Developer Policy Manual

September 2024

NORTH PENN WATER AUTHORITY

RESOLUTION 00-00-00

RESOLUTION ADOPTING THE NORTH PENN WATER AUTHORITY DEVELOPER POLICY MANUAL DATED

WHEREAS, North Penn Water Authority requires all new developer construction connecting to its water system to follow certain specific procedures,

WHEREAS, the Authority has adopted certain design standards and specifications related to infrastructure construction consistent with best practices in the water industry, and

WHEREAS, the Authority's Engineering Committee has reviewed the Developer Policy Manual and recommends its adoption by the NPWA Board of Directors,

NOW, THEREFORE, BE IT RESOLVED by the members of the North Penn Water Authority duly assembled, that the Developer Policy Manual dated _____ is hereby adopted.

ADOPTED, this_____day of_____, 2024 in Regular Session.

NORTH PENN WATER AUTHORITY

By: _____
Chair

Attest:

_____
Secretary/Treasurer

PREFACE

The purpose of this manual is to outline policies and procedures related to new construction to ensure the appropriate governance and stewardship of North Penn Water Authority (NPWA) business practices while ensuring fair and equitable treatment of all stakeholders including customers, municipalities, developers, builders, vendors, engineers and contractors doing business with NPWA. It is recognized that this is a Guidance Manual and not intended to cover every situation that NPWA could encounter in the course of doing business. Issues not specifically addressed in this manual should be discussed with the Authority and its Solicitor, as needed. This manual is intended to ensure orderly and consistent management in accordance with best industry practices as it relates to new service and system expansion to serve new developments and to support the growing water needs of the communities in the NPWA service area. Projects are evaluated to ensure fire flow and pressure requirements are met and that it supports the Authority Comprehensive Master Plan. Adherence to this Guidance Manual is imperative to ensure that the projects installed under this Policy will, as a minimum, meet Level of Service goals for all customers, support long range system improvement priorities and does not have a negative impact to our existing customers and communities served.

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Section 1: General Overview and Policies

1.1 Introduction

The following policies and procedures apply to all public water related activities being undertaken by construction contractors performing work on the water system within the North Penn Water Authority (NPWA) service area. The provisions of this manual apply to all such activities.

1.2 Definitions

Authority - The Board of Directors of the North Penn Water Authority (NPWA), and/or employees.

Contractor - A person, firm, corporation or other legal entity authorized to perform construction by the State of Pennsylvania Licensing Board for Contractors. A contractor may not perform work outside of his licensed capacity.

Deposit – The escrow account established by the Developer with NPWA in accordance with the Main Extension Agreement to cover all incidental costs incurred by NPWA to administrate and manage the water main construction from start to project closeout.

Development - The performance of *any* land improvement operation; the making of any material change in the use of any structure or land; or the division of land into two (2) or more parcels.

Developer - Any person, firm, corporation, or other legal entity improving property for commercial, industrial, institutional or residential purposes.

Equivalent Dwelling Unit (EDU) - A unit of measure established by NPWA that equals the average daily water consumption for a typical residential unit. The water usage of 162.5 gallons per day (GPD) equals 1 EDU.

Easement - A legal right by agreement afforded to NPWA by a property owner to occupy defined areas with utility infrastructure for operations, maintenance or construction activities.

Engineer - A person licensed as a Professional Engineer by the Pennsylvania State Board of Registration for Professional Engineers and Land Surveyors; Division of Occupational and Professional Licensing; Department of Labor, Licensing and Regulation.

Levels of Service – Performance goals established by the Authority in accordance with industry standards to drive water system operations to ensure all customers receive optimal water service.

Lot - A single parcel or tract of land that has been subdivided for the purpose of building a residence or commercial facility.

Main Extension Agreement - A written agreement between NPWA and a developer that provides for specific terms and conditions that apply to a particular development and which outlines all fees and costs.

Parcel - A portion or plot of land, usually a division of a larger area.

Potable Water - Drinking water that is of sufficiently high quality that is suitable for human consumption or use.

Pre-construction Conference (Pre-Con) - The kick-off meeting with representatives from NPWA, municipality, owner/developer, engineer and contractor to discuss project details and procedures prior to construction.

Project Fees – All fees required as a condition of service and included in the Main Extension Agreement. This includes tapping fees, meter and installation costs and service inspection fees.

Public Right-of-Way (ROW) - The portion of a street or road dedicated to the municipality for public use.

Record Drawings - Drawings that are used to record as-built conditions of the water system at the completion of construction.

Service – The water lateral owned by NPWA extending from the NPWA water main to the curb stop to serve a private facility.

Subdivision - The division of a tract, parcel, or lot into two or more lots, building sites, or other divisions for the purpose of immediate or future sale, legacy, or building of a development. Subdivision shall also refer to uses of land not ordinarily considered a subdivision but requiring utility installations. Examples of these uses are mobile home parks, multi-family projects, townhouses, apartments, and planned unit developments.

Surveyor - A person currently licensed as a Land Surveyor by the Pennsylvania State Board of Registration for Professional Engineers and Land Surveyors; Division of Occupational and Professional Licensing; Department of Labor, Licensing and Regulation.

Water Capacity - The volume of water needed to supply water to a project, based on the calculated equivalent dwelling units (EDUs).

Will Serve - A letter of acceptance written by the authorized NPWA representative to the Developer after review of proposed plans, stating that the water system has adequate supply capacity to support the proposed development demands, provided it is available at the time of final approval.

1.3 Infrastructure Extensions

1.3.1 Overview

Infrastructure is a general term that describes the Authority's vertical and horizontal assets, such as water storage tanks, booster and well stations, fire hydrants, water service connections, and transmission/distribution water main, which are needed to provide water service to all customers. Funding for Water Main Infrastructure projects is obtained through either NPWA's Bond Redemption Improvement Fund (BRIF) or through Developer contributions in the form of Contributions in the Aid of Construction (CIAC) or in the collection of tapping fees, as well as earnings generated from revenues.

Water main improvement projects can be lumped into two basic groups: Infrastructure improvement projects driven by the Capital Investment Plan for upgrades to water service and fire protection for existing and future customers such as main replacement and new assets such as tanks and boosters, and secondly, improvement driven by developer Main Extension projects. All developer projects shall adhere to AWWA and DEP standards, like any capital project, and to obtain

Board approval, pay all fees, establish escrow and post financial security prior to construction.

This manual provides guidance on developer main extension activity within the NPWA Montgomery and Bucks County service areas and defines what the Authority requires for new development. This includes the analysis to determine ultimately what system improvements are necessary to accommodate the development to include onsite water main extensions and offsite improvements, if needed, to meet levels of service goals as established by the Authority Asset Management Plan.

1.3.4 Developer Projects

When new land development is planned within the NPWA service area, NPWA shall be included in the Land Development Plan review and approval process, preferably when the Plan goes before the local Planning Commission. The developer shall provide the land development plans for NPWA to review at this time. NPWA will collaborate with the developer to determine the scope of construction and if deemed appropriate will issue a 'will serve' letter and evaluate potential cost contribution, if appropriate. Each new development site shall extend main along the improved frontage of the property. The developer must provide a completed allocation form, AutoCAD land improvement plans and a non-refundable engineering plan review fee as detailed on the Authority's fee schedule. If the project is constructed this fee will be used as a credit toward the Deposit. All engineering design of water main shall be done exclusively by NPWA and should be shown on approved Land Development Plans, including any easements required by NPWA. As part of the design process, the Authority will evaluate the impact of the new development on the water system and design to meet minimum service and fire flow requirements, where applicable. In particular:

- Main shall be designed to provide an optimal pressure of 60-80 psi where practicable under all demand conditions.
- Main size to all fire hydrants shall be a minimum of 8-inches.
- Developer is responsible for determining fire protection requirements for its development in accordance with local and state ordinances and requirements.
- Confirm sufficient capacity to meet the demands of the new development.
- Evaluate fire flow, pressure and capacity requirements to ensure no adverse impact on existing customers. If there is an adverse impact, determine the necessary improvements needed to mitigate issues.
- Evaluate proposed improvements to confirm adherence to the Authority Comprehensive Master Plan and identify any improvements that will be beneficial to existing and future customers. This could include main upsizing, grid reinforcement and utility easements for future improvements.
- Service and meter sizing and costs shall be per the Authority Schedule "A" included as Appendix A in the Rules and Regulations.
- All new services shall have meter pits or vaults in accordance with the NPWA service criteria under Section 1.5.2 of this document.
- All main to be installed within state roadways must have a secured PennDOT Highway

Occupancy Permit. NPWA will submit the HOP application.

- All main to be installed under any water way must have an approved conservation district plan and a DEP stream crossing permit. The Developer handles submitting the application.

- All proposed main outside of dedicated public roadways must have a deed of easement legally recorded in the County of jurisdiction. The Developer is responsible for all engineering and surveying and preparation of deed descriptions.

1.4 Hydrant Policies

1.4.1 Overview

The following are guidelines regarding the hydrants installed on water transmission and distribution pipelines throughout NPWA's two county service area. Hydrants perform a valuable role in providing a water supply for fire protection in Montgomery and Bucks Counties, as well as in flushing the Authority's water transmission and distribution pipelines to maintain quality of water delivered to and used by our customers.

NPWA flushes and tests all its hydrants on an annual basis to determine and record operating characteristics such as flow rate, as well as static and residual pressure. The test information is used to monitor water distribution system flow characteristics and as a tool to model system performance for use in designing water supplies to new developments and areas where water service is currently unavailable. Locations where new site improvements are planned, tests are required to verify current system conditions.

1.4.2 Hydrant Identification

Each hydrant paint color is reflective of ownership, thread and diameter.

Body: Red = privately owned; White = publicly owned

Nozzles: Red = North Penn threads; Blue = National Standard Threads

Caps: Red = 4" diameter; Orange = 6" diameter; Yellow = 8" diameter; Green = 12" diameter; Blue = 16" or larger diameter

1.4.3 Hydrant Location

The fire marshal representing the municipality is responsible for review and approval of the location of each new hydrant for new developments. Generally, hydrants are placed approximately 800 LF apart. Hydrants are horizontally located approximately 3 feet behind the curb line within the public right-of-way or within a blanket easement where the road is private. National Standard threads are used for most hydrants. Within the Lansdale fire department service area jurisdiction, hydrants are required to have North Penn Threads. Hydrants located on private property are considered private hydrants and are maintained by the property owner, unless otherwise specified.

1.4.4 Hydrant Usage

Hydrant operation will be controlled and closely monitored by NPWA to ensure the integrity of the water system. Contamination of the potable system can occur due to improper use of or connection

to hydrants. Directly following installation, all hydrants must be bagged and taped, tied or otherwise secured to provide visual confirmation that the water system is not ready for operation and acceptance by NPWA.

- No one except Authority personnel, the local fire department and authorized customers are approved to use a fire hydrant within NPWA's service area.

- A request for fire flow information shall be made through NPWA's Operations Department by e-mailing the hydrant location to Info@npwa.org. Persons or entities wanting to perform fire flow tests on NPWA's system must be in the presence of NPWA staff and make appointment at least 72 hours prior to the scheduled test. All hydrant operations will be performed by NPWA personnel.

- Contractors are required to obtain a temporary meter to utilize water during construction. Unauthorized persons or entities may not use a hydrant in the NPWA system to obtain water to fill tanker trucks, hydro seeders or for any other purpose, unless they complete a hydrant meter rental application which may be obtained from the Customer Service Department and pay the appropriate deposit prior to receiving the hydrant meter.

- After the work has been completed and the hydrant meter is no longer needed, the contractor will remove the hydrant meter, return it to NPWA and pay for all metered water use. Once the meter has been returned and no damage to the meter or hydrant is evident, NPWA will refund the deposit. If the user fees are unpaid or repairs are required, these costs will be deducted from the deposit and the remainder will be returned to the contractor. If the contractor intends to use the hydrant meter for more than 30 days, the meter readings must be submitted to the NPWA Customer Service Department by the 15th day of each month. Failure to do so may result in forfeiture of the contractor's deposit.

- It is the responsibility of the fire district and/or the associated municipality to request the addition of hydrants to NPWA's water transmission and distribution systems for the sole purpose of fire protection.

- It is the responsibility of the developer and his engineer to design a fire protection system that meets the requirements of the fire district, and the municipality based on the available NPWA system flows and pressures at the point of connection.

- Any existing hydrants that are taken out of service for an extended period shall be bagged and reported to county radio dispatch.

1.4.5 Unauthorized or Illegal Hydrant Use

Any unmetered water usage by a site developer under a main extension agreement will be held responsible for the associated penalty deducted from the builders' water deposit as detailed in the Main Extension Agreement.

Unauthorized water usage is illegal and therefore subject to civil or criminal penalties as prescribed by law. When an illegal connection is found:

- NPWA will confiscate the device used on any illegal connection. If the responsible person is at the scene, he will be advised of the policy and disconnect the device. Failure to comply with the request may result in NPWA pressing charges.

1.5 Service Connection Policy

1.5.1 Overview

The following guidelines govern the installation of new service connections throughout NPWA's two county service areas. In general, the Rules and Regulations of the Authority and by inclusion, the Developer Policy Manual, establish the criteria for how new connections shall be served and metered. All existing service renewals and new service lines require a meter-pit or vault. The meter pits and vaults are used to house the meter that measures the customer's water consumption. Inline valves or curb stops are used to turn on and shut off fire and domestic services to a single customer. The meter pit and curb stop also serve as a delineation between NPWA owned and privately owned. NPWA has ownership and the responsibility of maintenance from the public water main to the customer curb stop. The customer owns from the curb stop to the building including the meter-pit, with NPWA owning and maintaining the meter inside the meter pit.

1.5.2 Service Connection Design Criteria

The location of the service, and all its appurtenances, is subject to the approval of the Authority. Meter pits and curb stops shall be in the grass plot between the curb and sidewalk. Deviations due to existing conditions and conflicts with other utilities must be approved by the Authority. Meter pits are not permitted in driveways, roads or areas where they will be subject to vehicle traffic. All new services with a diameter of 2" and below are required to be metered from a meter pit located outside of the building. All services to properties with a diameter of 4" and above are required to be metered from within a vault located outside the building within proximity to the property line.

All new services will be served by either a meter pit or vault that will be owned by the property owner. Domestic curb stops shall be located no more than 18" from the curb or roadway unless site conditions dictate otherwise. The pit/vault shall be located as close as possible to the public water main. Meter pits shall be located generally between curb and sidewalk as approved by the Authority. Vaults shall be located as close as practicable just outside the public ROW line along the property line frontage. The criteria for service requirements are as summarized below:

1. A standalone, new single residential property with water main frontage shall be served with a single 15" meter pit for domestic service or if sprinklers are required, a combined domestic/fire service with an 18" meter pit, located near the public ROW line and in accordance with Section 2 of the Rules and Regulations.
2. All commercial, industrial, or institutional properties serving one building with domestic and fire service shall be served by vaults located near the property line with separate domestic and fire lines. Any hydrants on private property required by the fire marshal shall be private.
3. A rental property, managed by a property manager with multiple rental units shall be served with a combined service meter vault. Any hydrants required by the fire marshal shall be private.
4. Mixed use developments will be evaluated on a case-by-case basis in accordance with the following criteria:
    a. Where there is an opportunity to improve system reliability or enhance water service to the existing NPWA system, this may be considered a benefit to the existing system and its customers and trigger a main extension.
    b. Where there is a mixture of rentals and fee-simple property ownership, the nature of service to units and asset ownership shall be determined on a case-by-case basis.
5. Residential developments with public roads shall be served with main extensions in accordance with the main extension policy.
6. Residential developments with private roads and individual property owners shall be served

with main extensions and public fire hydrants provided the roads are suitable for multiple utility access and suitable width and the HOA provides acceptable easements. Each homeowner property will have its own meter pit and service.

7. Non-residential properties will be evaluated on a project specific basis:
    a. Where it is in the best interest of NPWA and there is a benefit to the public water system and its customers, NPWA may approve a main extension and serve each business and pad site with separate fire and domestic services and provide separate vaults as needed.
    b. Smaller shopping centers with one property owner may be served as a single domestic and fire service with private fire protection, similar to a rental property.
    c. Commercial and Industrial business parks or campuses with full width private roads will generally be served with main extensions and separate fire and domestic lines for each business and with public fire hydrants.

Section 2: Main Extension Procedures for Developers

2.1 General Procedures for Developers

The following procedures are to be followed by developers who construct water facilities that will be dedicated to NPWA upon completion of the associated work within a development. Depending upon the size and scope of the proposed project, some procedures may be modified by NPWA. If the development requires an individual service tap with no overall system impacts requiring offsite improvements, the procedure outlined for service connections, as dictated by the Rules and Regulations, is to be followed.

2.2 Main Extension Agreement Process

The main extension development sequence follows the following steps:

- Preliminary Review
- Allocation Form (see Appendix A of the Manual)
- Plan Review Meeting (if needed)
- Fire Marshall / Tentative Approval
- Project Cost Estimation
- Agreement Preparation
- Final Approval
- Construction
- Project Closeout

2.2.1 Preliminary Review

NPWA owns, operates and maintains hundreds of miles of water main throughout central Bucks and Montgomery Counties; however, there are some areas where there is no public water service. In this case, the Developer should consult with the local municipality regarding the availability of extending water into an area that is not currently served. Developers should request availability of water service while performing due diligence prior to purchasing a parcel or tract of land for development. A description of the location, purpose, scope, and size of a potential project shall be submitted to the Engineering Department at 300 Forty Foot Road, Lansdale, Pennsylvania 19446. After review of the proposed plans NPWA will evaluate public water service capacity and if appropriate provide a 'will serve' letter. This response will inform the developer of the availability, size and proximity of the water infrastructure in the requested area. The developer shall include this information as part of the land development approval process.

2.2.2 Allocation Form

The allocation form provides a record of the stakeholders including the Engineer, Developer and Financial Institution for project contract management. It also documents phasing, and the number of EDUs anticipated within the project. Each phase of a project will require a separate allocation submittal, fee and scope clarification. The Developer shall submit an allocation form, $1,500 non-refundable plan review fee, and an AutoCAD DWG file to begin the main extension drawing design. The drawing will be part of the construction plan set and be updated throughout the construction process; the final plan will eventually become a permanent record of the as-built water assets. Also required is a complete set of the land development plans, including utility and landscaping plans for the site. The non-refundable engineering fee submitted with the allocation

form covers administrative and engineering costs for processing the initial main extension design. Upon submission of the allocation form, the AutoCAD DWG and fee a Main Extension project number will be established for recording all time and materials expended by NPWA for the project.

2.2.3 Plan Review

Upon review of the allocation form and drawing submission, NPWA may require a pre-design meeting if determined that the project is of sufficient magnitude, including high density or phasing of the development. Appropriate water design criteria, including number of services, the corresponding usage designations (residential, multi-family, commercial), and fire flow requirements. The project may be evaluated to determine if offsite improvements are needed to meet level of service requirements. If a meeting is warranted, NPWA's project manager will specify the time and place of the project review meeting, which should include the following project stakeholders:

- Developer Engineer
- Developer Representative
- Municipal representatives, if applicable
- Other entities as needed

The NPWA engineering department is responsible for notifying the above-mentioned parties.

Acceptance of a Sketch or Concept plan is on a conditional basis and does not constitute final approval of the plan for construction.

2.2.4 Tentative Approval

The project shall be placed on the Board agenda at the monthly Board meeting for tentative approval once the following is completed:

- The water main extension design is completed in accordance with NPWA technical specifications including fitting and main alignment to optimize future maintenance and operability considerations,
- The service connections and metering pit locations are finalized in accordance with NPWA service specifications including total EDU calculations and meter requirements.
- The fire marshal has reviewed and approved all fire hydrant locations.

2.2.5 Project Cost Estimation

Once the proposed project has obtained tentative board approval the developer is to provide a detailed construction cost estimate based on the final main extension design. The costs are to be generated by the contractor who will be completing the water main installation. The estimate is to include all labor and materials required to complete the water main extension for assets to be dedicated to the Authority, including hydrants and services. The estimate should be broken into three categories: main, hydrant and service costs. The estimate will be reviewed by the Authority, and any inaccuracies resolved.

2.2.6 Agreement Preparation

The costs will be used to compile a cost summary which includes the appropriate fees and deposit amounts to be included in the main extension agreement (See Appendix B for sample agreement).

Costs are broken into three categories: Security, Deposit and Fees

Security: Amount equal to the construction costs for materials and labor required to complete the water main facility installation. This amount is to be submitted to NPWA to be held in escrow as a letter of credit, or tri-party set aside agreement prior to construction. The purpose is to ensure the funds are available to NPWA should the project fail to reach completion. The escrow amount is released once invoices reflecting completion of the installation are submitted to NPWA.

Deposit: Escrow funds used to offset direct costs incurred by the Authority associated with project management throughout the duration of the project. At project closeout, actual expenses are reconciled with deposit money and any remaining funds are returned to the Developer:

- Engineering, Administration & Inspection: 10% of construction costs
- Lab: As detailed in the Authority fee schedule
- Legal: As detailed in the Authority fee schedule
- Builders Water Deposit: The greater of $3,000 or $500/EDU; reconciled with unauthorized, unmetered water usage and remainder returned when last meter is activated
- Construction Contingency: 10% of construction costs; released at substantial completion less 10% which is held until final project closeout

Tapping and other Fees: See schedule A (Appendix A in the Rules and Regulations)

The following information is submitted to the NPWA solicitor for generation of the main extension agreement:

- Allocation form,
- Metering details,
- Construction estimate,
- Cost summary and
- Clarification of any easements needed for the development.

2.2.7 Final Approval

For the developer to receive Final Approval there needs to be a fully executed Main Extension agreement, checks for all fees and deposit, financial security and proof of insurance no later than 1 week prior to the monthly NPWA board meeting, typically held on the fourth Tuesday of each month. The documentation is presented to the NPWA board for approval and signature. Once the documentation is executed and approved the developer may follow through with construction notification procedures. In some cases, contingent final approval may be granted due to lending requirements of the lending financial institution. In this circumstance, the Authority may grant contingent final approval provided that all requirements and obligations are met as determined by the Solicitor. Contingent final approval may be released after 12 months if the developer fails to meet its obligations. At that time, the reserved EDUs shall be released and no longer committed to the development.

2.2.8 Construction

As required by the Main Extension Agreement terms and conditions (see sample Agreement, included as Appendix B), the Developer must construct all improvements in accordance with the NPWA Material, Installation and Testing Manual included as Appendix C and as detailed in the Authority drawings prepared specifically for the project. Prior to construction, the developer is to

submit a set of materials cut sheets indicating the proposed products to be used for construction of the water facilities. Material shop drawing submittals are required for all physical assets to ensure that they comply with NPWA Technical Specifications as detailed in this Manual under Appendix C – Material, Installation and Testing Manual. These submittals are project-specific, and as such, must include or highlight the specific materials to be used for the project. All material submittals must be routed in electronic format. The materials are to be reviewed and approved by the NPWA Construction Superintendent, no later than one week prior to the pre-construction meeting. NPWA must be given at least 48 hours' notice prior to the pre-con meeting to confirm attendance availability.

The purpose of the pre-con meeting is as follows:

- Review the project scope, NPWA approved drawings and material submittals,
- Review the contractor's proposed construction schedule and methods,
- Identify any project-specific issues and concerns,
- Review NPWA safety and design requirements and construction inspection procedures, and
- Discuss the project close out requirements.

The developer must provide notification of all water-related construction activity to ensure proper inspection of all work. Failure to do so could result in completed work being excavated to confirm proper construction.

- Once the main pipeline is completely installed, filled, flushed and tested and invoices are submitted reflecting the water facility expenditures, the project security escrow can be released. Partial requests are permissible as work is completed.
- When base paving and an initial punch list is completed successfully, the construction contingency, less 10% can be released.
- When all services are activated the builders water deposit less any unmetered usage can be released.
- When final paving is in place, dedication and final closeout can begin.

2.2.9 Project Completion

Project closeout requirements are more fully detailed in the form of Main Extension Agreement attached as Appendix B of this Manual. The developer must notify NPWA when all construction tasks associated with the water facilities are complete and final top paving is installed. At this time, the facilities shall be dedicated to the Authority and all easements, if needed, should be fully executed and ready for recording (see Appendix D of this Manual for a sample easement agreement). At that time, a maintenance bond with a duration of 18 months equal to 15% of the project costs is to be submitted. Once the bond is within two months of expiration and the project passes a final-final inspection, the project account can be reconciled and closed out at the end of the maintenance period. Any monies remaining in escrow shall be returned to the developer at this time.

APPENDIX A

ALLOCATION FORM

Form M-1

North Penn Water Authority
300 Forty Foot Road, P.O. Box 1659
Lansdale, PA 19446

NPWA USE ONLY

Date _____

APPLICATION FOR WATER CAPACITY ALLOCATION

PLAN REVIEW FEE: $ 1,500.00

DATE RECEIVED: _____

Applicant: _____
Address: _____
_____
Phone: _____
Fax: _____
Project Name: _____
Municipality: _____

Contact Person: _____
Address: _____
_____
Phone: _____
Fax: _____
Location: _____
_____

Engineer: _____
Contact Person: _____
Phone: _____
FAX: _____

Contractor: _____
Contact Person: _____
Phone: _____
Fax: _____

REQUIREMENTS

1. A pre-construction meeting will be required one (1) month before the installation of water main.
2. Meter pits are required if the building does not have a cellar or the service is over 200 feet from the water main.
3. Final Approval Date _____
4. The parcel number or numbers _____
   _____

CONSTRUCTION INFORMATION:

Phase(s)	Number of Lots	Construction Start Date	First Anticipated Occupancy	Anticipated Occupancies Per Month

Number of Units/Lots Required at this time _____

_____
Signature of Applicant

If the development is going to be phased, please include a list of the lot numbers in each phase and the size of the service. If there are any changes in the service size, make the request in writing.

Form M-1

APPLICATION FOR WATER CAPACITY ALLOCATION

Name of principle partner of the company _____

How will the Agreement be signed (L.P., Inc.) _____

Authorize Signatory _____

Type of Entity _____

The State/Commonwealth where it is incorporated _____

Name of Lender _____ Address _____

Contact Person _____ _____

Form of Credit (Letter of Credit, Cash, Lien set aside) _____

Name of Developer _____

Who prepared the plans? _____

Date of Plan _____

Last Revision _____

Total Acreage _____

Roads: Private (An Association) _____ or Dedicated to the Twp. or Boro. _____

Does the house have: ☐ a basement ☐ a slab on grade ☐ or, a crawl space?

Are there any lots over 200' from the water main? If so, give the lot number(s) _____

_____

What is the size of the fire line? (if required): _____

Will sprinklers be required? _____ Quantity _____ Location _____

What is the size of the services(s)? If there are different service sizes, give corresponding lot number and size:

Number of Services	Size of Services	Lot Numbers

Note: Please enclose one (1) set of plans and a CAD diskette of the development.

(revised 10/04/05-dak)

APPENDIX B

SAMPLE MAIN EXTENSION AGREEMENT

MAIN EXTENSION AGREEMENT

THIS AGREEMENT ("Agreement"), made this _____ day of _____, 2024 between **NORTH PENN WATER AUTHORITY** (hereinafter referred to as "Authority") and _____, its successors and assigns (hereinafter referred to as "Developer").

RECITALS:

A. Authority is duly incorporated under the provisions of the Pennsylvania Municipality Authorities Act of 1945, as amended, with its principal office located at 300 Forty Foot Road, Lansdale, Montgomery County, Pennsylvania 19446, and has been designated as the agency within _____, _____ County ("Municipality") responsible for providing water and water distribution service.

B. Developer is a company organized and existing under the laws of Pennsylvania with the principal office for the conduct of business located at _____.

C. Developer presently owns approximately ____ acres of land; being tax parcel nos. _____ (collectively, the "Property") and more specifically described in plans, prepared by _____, dated _____, and last revised _____, said Plans being incorporated herein by reference as if set forth in full (the "Plans").

D. Developer intends to use the Property for the purposes of constructing _____.

E. Developer has agreed to construct and install a water distribution system consisting of water mains, valves, meters, fire hydrants and other appurtenances, on and leading to and from the aforesaid site, collectively referred to as the "Improvements".

F. Developer specifically acknowledges receiving the design of the water system for the Property, which is identified as drawing no. _____construction takeoffs and Authority specifications as to materials required and methods of installation, collectively referred to as the "Authority's Drawing".

G. Developer has agreed to pay to the Authority all reasonable connection fees, meter fees, tapping fees (collectively "Fees") and deposit certain sums of money to reimburse Authority for engineering, inspection, legal and administrative costs, and other related costs of said development ("Deposit"). The Fees and Deposit, as detailed on Exhibit "D", are due and owing upon execution of this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants and promises hereinafter set forth, and intending to be legally bound hereby, the parties agree as follows:

ARTICLE I- CONSTRUCTION DESIGN AND CONDITIONS

1. Developer agrees to construct the Improvements in accordance with the Authority Drawing. Developer has provided Authority with a final construction cost estimate, detailing the quantity, unit prices and labor costs for all portions of the Improvements to be installed on the Property. The Authority has reviewed the final construction cost estimate to ensure its reasonableness, to ensure that appropriate consideration has been given to rock excavation, installation of select backfill, and contingencies and to add appropriate sums for permit fees and regulatory fees, and for the

Deposit which will cover costs incurred by Authority during the course of construction. The final construction cost estimate is attached hereto and made a part hereof as Exhibit "A".

2. Developer agrees that should Authority Rules, Regulations, and/or Specifications change between the date of this Agreement and commencement of construction, Developer will construct in accordance with "then current" Authority Rules, Regulations, and Specifications. All meter pits shall be installed in accordance with the Authority's Specifications and Developer acknowledges that but for the meter located within the meter pits, the Developer, and subsequent property owners, shall be solely responsible to own, repair, and maintain the meter pits and service line, from the curb stop to the premises, in accordance with applicable codes and standards, including the Authority's rules and regulations.

3. Developer shall construct and install the Improvements in accordance with the Plans and any subsequent construction plans reasonably requested and approved by or prepared by the Authority.

4. Developer agrees to employ a responsible, experienced contractor and to employ a sufficient workforce and equipment to complete construction of the Improvements.

5. Developer agrees that construction of the Improvements shall be pursued diligently and shall be performed subject to the observation of the Authority which shall be compensated for all costs of its employees or authorized representatives engaged in the inspection of said project, and further agrees that said Improvements shall not be used until the construction is approved by the Authority as having met the Authority's specifications.

6. Developer acknowledges that it is in possession of the most current edition of the Authority's Water System Materials, Installation and Testing Manual (hereinafter referred to as the "Manual"). Developer further acknowledges that all materials and methods used during the construction, installation and testing of the Improvements must conform to Authority specifications as set forth in the Authority's most current edition of the Manual. Developer agrees to submit all materials proposed for the construction of the Improvements to the Authority prior to the commencement of such construction to ensure compliance with the Authority Manual. No substitutions will be accepted. Pressure regulating devices, double check valves, reduced pressure back flow prevention devices and appropriate meter yoke assemblies with accessories, may be required in Authority's sole discretion. In addition to the foregoing, Developer will provide meter settings for the meters located in the meter pits to be installed by Authority in accordance with drawings attached hereto as Exhibit "B".

7. Developer agrees to schedule a pre-construction meeting with the Authority two (2) weeks prior to commencement of construction on any of the Improvements.

8. Prior to commencing construction of the Improvements, Developer shall notify the Authority's One Call representative that all underground utilities located on the Property have been marked through the Pennsylvania One Call System, or if not subject to the requirements of the Pennsylvania One Call System, have been marked by Developer. In accordance with 73 P.S. § 176 et seq. (the "Act"), the Developer shall be responsible for any obligations required of a Facility Owner, as defined in the Act, until such facilities are dedicated to the Authority.

9. Developer will require its paving contractor to schedule the paving so that water lines and all their respective appurtenances are installed prior to hard surfacing of streets and will require its paving contractor to exercise due care in paving over any of the Improvements. If because of the non-observance of the above requirements, any part of the Improvements or any of the Authority's facilities are damaged or repaving is required, Developer will repair or replace such facilities to the satisfaction of the Authority or, if the Developer fails to make such repairs or replacements, the Authority will perform the work and bill the Developer in full for repair costs thus incurred.

10. Developer may install the water distribution system prior to the installation of curbing only upon the condition that Developer agrees to be responsible for, and to pay promptly upon request of the Authority, all costs and expenses, including legal, administrative and engineering fees, associated with any repair, replacement or relocation of any portion of such water lines or related hydrants, laterals, curb stops, valves or other appurtenances caused in any way by the final grading of streets or installation or curbs (including settlement and insufficient ground cover) which may be necessary to meet the Authority's specifications. If lines and hydrants are installed prior to installing curbs, Developer will be responsible for damage attributable to settling or relocation. Developer agrees that until and unless (i) all curbs are installed; (ii) all streets are base graded and paved; and (iii) all portions of the water distribution system, including mains, hydrants, meters, curb stops, valves, and other appurtenances to the Improvements are repaired, replaced or relocated and have been paid for in full by Developer, the Improvements will not be deemed to be "complete" or acceptable for dedication to the Authority.

11. Upon the discovery of any defect during the construction of the Improvements or material utilized therein, or any variation from the Authority's Drawing, the Authority reserves the right to require the Developer to stop further work on the Improvements. Upon receiving such notice, Developer agrees to immediately cease any construction activities relating to the Improvements. Authority shall immediately inform the Developer of the action which the Developer must take to be permitted to resume construction. Construction may resume only with the approval of the Authority.

12. Upon application by Developer, and upon payment of the then current reasonable Authority charge, the Authority will furnish temporary water service, as and when available, for Developer's use during construction on the Property. Such service will only be provided through an Authority provided meter.

13. Using any form required by the Municipality, Developer, upon receiving subdivision approval, shall petition said Municipality to provide within the development such hydrants and water supply for fire protection as the Municipality may require.

14. Developer will disinfect and pressure test the water lines, at Developer's expense, under the direct observation of Authority.

15. Developer agrees to grant all easements to Authority necessary to allow Authority ingress and egress to install, operate and maintain all portions of the water system and appurtenances thereto not located within public rights-of-way. Any easements necessary for this purpose will be granted and shall be at least twenty (20') feet on each side of the water facilities installed pursuant to this Agreement. Developer shall grant the Authority all necessary deeds of easement prior to conveying any individual lots. Developer further agrees that the Deed to any individual lot within the

Property which is subject to a water easement will contain a specific reference to the easement to which the lot is subject.

16. The acquisition of all necessary easements, rights-of-way and acquisitions required of Developer are the responsibility of Developer, who agrees to pay all costs associated therewith. The Authority may, but shall not be required to, assist in the acquisition of rights-of-way using the Authority's powers of eminent domain.

17. Developer agrees that prior to the commencement of construction, Developer will furnish the Authority and its engineer with a certificate of insurance indicating that Developer has obtained public liability insurance, with limits of $1,000,000 for any one occurrence, $2,000,000 for multiple accidents, and $500,000 for property damage liability, which insurance includes the Authority as a named insured for all purposes. Such insurance shall be written on an "occurrence basis" by an insurer qualified to do business in Pennsylvania and who is reasonably satisfactory to the Authority. Insurance written on a "claims made" basis shall not satisfy the requirements of this Agreement. The Authority and its solicitor, engineer, staff and officers shall not be deemed to have modified or waived, and shall not be estopped from enforcing the requirements that insurance policies be written on an "occurrence basis" by any failure to object to any policy secured and submitted by or for a contractor, or by any other conduct. The obligation of a contractor to secure and maintain insurance written on an "occurrence basis" shall remain with the contractor, and shall be enforceable against the contractor, at all times, including after a loss has occurred, excepting only if the Authority shall have expressly agreed in writing to accept insurance which is not written on an "occurrence basis", which writing must expressly recognize that such insurance is

not written on an "occurrence basis." Developer agrees to indemnify, save and hold harmless and defend Authority, its officers and employees, from any and all liens, charges, claims, demands, losses, costs, including but not limited to legal fees and court costs, causes of action or suits of any kind or nature whatsoever, from any causes whatsoever, whether known or unknown, foreseen or unforeseen, including claims of alleged negligence or condition caused or created in part by Authority, arising by reason of or during performance of any work of any kind or nature covered by this Agreement.

ARTICLE II- FINANCIAL SECURITY AND PAYMENT OBLIGATIONS

18. Developer shall pay all costs of constructing and installing the Improvements, which shall be performed under the observation of the Authority and shall pay all costs incurred by the Authority with respect thereto. All costs shall include, but are not limited to, the Deposit and Fees. The Deposit and Fees owed by Developer upon the execution of this Agreement are set forth in Exhibit "D".

19. Developer agrees to reimburse the Authority, upon demand, for the costs of necessary inspection fees or any other costs incurred in accordance with the Authority's Regulations.

20. Developer agrees to furnish a letter of credit, in such form as is approved by the Authority solicitor, for the sole benefit of Authority (the "Security") in the amount of _____ Dollars ($_____), which is anticipated to be reasonable estimate, as determined by the Authority of the total cost of Improvements, plus service installation costs, as set forth in Exhibit "C" hereof. If the Security is not provided, the Authority shall have the right to terminate this Agreement by delivering

written notice of said intention to Developer. Delivery of notice, as set forth above, shall constitute a revocation of any and all permits issued to Developer.

21. Developer agrees that should the Authority, at any time prior to acceptance of the Improvements by Authority, determine that the amount of Security provided is insufficient to pay for completion of the Improvements, Developer shall increase the amount of Security by such additional sums of money as are determined necessary by the Authority. If Developer fails to provide additional Security within ten (10) days of the Authority's demand to do so, this Agreement shall terminate and all remaining Security shall be paid to the Authority.

22. Contemporaneously herewith, Developer agrees to deposit with the Authority the following sums:

(a) _____ Dollars ($_____) for those items more specifically set forth in the Authority's Deposit calculation, which is attached hereto and made a part hereof as Exhibit "D";

(b) a Builder's Water Deposit of Six Thousand Dollars ($6,000.00), which is covered in the Deposit. The Builder's Water Deposit is provided to charge Developer for any of the following unauthorized uses of water:

(i) obtaining unmetered water from fire hydrant – Two Thousand Dollars ($2,000.00) for each violation or day of violation.

(ii) obtaining unmetered water from service lines – Two Thousand Dollars ($2,000.00) for each violation or day of violation.

(iii) initiating water service prior to the installation of a meter – Two Thousand Dollars ($2,000.00) for each violation or day of violation.

In addition to being fined for obtaining unmetered water, Developer acknowledges that obtaining unmetered water is a criminal offense. The Authority reserves the right to prosecute any such theft of water to the fullest extent of the law. Developer shall be responsible for all of its contractors and subcontractors who illegally obtain unmetered water.

23. All Security posted and sums on deposit with the Authority as set forth in Paragraphs 20 and 22 above may be drawn down by the Authority to reimburse it for all expenses incurred by it as a result of this Agreement and to pay for the cost of construction. Developer agrees that if at any time during the existence of this Agreement either the amount of the Deposit or the Fees are insufficient to meet the costs and expenses of any of the Developer's obligations pursuant to this Agreement or unaccounted for materials and/or services furnished by Authority, Developer will immediately make payment for such obligations, unaccounted for materials and/or services. If Developer fails to make such additional payment(s) within ten (10) days, this Agreement shall terminate and all remaining sums on deposit shall be paid to the Authority. Any balances remaining from the Deposit shall be returned to Developer in accordance with Exhibit "E".

24. Developer agrees that in addition to all other amounts payable under this Agreement, Developer, or any purchaser, assignee, heir, successor, or assign shall, upon execution of this Agreement, pay to the Authority a water tapping fee of _____ Dollars ($_____). Authority and Developer acknowledge that the tapping fee amount covers _____ (__) tapping fees/ EDUs. Tapping Fees are imposed in accordance with Act 57 of 2003 and the Authority Fee Schedule and Resolution implementing tapping fees. Developer specifically acknowledges that Developer has been afforded the opportunity to review Authority's fees and charges set forth in this Agreement and specifically agrees to the validity of the same.

25. Developer shall submit all change orders, either for the size of services or the number of services in writing to the Authority seven (7) days prior to installing the additional services or the change in size of the services. Each change order shall be accompanied by a payment for the additional Deposit or Fees, associated with the change order.

ARTICLE III- PROJECT COMPLETION AND CLOSEOUT

26. Upon written request to the Authority to certify completion of portions of the Improvements, the Authority will review the request and issue, within forty-five (45) days, certifications of the Improvements completed. The Authority will then authorize the release of Security in an amount equal to the amount of the certified Improvements in order that payment may be made to the appropriate contractor. If, within forty-five (45) days, the Authority's engineer in writing states that the Improvements have not been satisfactorily completed, no release shall be authorized. Authority agrees to release funds for work which

has been verified as satisfactorily completed by Authority, subject to the retainage permitted by the Municipality Authorities Act. The Authority shall at all times have the right to retain ten percent (10%) of the total cost of the Security pending final certification. Developer agrees, however, that this Agreement does not constitute a third party beneficiary contract, and the Authority does not bear any responsibility whatsoever with respect to the payment of any contractor, subcontractor, supplier or any creditor of Developer. Upon completion of all of the Improvements certified by the Authority, the balance of Security and the remaining construction contingency shall be returned in accordance with Exhibit "E". If the payments and Security are insufficient to cover the obligations of Developer pursuant to this Agreement, Developer shall pay the amount of the shortfall to Authority within ten (10) days after receiving Authority's statement. The return of any remaining Deposit shall be returned in accordance with Exhibit "E".

27. After substantial completion of construction, Developer shall request the Authority to issue correspondence acknowledging that the construction has been completed in accordance with the approved Plans and requirements of the Authority. Upon such request, the Authority shall inspect the project and Improvements and shall generate a punchlist of items that need to be corrected, if any. Upon successful completion of the punchlist, the Authority shall provide the correspondence. Developer shall maintain the Improvements, at Developer's expense, until all curbing, sidewalks and base course paving relating to the Property have been completed. Before a final inspection can be made, Developer must certify to the Authority in writing that all final grading and paving is completed. All substantial completion steps and the processing of same shall comply with the process detailed on Exhibit "E".

28. Developer agrees that after the Authority issues correspondence acknowledging completion, Developer shall dedicate and convey to the Authority, by appropriate deed, all Improvements, rights of entry, and such further rights of way and/or easements, free and clear of all liens and encumbrances which the Authority's solicitor deems reasonably to be necessary or desirable to perfect the Authority's interests in the water system as extended, and as the Authority deems reasonably desirable to enable the Authority to connect the system to other portions of the Authority's water system so as to insure efficient flow of water throughout the system. Such connection points will be locations satisfactory to both parties. The Authority agrees, upon approval of the same, to accept said dedication of such Improvements as the Authority normally accepts in order to maintain and operate same as part of its water system. In no event shall Developer retain any right to convey or dedicate the water system or to take service from any other supplier of water service. Prior to the installation of services, Developer shall supply the Authority with all pertinent tax parcel numbers, property addresses, and lot numbers, written legal descriptions of all Improvements and all easements and rights-of-way required to gain access to the Improvements. And all costs, fees and any expenses to be incurred for the preparing, registering and recording by the Authority of any document contemplated herein shall be paid by Developer upon demand therefore. Upon receipt of the foregoing, Authority shall prepare the appropriate deeds and shall accept dedication of the Improvements.

Developer agrees that Authority, or anyone else with Authority's permission, may make connections with the Improvements constructed by Developer, notwithstanding the fact that such connection is made prior to an offer of dedication.

29. The Authority shall not be obligated to accept any deed of dedication, easements or rights-of-way or to provide water service until (i) Developer has provided a certificate prepared by its consulting engineers verifying satisfactory testing of the Improvements to be dedicated and completion thereof in full compliance with the Plans and specifications approved by the Authority; (ii) the Authority verifies Developer's tests; (iii) the Authority in its sole discretion, has determined that the intended use of the water system has not been materially altered since its approval of the Plans and specifications; (iv) Developer has executed a written confirmation of its guarantee of the system as hereinafter provided; and (v) Developer is not in default of any other obligations imposed pursuant to this Agreement.

30. At the time of acceptance of dedication by the Authority, Developer shall guarantee to the Authority that the Improvements shall be free of defects in workmanship and any variations from the approved Plans and specifications with respect to materials to be used and the methods of construction and installation of the Improvements for a period of eighteen (18) months after such dedication. In the event that any defects in workmanship are required to be corrected within such eighteen (18) month period, Developer agrees to make all necessary repairs to correct such defects after receipt of written notice from the Authority specifying such defects in workmanship and describing the extent of the repairs required. Developer shall use its best efforts to complete any such repairs within thirty (30) days after the receipt of such written notice from the Authority, provided, however, that in the event of any emergency which Authority determines is a health or safety hazard, Authority shall provide notice to Developer by telephone, followed by facsimile communication, receipt of which shall be confirmed by

the Authority, to immediately commence such repairs and shall complete same within three (3) days of the notice by telephone. If Developer fails to correct any such defects in workmanship in accordance with the terms and provisions hereof, Authority may, at its option, after expiration of the grace period hereinabove provided, enter into possession, complete the work with its own men or by contract, and the entire cost of such completion including Authority overhead, engineering and legal expenses shall be paid to Authority by Developer upon written demand therefore.

31. In order to further protect Authority, or in the event any of the work described herein with regard to the Property shall be performed by any purchaser of Developer then, at the time of the acceptance of dedication by the Authority, Developer or purchaser of Developer shall furnish Authority with an escrow fund, letter of credit or maintenance bond, which shall guarantee that for a period of eighteen (18) months after the acceptance of said dedication, there shall be no defects in workmanship in any Improvements dedicated to the Authority. The escrow fund, maintenance bond or letter of credit shall be in the amount of fifteen percent (15%) of the Security and in form satisfactory to the Authority's solicitor. In addition, Developer hereby agrees to pay any and all annual maintenance fees for all fire hydrants installed on the Property until such time as such fire hydrants are taxed by the Municipality. Subsequent to the imposition of the initial fire hydrant tax by the Municipality, Authority shall assume any and all maintenance expenses related to all such fire hydrants.

32. After such dedication to and acceptance by the Authority, and subject to the eighteen (18) month warranty against defects and workmanship, Authority shall operate and maintain at its sole cost and expense all Improvements included within the

dedication. At such time, the Authority shall return any security posted to guarantee the integrity of the Improvements dedicated.

33. After acceptance of dedication of the Improvements by the Authority, the Improvements shall be the sole property of the Authority.

ARTICLE IV- DEFAULT

34. On discovery of any defect in the construction of the Improvements or material utilized therein, or any variations from the Authority's Drawing or in the materials to be utilized; the Authority shall: (i) give notice of such defect or variations to the Developer; and (ii) unless Developer shall have forthwith corrected or caused to be corrected any such defect or variation, withhold authorization of further payments under construction contracts from the Security held by the Authority; provided that no failure on the part of the Authority to discover any such defects or variations, or to give notice as required by this Paragraph, or to cause further disbursements from the Security to be withheld, shall operate as a waiver of any such defects or variations on the part of the Authority; and provided further that no such failure on the part of the Authority shall limit the right of the Authority, as hereinafter provided, to reject any offer to dedicate and convey the completed Improvements to the Authority, or to refuse to provide water service.

35. If Developer fails to fulfill any of Developer's obligations under the Agreement, defaults in any way under the Agreement, fails to prosecute construction of the Improvements with reasonable promptness and diligence, or if Developer, after thirty (30) days written request fails to correct defective materials or workmanship, within the time periods specified in this Agreement, the Authority may draw down on the Security

and Deposit provided to cure Developer's default and may, but shall not be obligated to, complete the Improvements or any portion thereof. The Authority shall have the right, but not the obligation, to secure materials of the quality and quantity required by the Plans and the necessary numbers of workmen, mechanics and the required equipment on the open market at the then current market prices from any party to complete the construction of the Improvements, or any portion thereof.

36. Developer agrees that in the event of any default under the terms of this Agreement, and after the expiration of any applicable cure period, the Authority may cause judgment to be entered against Developer, and for that purpose Developer authorizes and empowers the Authority or any Prothonotary, Clerk of Court or Attorney of any Court of Record to appear for and confess judgment against Developer and agrees that the Authority may commence an action pursuant to Pennsylvania Rules of Civil Procedure No. 2950, et seq. for the recovery from Developer of all damages provided for herein, as well as for interest and costs and attorneys' fees, for which authorization to confess judgment, this Agreement, or a true and correct copy thereof, shall be sufficient warrant. Such judgment may be confessed against Developer, for the amount of damages provided herein, as well as for interest, costs and reasonable attorneys' fees, but in an amount not less than Three Thousand Five Hundred Dollars ($3,500.00). Neither the right to institute an action pursuant to said Pennsylvania Rules of Civil Procedure, nor the authority to confess judgment granted herein, shall be exhausted by one or more exercises thereof, but successive complaints may be filed and successive judgments may be entered for the aforesaid damages as they are incurred under the provisions of this Agreement.

37. In any procedure or action to enter judgment by confession for money pursuant to the above Paragraph, if the Authority shall first cause to be filed in such action an affidavit or averment of the facts constituting the default or occurrence of the condition precedent, or event, the happening of which default, occurrence of event authorizes and empowers the Authority to cause the entry of judgment by confession, such affidavit or averment shall be conclusive evidence of such facts, default or occurrences, conditions precedent, or events, and if a true copy of this Agreement be filed in such procedure or action, it shall not be necessary to file the original as a Warrant of Attorney, any rule of court, custom or practice to the contrary notwithstanding.

38. Developer hereby releases the Authority and any and all attorneys who may appear for the Authority from all errors in any procedure or action to enter judgment by confession by virtue of the warrant of attorney contained in this Agreement and all liability therefore. Developer further authorizes the Prothonotary or any Clerk of any Court of Record to issue a Writ of Execution or other process, and further agrees that real estate may be sold on a Writ of Execution or other process.

ARTICLE V- INDEMNIFICATION

39. Developer agrees to indemnify, save and hold harmless and defend Authority, its engineers, solicitors, officers, employees, agents and servants from any and all liens, costs, liabilities, charges, claims, demands, losses, costs, including but not limited to legal fees and court costs, causes of action or suits of any kind or nature whatsoever, from any causes whatsoever, whether known or unknown, foreseen or unforeseen, including claims of alleged negligence or condition caused or created in whole or in part by the Authority, arising by reason of or during performance of any work

of any kind or nature covered by this Agreement including, but not limited to, the construction of the Improvements and the marking of all underground utilities not subject to the requirements of the Pennsylvania One Call System as required under Paragraph 7.

40. Developer agrees that the indemnity obligations of Developer under this Agreement apply to, and include, claims made by employees of Developer and Developer's contractors. Developer, on behalf of itself and its contractors, hereby waives the protection and immunity of the Worker's Compensation Act as to any actions brought against the Authority, and all other immunities or statutory provisions, which would otherwise prohibit, prevent or limit Developer from having the indemnification duties and liabilities set forth in this agreement.

41. The Authority will give prompt written notice to Developer of any such claim asserted against it, which claim, if sustained, may result in liability on the part of Developer hereunder; provided, however, that the reasonable failure on the part of the Authority to give such notice shall not relieve Developer from its obligations under this section. If requested by the Authority in such notification, Developer will promptly assume the defense thereof, employing competent counsel in such defense; provided, that nothing contained herein shall require the Authority to accept counsel unsatisfactory to it; and provided further, that no compromise or settlement of such claims shall be made without the prior written consent of the Authority.

ARTICLE VI- MISCELLANEOUS PROVISIONS

42. It shall be Developer's obligation at Developer's expense, to give or cause to be given all notices and to comply or cause compliance with all laws, ordinances, municipal rules and regulation and requirements of public authorities applying to or affecting the

conduct of the project work, including but not limited to, obtaining permits, bonds, insurance policies or certificates, road opening/closing permits, if necessary, and posting the appropriate Security and escrow deposits.

43. Upon the purchase or lease of the land subject to this Agreement, and prior to settlement thereto, Developer shall supply to the Authority the name or names and addresses of prospective purchasers and/or lessees of the subject tract, or any portion thereof.

44. This Agreement shall be binding upon the heirs, successors and assigns of the parties hereto. It shall not, however, be assigned, except with the written consent of the Authority, which consent shall not be unreasonably withheld, conditioned or delayed. The covenants and conditions contained in this Agreement shall be covenants running with the land.

45. This Agreement shall become effective upon its execution by the parties to it.

46. Developer agrees that the term of this Agreement shall be subject to Authority review one (1) year from the date hereof. At the end of the applicable period, if the installation of the Improvements (except for the installation of individual water services from the curb to the area to be constructed on the Property as part of the Developer's project) has not been completed, the Agreement may, at the sole discretion of the Authority, be extended or terminated by written notice to Developer.

47. Developer acknowledges that the water capacity reserved herein is site specific and may be used only on the Property which is the subject of this Agreement.

48. Authority may, in its sole discretion, record this Agreement or a memorandum of this Agreement in the Office of the Recorder of Deeds for the County in which the Property is located.

49. Any notice given pursuant to this Agreement shall be valid only if given in writing, and shall be deemed sufficiently given if forwarded by certified mail, with sufficient postage attached. The date of any notice provided for in this Agreement shall be the date of deposit in the United States mail. The place to which notice shall be given is set forth in the preamble of this Agreement and shall be binding, unless changed, by either party, in the manner set forth above.

50. All questions with respect to the construction of this Agreement and the rights and liabilities of the parties shall be determined according to the applicable provisions of the laws of the Commonwealth of Pennsylvania.

51. This Agreement may be amended only by written document executed by the parties hereto.

52. This Agreement contains the entire understanding between the parties and supersedes any prior written or oral agreements with respect to the subject matter of this Agreement. There are no representations, agreements, arrangements, or undertakings, oral or written, between and among the parties hereto relating to the subject matter of this Agreement which are not fully expressed herein.

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

Attest: **NORTH PENN WATER AUTHORITY**

_____ By:_____

_____ By: _____

Exhibit "A"

Final Construction Cost

Exhibit "B"

Meter Drawings

Exhibit "C"

Security

Exhibit "D"

Deposit

Exhibit "E"

Phasing and Dedication

APPENDIX C

NPWA DEVELOPER MATERIAL, INSTALLATION AND TESTING MANUAL

North Penn Water Authority

WATER SYSTEM MATERIALS, INSTALLATION AND TESTING MANUAL

2005

1.0 GENERAL TECHNICAL SPECIFICATIONS

Scope of Work included under this Manual:

In general, work included in this Manual covers all aspects of the water system construction required to bring water service to any improvement located within the area of development as described within the Development Plan or the Main Extension Agreement. The design of any on-site private system will follow the guidelines as established in the PADEP Water Supply Manual for the Construction of Public Water Supply Systems to ensure adequate water service and fire protection. This manual specifies a minimum standard of quality and workmanship for materials and construction methods. This includes but is not limited to the furnishing and installing of all materials, goods and services needed to bring public water to any proposed structure or proposed facility to include:

- All public and private water main,
- All service line materials, and
- All valves, hydrants, brass goods, fittings and all accessories and all appurtenances needed for a complete and proper installation of a public water system.

1.1 STANDARDS AND CODES

1.1.1 Work shall be in accordance with standards and codes listed below except as modified by the Contract Documents:

ACI Building Code Requirements for Reinforced Concrete (ACI 318)
AISC Manual of Steel Construction
ANSI Applicable Volumes
ASTM Applicable Volumes
AWS Applicable Codes
AWWA Applicable Volumes
OSHA Regulations
Federal State, and Local Regulations

1.1.2 Reference herein and in other attached documents to these and other standards and codes are to editions thereof in effect as to the date of the contract.

1.1.3 The following terms are defined as follows, unless another meaning is clearly intended.

Authority: The North Penn Water Authority.

Developer: The company, partnership, corporation or individual desiring to enter into a Main Extension Agreement with Authority for the purpose of obtaining public water for the Developer's project.

Contractor: Any company, partnership, corporation or individual hired by the developer or general contractor, its subcontractors and representatives assigned to complete or construct any aspect of the water system.

1.1.4 **Related Documents:** The general provisions of the Developer Main Extension Agreement, The NPWA Standard Details Sheet, The PA DEP Water Supply Manual--Chapter 8, Municipal Development and Subdivision Plan approvals and local fire and plumbing codes may apply in the execution of the work associated with this manual. It is the Contractor's responsibility to ensure that construction is in compliance with all applicable rules, codes, regulations and stipulations.

1.1.5 Report any conflict between the various codes or between any code and Specification to North Penn Water Authority (NPWA) for interpretation and consultation, prior to proceeding with the work. Report any conflict between the NPWA Standard Details Sheet and this Manual to NPWA for interpretation and decision. In general, the materials and methods specified in this Manual are to be used for the installation of all appurtenances of the water system.

1.1.6 The Contractor shall provide all the labor, supervision, materials, plant, tools and equipment necessary or desirable for properly performing and completing the work as described and specified in the plans and these specifications. All water system work by the Contractor is subject to the review, inspection and approval of the Authority.

1.1.7 Where this Manual refers to NPWA, the Authority or Authority's representative, it is defined as the NPWA Construction Inspector or its authorized representative.

1.1.8 **Materials and Workmanship** -- All materials, fixtures, fittings and supplies furnished under this Main Extension Agreement, unless otherwise specified, shall be of standard first grade quality and of the best workmanship and design. Where the characteristics of any materials are not particularly specified, such approved materials shall be used as is customary in first-class work of the nature for which the material is employed. No inferior or low grade materials will be either approved or accepted, and all work of assembly and construction shall be done in a neat, first-class and workmanlike manner. Authority shall have sole discretion in accepting or rejecting all materials and work associated with this Main Extension.

1.2 EXCAVATION AND BACKFILL

1.2.1 In general, the Contractor shall conform with all local and state road opening permit requirements for excavating and backfilling.

1.2.2 This item includes removal of all material encountered in excavating, backfilling and compaction of backfill necessary for the installation of water main. It includes all clearing and grubbing, barricades, sheeting and bracing, removal of water, disposal of surplus materials and debris and other precautions required for the safe and proper conduct of the work.

1.2.3 Trench excavation for pipe installation shall be to the depth shown on the drawings. Depth in unpaved area shall be measured from edge of nearest pavement.

1.2.4 Trench excavation in existing pavement shall be performed in a manner that will prevent fracture or disturbance of the pavement beyond reasonable working limits.

1.2.5 Topsoil, or other suitable materials removed from excavations shall be stored separately for further use as backfill, if approved by Authority's representative for use as backfill. Topsoil shall be used only for finished surface grading and shall be spread uniformly over the areas designated to a compacted depth of six (6) inches unless otherwise specified.

1.2.6 All materials not needed for backfill or deemed unsuitable for backfill by the Authority's Representative shall be disposed of by the Contractor at Contractor's dumpsite.

1.2.7 Suitable Material

1.2.7.1 Excavated material used as backfill shall contain no frozen material, ashes, rubbish, combustible or decomposable material, topsoil nor any other material which the Authority's Representative deems unsuitable for this purpose. Contractor shall replace any excavated material unsuitable for use as backfill with proper material obtained from other sources as approved by the Authority's Representative.

1.2.8 Select Fill

1.2.8.1 Backfill shall conform to PennDOT specifications and the drawings and more commonly known as 2A Modified.

1.2.9 Trench Backfill

1.2.9.1 Backfill from the trench bottom to 12 inches above the top of pipe shall be made with specified material. The material shall be placed in uniform layers a maximum of 4 inches thick and compacted alternately on both sides of the pipe by hand tamping.

1.2.9.2 Backfill from 6 inches under and 12 inches above the pipe to rough grade shall be made with suitable material in unpaved areas as defined in 1.2.7, and select fill in paved areas as defined in 1.2.8, unless trench detail states otherwise, including driveways. The material shall be placed and compacted in 4-inch layers for hand tamping and 12-inch layers for mechanical tamping.

1.2.10 Gravel Cradle

1.2.10.1 The Contractor shall install a gravel cradle by Authority's Representative or inspector due to rock protrusion or unstable trench bottom, the Contractor shall furnish and install a minimum of a 6-inch thick layer of compacted select fill prior to placing the water main or appurtenances. The limits of the gravel cradle will be determined by the Authority.

1.3 ROCK EXCAVATION

1.3.1 Wherever "rock" is used as the name of an excavated material, it shall mean boulders or pieces of rock, concrete or masonry, measuring one-half (1/2) cubic yard or more, hard shale or solid ledge rock and masonry which, in the opinion of the Authority's Representative, requires for its removal the continuous use of

pneumatic tools or drilling and blasting. Material which can be loosened and removed by normal job equipment and material which is outside the limits of measurement allowed shall not be measured or classified as rock excavation.

1.3.2 In areas where blasting is necessary, such blasting shall be performed only by a person or persons showing proper credentials to be fully qualified to handle blasting materials and perform blasting. The local municipality must approve all proposed blasting prior to proceeding. The Contractor shall assume the risk of and be responsible for all blasting by him or under his supervision.

1.4 TRENCH EXCAVATION

1.4.1 **Sheeting, Bracing and Shoring** -- Wherever it is necessary to prevent injuries or to avoid damage to existing structures, pavement or foundations, or to prevent trench loads in the pipe due to caving or sliding of banks or excavations, the Developer shall sheet, brace or shore such excavations.

1.4.2 In open trench operations on State highways, the Developer shall be governed by the conditions, restrictions and regulations made by the Pennsylvania Department of Transportation (PADOT). The Developer shall comply with all applicable standards as published by the Occupational Safety and Health Administration (OSHA). If the Developer fails or neglects to meet these requirements, Authority may order any or all of the work to be stopped until the requirements are met.

1.4.3 All sheeting, sheet piling, bracing and shoring shall be installed by personnel skilled in such work. Timber or steel members used shall be sound, straight and free from defects. Sheeting and piling shall remain in place within the pipe zone which is the area of trench from the top of the pipe to the subgrade.

1.4.4 Sheeting, sheet piling, bracing and shoring above the pipe zone shall be withdrawn and removed as the trench is being backfilled except where and to such extent as Authority shall order in writing that the same shall be left in place, or where Authority shall permit the Developer to leave the same in place, at the request and expense of the Developer.

1.4.5 In withdrawing sheeting and sheet piling, special care shall be taken to ensure that all voids or holes are filled with satisfactory material and thoroughly compacted so as to prevent injury to the pipe and its appurtenances and injury or settlement of adjacent structures and pavement.

1.4.6 The neglect, failure or refusal of Authority to order the use of sheeting or sheet piling, or to order better quality or larger sizes of timber or steel members, or to order sheeting, sheet piling, bracing or shoring to be left in place, or the failure to give any orders or directions to the manner or methods of driving or placing sheeting, sheet piling, bracing or shoring shall not in any way or to any extent relieve the Developer of any or all obligations under this Main Extension Agreement. Such sheeting, sheet piling, bracing or shoring shall be provided at the sole expense of the Developer.

1.4.7 Width and Depth of Trenches

1.4.7.1 **Trench Widths** -- Sides of trenches shall be kept as nearly vertical as possible, and the trenches shall be excavated true to line so that a clear space as shown on details is provided on each side of the barrel of the pipe. If sheeting is required at the level of the pipe, the dimensions in the foregoing sentence shall be applicable to the inside faces of the sheeting.

1.4.7.2 **Trench Depths** -- The depth of the excavation for the pipe and appurtenances shall be so constructed to provide an minimum of four feet of cover. Stream crossings shall be excavated to provide a minimum of three feet of cover in the stream bed. The subgrade shall be excavated to fit the outside periphery of the lower quarter of the pipe with depressions being formed for bells or couplings. The pipe shall be bedded as shown on the details throughout the entire length of the pipe. If the trench is not excavated neatly or is excavated beyond the specified subgrade, the trench shall be backfilled to the proper subgrade with crushed stone or concrete if encasement is required so that the lower third of the pipe is supported for its entire length. The Developer shall have no claim for additional compensation for such bedding.

1.4.7.3 **Unstable Subgrade** -- When Authority determines that the material encountered at subgrade is unstable, the material shall be removed from under and from each side of the pipe for a distance of one diameter of the pipe or as otherwise ordered by Authority. The trench shall then be backfilled to the proper subgrade as required in these specifications.

1.4.7.4 **Unyielding Subgrade** -- When any unyielding material such as rock is encountered at subgrade, such material shall be removed to the depths below the bottom of the pipe as shown on the drawings, and the trench shall be backfilled to the proper subgrade with crushed stone so that the pipe is supported along its entire length. If trenches are shattered by blasting below or beyond the lines of excavation specified herein, the trench shall be refilled to specified lines of excavation with crushed stone, as directed by Authority. The Developer shall pay for all additional excavation and bedding as required by this specification.

1.4.8 Length of Open Trench

1.4.8.1 Authority shall have the right to limit the amount of trench opened in advance of pipe-laying and the amount of pipe laid in advance of backfilling, but in no case shall more than 400 feet of trench be opened at any one place in advance of the completed pipe. The trench shall not be opened for a distance of more than 500 feet at any one time.

1.4.8.2 Trench excavation shall be fully completed, except for the forming of trench subgrade, at least 20 feet in advance of the pipe placement and shall be kept free from obstructions except at the close of the work day, or at the discontinuance of work, the pipe laying may be completed to within 5 feet of the end of the opened trench. The amount of pipe laid in advance of backfilling shall not exceed 200 feet.

1.4.8.3 Authority may, at any time, require backfilling of open trenches over completed pipelines and the Developer shall have no claim for compensation even though, to accomplish said backfilling, excavation or other work at any place must be discontinued temporarily. If work is discontinued on any trench, except by order of Authority, and the excavation remains open for an unreasonable time, in the opinion of Authority, the Developer shall backfill the trench if so directed by Authority.

1.4.9 Trench Consolidation, Backfill, Cleanup and Traffic Maintenance

1.4.9.1 Trench backfill shall be completed expeditiously upon completion of pipe-laying. Trench backfill material shall be as specified in the appropriate section of these specifications. All excess trench excavation shall be removed from the site daily, and, where applicable, each street shall be broom-swept to afford a clean pavement surface. The Developer shall maintain affected streets in a clean condition and shall make daily inspections to examine all water main trenches. Where settlement occurs, the trench shall be repaired immediately to bring the trench up to grade. The Developer shall conform to all applicable PADOT and local codes and standards, as a minimum, for all backfill work.

1.5 BACKFILLING MATERIALS

1.5.1 Description

1.5.1.1 The Developer shall perform all backfill operations of every description for trenches and roads, with the materials and procedures and to the dimensions and levels shown on the drawings, or as required by Authority and in accordance with these specifications. This section shall include the backfilling, consolidation and compaction of all pipe trenches in roadways and shoulders and other areas with select or suitable materials to the levels and tolerances specified.

1.5.1.2 In open trench operations on State highways, the Developer shall be governed by the conditions, restrictions and regulations made by the Pennsylvania Department of Transportation (PADOT). All such regulations shall be in addition to those set forth in these specifications.

1.5.2 Related Work Specified Elsewhere

- Excavation
- Maintenance of Work Site
- Erosion Control
- Paving Restoration
- Ductile Iron Pipe and Appurtenances
- Service Line Materials and Brass Goods

1.5.3 **References** -- The following references are to be consulted for the applicable work items.

1.5.3.1 PADOT 408 - Pennsylvania Department of Transportation Publication 408 - Specifications - Sections 601.3 and 703.3.

1.5.3.2 Standard Detail Drawings

1.5.3.3 ANSI/ASTM D1557 - Test Methods for Moisture-density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 kg) Rammer and 18 Inch (457 mm) Drop.

1.5.4 **Regulatory Requirements** -- Backfill operations shall conform to the applicable PADOT and local codes and standards for all backfill work.

1.5.5 Backfill Material

1.5.5.1 **Select Material Stone Backfill** -- Select material stone backfill shall be crushed stone or gravel aggregate with suitable soil filler materials conforming

to Select Granular Material (2A modified) - Section 703.3, Publication 408 - Specifications - PADOT. Select material stone backfill shall be placed from the top of pipe bedding material to subgrade elevation in roadways and shoulder or as directed by Authority. Refer to the appropriate Standard Details in these Specifications for an illustration of proper backfill placement.

1.5.5.2 **Suitable Backfill Material for Use in Pipe Trenches other than in Roadways and Shoulders** – Select Material Stone Backfill shall be used up to 12 inches below finished grade. The trench may be topped off using suitable backfill material excavated from the trench, if free of stones larger than eight (8) inches in maximum dimension and free from waste, objectionable organic matter, rubbish, boggy or other unsuitable materials as determined by Authority. No frozen material shall be used for backfilling.

1.5.5.3 **Imported Backfill Material** -- Imported fill soils, if required, shall be predominantly granular, well-graded, non-plastic soils with a maximum particle size of two (2) inches, with not more than ten (10) percent fines passing the U.S. Standard Sieve No. 200, such as AASHTO Coarse Aggregate No. 2A or equivalent. If first approved in writing by Authority, imported backfill material may be material meeting the requirements of Section 4.2.1.2 above when imported from a local, nearby excavation.

1.5.5.4 **Structural Backfill Material** -- Structural backfill material shall be designated as Class B Fill and shall be used around structures for the width of the excavation or as directed by Authority. Class B fill shall be the deeper, courser-grained residual soil materials of low plasticity properties which are excavated as part of the proposed construction, or material meeting the requirements for Class A Fill, and shall be used for structural fill unless otherwise first approved in writing by Authority. The surficial higher plasticity, clayey soils, the decomposed shale bedrock (i.e., predominantly shale rock fragments with a much smaller fraction of intermixed coarse and fine-grained soils), and intact fragmented shale bedrock from blasting work shall not be used for compacted structural fill construction.

1.6 BACKFILLING OPERATIONS

1.6.1 **General Procedures** -- All trenches and excavation shall be backfilled and compacted in accordance with this Section, to the original line and grade or to such other line and grade as may be shown on the Drawings or as directed by Authority. Excavation shall be backfilled as promptly as work permits, but not until completion of the following:

- Acceptance of construction below finish grade
- Inspection, testing, approval and location of underground utilities have been performed and recorded.
- Removal of concrete form work.
- Removal of shoring and bracing and backfilling of voids with satisfactory materials.
- Removal of trash and debris from excavation.
- Removal of all water, mud and slough.
- Placement of permanent or temporary horizontal bracing on horizontally-supported trench walls.

1.6.2 All pipe shall have been bedded as shown on the Standard Details or as directed by Authority. Select backfill material shall be placed in uniform horizontal lifts not to exceed six (6) inches using hand tamping equipment and twelve (12) inches using a mechanical head shaker or similar equipment. Frozen material shall not be placed as backfill, nor shall backfill be placed upon frozen material. Previously frozen material shall be removed or otherwise treated as directed by Authority before new backfill is placed.

1.6.3 A bulldozer or other blade shall not be used to place select material backfill. However, mechanical equipment with various types of buckets may be used. The work shall be performed in such a way as to prevent dropping material directly on top of the pipe through a vertical distance greater than 5 feet. Care shall be taken to compact the material under the haunches of the pipe, to place the select material backfill evenly on each side, and to avoid displacing the pipe during backfill operations.

1.6.4 Where Authority determines that backfill material, whether it be material removed from the trench or imported to the site, is unsuitable and rejects all or a part thereof due to conditions prevailing at the time of construction, the Developer shall remove the unsuitable material and replace it with select material stone backfill or suitable foreign backfill material.

1.6.5 Compaction by water-jetting shall not be permitted.

1.6.6 The Developer shall permit Authority to visually inspect backfill and compaction operations at all times and if backfill material or the degree of compaction is determined by Authority to be inadequate, then the Developer shall remove backfill as specified above or shall re-compact material until, in the opinion of Authority, compaction is adequate.

1.6.7 **Backfilling in Roadways** -- After the pipe is installed, select material backfill shall be placed along the pipe in horizontal layers in maximum lifts of one (1) foot loose thickness and shall be compacted with approved tamping equipment to 95 percent density at optimum moisture as determined by the Modified Proctor Moisture Density Relationship (ASTM D 1557-78). Lift thickness limitations and compaction requirements specified for State highways, shoulders or embankments govern over these specifications when working in State highway rights-of-way.

1.6.8 **Backfilling Around Structures** -- No backfill shall be placed against concrete until the concrete has obtained sufficient strength to withstand the earth pressure placed upon it and in no case less than seven (7) days, nor before carrying out and satisfactorily completing the tests specified in the applicable section of the "Concrete" specifications.

1.6.9 **Backfilling in Open Trench** -- As soon as practicable after the pipe has been placed, as specified elsewhere, and the pipe joints have been properly made, the backfilling shall begin and shall continue without delay. In placing the material, care shall be taken that stones do not strike the pipe and correct pipe alignment shall be maintained by the Developer at all times. Pipe bedding material shall be placed in accordance with the Standard Details or as directed by Authority. Care shall be

taken in the use of mechanical or other tampers not to injure or move the pipe or to cause the pipe to be supported unevenly.

1.6.9.1 The backfill in the remainder of the excavation from the top of the pipe bedding material to grade, or above the top of the concrete envelope, if used, shall be placed in lifts of 2 feet loose thickness and promptly compacted with appropriate compaction equipment until dense and stable. Refer to Standard Details for specific conditions and operations.

1.6.9.2 No stone or rock fragments shall be placed into the trench nor shall large masses of backfill material be dropped into the tamped layers of backfill until two (2) feet of earth backfill has been placed over the top of the pipe bedding material. Whatever method of compacting backfill is used, care shall be taken that stones and lumps shall not become nested and that all voids between stones shall be completely filled with backfill material.

1.6.9.3 No compacting shall be done when the material is too wet to be compacted properly. At such times, the compacting work shall be suspended until the previously placed and new materials have dried sufficiently to permit proper compacting, or such other precautions shall be taken as may be necessary to obtain proper compacting. Authority shall be the sole judge of when conditions are proper for compacting backfill. All backfilled trenches shall be thoroughly surface-tamped with a hydraulic tamping machine approved by Authority.

1.6.10 **Tests and Testing**

1.6.10.1 Prior to accepting any material for use as backfill around structures or as select material stone backfill, Authority will visit the proposed borrow source area(s) to inspect the material proposed for use as structural fill material or as select material backfill stone backfill. Upon inspection and acceptance by Authority, a minimum of two (2) 100-pound samples of each borrow source will be obtained by Authority and transported to a qualified soils testing laboratory for testing. The Developer shall select the soils testing laboratory and pay the associated costs for testing.

1.6.10.2 A complete series of tests will be conducted on each selected sample and shall consist of determinations of moisture content, grain-size distribution, specific gravity and the Modified Proctor Moisture-Density Relationship (ASTM D1557-80). The data shall be used in determining field moisture and density acceptability of compacted structural backfill or compacted select material backfill.

1.6.10.3 The field moisture content of materials being compacted shall be determined by "Laboratory Determination of Moisture Content of Soil" (ASTM D2216-80), or by "Standard Test Methods for Water Content of Soil and Rocks in Place by Nuclear Methods (Shallow Depth) (ASTM D3017-88). The field density of compacted material shall be determined by either "Test for Density of Soil in Place by the Sand-cone Method" (ASTM D 1556-82), or "Test Method" (ASTM D2167-84) or by "Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (shallow depth)" (ASTM D2922-81).

1.6.10.4 Authority shall perform field density and field moisture content tests on each lift of material in 100-foot intervals, or as deemed necessary by Authority, to ensure that the Developer is complying with the compaction requirements of this Section of the Specifications. Authority shall have the right at all times to test each lift of material to ensure that the compaction requirements of this Section of the Specifications are met.

1.6.11 **Protection of Finished Work** -- The Developer shall protect finished work with temporary barriers, structures, signs and traffic regulation as required by Authority or the State or local governmental agency having jurisdiction. The Developer shall reshape and re-compact fills subjected to vehicular traffic, as necessary, to maintain original line and grade.

1.7 REMOVAL OF WATER

1.7.1 The Contractor shall at all times during construction provide and maintain ample means and devices with which to promptly remove and properly dispose of all water entering the excavations and trenches. The Contractor shall take whatever means are necessary protect drainage areas and storm sewers from silt loading due to runoff or pumping from trenches. The Contractor shall use sediment bags and other sediment control devices as approved by the Authority's representative to ensure the control all runoff from the site.

1.8 TRAFFIC CONTROL

The Contractor shall supply and maintain all traffic control devices as shown on the development plans and as required by PennDOT or other agencies having jurisdiction. Traffic control devices shall be in accordance with the Manual of Uniform Traffic Control Devices, latest edition.

2.0 WATER DISTRIBUTION SYSTEM SPECIFICATIONS

2.1 GENERAL

2.1.1 Related Documents: The general provisions of the Developer Main Extension Agreement, PA DEP Water Supply Manual, Chapter 8, Township approvals and local fire and plumbing codes may apply in the execution of the work under this section.

2.1.2 Description of Work: The work of this section includes furnishing all labor, materials, equipment to install, and test all pipe and tubing and related items required for this project. The pipe and related items shall be installed by the Contractor as indicated on the plans and as further specified in the specifications.

2.1.3 Submittals: For materials furnished by the Contractor, submittals shall be given to NPWA for approval for any material that differs from the specifications. As a minimum the information shall consist of catalog data and manufacturer's specification and engineering data.

2.1.4 Standards: All the products used in the construction that come in contact with drinking water shall meet the American Water Works Association (AWWA) Standards* and applicable Pennsylvania Department of Environmental Protection (PADEP) and National Sanitation Foundation (NSF) Standards. The primary focus of the NSF standards is on contaminants or impurities which may be imparted indirectly to drinking water. The products and/or materials covered include, but are not limited to, protective materials (coatings, linings, liners, etc.), joining and sealing materials (solvent cements, welding materials, gaskets, etc.), pipes and related products (pipes, tanks, fittings, etc.), and mechanical devices used in transmission and distribution systems (valves, etc.).

*AWWA Standard C600 and C651, latest revisions are incorporated into and considered a part of this Section.

2.2 STEEL PRODUCTS PROCUREMENT ACT

ONLY STEEL PRODUCTS AS DEFINED IN THE STEEL PRODUCTS PROCUREMENT ACT, ACT NO. 3 OF 1978 73 P.S. § 1881 ET. SEQ., SHALL BE USED OR SUPPLIED IN THE PERFORMANCE OF THIS MAIN EXTENSION AGREEMENT OR ANY RELATED CONTRACT OR ANY SUBCONTRACT HEREUNDER, WHERE IRON OR STEEL PRODUCTS ARE SPECIFIED.

2.3 DUCTILE IRON PIPE AND APPURTENANCES:

2.3.1 Ductile Iron Pipe (Underground / Exterior):

2.3.1.1 All pipe greater than 2 inches in diameter shall be ductile iron pipe, Class 52 and manufactured in accordance with

ANSI/AWWA specifications C151/A21.51, latest revision in nominal laying lengths of approximately 18 feet. Joints are to be Tyton joint, single rubber push-on gasket, made in accordance with ANSI/AWWA specifications C111/A21.11, latest revision.

2.3.1.2 All pipe and fittings furnished shall be cement lined and either bituminous or epoxy coated in accordance with ANSI/AWWA specifications C104/A21.4, latest revision. The minimum thickness of the cement lining shall be 3/32".

2.3.1.3 In accordance with ANSI/AWWA specifications C151/A21.51, Section 51-15, latest revision, Ductile Iron Pipe shall be tested for ductility by an approved method such as ball impression test, punch test, or approved equal test method and the manufacturer shall furnish certification.

2.3.1.4 Polyethylene encasement for ductile iron pipe and fittings shall be used in corrosive soils, locations of potential stray current influence, gas line and stream crossings or in locations that may be impacted by future changes in condition, at the direction of the Authority. Consideration should be given to normally using polyethylene encasement in environments that have in the past posed external corrosion problems. Class C (black) polyethylene encasement shall be in accordance with the latest revision of AWWA C105, latest revision. Class B (colors) may be used if prolonged exposure (more than one month) to sunlight is precluded. Both low-density and high-density cross-laminated films are approved. For assistance in performing a soil survey and measurements for stray current influence, DIPRA can generally be called upon for assistance.

2.3.2 FITTINGS: All fittings shall be mechanical joint, Class 350, manufactured in accordance with AWWA specifications C-153/A21.53, latest revision (Compact Fittings) and furnished complete with all joint accessories. All fittings are to be bituminous coated or epoxy coated in accordance with applicable AWWA specifications. Fittings shall be of United States manufacture.

2.3.3 ACCESSORIES: Accessories such as gaskets, glands, bolts, nuts, etc., shall be furnished by the Manufacturer as required to make all piping systems complete.

2.3.4 Mega-Lugs will be used on all fittings and on all fire hydrant assemblies.

2.3.5 Field-Lock Gaskets – shall be used as determined by the NPWA inspector

2.3.6 VALVES:

A. GATE VALVES: All valves smaller than 24 inches shall be gate valves of the resilient seat wedge gate valve design, meeting or exceeding all requirements of the latest revision of AWWA C 509 & C-550. The wedge shall consist of a ductile iron casting encased in a bonded-in-place nitrile elastomer covering which forms the resilient sealing surfaces. The valves shall be of the

non-rising stem design with sealing accomplished by double "O" rings and shall open left. All gate valves shall be designed for a minimum of 150 psi working pressure. Valves shall have mechanical joints and shall be epoxy or bituminous coated. Valves shall be Mueller Model A2360-20 or approved equal

B. BUTTERFLY VALVES: All valves 24 inches and larger shall be butterfly valves and conform to AWWA C504, latest revision, except as modified herein. Valves shall be designed for tight shutoff against a differential pressure equal to a minimum 150 psi for the service indicated. The valve body shall be constructed of cast iron, ASTM A126, Class B. Two trunnions for shaft bearing shall be integral with the valve body. Discs shall be cast iron, ductile iron, Type 304 or 316 stainless steel Seats bonded on the discs are not acceptable. Seats shall be Buna-N for liquids. Stuffing boxes shall be constructed of cast iron, ASTM A126. Gland assemblies shall be of cast bronze, ASTM B132. The packing gland shall be housed in a solid walled cast iron, ASTM A48, Class 40 one piece structure, or approved equal. Valves shall be open left. Shaft seals shall be O-ring type. Valve body & vane shall be epoxy coated in accordance with AWWA Standard C-550, latest revision.

C. INSERTION VALVES: Linestops shall be JCM 440 epoxy coated with stainless steel bolts. The method of linestop shall be as shown on the NPWA standard detail sheet.

2.3.7 VALVE BOXES: Each exterior valve shall be provided with a valve box. Valve boxes shall be cast iron and of the adjustable, screw type. The heavy pattern type must be used in areas where vehicular traffic can be expected. They shall be so designed and constructed as to prevent the direct transmission of traffic loads to the pipe or valve and shall be made by Pioneer, Quality Water Products, or approved equal. The box shall be adjustable through at least 6" vertically without reduction of lap between sections to less than 4 in. The length shall be as necessary to suit the ground elevation. The inside diameter of the box shall be at least 5-1/4 in. Covers shall be close fitting and substantially dirt-tight. The top of the cover shall be flush with the top of the box rim.

2.3.8 FLANGED ADAPTOR: Flanged adaptor shall be Uniflange, manufactured by EBAA Iron Sales, Inc. of Eastland, Texas or similar type couplings as approved by NPWA. Interior couplings shall have retainer rods according to the following schedule:

Pipe Dia	No.of Rods	Rod Dia.
3	2	5/8"
4	2	5/8"
6	4	¾"
8	4	¾"
12	4	7/8"

2.3.9 HYDRANTS:

A. All material used in the production of fire hydrants for ordinary service shall conform to the specifications designated for each material listed in AWWA Standard C 502, latest revision.

B. All hydrants shall be Mueller or Kennedy and will be approved by NPWA and have the appropriate threads.

C. Installation shall be in accordance with Section 2.5.1 (G) of this Manual.

2.3.10 POLYETHYLENE ENCASEMENT TUBING: Eight (8) mil thick polyethylene encasement tubing and tape for water pipe shall conform to AWWA Standard C 105, latest revision.

2.3.11 CURB BOXES: All curb boxes shall be the extension type with arch pattern base. Inside diameter of the upper section is to be 1.0". Boxes will be provided complete with heavy cover. Cover shall have a solid brass pentagon headed plug with easy out thread. Boxes will be designed such that if a heavy weight is placed on the top of the box, the upper section will slide into the base without causing damage to the curb stop or service piping. All boxes shall be coated inside and out with a tar base or epoxy base enamel. Mueller H-10308 Quality Water Products type or equal shall be used. Bases shall fit 1" ball valves. Rods shall be stainless steel ends and be one piece units with integral end. Boxes shall be of domestic manufacture.

2.3.12 TAPPING SLEEVES AND TAPPING VALVES

2.3.12.1 **Tapping Sleeves**: Mechanical joint stainless steel tapping sleeve with Class 125 outlet flange shall be used. Sleeve working pressure shall be 150 psi. Neoprene gaskets to be included with each sleeve. Sleeve to be cast iron construction and furnished with COR 10 bolts and nuts.

Pipe Type	Sleeve Type	U.S. Pipe Type
Class 150 Asbestos Cement	Mechanical Joint	Heavy Class
Ductile Iron	Mechanical Joint	M.J.
Class 150 Asbestos Cement	Mechanical Joint	M.J.
PVC Plastic pipe – AWWA C-900	Mechanical Joint	M.J.

U.S. Pipe, Atlantic States Pipe or approved equal

Tapping sleeves are to be used to make "Wet" taps.

2.3.12.2 **Tapping Valves**: Tapping valves shall be in accordance with AWWA C500, latest revision. Affidavit from manufacturer required that the valves furnished comply with all applicable provisions of AWWA C-500. Flanged valve ends - Inlet flange shall be Class 125 and the Outlet Flange shall be mechanical joint. Companion flanges shall be made from a corrosion-

resistant material and all mechanical joint bolts and nuts shall be COR-10. Stem seal to be "O" Ring type. Epoxy-coated resilient wedge gates. Valve to be Mueller type H-667, H-642, H-541 or approved equal. All valves shall be of domestic manufacture.

2.3.13 REPAIR CLAMPS: **Repair clamps are not allowed for new installations.** If existing pipe is damaged and replacement is not practical, the Authority may permit the use of a repair clamp. Only with Authority approval, clamps shall be split type repair sleeves for the repair of cast iron, asbestos cement, or ductile iron pipe. Repair sleeve shall hold a minimum of 200 psi at 150 degrees Fahrenheit hydrostatic test pressure. Sleeve to be caulked or mechanical joint as manufactured by Tyler or approved equal. Sleeve shall be of domestic manufacture.

2.3.14 WRAP AROUND TYPE: **Repair clamps are not allowed for new installations.** Double or single band clamp used for repair of steel pipe, cast iron pipe, asbestos cement pipe, ductile iron pipe or PVC pipe. Repair sleeve shall hold a minimum of 200 psi at 150 degrees Fahrenheit hydrostatic test pressure. Bands shall be stainless steel type 304 with 24 gauge minimum thickness. Lugs shall be of malleable iron ASTM A47 Grade 30510 with mutually supporting sliding fingers. Low alloy steel bolts and nuts shall meet AWWA C115, latest revision. Bolts shall have double radius heads and square necks. Gasket shall provide for water service at 150 degrees Fahrenheit, and be at least 3/16" thick. Manufacturers shall furnish a report of gasket material certification by ASTM for specific applications. Gaskets shall have tapered ends and stainless steel armor shall be vulcanized into gasket. Clamps to be Rockwell Model #245, 226, 227, 228 or approved equal. Clamps shall be of domestic manufacture.

2.3.15 COMPRESSION TYPE: **Repair clamps are not allowed for new installations.** Compression type repair coupling used for repair standard size steel, plastic or copper pipe through 2" diameter. End nut sleeves shall be mild steel or malleable iron (ASTM-A47), Grade 32150. Finish shall be galvanized with steel sleeve meeting AISI C1010-15, liberal clearance to accommodate deflection of up to 6 degrees. Repair sleeve shall hold a minimum of 300 psi at 150 degrees Fahrenheit hydrostatic test pressure. Coupling shall be Rockwell Model 521 or 522 or approved equal. Coupling shall be of domestic manufacture.

2.4 SERVICE LINE MATERIALS AND BRASS GOODS:

2.4.1 **Corporation Stops**: Stops shall be manufactured and designed in accordance with AWWA C800, latest revision. Design working pressure shall be 300 psi ball valve compression. Outlet threads shall be tapered iron pipe thread as described in Table 7, AWWA C800, latest revision. Inlet threads shall be the standard corporation stop thread as described in Table 8, AWWA C800, latest revision. Corporation stops to be Mueller B-25008 or approved equal. Stops shall be of domestic manufacture.

2.4.2 **Ball Valve Curb Stops**: Curb stops shall be manufactured and designed in accordance with AWWA C800, latest revision. Design working pressure shall be 300 psi compression ball valves. Compression fitting equal or exceeding Ford pack joint with gasket material molded of synthetic rubber meeting ASTM D-2000. Body shall be three piece design with solid brass ball. Stem shall be locked on with brass ring. Curb stops to be Mueller B-25209 or approved equal. Valves shall be of domestic manufacture.

2.4.3 **Couplings**: Couplings shall be manufactured and designed in accordance with AWWA C800, latest revision. Design working pressure shall be 300 psi. Compression fitting equal or exceeding Ford pack joint with gasket material molded of synthetic rubber meeting ASTM D-2000. Couplings to be Mueller or approved equal. Couplings shall be of domestic manufacture.

2.4.4 **Alternate for all Brass Goods**: Brass goods meeting and manufactured in accordance with AWWA C800, latest revision and of the same or equal design to Mueller.

2.4.5 **Copper tubing**: All service lines 2 inches and smaller shall be copper tubing Type K conforming to ASTM B88 and meeting AWWA Standard C-901, latest revision. Service lines all be laid out in one continuous length whenever possible. Where couplings are needed, exterior pipe shall have compression fittings. All interior copper pipe shall be supported 5 feet on center by Grinnell Fig. CT-130 supports or equal.

2.5 EXECUTION

2.5.1 All materials shall be stored and handled in accordance with the manufacturer's recommendations. The Contractor is responsible for replacing at its cost, any pipe and/or material damaged, that is deemed unacceptable by the Authority's representative. during the course of unloading the pipe or during construction.

A. Pipe Unloading: It is the responsibility of the Contractor to unload and string pipe. Pipe shall be lifted off the truck and placed on the ground with care to prevent damage to the pipe and the cement lined interior of the pipe. Rolling the pipe off the truck or dropping the pipe is prohibited. Pipe may be stacked, but no more than three layers high and only with proper blocking in between layers.

B. Pipe Jointing: For exterior piping, all joints shall be made in a dry trench and in accordance with the manufacturer's recommendations and the best practices for class of pipe laid. The ends of the pipe shall be wiped clean with a dry cloth before making the joint.

C. Pipe Laying:

1. Installation of ductile iron pipe shall be in accordance with the requirements of AWWA C 600 and AWWA C 605, latest revisions, respectively. The pipe shall be accurately laid to the

line and grades to the satisfaction of the Authority's representative. The line and grade may be adjusted from what is shown on the drawings to meet field conditions, upon approval by the Authority's representative.

2. All pipe shall be laid with a minimum of four feet of cover and a maximum of six feet of cover over the top of the pipe, where utility conflicts do not prevail.

3. All pipe laid within 3 feet of a culvert or with less than 4.0 feet of cover shall be insulated with 2-inch 40 pound density styrofoam material. The insulation shall extend the width of the trench, a minimum of 4 feet above the pipe envelope and on the vertical sides of the trench bottom from the bottom to above the pipe envelope. No pipe shall be laid with less than 4.0 feet of cover without prior approval of the Authority.

4. The deflection of alignment at a joint shall not exceed the appropriate permissible deflection, as specified in the tabulation titled PIPE DEFLECTION ALLOWANCES.

PIPE DEFLECTION ALLOWANCES

Push-on Joint Ductile Iron Pipe
Maximum Permissible Deflection, in Inches*

Nominal Size of Pipe (in)	*Deflection Angle = θ* (deg)*	*Maximum offset (in)*	*Approximate Radius of Curve – R* Produced by succession of joints (ft)*
24	3	11	340
16	3	11	340
12	5	19	205
8	5	19	205
6	5	19	205
4	5	19	205

Mechanical Joint Ductile Iron Pipe
Maximum Permissible Deflection, in Inches.*

Nominal Size of Pipe (in)	*Deflection Angle = θ* (deg)*	*Maximum offset* (in)*	*Approximate Radius of Curve – R* Produced by succession of joints (ft)*
24	2	9	450
16	3.5	13.5	285
12	5	20	195
8	5	20	195
6	7	27	145
4	8	31	140

* Maximum permissible deflection for 18-ft. length, maximum permissible deflections for other lengths shall be in accordance with AWWA and DIPRA standards.

5. When mechanical joint, push-on joint, or similar pipe is laid, the bell of the pipe shall be cleaned of excess tar or other obstruction and wiped out before the cleaned and prepared spigot of the next pipe is inserted into it. The gasket, bell, and spigot shall be lubricated with gasket lubricating compound compatible with potable water. The new pipe shall be shoved firmly into place until properly seated and held securely until the joint has been completed. All pipe shall be pushed home by a method that protects the driving end of the pipe.

6. No pipe laying will be allowed to begin at any point other than a stub end or other appurtenance without the expressed consent of the Authority's representative. If the Authority's representative requires it, the interior of each length of pipe will be swabbed and wiped clean before laying the next length. Whenever the work is stopped temporarily, or for any reason whatsoever, the end of the pipe shall be carefully protected against dirt, water, or other extraneous material. Bedding shall be as shown on the plans.

7. In areas where the Contractor's trenching operation exceeds the typical section, the Contractor may be required to use a higher strength class pipe in lieu of the designated class at no additional cost to the Authority.

D. Valve Installation: All valves shall be installed in accordance with the specifications for the pipe to which they are to be connected. Valve joints shall be made up in accordance with the Contract Drawings. The valves shall bear no stresses due to loads from the adjacent pipe. Valve shall be placed on solid concrete block with

operating stem plumb. Wedges shall be used to prevent movement during backfill operation. The valve shall be operated completely before placement in the trench, and all factory installed bolts shall be checked for tightness. All valves shall be inspected before installation and they shall be cleaned and well lubricated before installed in the line.

E. Pipe Cutting:

1. Where required, sections of pipe may be cut to provide shorter sections of pipe necessary for the construction. The cutting of the pipe shall be done in accordance with the pipe manufacturer's recommendations and subject to the approval of the Authority Inspector.

2. In general the pipe material shall be cut by using a saw or milling process, approved by the pipe manufacturer. The pipe shall be cut, not broken. The cut end of the pipe shall be square to the axis of the pipe, any rough edges ground smooth, and beveled where being used for push-on joints.

F. Repair Clamps: Repair clamps are not considered as permanent repairs. If a section of main is found to be defective, it shall be cut out and a new section of ductile iron pipe shall be installed using solid cast couplings.

G. Hydrant Installation:

1. The hydrant valve shall be installed using a hydrant tee with a ductile iron rotatable MJ gland.

2. The hydrant shall be secured to the hydrant valve connecting piece with a ductile iron rotatable Mega-lug on one end.

3. The MJ bolts shall be Corten.

4. The hydrant shall be set in true vertical alignment and shall be braced against undisturbed trench walls with poured concrete. Hydrants shall not be encased in poured cement in such a way that the bolts cannot be removed. The hydrant base shall be wrapped in polyethylene. Concrete shall not plug up drain holes.

5. No service connection shall be made between the distribution main and the hydrant along the hydrant lateral.

6. All hydrant installations shall be inspected by the Authority's representative prior to backfilling.

7. In unfavorable soil conditions and at my time when so designated by the Authority's representative, a concrete collar shall be placed below the surface around the hydrant barrel, as shown in

AWWA Manual M17, to provide better resistance for traffic model hydrants.

2.5.2 SPECIAL REQUIREMENTS:

2.5.2.1 Pressure Pipe - Ductile Iron: Valves shall bear no stresses due to loads from the adjacent pipe.

2.5.2.2 Vertical Separation From Sanitary and Storm Sewer: Utility separation must be in accordance with PADEP regulations of the Public Water Supply Manual—Chapter 8. Whenever water mains must cross sewers, the main shall be laid at such an elevation that the top of sewer is at least 18 inches below the bottom of the water main. When the elevation of the sewer cannot be buried to meet the above requirements protection shall be provided as follows:

1. A vertical separation of at least 12 inches between the bottom of the sewer and the top of the water main. (Water main below sewer)
2. Adequate structural support for the sewers to prevent excessive deflection of joints and settling on and breaking the water main.
3. That one full length of water pipe be centered at the point of crossing so that the joints will be equal distance and as far as possible from the sewer.

2.5.2.3 Parallel Separation from Sanitary and Storm Sewer Water mains shall be laid at least 10 feet horizontally, edge to edge from sewers or sewer manholes. When conditions do not permit a horizontal separation of 10 feet, a water main may be laid closer to a sewer provided that:

1. The bottom of the water main is at least 18-inches above the top of the sewer and a minimum of 5 feet edge to edge horizontally.
2. Where this 18-inch vertical separation and 5 foot horizontal separation can not be obtained, field conditions will dictate the methods of pipe protection, to include use of concrete bridging, blocking, mechanical joints, or other methods as directed by the Authority's representative.

2.5.2.4 Assembling Mechanical Joints: Mechanical joints shall be assembled in accordance with manufacturer specifications, pipes shall be parallel in line with each other as joint is assembled. Surfaces against which the gasket will come in contact shall be thoroughly brushed with a wire brush prior to assembly of the joint. The gasket shall be cleaned. The gasket, bell, and spigot shall be lubricated by using gasket lubricating compound compatible with potable water. The spigot shall be inserted into the bell until it is correctly seated. The gasket shall then be seated evenly in the bell at all points, centering the spigot, and the gland shall be pressed firmly against the gasket. After all

bolts have been inserted and the nuts have been made up finger-tight, diametrically opposite nuts shall be progressively and uniformly tightened all around the joint to the proper tension by means of a torque wrench. Mechanical joints shall be assembled with mechanical joint restraint glands, megalugs or approved equal.

The correct range of torque as indicated by a torque wrench and the length of wrench, shall not exceed the values specified in the tabulation titled TORQUE RANGE VALUES.

TORQUE RANGE VALUES
Range of torque 75-90 ft. - lb.

Mechanical joint bolts shall be re-torqued to a range of 75 to 90 ft-lb. after waiting a period of two hours.

If effective sealing of the joint is not attained at the maximum torque indicated above, the joint shall be disassembled and thoroughly cleaned, then reassembled. Bolts shall not be overstressed to tighten a leaking joint.

2.5.2.5 THRUST BLOCKS: Thrust blocks of concrete of adequate size and weight shall be used on all pressure piping for all bends including and in excess of 11 1/4 degrees.

Minimum thrust blocking size shall be as shown on the standard details or shall be determined by the soil characteristics and bearing capacities as shown on the following table, whichever is larger:

Horizontal Bearing Strengths

Soil	*Bearing Strength S_b(lb/ft^2)
Soil Muck	0
Soft Clay	1,000
Silt	1,500
Sandy Silt	3,000
Sand	4,000
Sandy Clay	6,000
Hard Clay	9,000

*Although the above bearing strength values have been used successfully in the design of thrust blocks and are considered to be conservative, their accuracy is totally dependent on accurate soil identification and evaluation. The ultimate responsibility for

selecting the proper bearing strength of a particular soil type must rest with the design engineer,

2.5.2.6 POLYETHYLENE ENCASEMENT TUBING: Eight (8) mil thick polyethylene encasement tubing shall be installed when appropriate on all ductile iron water pipe as set forth in the instruction in AWWA C105, latest revision and recommended by DIPRA. All valves, fittings and appurtenance shall also be wrapped and taped in a similar fashion.

2.5.3 HYDROSTATIC PRESSURE TEST:

2.5.3.1 The Contractor shall perform pressure and leakage tests under Authority supervision, according to the requirements set forth below.

2.5.3.2 All water lines shall be tested in the field in the presence of the Authority or an authorized representative in the manner prescribed. All test procedures must be reviewed and approved by the Authority prior to proceeding. Pipe shall be tested in stages so that unacceptable leakage can be more easily pinpointed and as part of the flushing water disposal management plan.

2.5.3.3 The pipe shall be filled slowly with water and tested at a pressure of 50 percent above the normal working pressure, as determined by the Authority, but in no case less than 200 psi. The pipe shall be filled in such a way as to evacuate all air from the line. The test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Authority. A meter to measure makeup water shall also be installed. Makeup water shall be potable water in a disinfected container made of material NSF-approved for contact with potable water. The pump, pipe connections, pipe taps, and all necessary apparatus shall be furnished by the Contractor at no additional cost.

2.5.3.4 The allowable leakage for ductile iron pipe may be determined by the formula:

$$\frac{L = SD\ p\ 1/2}{133{,}200}$$

Where L is the allowable leakage in gallons per hour, S is the length of pipe in feet, D is the nominal diameter in inches, and P is the average test pressure in psi. For convenience, the following Table 1 may be used to estimate allowable leakage for ductile iron pipeline installations:

Table 1
DIPRA RECOMMENDED ALLOWABLE LEAKAGE PER 1000' OF PIPELINE*
(GALLONS PER HOUR)

Avg. Test Pressure (PSI)	NOMINAL PIPE DIAMETER (INCHES)				
	6	*8*	*12*	*16*	*24*
450	0.95	1.27	1.91	2.55	3.82
400	0.90	1.20	1.80	2.40	3.60
350	0.84	1.12	1.69	2.25	3.37
300	0.78	1.04	1.56	2.08	3.12
275	0.75	1.00	1.49	1.99	2.99
250	0.71	0.95	1.42	1.90	2.85
225	0.68	0.90	1.35	1.80	2.70
200	0.64	0.85	1.28	1.70	2.55
175	0.59	0.80	1.19	1.59	2.38
150	0.55	0.74	1.10	1.47	2.21
125	0.50	0.67	1.01	1.34	2.01
100	0.45	0.60	0.90	1.20	1.80

* For mechanical or push-on joint pipe with 18-ft. nominal lengths. To obtain the recommended allowable leakage for pipe with 20-ft. nominal lengths, multiply the leakage calculated from the above table by 0.9.

If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.

2.5.4 DISINFECTION OF WATER MAINS (Refer to AWWA Standard C651)

2.5.4.1 Disinfection: The disinfection and hydrostatic testing operation can be combined provided that the following procedure is followed:

Dry HTH (calcium hypochlorite) tablets are to be placed in each section of pipe and also one such tablet shall be placed in each hydrant, hydrant branch, and other appurtenance. The number of HTH tablets required per length of pipe is as noted in Table 2 below. The tablets shall be attached by an FDA-approved adhesive such as Poly Grip or equal. There shall be no adhesive on the tablet except on the broad side attached to the surface of the pipe. Attach all tablets inside and at the top of the main, with approximately equal numbers of tablets at each end of a given pipe length. If the tablets are attached before the pipe section is placed in the trench, their position shall be marked on the section so it can be readily determined that the pipe is installed with the tablets at the top.

Table 2
Quantity of 5g HTH tablets needed per section of pipe

Length of Section (feet)	Diameter of Pipe (inches)				
	6	8	12	16	24
13 or less	1	1	3	4	8
18	1	2	4	6	12
20	1	2	4	7	14

After a satisfactory hydrostatic test and allowing the chlorinated water to remain in the pipe for at least 24 hours, the line shall be flushed as described below, if the water temperature is less than 41°F (5°C), the water shall remain in the pipe for at least 48 hours. During this test period, all newly installed valves and hydrants shall be operated to thoroughly disinfect all moving internal parts.

2.5.4.2 Flushing Procedures: After the chlorinated water has been retained for the required time, the treated water shall then be thoroughly flushed from the newly laid pipeline at its extremities until the replacement water throughout its length shall, upon test show a residual chlorine content of not more than 1 ppm as tested by the Water Authority.

Water samples taken from the test section following completion of the disinfection procedure described above shall show no coliform count in 2 consecutive 100 ml samples. **The Authority shall take all required bacteriological tests and perform this testing for the Contractor.** Test results will be furnished to the Contractor at the earliest possible time. Should the initial treatment fail to result in the conditions specified in the above paragraphs, an alternate disinfection procedure shall be used as directed by the Water Authority.

Disposal of flushing waters

The environment to which dechlorinated water is to be discharged shall be inspected. The Contractor shall take proper precautions to dispose of all dechlorinated water in an environmentally acceptable manner. It is the Contractor's responsibility to ensure that all flushing water is retained, treated and free of chlorine residual prior to discharge to the environment.

The chlorine residual of water being disposed must be neutralized using one of the chemicals listed in Table 3. If a

sanitary sewer system is unavailable for disposal of the chlorinated water, then an alternate disposal site must be located by the Contractor. The proposed alternative site to which the dechlorinated water is to be discharged shall be reviewed and approved by the Authority. The reducing agent shall be applied to the water to completely neutralize the chlorine residual (see Table 3 for neutralizing chemicals). Where necessary, the appropriate local and state authorities should be contacted by the Contractor regarding disposal to public waterways.

Table 3
Neutralizing Chemicals for Disposal of Flushing Water (lbs/100,000 gallons)

Chlorine residual concentration (mg/L)	Sulfur Dioxide (SO_2)	Sodium Bisulfate ($NaHSO_3$)	Sodium Sulfite ($NaSO_3$)	Sodium Thiosulfate ($NaS_2O_35H_2O$)
1	0.8	1.2	1.4	1.2
2	1.7	2.5	2.9	2.4
10	8.3	12.5	14.6	12.0
50	41.7	62.6	73.0	60.0

All expenses and costs incurred in carrying out the specified disinfection work, including furnishing the calcium hypochlorite granules and tablets, shall be borne by the Contractor at no extra cost to the Authority.

2.5.4.3 ACCEPTANCE:

2.5.4.3.1 The Authority reserves the right to allow the mains to be placed into service in sections after the satisfactory tests have been made and approved, and to make full use of any part or parts of the system after acceptance of those parts.

2.5.4.3.2 Until such time as the entire work has been accepted by the Authority, the Contractor shall be held responsible to rectify any leaks, errors, or other poor workmanship which may be discovered and shall make any necessary repairs, alterations, or adjustments as may be required to properly complete the work, as directed by the Authority's representative at Contractor's own expense.

2.6 RESTORATION OF OFF-SITE UNPAVED AREAS

2.6.1 The Contractor shall restore all disturbed unpaved grassed areas with topsoil, seed and mulching, and be responsible for the re-vegetation of said areas.

2.6.2 The topsoil shall be applied to a uniform depth of six (6) inches. Immediately prior to topsoil distribution, the surface shall be scarified to

provide a good bond with the topsoil. Topsoil shall contain no stones, lumps, roots or similar objects larger than one (1) inch in any dimension and shall have a pH value of not less than 5.0 and no more than 7.5.

2.6.3 All seeds shall be certified blends (blue tag). No annual ryegrass will be permitted under any circumstances. Bluegrass blends may be added for residential lawns as needed. Cultivars are as follows: Kentucky Bluegrass, Quantum Leap Kentucky Bluegrass, Rugby 2 Kentucky Bluegrass and Alpine Kentucky Bluegrass.

2.6.4 Seeding shall consist of the following blend and be applied at the following rate:

SEED TYPE*	MINIMUM GERMINATION ALLOWED	RATE
Manhattan II Perennial Ryegrass	95-100	1 lb./200 sq. ft.
Catalina Perennial Ryegrass	95-100	1 lb./200 sq. ft.
Quickstart Perennial Ryegrass	95-100	1 lb./200 sq. ft.
Brightstar 2 Perennial Ryegrass	95-100	1 lb./200 sq. ft.
Kentucky Bluegrasses per 4.7.3	95-100	2 lb/1000 sq. ft.

* alternate seed selections may be used, only if cultivars are listed as top performers in the National Turfgrass Evaluation Program. All alternates must be approved by the Authority prior to application.

2.6.5 Fertilizing and mulching shall be applied to assure the proper growth of the seed. Fertilizer shall be a starter blend (18-24-5) applied at 1 lb/1,000 sq. ft. Mulch shall be a quality straw material and shall be applied at a uniform rate to ensure good coverage. If acceptable growth does not occur due to planting season, inadequate fertilization or mulching, poor topsoil or other related aspects, the Contractor will be responsible for reseeding until acceptable growth has occurred.

2.6.6 For optimum germination, straw should be secured using tackifier or netting. In the latter, netting shall be removed by Contractor after germination. No mulch or hay will be permitted as securing for seed.

2.6.7 In the event tree roots are damaged during excavation, all roots over ½" diameter shall be cut cleanly with pruning shears.

2.6.8 The Contractor will be responsible for the replacement of any shrubbery or ornamental landscaping that is irreparably disturbed by the Contractor and replace any plantings or Shrubbery with equivalent or superior plant material. The Contractor will guarantee and replace any disturbed planting which die within one year of completion of this project.

2.7 RESTORATION OF PAVED AREAS

2.7.1 **Description:** The work in this Section includes, but is not limited to, temporary paving, permanent paving and shoulder restoration. The work in this Section is also referenced or specified in Sections specifying Excavation, Backfilling and Maintenance of Work Site.

2.7.2 **References - Quality Assurance:**

The following publications of the Pennsylvania Department of Transportation (PADOT) are referenced throughout this Section.

- Publication 408 Specifications
- Publication 27 - Specification for Bituminous Mixtures (Bulletin 27)
- Publication 37 - Specification for Bituminous Materials (Bulletin 25)
- Publication 203 - Work Zone Traffic Control
- Publication 72 - Standards for Roadway Construction Submittals

The Developer shall submit certification from bituminous and aggregate suppliers attesting that materials conform to the applicable State specifications, shall obtain materials from the same source throughout the life of the project, and shall maintain two (2) copies of each delivery document on site.

2.7.3 **Job Conditions:** The Developer shall take appropriate measures to control traffic during paving operations and shall not allow traffic to damage newly-placed paving. The Developer shall employ traffic control measures in accordance with Publication 203 - "Work Zone Traffic Control." The Developer shall, at his expense, restore to its original condition existing paving outside the limits of the work that was damaged by the Developer's operations.

2.7.4 **Bituminous Concrete Materials**

Bituminous concrete used for paving or repaving under this Main Extension Agreement shall conform to the applicable requirements listed below:

- Bituminous Base Course - PADOT 408, Sections 305 and 700.
- Bituminous Binder Course ID-2 - PADOT 408, Sections 401 and 421.
- Bituminous Wearing (Surface) Course ID-2 - PADOT 408, Sections 401 and 420.
- Emulsified Asphalt Seal - PADOT 408, Section 401.3(g).

2.7.5 **Temporary Paving:** The Developer shall place temporary paving, when directed by Authority, immediately upon completion of trench backfilling. Unpaved trenches shall not remain unpaved longer than three (3) working days after backfilling unless approved by Authority. The subgrade material shall be properly shaped and compacted. and the crushed stone base course shall then be placed and compacted to the required thickness and density. The temporary paving material shall then be placed and compacted to required minimum thickness using a trench roller having a minimum compaction roll of 300 pounds per inch-width. The Developer shall continuously maintain temporary paving material to the satisfaction of Authority and State and local road departments. Cold patch or 1-1/2" fo 1-D2 may be used.

2.7.6 **Permanent Paving:** The Developer shall saw cut existing paving to remove damaged areas, where applicable, and shall cut straight joint lines

and right angle offsets using a 1 foot cut back. If temporary paving was placed, then such temporary paving shall be removed and disposed of in accordance with applicable State and local requirements. The permanent base course and surface course shall be placed to the required compactions and thicknesses in accordance with the specifications contained in Publication 408. Upon completion of the permanent paving, the Developer shall continuously maintain permanent paving throughout the contract maintenance period.

2.7.7 **Bituminous Concrete Base Course:** The bituminous concrete base course shall be placed in accordance with PADOT 408 - Section 305 Specifications. The base course shall be placed to the specified thickness after compaction which shall be accomplished by rolling. Pavement shall not be displaced or extruded from position and shall be compacted by hand with mechanical tamping equipment in areas which are inaccessible to rolling equipment.

2.7.8 **Bituminous Concrete Surface Courses:** Bituminous concrete surface courses shall only be placed after the binder course has been placed and compacted to the required thickness. The wearing course shall be placed to the required compacted thickness and shall conform to the gradient and surface cross-section of abutting pavement, where applicable, or to the required line and grade as specified. Pavement shall be compacted by rolling and shall not be displaced or extruded from position. Pavement shall be hand-compacted in areas which are inaccessible to rollers. Rolling shall be performed in connective passes to achieve an even and smooth finish without roller marks.

2.7.9 **Shoulder Restoration:** The Developer shall restore shoulders to the specifications and to the satisfaction of the local road departments and/or PADOT, whichever has jurisdiction.

2.7.10 **Driveways:** Driveways shall be trimmed to remove damaged areas and shall be saw cut with straight joint lines parallel to the centerline of the trench. Offsets shall be cut at right angles to the trench centerline. Existing concrete driveways shall be restored with a six (6) inch layer of concrete reinforced with 6x6 10/10 wire mesh. Existing asphalt driveways shall be restored with a minimum 1-1/2 inch layer wearing course over a six (6) inch layer of 2A modified stone backfill. Stone or gravel driveways shall be restored with a six (6) inch layer of 2A modified stone backfill.

2.7.11 **Emulsified Asphalt Seal:** A twelve (12) inch wide wearing surface seal shall be applied adjacent to curbs, inlets and other structures on the finished wearing course and on pavement joints. The seal shall be applied per PADOT Specification 408 - Section 401.3(g).

2.7.12 **Field Quality Control:** Authority will conduct field inspections as applicable. The standard nuclear method for testing the density of bituminous concrete in place shall be performed, as required during construction, at the expense of the Developer and in accordance with ASTM Designation D2950-82. Where applicable, all equipment and

materials necessary for such testing shall be maintained on-site during the period of construction.

2.7.13 **Protection:** Immediately after placement, pavement shall be protected from traffic or loads until the pavement has attained adequate stability and adhesion.

2.7.14 As a minimum, the Contractor shall restore all pavement removed or disturbed during construction to a condition which is equal to or superior to the appearance and quality that existed before the work began.

2.7.15 The restoration of the roadway shall be constructed in accordance with all permitting agencies having jurisdiction in the vicinity of the road openings.

2.7.16 The Contractor shall be responsible for any sinking of the finished grade of the trench and for the pavement restoration for a period of one (1) year following the completion of the work.

2.8 RESTORATION OF OFF-SITE PRIVATELY OWNED IMPROVEMENTS

2.8.1 The Contractor shall restore all privately owned improvements such as driveways, sidewalks, curbing and landscaping to a condition that existed prior to construction.

2.8.2 The materials used will be equal to those that existed prior to construction unless otherwise directed by the Authority's Representative, in which case the Contractor shall place whatever the authorized governing body requires.

2.8.3 The finished product shall have workmanship equal to or superior to that which existed prior to construction.

2.8.4 The Contractor shall be responsible for any sinking of the finished grade of the trench and restoration work for a period of one (1) year following the completion of the work, in accordance with all requirements as set forth by the local governing agency and NPWA, where applicable.

2.9 RESTORATION IN EASEMENT AREA (If applicable)

2.9.1 In off-site easement areas, the Contractor shall restore the area to a condition equal or superior to what existed prior to construction. No change in pre-existing grade will be allowed.

2.9.2 The Contractor shall, during the backfilling operation and if required by the Authority, bury a pipeline marker tape along the entire trench within the easement 12" to 18" below finished grade.

2.9.3 The Contractor shall install pipeline markers at locations shown on the plans.

APPENDIX D

STANDARD EASEMENT AGREEMENT

Prepared by
Paul G. Mullin, Esquire
Hamburg, Rubin, Mullin, Maxwell & Lupin

Return to
Paul G. Mullin, Esquire
Hamburg, Rubin, Mullin, Maxwell & Lupin
375 Morris Road, P. O. Box 1479
Lansdale, PA 19446-0773
215-661-0400

Parcel No.

DEED OF EASEMENT

THIS INDENTURE made this _____ day of_____, 2024, between _____ ("Grantor"), and **NORTH PENN WATER AUTHORITY**, a municipal corporation of Montgomery County, Pennsylvania, successor in interest to Lansdale Municipal Authority ("Grantee").

WITNESSETH: THAT the said Grantor for and in consideration of the sum of One Dollar ($1.00) lawful money of the United States unto Grantor well and truly paid by the said Grantee, receipt of which is hereby acknowledged, has granted, bargained, and sold and by these presents doth grant, bargain, and sell unto the Grantee, its successors and assigns, the free and uninterrupted use, liberty, and privilege of and passage in and along a certain parcel or certain parcels of ground situate in_____, _____ County, Pennsylvania, being identified as a portion of Tax Parcel Number _____ and described in the legal description attached hereto and made a part hereof as Exhibit "A" and depicted in the Plan attached hereto and made a part hereof as Exhibit "B" (collectively referred to as "Easement Area").

Such use, liberty, and privilege being hereby granted to the Grantee for the sole purpose of permitting the Grantee, its successors, and assigns to construct, reconstruct, install and perpetually

maintain underground, water lines, meters, meter pits, valve boxes and valves, taps, laterals, curb cocks, fire hydrants, connections, public utility lines or other necessary public improvements, together with any necessary appurtenances (collectively referred to as the "Improvements") along and under the said Easement Area, together with any necessary appurtenances which shall not be extended beyond the aforesaid Easement Area.

TO HAVE AND TO HOLD the same perpetually to the Grantee, its successors, and assigns so long as the Improvements are used and maintained upon the aforesaid Easement Area, together with the right and privilege at any and all times to enter the aforesaid parcel or parcels of ground or any part thereof, for the purpose of constructing, reconstructing, installing and maintaining the Improvements, and for making connections therewith. Grantor agrees, for themselves, their successors, heirs, executors, administrators and assigns that no buildings, fences (other than the barrier fence currently shown on Grantor's land development plans) or other structures of any kind, nor any trees or shrubbery (hereinafter referred to collectively as "Prohibited Improvements") shall be erected, planted or placed upon or within ten (10') feet of any of the Improvements located within said easement. No permission or easement shall be granted to any other person, corporation or other entity to install pipes, conduits, wires or other underground facilities within ten (10') feet of any of the Improvements as constructed, without first obtaining the prior written permission of Grantee.

AND Grantee, its successors and assigns will not create any nuisance or do any act that will be detrimental to the Grantor, its tenants, or occupants of land abutting the parcel or parcels of ground aforesaid, and will at all times, after doing any work in connection with the construction, reconstruction, repair, or maintenance of any Improvement, restore the premises to substantially

the same condition in which same were found before such work was undertaken, it being understood that no Prohibited Improvements as herein defined, will be restored.

IN WITNESS WHEREOF, Grantor has executed this Agreement the day and year first above written.

GRANTOR:

Attest: _____ By: _____

GRANTEE:

NORTH PENN WATER AUTHORITY

Attest: _____ By: _____

COMMONWEALTH OF PENNSYLVANIA :
: ss.
COUNTY OF _____ :

On the _____ day of _____, A.D., 2024, before me, the undersigned officer, personally appeared _____, who acknowledged himself/ herself to be the _____ of the _____ and that he/she as such officer being authorized to do so, executed the foregoing instrument for the purposes therein contained.

_____
Notary Public

{03896265;v1 }

COMMONWEALTH OF PENNSYLVANIA :
: ss.
COUNTY OF MONTGOMERY :

On the _____ day of _____, A.D., 2024, before me, the undersigned officer, personally appeared _____, who acknowledged himself to be the Chairperson of the NORTH PENN WATER AUTHORITY, a Municipal Corporation, and that she as such officer being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the Municipal Corporation by himself as Chairperson.

_____
Notary Public

Exhibit "A"

Legal Description

EXHIBIT "B"

Plan