



Fire Protection Water Supply Submittal Requirements

Introduction

Thank you for your role in supporting development and life safety within the City of Bryan. The expertise, coordination, and technical judgment provided by automatic fire sprinkler system design professionals are essential to protecting occupants, supporting fire department operations, and ensuring code-compliant construction.

The purpose of this Fire Protection Water Supply Submittal guide is to assist design professionals in navigating the City of Bryan's plan review and permitting process efficiently. This guide is intended to clearly communicate submittal expectations, coordination requirements, and documentation standards necessary for a complete and compliant fire protection water supply system design. Consistent and thorough submittals help reduce review cycles, minimize delays, and support successful installation, testing, and final acceptance.

By following the guidance outlined in this document, along with applicable adopted codes and the resources available through Development Services, design professionals can help facilitate a streamlined review process and a smoother progression through construction and Certificate of Occupancy approval.

We appreciate your professional contributions to projects within Bryan and look forward to working collaboratively throughout the design, review, and construction phases to support the long-term safety and success of each project.

Sincerely,

Bryan Fire Marshal's Office

414 Lawrence St, Bryan Tx, 77801
979.209.5960 Ext. 1
Bryantx.gov/fire

Disclaimer:

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1 Code Adoption & Amendments

The 2021 edition of the International Fire Code, including appendix B, C, D, E, F, and G as published by the International Code Council, a copy of which is on file with the city secretary and the fire marshal, is adopted to the same extent as though such code were copied at length herein, subject however to the omissions, additions, supplements, and amendments contained in this article. [City of Bryan Municode](#)

NFPA ADOPTIONS

2021 IFC Chapter 80 should be consulted to find which NFPA edition is enforced in the City of Bryan.

BCS UNIFIED DESIGN GUIDELINES

All fire protection water supply system designs shall comply with the applicable provisions of the BCS Unified Design Guidelines and Standard Details, as adopted by the City of Bryan. The design professional of record is responsible for reviewing and ensuring compliance with all applicable specifications, standards, and details pertinent to the proposed installation.

Plans shall include all required information necessary to demonstrate compliance with these standards. Submittals that do not include the required information, details, or clearly defined design elements will not be approved.

The following documents are provided as general guidance and to highlight commonly missed requirements; however, they are not intended to be all-inclusive:

- Utility Location Materials / Tracer Wire Detail (W1-03)

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- Thrust Block Standard Detail (W2-00)
- Conductive Trace Wire Specification (Section 09 03 12)
- Ductile Iron Pipe Specification (Section 33 05 02)
- PVC Pipe and Fittings Specification (Section 33 05 01)

It remains the responsibility of the design professional to ensure that all applicable requirements are identified, incorporated into the construction documents, and clearly conveyed to the installer.

2 Fire Protection Water Supply Permit Fees

For the purpose of permitting and fee determination under a Fire Protection Water Supply Permit, a “Fire Protection Water Supply Line” shall be defined as follows:

SINGLE LINE – SHARED DOMESTIC MAIN

Where there is one lead-in connection between a shared domestic water main and a single fire protection system riser, the installation shall be considered one (1) fire protection water supply line.

In this configuration, only the lead-in connection serving the fire protection riser is counted for permitting purposes.

PRIVATE FIRE SERVICE MAIN WITH DEDICATED FIRE SUPPLY

Where a Private Fire Service Main, as defined by NFPA 24, does not share domestic water supply and provides:

- One private fire service main from the point of connection to the public water system, and
- One lead-in connection to a fire protection system riser,

The installation shall be considered two (2) fire protection water supply lines for permitting purposes:

1. The Private Fire Service Main
2. The lead-in connection to the fire protection system riser

PRIVATE FIRE SERVICE MAIN SERVING MULTIPLE SYSTEMS

Where a Private Fire Service Main provides multiple lead-in connections to separate fire protection systems or risers, each lead-in connection shall be counted as a separate fire protection water supply line.

For example: One private fire service main with three separate lead-ins to three risers shall be counted as four lines:

- One private fire service main
- Three individual lead-in connections

SHARED DOMESTIC MAIN WITH MULTIPLE LEAD-INS

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Where multiple lead-in connections originate directly from a water main that shares domestic use, and no separate private fire service main exists, only the number of lead-in connections serving fire protection systems shall be counted as separate fire protection water supply lines.

The shared domestic main itself shall not be counted as a separate fire protection water supply line.

ADMINISTRATIVE CLARIFICATION

This definition is established solely for permitting and fee assessment purposes and does not alter technical design requirements under the International Fire Code or NFPA standards.

PHASED CONSTRUCTION AND MULTIPLE PERMITS

Where all Fire Protection Water Supply components are not installed, completed, and tested at the same time, phased construction permitting shall be required to ensure the installation status of each phase is properly tracked, inspected, and documented.

Each permit application shall clearly identify and reflect the approved phase designation. The phase name used on the permit shall match the approved phasing plan to ensure accurate inspection scheduling, acceptance testing, and project closeout documentation.

When a project includes multiple fire protection water supply installations that will not be constructed and commissioned simultaneously, or when phased construction has been approved, each system or phase shall require a separate permit application.

Where a project includes both underground fire mains and separate fire sprinkler system installations, distinct permits may be required for each scope of work. Phase names shall correlate with naming conventions that align with approved construction drawings.

3 Required Documents

MANUFACTURE SPECIFICATIONS

All material submittals shall include all components specified in the product data section, as well as any additional items required to ensure a complete and code-compliant installation. Where multiple products are shown on a manufacturer's catalog sheet, the specific item(s) to be used shall be clearly identified. This may be accomplished by removing unrelated pages or by clearly marking the applicable products through circling or highlighting.

FIRE FLOW REPORT

A Fire Flow Report shall be submitted with the permit application in accordance with the current Bryan/College Station Unified Design Guidelines Manual – Drinking Water Standards. The report shall document the available fire flow data applicable to the proposed project and water supply system.

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4 Drawings

Underground piping plans shall include detailed graphics and clearly labeled callouts identifying the manufacturer's installation guidelines and protection requirements for all specified materials. All submitted information must be consistent with the manufacturer's specifications, applicable codes and standards, and the Bryan-College Station Unified Design Guidelines, available at www.bcsunited.net

PLANS SHALL ALSO INCLUDE:

THRUST BLOCKS – GENERAL REQUIREMENTS

Thrust blocking shall be provided for all fittings, bends, tees, plugs, and other locations where unbalanced forces are created within the fire protection water supply system. Thrust blocks shall be designed and installed in accordance with BCS Unified Standard Detail W2-00 – Typical Horizontal Thrust Block, as adopted by the City of Bryan.

Concrete thrust blocks shall be placed against undisturbed native soil or rock to effectively resist thrust forces. Bearing surfaces shall not be placed on backfill material. The size and configuration of thrust blocks shall be based on internal system pressure, pipe size, and fitting type, with a minimum design pressure of 200 psi.

Concrete used for thrust blocking shall have a minimum compressive strength of 2,000 psi, and the water system shall not be pressurized until the concrete has achieved a minimum strength of 1,500 psi. Thrust block dimensions may be adjusted in the field as directed by the Engineer; however, the volume shall not be less than that indicated in the standard detail.

Thrust blocks shall be installed so that concrete does not encase or bear directly against pipe joints or fittings in a manner that would restrict movement or interfere with maintenance. A polyethylene barrier or approved equal shall be provided between the pipe and concrete where required to prevent bonding.

All thrust block locations, sizes, and details shall be clearly indicated on the construction documents. The design professional is responsible for ensuring all thrust restraint requirements are properly addressed in accordance with adopted City of Bryan standards.

TRACER WIRE- PLAN SUBMITTAL REQUIREMENTS

Construction documents shall include clearly defined notes and callouts for tracer wire to ensure proper material selection and installation.

- Plans shall include specific material callouts identifying the tracer wire to be used, including applicable standards, type, and installation requirements to demonstrate compliance and provide clear direction to the installer.
- Callouts shall clearly describe installation methods, including routing, continuity, splicing, and termination requirements.
- Plans shall specifically note that tracer wire shall be secured to the pipe at intervals not exceeding 10 feet.

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- Plans shall include graphical callouts identifying tracer wire labeling requirements, including system identification and marking at termination points.

Example:

CONTINUITY TESTING	
a. PERFORMED USING A CALIBRATED MULTIMETER (OHMMETER)	
b. TEST SHALL BE CONDUCTED BETWEEN ACCESSIBLE TERMINATION POINTS	
c. SYSTEM SHALL DEMONSTRATE A CLOSED CIRCUIT WITH STABLE RESISTANCE	
ACCEPTABLE RESISTANCE VALUES BY LENGTH	
RUN LENGTH	ACCEPTABLE RESISTANCE RANGE*
UP TO 500 FEET	0 - 2 OHMS
Up to 1,000 feet	0 - 5 OHMS
GREATER THAN 1,000 FEET	Add approximately 1 to 2 ohms per additional 500 feet
*VALUES ARE BASED ON TYPICAL PERFORMANCE OF #12 AWG TRACER WIRE. SLIGHTLY HIGHER RESISTANCE MAY BE ACCEPTABLE DEPENDING ON CONDUCTOR TYPE (SUCH AS COPPER CLAD STEEL). PROVIDED READINGS ARE STABLE AND CONTINUITY IS CLEARLY DEMONSTRATED	
SIGNAL TRANSMISSION (LOCATABILITY) TESTING	
a. PERFORMED USING A PIPE AND CABLE LOCATOR (TRANSMITTER AND RECEIVER)	
b. A SIGNAL SHALL BE APPLIED TO THE TRACER WIRE AND TRACED ALONG FULL LENGTH OF SYSTEM	
c. THE SYSTEM SHALL DEMONSTRATE:	
- CONTINUOUS, TRACEABLE SIGNAL - NO LOSS OF SIGNAL AT SPLICES, FITTINGS, OR BRANCHES - ABILITY TO LOCATE THE FULL ALIGNMENT OF THE PIPE	
<u>APPROVED METHODS OF TRACER LINE VERIFICATION</u>	

All notes and callouts shall be of sufficient clarity to ensure the installer understands the required materials and installation practices without the need for field interpretation.

DETECTABLE WARNING TAPE – PLAN SUBMITTAL REQUIREMENTS

Construction documents shall include clearly defined notes and callouts for detectable warning tape to ensure proper installation and identification of underground piping.

- Plans shall include specific material callouts identifying the detectable warning tape to be used, including labeling requirements indicating “Water Line” and detectable properties.
- Callouts shall clearly describe installation methods, including continuous placement directly above the pipe alignment.
- Plans shall include a graphical callout indicating installation of detectable warning tape at a depth of 2 feet below natural ground (grade).

FIRE HYDRANT PHYSICAL PROTECTION – SUBMITTAL REQUIREMENTS

Fire hydrants shall be protected from potential vehicle impact in accordance with IFC §507.5.6 and Section 312, as interpreted by the City of Bryan.

- Hydrants not protected by a curb shall be provided with approved physical protection.
- Where a curb is present, hydrants located within 6 feet behind the curb shall be provided with approved physical protection.
- The 6-foot distance is based on typical vehicle overhang, including passenger vehicles and commercial trucks, and represents the area where hydrants remain susceptible to impact despite the presence of a curb.
- Curbs alone shall not be considered adequate protection where hydrants fall within this overhang zone.

Where hydrant protection is required but not included within the scope of the Fire Protection Water Supply permit, the construction documents shall still clearly indicate:

- The required protection measures, and
- The responsible party for installation

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Plans shall provide sufficient detail, including location, spacing, and type of protection, to ensure compliance and proper installation.

FIRE RISER / FIRE PROTECTION EQUIPMENT CLEARANCE COORDINATION

Underground fire water supply plans shall include graphic details and notes demonstrating that the underground fire service main entry point, sleeves, and riser stub-up locations have been coordinated with the final fire protection equipment layout. The plans shall provide sufficient information to confirm that the proposed underground installation will allow the required fire protection equipment to be installed with:

- **36 inches minimum clear working space at the service side of fire protection equipment; and**
- **18 inches minimum between fire protection equipment and adjacent walls or obstructions.**

The purpose of this requirement is to ensure clear communication and coordination between the civil designer, building designer, fire protection designer, and installation contractors prior to slab placement and underground fire line installation. Where the proposed layout does not meet these minimum clearances, an alternate layout shall be specifically identified for review and approval by the Fire Code Official.

5 Fire Protection Water Supply Acceptance Testing

REQUESTING ACCEPTANCE TESTING

The inspection and testing process for fire sprinkler systems is divided into two components:

- Underground Piping – Cover-Up Inspection
- Underground Piping – Hydrostatic Testing

Each of these inspections must be scheduled as needed based on the construction phase. The permit holder is responsible for requesting the appropriate inspection(s).

INSPECTION READINESS AND SCHEDULING POLICY

To ensure timely and efficient service for all customers, acceptance testing inspections shall not be scheduled until all associated work has been completed and verified as code-compliant by the contractor. By requesting an inspection, the applicant affirms that all components related to the inspection are fully installed, functional, and ready for review at the scheduled time.

If the work is found to be incomplete, the inspection may be immediately terminated, and a reinspection fee will be assessed. Rescheduling will be based on Fire Marshal's Office availability and may result in significant project delays.

Additionally, appointment cancellations made with less than one full business day notice may be subject to additional fees.

REQUIRED ACCEPTANCE TESTING DOCUMENTS – FIRE PROTECTION WATER SUPPLY

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At the time of the scheduled underground piping inspection(s), the RME-U of record shall have the Texas State Fire Marshal's Office Form SF042, *"Contractor's Material and Test Certificate for Underground Piping,"* readily available and completed to the appropriate level based on the phase of testing.

The fully completed and signed SF042 form shall be uploaded to the City's Citizenserve permit portal prior to requesting the hydrostatic acceptance testing. Completion of this form certifies that all required underground piping components, materials, and hydrostatic testing have been installed, tested, and verified in accordance with applicable standards before witnessed acceptance testing is scheduled.

SCOPE OF INSPECTIONS- FIRE PROTECTION WATER SUPPLY

Inspections conducted under this permit are limited exclusively to fire protection water supply systems that serve **only** fire protection systems, including underground fire mains, fire service mains, private fire hydrants, and related fire protection appurtenances.

This permit does **not** authorize inspection of water systems that supply, in whole or in part, any domestic water distribution system.

Where any portion of the water supply serves both the domestic water system and the fire protection system, including combined service lines or shared infrastructure, inspections shall be requested through Development Services and will be conducted by the City's Engineering Inspector in accordance with applicable plumbing, utility, and public infrastructure requirements.

Failure to obtain the appropriate inspection authority may result in inspection denial and rescheduling.

APPROVED METHODS OF TRACER LINE VERIFICATION

Continuity Testing

- Performed using a calibrated multimeter (ohmmeter)
- Test shall be conducted between accessible termination points
- System shall demonstrate a closed circuit with stable resistance readings
-

Acceptable Resistance Values by Length

Run Length	Acceptable Resistance Range*
Up to 500 feet	0 to 2 ohms
Up to 1,000 feet	0 to 5 ohms
Greater than 1,000 feet	Add approximately 1 to 2 ohms per additional 500 feet

*Values are based on typical performance of #12 AWG tracer wire. Slightly higher resistance may be acceptable depending on conductor type (such as copper clad steel), provided readings are stable and continuity is clearly demonstrated.

Signal Transmission (Locatability) Testing (Required)

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- Performed using a pipe and cable locator (transmitter and receiver)
- A signal shall be applied to the tracer wire and traced along the full length of the system
- The system shall demonstrate:
 - Continuous, traceable signal
 - No loss of signal at splices, fittings, or branches
 - Ability to locate the full alignment of the pipe

If you have any questions, please call our office at 979.220.5960 Ext. 1

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