drop into the trench. No stones, boulders, concrete, asphalt, etc. in excess of 6" shall be placed in the trench below the level of 18" above the top of the pipe. The trenches and excavations shall be wet down as required to obtain optimum density while the backfilling is being carried out.

In all trenches, backfill between a plane 18" above the top of the pipe and the finished surface grade shall be as required by the governing body, authority, and/or property owner. Ridgewood Water only requires that no stones, boulders, concrete, etc. in excess of 6" and no pieces of asphalt be placed in the trench above this point as backfill.

Ridgewood Water may perform in-place density testing on any or all lifts of the backfill during the backfilling operation. The Developer shall provide safe access to the trench for Ridgewood Water for such testing. If the testing indicates less than the specified density, the Developer shall re-compact the material until the specified density is achieved.

1.07 SURFACE RESTORATION

Restoration of the trench surface is not under the jurisdiction of Ridgewood Water and is not covered within these specifications.

1.08 DISINFECTION, TESTING, FLUSHING, AND SAMPLING

General: The Developer is responsible for coordinating all disinfection, testing (both pressure and bacteriological), main flushing, and sampling of the proposed additions to the system.

Schedule of Events: The following are a set of events, in general order of occurrence, that need to be followed to disinfect, test, flush, and sample proposed additions to the system:

The Developer shall introduce chlorine (either liquid, powder, or quick dissolving tablet) as approved by Ridgewood Water at the appropriate time and with acceptable methods. When a reach of pipe, deemed adequate by Ridgewood Water, is ready for pressure testing the line shall be completely filled with water at a controlled slow rate, all air expelled, and a pressure and leakage test made.

Upon acceptable completion of the pressure test, the facilities shall be flushed and prepared for sampling.

Prior to final acceptance of the facilities, all sampling and testing connections shall be removed.

Services and Requirements of Ridgewood Water: The following services are offered (or required, where noted) by Ridgewood Water to facilitate accomplishing the testing, flushing, and sampling of the facilities:

It is required that Ridgewood Water personnel shall be present during all testing and sampling.

It is required that Ridgewood Water operate existing facilities and system isolation valves to accomplish filling and flushing the proposed facilities under the direction of the Developer.

Ridgewood Water will provide water for initial filling and initial flushing of the disinfectant and proposed facilities via the connection to the system.

Sample bottles can be obtained from Ridgewood Water and Ridgewood Water will perform the bacteriological testing.

Additional Charges: The following items will result in charges against the Developer:

Water for additional fillings and flushings will be obtained at a cost for the water at the going rate per gallon and a cost per hour or portion thereof for the operation of the existing facilities to provide water and oversight of the testing.

Additional water samples and testing (beyond the initial sampling and testing) will also require a charge per sample.

Notification: Two days prior notification shall be provided for both pressure and bacteriological testing. Specific times shall be arranged for the start of the tests and for the sample taking.

Initial Filling: The Developer shall be responsible for expelling all air from high points in the lines by installing corporations as necessary, directed, and approved. Location of the corporations shall be coordinated with Ridgewood Water prior to installation.

Pressure Testing: The Developer shall furnish all labor, materials and equipment for performing pressure tests in the presence of Ridgewood Water, including calibrated pressure gauges, test bulkheads, filling, draining, and air release connections and valves, calibrated drum and test pump.

All Hydrant Valves (the gate valve between the hydrant and the main) shall be in the open position during pressure testing.

All portions of the proposed facilities will be pressure tested at 200 psi or 100 psi above the eventual static system pressure, whichever is greater, for a duration of two hours. The pressure shall be measured at the lowest elevation of the section of main being tested. Pressure in the main shall be maintained within 5 psi of the specified test pressure throughout the test. At the end of two hours, the pressure shall be brought back up to the specified test pressure. All water supplied into the main during the test to maintain pressure within 5 psi of test pressure, and to bring pressure back to test pressure at the end of the test, shall be measured. This total amount of water is the leakage during the test. Allowable leakage shall be as follows:

$$L = \frac{SD(P)^2}{133,200}$$

Where L is the allowable leakage in gallons per hour, S equals the length of pipe in feet, D is the nominal pipe diameter in inches, and P is the test pressure in PSIG.

No visible leakage will be allowed regardless of test results. In the event that the section under test fails to meet allowable leakage, the Developer shall make all necessary repairs and repeat the test. The test shall be repeated as many times as is necessary to meet the allowable leakage specified above.

Disinfection, Flushing, and Sampling: All proposed facilities shall be disinfected and flushed upon completion of pressure testing in accordance with the recommendation of "Standard for Disinfecting Water Mains", (AWWA C651) of the American Water Works Association, except as may be modified herein.

The Developer shall be responsible for the introduction of chlorine into the new piping, either by addition of powder, liquid, or tablets (quick dissolving). Ridgewood Water shall be informed of and approve the method of chlorine addition prior to the initiation of work.

Heavily chlorinated waters shall occupy the proposed facilities for no less than 24 and no more than 72 hours. In order to prevent damage to the pipe lining or corrosion damage to the pipe itself, the heavily chlorinated water shall be flushed from the main until chlorine measurements show that the concentration in the water leaving the main is no higher than that generally prevailing in the system or is acceptable for domestic use.

After flushing of the proposed facilities, they shall be valved closed from the water system and the water allowed to sit undisturbed for a period of at least 24 hours. After the 24 hour period the Developer shall obtain bacteriological samples for testing.

Should the bacteriological results prove unacceptable, the Developer shall employ the necessary means to obtain satisfactory results (i.e. more flushing and disinfection, either singularly or in concert with each other).

Discharge, Handling and Disposal of Water: The Developer is responsible for the discharge, handling, and disposal of water produced during the flushing process and as a result of disinfection procedures. The inadequacy of the Developer to handle the discharge will not reduce the necessary velocity and volume of water that will be required to be discharged from the mains. This will lead to the unacceptability of the mains and the inability of Ridgewood Water to initiate water service.

Removal of Temporary Test and Sample Connections: Upon completion of all testing and sampling and prior to acceptance of the facilities by Ridgewood Water, the Developer shall remove all temporary test and sample connections (i.e. remove the corporations) from the piping and plug the openings as directed by Ridgewood Water in the field.

END OF SECTION

SECTION 2

DUCTILE IRON FITTINGS

2.01 MATERIALS

General: All fittings shall be ductile iron, compact, cement lined, and mechanical joint meeting the AWWA Standard Specifications for Compact Ductile Iron Fittings 3" through 24", for Water Service AWWA C153 (ANSI A21.53). Mechanical joints shall conform with AWWA C111 (ANSI A21.11) for Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings.

Pressure Rating: Fittings shall have a pressure rating of 350 psi.

Restrained Joint: All mechanical joint fittings shall be installed using a mechanical joint restraint incorporated into the follower gland. The restraining mechanism shall consist of individually actuated wedges that increase their resistance to pull-out as pressure or external forces increase. The device shall be capable of full mechanical joint deflection during assembly and the flexibility of the joint shall be maintained after burial. The joint restraint ring and its wedging components shall be made of grade 60-42-10 ductile iron conforming to ASTM A536-84. The wedges shall be ductile iron heat treated to a minimum hardness of 370 BHN. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell conforming to ANSI/AWWA C111/A21.11 and ANSI/AWWA C153/A21.53 of the latest revision. Torque limiting twist-off nuts shall be used to insure proper actuation of the restraining wedges. The mechanical joint restraint shall have a rated working pressure of 350 psi. The restraint shall be the Series 1100 MEGALUG restraint as manufactured by EBAA Iron, Inc., or approved equal.

Gaskets: Gaskets shall be made of vulcanized synthetic rubber in accordance with AWWA C111 (ANSI A21.11) Rubber Gasket Joints for Cast-Iron and Ductile Iron Pressure Pipe and Fittings as supplied by U.S. Pipe and Foundry Company, or approved equal.

Cement Lining: Cement lining shall conform to AWWA C104 (ANSI A21.4) Cement Mortar Lining for Ductile Iron Pipe and Fittings for Water and shall include a bituminous seal coat. The exterior surface of fittings shall receive a standard foundry coal tar dip coating, product to meet with EPA approval.

2.02 STORAGE AND HANDLING

Fittings shall be stored and handled carefully so as not to caused damage to their linings or coatings. All fittings shall be thoroughly cleaned with a brush and water (and soap solution as required) to remove all foreign material from the fitting prior to installation. Failure to properly store and clean fittings prior to installation shall cause overall unacceptability of the piping installation, rejection of the work, and removal and replacement of materials.

2.03 INSTALLATION

Excavation, Bedding, Haunching, Backfilling: Fittings shall be installed in similar accordance with the specifications of SECTION 1 Water Mains.

2.04 JOINTING

General: Jointing shall be done in strict conformance with manufacturer's recommendations. Pipe ends and gaskets shall be thoroughly cleaned prior to jointing and only approved lubricants shall be used. Installation and assembly of push-on joints shall be in accordance with AWWA C-600. Deflection of push-on joints shall not exceed that specified in AWWA C-600, or the manufacturer's instructions, whichever is less.

Gaskets: The gaskets used to make up joints on all ductile iron fittings shall be the standard gaskets supplied with the fittings. Field Lok 350 gaskets shall **not** be used on fitting joints.

Cleaning, Lubrication, Jointing: As a minimum, the last 12" of the outside of the spigot piece and inside of the bell shall be thoroughly cleaned to remove oil, grit, tar (other than the standard coating) and other foreign materials from the joint, and then painted with a manufacturer's approved lubricant. The retainer gland and then the rubber gasket shall be placed on the spigot end with the thick edge toward the gland and painted with the same lubricant.

The entire section of the pipe shall be pushed forward to seat the spigot end into the bell. The gasket shall then be pressed into place within the bell being careful to have the gasket evenly located around the entire joint. The ductile iron restrained follower gland shall be moved along the pipe into position for bolting, all of the bolts inserted and the nuts screwed up "finger-tight." All nuts shall be tightened with a suitable torque-limiting wrench. The torque for various sizes of bolts shall be in accordance with Appendix A of ANSI/AWWA C111/A21.11 which is as follows:

<u>Bolt Size (in.)</u>	<u>Range of Torque (ft.-lb.)</u>
5/8	45 - 60
3/4	75 - 90
1	100 -120
1-1/4	120 -150

Nuts spaced 180 degrees apart shall be tightened alternately in order to produce an equal pressure on all parts of the gland. Suitable torque gauges shall be furnished to Ridgewood Water for use in checking the job.

If effective sealing is not attained at the maximum torque indicated above, the joint shall be disassembled and reassembled after thorough cleaning. Over-stressing of bolts to compensate for poor installation practice will not be permitted.

Upon proper tightening of the nuts and bolts of the mechanical joint the torque limiting twist-off nuts on the restraining wedges shall be tightened until the head of the nuts shears off.

2.05 ANCHORAGE OF FITTINGS (THRUST BLOCKS)

Thrust blocking shall be Class C (2500 lbs.) concrete. All mechanical joint fittings that enact a change in direction of the pipe (tees, hydrants, 90° bends, 45° bends, etc.) shall include concrete thrust block in addition to restrained glands. Thrust blocking shall be placed between the undisturbed edge of the trench and the fitting with adequate bearing area on the pipe and the earth as shown on the detail sheet included in these specifications. Thrust blocks shall be formed to permit accessibility for joint repair. Metal harnesses of tie rods and metal clamps of adequate strength to prevent movement or other approved means may be used where concrete blocks alone cannot be used. Rods and clamps shall be painted with a corrosion resistant asphaltum.

END OF SECTION

SECTION 3

GATE VALVES AND VALVE BOXES

3.01 MATERIALS

General: Gate (Resilient Seat) valves shall be iron body, inside screw, fully bronze mounted, conforming with the requirements of A.W.W.A. Standard for Resilient Seated Gate Valves, 3 through 12 NRS, for Water and Sewage Systems of the American Water Works Associations (AWWA C509). There shall be a resilient rubber seat ring mounted to the valve disc with stainless steel screws. The rubber ring shall seat against a machined surface of the valve body. Gate valves shall be Resilient Seat Mechanical Joint Gate Valves as manufactured by the Mueller Company or approved equal.

Direction of OPEN: Direction of valve opening shall be counter clockwise. Operating nuts shall be 2" square. An arrow showing the direction of opening and the word "OPEN" shall be cast on the flange of the operating nut.

Pressure Rating: Valves shall be suitable for water working pressures to 200 psi.

Joints: Valves in sizes 3" to 12" shall be provided with mechanical joint ends and restrained follower glands as specified in SECTION 2.

Orientation: Valves in sizes 3" to 12" shall be oriented with the stem and operating nut in a vertical position.

Gaskets: The gaskets used to make up joints on all valves shall be the standard gaskets supplied with the valves. Field Lok 350 gaskets shall **not** be used on valve joints.

Valve Boxes: Each buried valve shall be provided with a cast iron, three piece, threaded valve box. Valve boxes shall be 5-1/4" shaft with a round base and shall be provided with extra deep covers with the word "WATER" cast on the top. The top section shall screw over the middle section to provide adjustment. The middle section locks into the base section. Length of valve boxes and size of base shall be to suit each particular installation and shall have about 8" of adjustment up and down available after setting to grade. Valve boxes shall be as manufactured by Bingham & Taylor Company, Figure 4906 with a No. 6 Round Base (Figure 4909-A) or approved equal.

3.02 STORAGE AND HANDLING

Valves shall be stored and handled carefully so as not to caused damage to their coatings or parts. All valves shall be thoroughly cleaned with a brush and water (and soap solution as required) to remove all foreign material from the valve prior to installation. Failure to properly store and clean valves prior to installation shall cause overall unacceptability of the piping installation, rejection of the work, and removal and replacement of materials. Valves shall be shipped and stored is a closed position and only opened during the actual process of jointing them to the piping.

3.03 INSTALLATION

Jointing: Jointing shall be performed as specified under SECTION 2 for ductile iron fittings.

General: Valves shall be set truly plumb with valve boxes directly over the valves.

Excavation: Fittings shall be installed in similar accordance with the specifications of SECTION 1 Water Mains.

Bedding, Haunching, Backfilling, and Surface Restoration: After the valve and pipe have been jointed, quarry-processed stone shall be placed and compacted in 6" lifts around the valve and brought up to an appropriate height to set the base section of the valve box over top of the valve. After being correctly positioned for line and grade, the remainder of the valve box shall be assembled on the base and fill shall be carefully tamped around the valve box. The pipe trench shall be backfilled and tamped in 6" lifts for its entire width with suitable material for a distance of 6' in each direction from the valve from the top of the pipe to bottom of the pavement or 12" below the final ground surface. Top of box shall be flush with pavement in paved areas and shall be 1" above ground surface in grassed or earth areas. In grassed or earth areas, valve boxes shall be set in a concrete pad with minimum dimensions of 20" x 20" x 6", which shall include markings as directed by Ridgewood Water.

END OF SECTION

SECTION 4

HYDRANT ASSEMBLIES

4.01 MATERIALS

Hydrant Assemblies: Hydrant Assemblies shall consist of a Fire Hydrant (SECTION 4), 6" Ductile Iron Pipe (SECTION 1), Gate (or Hydrant) Valve (SECTION 3), and Hydrant Tee (SECTION 4).

Fire Hydrants: Fire Hydrants (Hydrants) shall be of 5-1/4" size, conforming to the standards of the American Water Works Association, AWWA Standard for Dry-Barrel Fire Hydrants for Ordinary Water Works Service, AWWA C502, latest revision, relating to fire hydrants and conforming with the Ridgewood standards.

Hydrants shall be of the safety flange type with 6" mechanical joint connection; 5-1/4" main valve opening; two (2) 2-1/2" hose connections with National Standard threads; and one (1) 4-1/2" steamer nozzle, 5.100" outside diameter, 4 threads per inch, 0.050 normal shake. Hydrants shall have O-Ring seals and the main valve shall close clockwise. Painting and all details shall be in accordance with AWWA standards.

All parts of hydrants shall be interchangeable with similar parts of hydrants of the same size and type. All bolt holes shall be accurately drilled from templates. All joints shall be faced smooth, so as to make a perfectly watertight joint.

Hydrants shall be provided with "O" ring seals. Each hydrant shall be shop tested under 300 psi applied above and below the compression valve. Any hydrant showing sweating of metal or leaking or other defect shall be rejected. All tests shall be made at the expense of the supplier.

Size and shape of hydrant operating nut and cap nut shall be pentagonal, 1-1/4" point to flat.

Standard fire hydrants shall be model A-423 as manufactured by the Mueller Company, or approved equal.

Hydrant Tees: Hydrant tees shall be a mechanical joint tee as specified in SECTION 2 with the additional feature of a ductile iron rotatable gland on the branch that facilitates direct connection of the mechanical joint gate valve to the hydrant tee as a mechanical joint, without the need for a spool piece and tie rods.

4.02 STORAGE AND HANDLING

Fire Hydrants shall be stored and handled carefully so as not to caused damage to their parts or coatings. All caps shall be kept firmly tightened during shipping from the point of manufacture and through acceptance by Ridgewood Water of the piping installation, except for purposes of flushing and testing. The piping connection shall be covered against the intrusion of material until such time that the hydrant is to be installed. Hydrants shall be stored

so that they are not subject to submergence in water or mud prior to installation.

4.03 INSTALLATION

General: Hydrant Tees shall be placed in the line of piping per the requirements of SECTION 2. A gate (or hydrant) valve shall be jointed directly to the hydrant tee as specified in SECTIONS 2 and 3. A valve box shall be set on the hydrant valve as specified in SECTION 3. An appropriate length of 6" ductile iron pipe (SECTION 1) shall be placed from the hydrant valve to the proposed hydrant location and jointed to the hydrant valve. The fire hydrant shall then be jointed to the 6" pipe per Jointing in SECTION 3.

Orientation: Hydrants shall be placed so that centerline of hydrant is approximately 2'-0" back from the face of the curb, or as directed in the field by Ridgewood Water. Steamer nozzle shall face the road. Hydrants shall be set plumb and with the grade marking on the hydrant barrel set even with finished grade. All backfill around hydrants and valves shall be thoroughly and carefully compacted after correct positioning.

Restraint: Hydrants shall be rodded back to the hydrant valve with two 3/4" diameter steel rods. Rods and bolts shall be painted with asphaltum upon installation.

Hydrant Drains: Around the base of each fire hydrant shall be placed not less than seven (7) cubic feet of broken stone to insure the complete drainage of the hydrant when closed.

Thrust Blocks: A concrete thrust block shall be placed between the hydrant and the undisturbed edge of the trench as specified in SECTION 2. The concrete shall not interfere with the operation of the barrel drain.

Backfill: Quarry-processed stone shall be placed around the hydrant assembly (tee, valve, 6" pipe, and fire hydrant) and compacted in accordance with the requirements of SECTION 3 for valve boxes.

END OF SECTION

SECTION 5

BROKEN STONE OR GRAVEL

5.01 MATERIALS

Broken stone or gravel shall be clean, hard aggregate, conforming to NJDOT Standard Specifications for NO. 57 stone. A 30 pound sample for each proposed source shall be submitted to Ridgewood Water for approval before any material is trucked to the site.

Should differences of opinions arise in the field between the Developer and Ridgewood Water, Ridgewood Water reserves the right to have a certified testing laboratory perform sieve analyses on the material. Cost of said testing shall be bourn by the Developer and levied against the final acceptance of the work.

Broken stone or gravel shall conform to the following gradation:

<u>U.S. Standard Sieve Size</u>	<u>Percent Finer By Weight</u>
1-1/2"	100%
1"	95-100%
1/2"	25-60%
No. 4	0-10%
No. 5	0-5%

END OF SECTION

SECTION 6

BANK-RUN-SAND-AND-GRAVEL BACKFILL

6.01 MATERIALS:

Bank-run-sand-and-gravel shall be bank run supply, free of clay and foreign material, as approved by Ridgewood Water. A 30-pound sample for each proposed source shall be submitted to Ridgewood Water for approval before any material is trucked to the site.

Should differences of opinions arise in the field between the Developer and Ridgewood Water, Ridgewood Water reserves the right to have a certified testing laboratory perform sieve analyses on the material. Cost of said testing shall be bourn by the Developer and levied against the final acceptance of the work.

Bank-run-sand-and-gravel shall meet the following gradation:

<u>U.S. Standard Sieve Size</u>	<u>Percentage by Weight Passing Square Mesh Sieves</u>
1"	100%
3/8"	65 - 100%
No. 10	40 - 85%
No. 30	20 - 65%
No. 60	10 - 45%
No. 200	5 - 12%

END OF SECTION

SECTION 7

QUARRY-PROCESSED STONE

7.01 MATERIALS:

Quarry-processed stone shall be a broken stone material conforming to the requirements for dense graded aggregate material as outlined in the New Jersey State Department of Transportation Standard Specifications. This material shall be hard, durable, broken gravel so that it can be compacted into a hard dense mass. A 30 pound sample for each proposed source shall be submitted to Ridgewood Water for approval before any material is trucked onto the site.

Should differences of opinions arise in the field between the Developer and Ridgewood Water, Ridgewood Water reserves the right to have a certified testing laboratory perform sieve analyses on the material. Cost of said testing shall be bourn by the Developer and levied against the final acceptance of the work.

Quarry-processed stone shall have the following gradation:

<u>U.S. Standard Sieve Size</u>	<u>Percentage by Weight Passing Square Mesh Sieves</u>
1-1/2"	100%
3/4"	55 - 90%
No. 4	25- 60%
No. 50	5 - 25%
No. 200	3 - 12%

Dense graded aggregate materials other than quarry-processed stone shall not be used in lieu of quarry-processed stone. Recycled concrete will not be acceptable.

END OF SECTION

SECTION 8

SAND

8.01 MATERIALS

Sand shall be clean, siliceous sand, having no more than 3% by weight of foreign matter such as loam, clay, dirt, organic matter, or other impurities. A 30 pound sample for each proposed source shall be submitted to Ridgewood Water for approval before any material is trucked to the site.

Should differences of opinions arise in the field between the Developer and Ridgewood Water, Ridgewood Water reserves the right to have a certified testing laboratory perform sieve analyses on the material. Cost of said testing shall be bourn by the Developer and levied against the final acceptance of the work.

Sand shall conform to the following gradation:

<u>U.S. Standard Sieve Size</u>	<u>Percent Finer By Weight</u>
3/8"	100%
No. 4	95-100%
No. 8	80-100%
No. 16	50-85%
No. 30	25-60%
No. 50	10-30%
No. 100	2-10%
Weight Removed by Decantation	less than 3%

The decantation test shall be made in accordance with "Standard Test Method for Materials Finer Than 75 um (No. 200) Sieve in Mineral Aggregate by Washing", ASTM designation: C 117-84.

END OF SECTION

SECTION 9

TAPPING SLEEVES AND VALVES

9.01 MATERIALS

Tapping Sleeves: Tapping sleeves shall be constructed of Type 304 (18-8) stainless steel. All welds shall be passivated to restore the corrosion resistance of the metal. The tapping sleeve shall have a pressure rating of 250 psi for 4" to 8" and 200 psi for 10" and 12".

Tapping Sleeves shall have a gasket system that provides full circular contact with the pipe being tapped. The gasket material shall have a checkered and O-ring pattern that ensures leak free contact between the pipe wall and the Tapping Sleeve. The gasket system shall also form a seal on the tapping branch that utilizes both a mechanical and hydraulic sealing principle. The gasket material shall be Styrene BUNA Rubber (SBR) and shall be held in place with a series of stainless steel retainers.

Tapping Sleeves shall have a 3/4" NPT pressure test tap along the branch connection that allows for testing the tightness of the sleeve after installation and prior to tapping.

Tapping Sleeves shall have a rotatable gland on the branch that facilitates direct connection of the mechanical joint gate valve to the Tapping Sleeve as a mechanical joint.

Tapping sleeves shall be model 3490 MJ as manufactured by PowerSeal Pipeline Products Corporation or approved equal.

Valves: Valves to be installed with tapping sleeves shall be gate valves as specified in SECTION 3 Gate Valves and Valve Boxes, of these specifications and shall have a large enough body to pass the shell cutter of Ridgewood Water's tapping machine when the valve is in the "OPEN" position.

9.02 STORAGE AND HANDLING

Tapping Sleeves: Tapping sleeves shall be stored in their original packaging as shipped from the manufacturer and shall be presented to Ridgewood Water with all the required bolts, nuts, gaskets, and installation directions. The Developer shall be responsible for ensuring that all materials are present for the installation of the tapping sleeve.

Valves: Refer to SECTION 3 Gate Valves and Valve Boxes, of these specifications. The Developer shall provide the proper gaskets, nuts, and bolts for the proper installation of the valves.

9.03 INSTALLATION

Materials Required Onsite: Developers will have all the materials onsite that are necessary to perform the installation of a tapping sleeve and valve. Failure to provide proper materials will

be met with a refusal on the part of Ridgewood Water to make the wet tap to the existing system.

Test Holes: Test holes may be requested to investigate the location, orientation, size, etc. of existing facilities. When deemed necessary, Ridgewood Water will require the Developer to dig test holes to determine the conditions of the existing facilities prior to performing the installation of a tapping sleeve and valve. Failure to dig test holes (whether requested by Ridgewood Water or not) may result in delays. Ridgewood Water will not proceed with an installation until all materials are present at the location and the existing facilities are uncovered to the extent that the existing conditions are known.

General/Excavation: Ridgewood Water personnel shall install the tapping sleeve and valve and perform the wet tap in a trench prepared and maintained by the Developer. Adequate room shall be given for the proper installation of the materials. Should Ridgewood Water personnel not be satisfied with the preparation and maintenance of the trench, they shall direct the Developer's personnel to rectify the situation or cancel the installation of the tapping sleeve and valve. The trench bottom shall be level and dry in accordance with the specifications of SECTION 1 Water Mains.

Bedding, Haunching, Backfilling, and Surface Restoration: Refer to SECTION 3 Gate Valves and Valve Boxes for the proper bedding, haunching, backfilling, and surface restoration.

9.04 OWNERSHIP AND OPERATION OF MATERIALS

Failure of Materials: The Developer is responsible for all materials prior to and during installation. Any deficiencies in the materials and failures as a result of the installation procedures employed by Ridgewood Water shall be rectified by the Developer. Ridgewood Water personnel are fully familiar with the materials and the installation thereof. However, periodically accidents occur and materials fail during installation.

Should failures occur during or after the tapping process has begun that place the water system in jeopardy, then Ridgewood Water shall take appropriate actions to rectify the situation to maintain the integrity of the water system. Should Ridgewood Water have to provide material to maintain the operation of the existing system once the tapping process has been initiated, the Developer shall be responsible for providing Ridgewood Water with replacement of the materials in kind and compensation for time spent on their installation.

Transfer of Ownership: Upon completion of the wet tap and inspection of the facilities by Ridgewood Water Staff, with satisfactory results, Ridgewood Water shall direct the Developer to backfill the tapping sleeve and valve and set a valve box. The materials (tapping sleeve and valve) shall then be accepted by Ridgewood Water.

Operation of Valve: Upon the transfer of ownership of the materials the Developer shall not operate the valves associated with the wet taps. Operation of these valves shall result in legal actions against the Developer.

END OF SECTION