



Milwaukee Water Works

Safe, Abundant Drinking Water.

**City of Milwaukee
Department of Public Works
Milwaukee Water Works**

**Specifications for
Howard Purification Plant**

HP-181: HOWARD FLOW MONITORING



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GENERAL REQUIREMENTS

PART 1 DEPARTMENT OF PUBLIC WORKS - GENERAL SPECIFICATIONS

(NOTE: The Department of Public Works General Specifications applies to all contracts. These specifications are in a separate booklet.)

PART 2 SPECIFIC OFFICIAL NOTICE AND GENERAL OFFICIAL NOTICE

The Specific Official Notice as it appears in The Daily Reporter and General Official Notice are a part of these contract documents.

PART 3 SPECIFICATIONS

HP-181: HOWARD FLOW MONITORING

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JOB REQUIREMENTS

HP-181: HOWARD FLOW MONITORING

JR-1 FORM OF BID Contractor shall submit a lump sum bid for furnishing the complete job in accordance with the plans and specifications.

JR-2 JOB LOCATION Howard Avenue Purification Plant; 3929 South 6th Street, Milwaukee, WI 53221.

JR-3 GENERAL DESCRIPTION OF WORK The work to be performed under this contract consists of the supply of all labor, materials, transportation and services necessary for the installation and/or refurbishment of the equipment items described below, including the provision of all design, manufacturing, delivery, plant, materials and labor connected therewith.

HP-181: HOWARD FLOW MONITORING

The Contractor shall furnish and install all materials required to construct a manhole, complete a 2” tap on the 72” concrete Raw Water line and install a 2” conduit as detailed in the contract drawings and specifications. Site shall be restored to original condition.

The materials and work required for the 2” tap shall be provided by Hanson Pressure Pipe. All materials and installation shall be as recommended by Hanson Pressure Pipe.

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JR-4 CONTRACT DRAWINGS The contract drawings upon which the proposal is to be based are listed hereunder:

<u>Contract Drawing No.</u>	<u>Title</u>
HP-181-01	Location Map - Drawing Index
HP-181-02	General Layout
HP-181-03	Details

JR-5 REFERENCE DRAWINGS - None

JR-6 PRE-BID MEETING: A **MANDATORY** Pre-Bid Meeting is scheduled for **THURSDAY, OCTOBER 27TH, 2011 AT 10:00AM** in the Howard Avenue Purification Plant Conference Room; 3929 South 6th Street, Milwaukee, WI 53221. The City of Milwaukee will **ONLY** receive bids from prospective bidders who are in attendance at the **MANDATORY** Pre-Bid Meeting. The official envelope for submitting a bid will be available at the **MANDATORY** Pre-Bid Meeting. **All attendees are required to e-mail anthony.i.supinski@milwaukee.gov; karl.rohrbach@milwaukee.gov AND phillip.greuel@milwaukee.gov no later than October 25, 2011 by 4:00PM for coordination and to be placed on the visitor list for access to the Howard Avenue Purification Plant.**

Site Visit: A site visit will be available at the conclusion of the **MANDATORY** Pre-Bid Meeting.

JR-7 PRE CONSTRUCTION MEETING Within **ten (10) business days** after Notice to Proceed is issued, a pre-submittal meeting will be held at the job site. The meeting will include discussion of design and equipment function and system operation details of the project.

JR-8 PRE-INSTALLATION MEETING No less than **twenty (20) business days** prior to the start of construction, a meeting will be held at the job site to discuss security requirements, scheduling of work, equipment delivery and storage and other construction details of the project.

JR-9 JOB SCHEDULE Within **ten (10) business days** after Notice to Proceed is issued, the contractor shall submit a construction schedule for approval. The schedule shall be made in sufficient detail to indicate dates of each significant operation. The schedule shall be such that the entire job will be completed within the specified completion time. **Contractor shall submit the schedule in hard copy and electronic format using Microsoft Project 2000. However, if an electronic copy cannot be provided in this format, a copy shall be transmitted electronically in a .pdf format and a hard copy of any updated schedules must be provided at all progress meetings.**

The contractor shall place all orders for materials promptly after award of the contract. With submittal of the construction schedule, he shall include an anticipated schedule of delivery of all major material and equipment required for the job.

The contractor shall immediately notify the City, in writing, of any problems with meeting this schedule. If the construction schedule cannot be met because of materials or equipment deliveries, the contractor shall be required to submit purchase orders and confirmations of delivery, showing the date the order was placed and the promised date of delivery.

JR-10 COMPLETION DATE All work on this project shall be completed according to the following schedule:

No Work Shall Begin Before: Notice to Proceed
Project Completion Date: January 13th, 2012

JR-11 CHARGE FOR INSPECTION: The Contractor will be charged \$350.00 per day per inspector for each and every day inspection is required on this Contract after the date allowed for completion or after such extension of time as may have been granted. This charge is further defined in Section 2.5.11 of the Department of Public Works (DPW), General Specifications.

END OF SECTION

SECTION 01010**SUMMARY OF WORK****PART 1 SCOPE OF THE CONTRACT**

This contract includes the furnishing of all transportation, equipment, supervision, labor, services, materials and appurtenances for and in connection with the following project as shown on the Contract Drawings and further specified herein. The work will take place at the Milwaukee Water Works Howard Purification Plant which supplies finished drinking water to the community.

1.01 HP-181 HOWARD FLOW MONITORING

The work covered by this specification shall consist of furnishing all transportation, equipment, supervision, labor, materials and services necessary to secure an excavation to complete a 2" tap on an existing 72" concrete water main, build a manhole at the desired location and install 2" conduit from the manhole to the chemical building.

The Contractor shall be responsible for all materials and equipment required to complete the project. The work to be performed shall include but not be limited to the following:

- A. Secure adequate excavation for the successful tap of the 72" concrete water main.
- B. Following the successful tap, build manhole centered on the 2" valve.
- C. Furnish and install 2" rigid conduit from the manhole to the Chemical Building as identified on plans.
- D. Site restoration to original conditions.

1.02 SPECIFICATIONS AND STANDARDS

All work shall be done in accordance with the City of Milwaukee "Water Main Installation Specifications", Dated January 2, 1987. Additionally, all work shall be in accordance with "The Milwaukee Water Works Standard Plan notes Regarding Water Main Construction".

The Department of Public Works General Specifications, dated January 31, 1992, latest revision, applies to this contract which will supersede any part of the specifications which differs there from.

All materials, demolition, general design, design loads, allowable stresses, joint design, shop fabrication and field construction shall conform to the requirements of the following

latest standard specifications of any technical society, organization, or association, or to codes of local or state authorities:

- A. NEC, National Electric Code.
- B. NEMA, Standards of National Electrical Manufacturers' Association.
- C. IEEE, Institute of Electrical and Electronic Engineers.
- D. AFBMA, Anti-Friction Bearing Manufacturers Association.
- E. ANSI, American National Standards Institute.
- F. SSPC, Steel Structures Painting Council.
- G. ASTM, American Society for Testing and Material.
- H. The Wisconsin Administrative Code.
- I. OSHA, U.S. Department of Labor Occupational Safety and Health Act.
- J. AWWA, American Water Works Association.

The contractor shall be familiar with the requirements of the above agencies. Any conflict in the contract drawings, these specifications or the contractor's design or construction methods, shall result in this contractor performing in a manner that conforms to the applicable requirements.

PART 2 SHOP DRAWINGS:

- A. Within two weeks after Notice to Proceed is issued, the Contractor shall submit to the City for review a minimum of three (3) copies of all shop, fabrication, assembly, foundation and other drawings required by the specifications; all drawings of equipment and devices offered by the Contractor; all drawings showing essential details of any change in design or construction proposed by the Contractor.
- B. Each shop drawing shall bear City of Milwaukee, the name and location of the structure, job number, the name of the Contractor, the date of the drawing, the date of each correction or revision and the specification numbers and plan sheet numbers applicable thereto.
- C. All shop drawing submittals should be sent to Ms. Carrie Lewis, Superintendent, Milwaukee Water Works, Room 409, Frank P. Zeidler Municipal Building, 841 N. Broadway, Milwaukee, WI 53202.

- D. Three revised copies of each drawing shall be submitted each time a drawing is returned to the contractor for revision. Upon final review of a drawing, eight (8) copies shall be submitted to the City for record and distribution to authorized persons.
- E. After review by the City, all such drawings shall become a part of the contract documents and the work or equipment shown thereby shall be furnished and installed as shown unless otherwise required by the City. No work shall be performed or equipment manufactured until drawings have been reviewed by the City and returned to the Contractor stamped “no exceptions”. The review of drawings submitted by the Contractor will be for, and will cover only general conformity to the plans and specifications and will not constitute a blanket acceptance of all dimensions, quantities, or details of the material or equipment shown by such drawings, nor shall such review relieve the Contractor of responsibility for errors contained therein.

END OF SECTION

SECTION 01039**COORDINATION AND MEETINGS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Coordination
- B. Alterations
- C. Cutting and patching
- D. Pre-construction conference
- E. Progress meetings
- F. Pre-installation conferences

1.02 COORDINATION

- A. Coordinate scheduling, submittals, and Work on the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Coordinate completion and clean up of Work of separate Sections in preparation for Substantial Completion.
- C. Coordinate correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of the City of Milwaukee's activities.

1.03 ALTERATIONS

- A. Materials: As specified in product Sections or on plans; match existing products and work for patching and extending work.

1.04 CUTTING AND PATCHING

- A. Employ skilled and experienced installer to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements which affects:

1. Structural integrity of element.
 2. Integrity of weather-exposed or moisture resistant element.
 3. Efficiency, maintenance or safety of element.
 4. Visual qualities of sight-exposed elements.
 5. Work of City of Milwaukee or separate contractor.
- C. Execute cutting, fitting and patching to complete Work, and to:
1. Fit the several parts together, so as to integrate with other Work.
 2. Uncover Work to install or correct ill-timed Work.
 3. Remove and replace defective and non-conforming Work.
 4. Remove samples of installed Work for testing.
 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
 6. Execute work by methods which will avoid damage to other Work and provide proper surfaces to receive patching and finishing.
 7. Cut rigid materials using masonry saw or core drill.
 8. Restore Work with new products in accordance with requirements of Contract Documents.
 9. Fit Work tight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.
 10. Maintain integrity of wall, ceiling or floor construction; completely seal voids.
 11. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
 12. Identify any hazardous substance or condition exposed during the Work to the City.

1.05 PRE-CONSTRUCTION CONFERENCE

- A. City of Milwaukee will schedule a pre-construction conference after Notice of Award.

B. Attendance Required: City and Contractor.

C. Agenda:

1. Submission of executed bonds and insurance certificates.
2. Submission of list of Subcontractor, list of products, Schedule of Values and progress schedule.
3. Designation of personnel representing the parties in Contract.
4. Procedures and processing of field decisions, SUBMITTALS, substitutions, applications for payments, proposal request, Change Orders and Contract closeout procedures.
5. Scheduling and reports.
6. Use of premises by City of Milwaukee and Contractor.
7. Construction facilities and controls provided by City of Milwaukee.
8. Temporary utilities and controls provided by City of Milwaukee, if any.
9. Security and housekeeping procedures.
10. Procedures for testing.
11. Procedures for start-up of equipment.
12. Requirements for maintaining record documents.
13. Inspection and acceptance of equipment put into service during construction period.
14. Conflicts.

1.06 PROGRESS MEETINGS

- A. The City will Schedule and administer meetings throughout progress of the Work as required.
- B. The City will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes and distribute copies within three days to the City, participants and those affected by decisions made.

C. Attendance Required: Contractor's general superintendent, major Subcontractors and suppliers, City, as appropriate to agenda topics for each meeting.

D. Agenda:

1. Review minutes of previous meetings.
2. Review of Work.
3. Field observations, problems, and decisions.
4. Field observations of problems which impede planned progress.
5. Review of SUBMITTALS schedule and status of submittal.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding Work period.
10. Coordination of projected progress.
11. Maintenance of quality and Work standards.
12. Other business relating to Work.

1.07 PRE-INSTALLATION CONFERENCES

- A. When determined by the City, convene a pre-installation conference at work site prior to commencing work.
- B. Require attendance of parties directly affecting, or affected by, work of the specific Section.
- C. Notify all parties four days in advance of meeting date.
- D. Prepare agenda, preside at conferences, record minutes and distributed copies within two days after conference to participants, with one copy to the City.
- E. Review conditions of installation, preparation and installation procedures, and coordination with related work.

END OF SECTION

SECTION 01500**JOB SITE SECURITY, UTILITIES AND FACILITIES****PART 1 SCOPE**

A. Index

1. Scope
2. Security and Safety
3. Occupancy during Construction
4. Electric Power
5. Water
6. Toilet Facilities

B. General Conditions

1. All operations shall be carried on with a minimum of damage and disturbance. All damages shall be repaired to the original condition to the satisfaction of the Engineering Representative.
2. All removals become the property of the Contractor and shall be disposed of off the site unless otherwise specified.

C. Temporary Ventilation

Ventilate enclosed areas to assist cure of materials, to dissipate humidity and to prevent accumulation of dust, fumes, vapors and/or gases.

D. Barriers

1. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
2. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

E. Progress Cleaning

1. Waste materials, debris and rubbish shall be removed daily after work. Maintain site in a clean and orderly condition.
2. Clean and repair damage caused by removals or installations.
3. Restore existing facilities used during construction to original condition.

PART 2 SECURITY AND SAFETY

A. General

The Milwaukee Water Works consists of a number of facilities to treat and deliver drinking water to the City and surrounding suburban communities. To insure the safety and security of drinking water, the Milwaukee Water Works has instituted protocols for visitors and contractors to control entry to these facilities. It is essential that contractors strictly comply with the security policy outlined in the specification section.

For this project, the Contractor shall continuously coordinate building and site security measures, including accessing the site, with the designated Water Engineering representative or the Water Security Manager, Mr. Michael Schaefer, who can be reached at **Telephone # (414) 286-3465 or Facsimile # (414) 286-2672.**

B. Scope

Any and all City agencies and contractors engaged for work at Milwaukee Water Works facilities shall be required to attend a "Pre-Construction Security Briefing" before any contracted work can be initiated. At this meeting, the contractor and sub-contractors shall have a detailed briefing with discussions regarding the following items:

1. Milwaukee Water Works site security policies and procedures.
2. Contractor and Sub-Contractor Obligations.
3. Permit System.

C. Policies

During the "Security Briefing" portion of the "Pre-Construction Meeting", Milwaukee Water Works Security staff shall provide the Prime Contractor with site polices to be reviewed by the Prime and Sub Contractors. These documents may include:

1. Lock-out / Tag-out Policy.
2. Confined Space Entry Procedures.
3. Evacuation Procedure for Propane, Lox & Ammonia Releases.
4. Personal Protective Equipment Guidelines.
5. No Smoking Policy.
6. Prohibited Materials.

Additionally, the contractor will be provided:

1. Contact Phone Numbers for MWW Staff.
2. On-Site Parking Location and designated construction entrance.
3. Site security policy and procedures.

The Prime Contractor shall be required to review these documents and is responsible for conveying the contents of these submittals to their employees, sub-contractors and any other parties working directly or indirectly for them. These policies apply equally to all contractors. Failure to comply with established policies and procedures may result in access privileges being withdrawn.

MWW Staff shall provide a “walk-through” session with the contractor to review area layout and site plans as part of this orientation process and to establish the specific work areas necessary for the contractors to perform their scope of work. Topics covered in this session include: site overview with hazards, Material Safety Data Sheets (MSDS), fire extinguisher placement and the storm water protection policy.

D. Contractor Responsibilities

Contractors shall provide the following documents **no less than 7 business days prior** to the start of contracted work:

1. Scope of work to be performed.
2. Name of primary contractor’s onsite representative.
3. Names of all companies sub-contracted to do work on the project.

4. Completed "Contract Firm Registration Form" (see attachment 'A') for prime contract firm and every sub-contract firm.
5. A "Contractor Employee Registration Form" completed for the contractors and every employee who needs to be granted site access (see attachment 'B').
6. List of items to be stored on-site.
7. Material Safety data Sheets for all Chemicals to be used/stored on-site.

Note: It is the responsibility of the Prime Contractor to facilitate gathering and submittal of the "Contractor Employee Registration Form" for all sub-contractors working on the project. A sub-contractor is defined as an individual or firm hired by the primary contractor to perform a specific task as part of the overall project. This would not include an organization making deliveries of supplies or equipment to the job site; procedures for these firms are covered under Part 8, "DELIVERIES".

In the event it is necessary for the Prime Contractor to add additional employees to the list of approved personnel, a minimum of 72 hours, or 3 business days, must be allowed for processing of the request. Site access will be denied to the additional personnel until processing is complete.

Additionally, Contract Firms are obligated to notify MWW in a timely manner of any site-authorized staff that leaves the employ of the Contractor.

At no time should anyone but the Prime Contractor be contacting Milwaukee Water Works employees with issues or access requests. If a request for site access does not come from the Prime Contractor, the request will not be processed.

During the time period that the Contractor is on-site, they must agree to:

1. Notify the Plant Manager immediately of any significant chemical spills or leaks.
2. Maintain normal non-toxic breathable air quality through adequate ventilation at the work site.
3. Perform no equipment isolations or tie-ins without the signed approval of Site Management.
4. Restrict movement to the specific work areas within the site to perform Contractors Scope of Work.

E. Contractor Special Work Permits

Contractors must notify Engineering / Site Management Staff of any welding, torching or potentially hazardous or operational impact request prior to commencing such operations. Special Permits shall be issued to the contractor and these must also be displayed at the work site.

Failure to comply with the terms of the Special Work Permits or provisions that provide for MWW Employee Safety shall be cause for revocation of such Permits, and the contractor may be forced to discontinue activities at the Site.

F. Contractor Identification and Daily Registration

Every day, all contractors shall be required to show a valid picture ID card, to sign-in at the start of work, and sign out at the end of work. A MWW employee or designated security representative shall be on site to ensure compliance. Any identification tags or lanyards issued by MWW are to be worn while on site and returned to site management upon completion of contracted work.

G. Contractor Gate Access and Parking

Contractors must comply with the terms of entry for the site and park only in the areas designated for parking by the MWW site representative.

NOTE: Parking privileges may be rescinded at any time as Site Operational Requirements dictate.

PART 3 CITY OF MILWAUKEE PERMITS

The Contractor shall obtain the necessary permits for this Project.

PART 4 OCCUPANCY DURING CONSTRUCTION

The Water Works facility shall be in continuous operation during this contract. Contractor and Sub-Contractors are to take any and all necessary precautions to insure there is no interference with daily operations or security. MWW personnel shall be continuously occupying the facility. All hours of contractor's operations shall be coordinated with the MWW site or engineering representative.

PART 5 ELECTRICAL POWER AND TELEPHONE SERVICE

On-site electrical service is available for Contractor use during project duration. Contractor shall provide and maintain all necessary power cords, electrical lighting, heat, ventilation, and

telephone service and shall make all necessary connections in accordance with OSHA regulations. Contractor shall provide and pay for his own wireless telephone service.

PART 6 WATER

Water is available for the Contractor at the site and may be obtained from the fixture(s) so designated by MWW staff or Engineering Representative. Contractor and Sub-Contractors must provide their own hoses, back flow preventer, and any other connection appurtenances required for the contract.

PART 7 TOILET FACILITIES

On-site toilet facilities are available for Contractor use during project duration. The specific location of these facilities will be transmitted to the Contractor at the pre-construction meeting. However, if project requirements render the use of on-site facilities impractical, then Contractor shall furnish portable facilities. If portable facilities are required, Contractor shall maintain these toilet facilities in a sanitary condition throughout the duration of the project and shall remove them from site at the end of the project. The placement and location of the temporary portable toilets shall be coordinated with the Plant Manager and Engineering Representative.

PART 8 DELIVERIES

Contractor shall coordinate the delivery of all equipment, material, Dumpsters, portable toilets (and their maintenance) and other required items required for the contract work with the MWW staff. A minimum of 24 hours prior notice in advance of the desired delivery date shall be transmitted to the designated Water Engineering Representative. Contractor shall provide the following information in the notification:

- A. Trucking/Delivery Company
- B. Driver Name
- C. Truck License Plate Number

The driver of the delivery vehicle is required to display picture identification as a pre-requisite for entry to the MWW facility for the delivery. Failure to comply with the above will result in denial of project site access, requiring the contractor to re-schedule delivery.

END OF SECTION

Milwaukee Water Works

Safe, Abundant Drinking Water.

HP-181
Attachment "A"

FORM A

CONTRACT FIRM REGISTRATION FORM

CONTRACTOR: _____

PLANT/SITE: _____

CONTRACT/SERVICE ORDER No. _____

WATER ENGINEERING PROJECT No. _____

PRIMARY CONTACT PERSON: _____

OFFICE PHONE NUMBER: _____

CELL PHONE NUMBER: _____

REQUESTED WORK HOURS (00am – 00pm): _____

NUMBER OF EMPLOYEES TO BE WORKING ON-SITE: _____

**Signature certifies receipt of the materials outlined in
Contract Section 01500, Part 2 – Security and Safety, Section C, Policies.**

SIGNATURE: _____

PRIMARY CONTACT PERSON

DATE: _____

***Accompanying this form should be a complete listing of all
equipment to be stored on site for the duration of the project.***

Milwaukee Water Works

Safe, Abundant Drinking Water.

HP-181
Attachment "B"

FORM B

CONTRACTOR EMPLOYEE REGISTRATION FORM

Contract Firm: _____

Plant/Site/Project: _____

Employee Name (Printed): _____

This certifies that I have received the building site security and safety policies.

EMPLOYEE
SIGNATURE: _____
Required

DATE: _____

ONSITE PARKING

- I will always be driving a Company vehicle.
- I will always be a passenger in a vehicle.
- I will be driving my personal vehicle. If checked here complete and sign the next section.

Contractor Personal Vehicle Liability Waiver

EMPLOYEE VEHICLE
MAKE & MODEL: _____ LICENSE PLATE: _____

I, hereby agree to hold harmless the City of Milwaukee for any and all damage, loss or injury, which may occur as a result of utilizing the contractor onsite parking area.

EMPLOYEE
SIGNATURE: _____
Required

DATE: _____

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1. Inspection

Paragraph 3 of section 3.5.11 of the City of Milwaukee Water Main Installation Specifications, dated 1987, shall be revised to read:

The amount of per diem charge for inspection as referred to in section 2.5.11 shall be \$325.00.

The contractor shall allow four working days notice for material inspection and for scheduling installation inspection prior to the start of construction. Contact Steve Brengosz at 414-708-2808 or Mark Scheller at 414-286-2427 for materials inspection and the City of Milwaukee's Construction Section at 414-286-2497 for installation inspection.

2. Material Testing

All material tests required on this contract shall be performed at a testing laboratory designated by the City.

3. Winter Water Main Construction

No water main construction work shall be done between the days of December 15 and March 15 of the following year without permission from the City of Milwaukee Commissioner of Public Works or his representative.

4. Additional Bids

The water main construction work for this project is separated into additional bid items for the purpose of identifying possible subcontractor work for the disadvantaged business enterprises.

The portions of the water main specifications listed below shall govern the extent of these bids:

<u>Bid</u>	<u>Specification</u>	<u>Page (S)</u>
Permanent Pavement	Chapter 5.19.0	170,171
Curb & Gutter	Chapter 5.19.0	170,171
Walk	Chapter 5.19.0	170,171
Driveway	Chapter 5.19.0	170,171
Barricades and Traffic Control	Sections 2.7.2 and 2.7.3	38,39
Sawcutting	Sections 3.5.6 and 3.5.7	66,67
Finishing of Roadway	Section 2.5.4	32

All other work on this project, which is not specifically bid, shall be included in the unit price bid for water main.

5. Delivery of Material Furnished by the City

Specification chapter 4.3.0 shall be revised to read:

The City of Milwaukee will not deliver material that is furnished by the City. It shall be the contractor's responsibility to pick up and transport all material furnished by the City. The contractor's responsibility for this material shall begin on the day the contractor picks up the material, whether this is done before or during construction.

The contractor, upon receipt of the city-furnished material, shall sign the City of Milwaukee, Department of Public Works "Material Requisition and Disbursement Report". The contractor shall also return any city-furnished material that is designated to be returned. All costs for the transportation of city furnished material shall be included in the unit price bid for water main. Contact Mr. Kevin Gray, City of Milwaukee Inventory Assistant at 414-286-0669 for additional information.

6. Erosion Control Specifications

Non Rural

Soil Erosion Control Plans for Water Main Installation In Paved, Non-Rural Areas; Revised August 1, 2001, shall apply to this project. Copies of this document are available upon request from Milwaukee Water Works – Water Engineering; Zeidler Municipal Building; 841 N. Broadway, Room 403; Milwaukee, WI 53202.

The contractor shall clean the storm water inlets prior to placing the inlet baskets. If the inlet drain is clogged, the contractor shall contact Underground Operations (414-286-3731) so that the drain can be cleaned.

Rural

Soil Erosion Control Plans for Water Main Installation In Paved, Rural Cross-Section, Pedestrian Ways, and Unpaved Areas Other Than Channels; Revised August 1, 2001, shall apply to this project. Copies of this document are available upon request from Milwaukee Water Works – Water Engineering; Zeidler Municipal Building; 841 N. Broadway, Room 403; Milwaukee, WI 53202.

The contractor shall clean the storm water inlets prior to placing the inlet baskets. If the inlet drain is clogged, the contractor shall contact Underground Operations (414-286-3731) so that the drain can be cleaned.

7. Backflow Preventer

In any instance where water is used from a hydrant or other public water supply source, the contractor shall protect the public water supply by means of an appropriate backflow preventer.

Where the hose or outlet will be above the elevation of the water source, the contractor shall use a reduced pressure zone (rpz) backflow preventer. If a $\frac{3}{4}$ " or smaller hose supply is required a vacuum breaker-backflow preventer may be used. Where the hose and outlet will always be below the elevation of the water source, an atmospheric vacuum breaker may be used. The backflow preventer shall be connected to the hydrant in compliance with section 2.8.12 and shall be self-supporting imposing no load on the hydrant.

8. Hydrants and Valves

The contractor shall install hydrants with the nozzle section facing the street where practical. The cost of modifying the hydrants shall be included in the unit price bid for installing hydrants. The contractor shall be responsible for installing the hydrant frangible coupling (flange) within 0.2' of the plan grade. The contractor shall notify the Milwaukee Water Works Distribution Division of any existing hydrant vandal proof devices before removing hydrants. The contractor shall be responsible for tightening nuts and bolts on all valves and hydrants in this contract.

9. Hydrant Permits

A \$65.00 hydrant permit/use fee will be part of the hydrant use permit. This fee is per hydrant per week.

It is the intention of the City of Milwaukee to meter and record all water use on this contract. The contractor must obtain a hydrant permit for this contract, which includes the requirement of a meter to measure water usage. This permit can be obtained from the City's Development Center located at 809 N. Broadway.

If it is found that the contractor is not following the standard hydrant permit use rules, the City of Milwaukee will take normal enforcement action.

Milwaukee Water Works only projects issued through DPW

The permit requires the contractor to place a refundable \$6750.00 deposit for each meter to be used. The contractor will not be required to pay \$325.00 for the setup of the meter. The \$65.00 hydrant permit/use fee will be waived by the utility. The contractor will not be charged for the volume of water used.

Combined Water/Sewer projects issued through DPW

The permit requires the contractor to place a refundable \$6750.00 deposit for each meter to be used. The contractor will be required to pay \$325.00 for the setup of the meter. The contractor will be charged for the volume of water used to complete the work on the contract. Construction activities directly related to the installation of water main shall be exempt from the usage charge. The contractor shall contact Meter Services before and after the water main installation. Failure to contact Meter Services will subject the contractor to the full water use charges.

All other contracts or water main installations

The permit requires the contractor to place a refundable \$6750.00 deposit for each meter to be used. The contractor will be required to pay \$325.00 for the setup of the meter. The contractor will be charged for the volume of water used and read on the meter(s).

Questions, arranging installations, and readings

MWW Meter Services dispatcher, 414-286-2865
Mr. Tim Garczynski, Water Meter Project Manager, 414-286-8119

10. Water Services

On each connect original service (C.O.S.), replace original service (R.O.S.) or installation of new service, the contractor shall furnish and install a service insulator (Ford Meter Box Co. Inc. SI-2, SI-4, SI-6, SI-7 or equal). Cost of furnishing and installing the service insulator shall be included in the unit bid price for the C.O.S., R.O.S. or service, respectively. On C.O.S.'s the service insulator shall be installed on the outlet side of the corporation stop. On R.O.S.'s and new services, the service insulator shall be installed on the outlet (private property) side of the curb stop.

11. Pipe Restraint

Pipe shall be restrained by means of concrete buttresses and anchors as shown on specification drawing no.'s 3 through 12 and no. 17. When adequate concrete buttressing is not possible, strapping and rodding as shown on drawing no.'s 13, 14, and 16 shall be installed for pipe restraint at 4" through 16" bends and offsets. Bell spigot restraints, as shown in drawing no. 15, shall be used only at the direction of the commissioner,

- 1) In conjunction with concrete restraints when the water main must be immediately restored to service, or
- 2) Where other restraints cannot be used.

12. Water Quality Tests

Section 5.18.1 of the specifications shall be revised to read:

Water from all new mains must successfully pass turbidity and bacterial tests performed by the City before the main is accepted for use.

13. Pressure Testing

The allowable leakage referred to in section 5.17.3 shall not exceed the number of gallons per hour as determined by the following formula:

$$GPH = \frac{S \times D \times \sqrt{P}}{148,000}$$

In which *GPH* = gallons per hour

D = nominal diameter of main in inches

S = length of pipe tested in feet

P = average pressure in pounds per square inch gauge during leakage test

14. Backfill and Bedding Material

The contractor shall have the option of using one of the following requirements for backfill and bedding on installations of 16" and smaller water mains.

Backfill

Material used to backfill water main trenches, as required in chapter 5.16.0 of the "Water Main Installations" of the City of Milwaukee, shall be one of the following gradation requirements:

Option No. 1

<u>Sieve Size</u>	<u>Crushed Gravel</u>	<u>Crushed Stone</u>
1 inch	100 %	100 %
3/8 inch	50 – 85 %	40 – 75 %
No. 4	35 – 65 %	25 – 60 %
No. 10	25 – 50 %	15 – 45 %
No. 40	10 – 30 %	–
No. 200	3 – 10 %	3 – 12 %

Option No. 2

<u>Sieve Size</u>	<u>1/4" Screenings</u>
1/2 inch	100 %
3/8 inch	–
No. 4	75 – 100 %
No. 8	–
No. 16	–
No. 30	–
No. 100	10 – 25 %

Option No. 3 Sieve Analysis, ASTM C 136

<u>Sieve Size</u>	<u>Percent Passing</u>	
2.5 inch	100.0 %	
2 inch	88.2 %	
1.5 inch	68.9 %	
1 inch	50.7 %	
3/4 inch	41.0 %	
1/2 inch	33.3 %	
3/8 inch	28.3 %	
No. 4	20.6 %	
No. 10	15.8 %	
No. 20	12.0 %	
No. 40	10.0 %	
No. 100	8.3 %	
No. 200	7.5 %	Percent Finer than No. 200 Sieve, ASTM C 117

Bedding

Option No. 1

Material used for bedding shall be per specification 4.6.0 of the "Water Main Installation Specifications" of the City of Milwaukee.

Option No. 2

<u>Sieve Size</u>	<u>1/4" Chips</u>
1/2 inch	100 %
3/8 inch	90 – 100 %
No. 4	–
No. 8	0 – 50 %
No. 16	–
No. 30	0 – 5 %

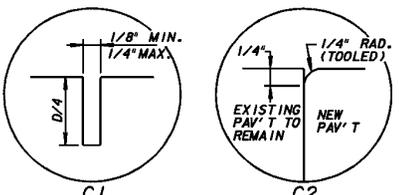
15. Consolidation of Backfill and Aggregate Slurry Backfill

The contractor shall consolidate all backfill by mechanical compaction per specification 2.6.14 (B) of the Standard Specifications for Sewer & Water Construction in Wisconsin. Per the specification, the initial compacted lift shall be two (2) feet. The specification language for subsequent lifts shall be revised to read, "Each subsequent compacted lift of material shall be one (1) foot". Costs are to be included in the unit bid price for water main. Settling the trench by flooding the backfill will not be allowed.

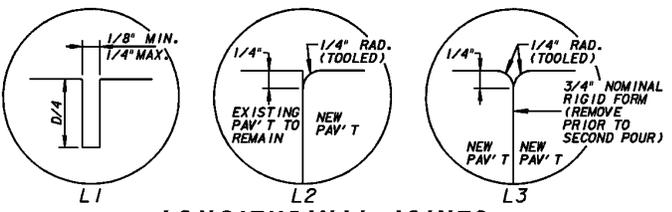
Where specified on the plans, the contractor shall backfill with aggregate slurry per specification 8.43.8 of the Standard Specifications for Sewer & Water Construction in Wisconsin. A bid item for "Slurry Backfill", measured by cubic yards, will be included on the water main construction plans. In addition, if the City of Milwaukee Construction supervisor determines that slurry backfill is required at a location not specified on the plans, and a bid item has not been included in the contract, the contractor shall be paid the "Fixed Price" extra for aggregate slurry backfill.

16. 4" Asphaltic Concrete Pavement Replacement

The bid item for 4" Asphaltic Concrete shall consist of 4" of asphaltic concrete on 2" of 3/4" crushed stone (meeting Street Construction Specification 904.2.2) on 7" of no. 2 crushed stone. The cost of the crushed stone base shall be included in the unit price bid for 4" Asphaltic Concrete.



TRANSVERSE JOINTS

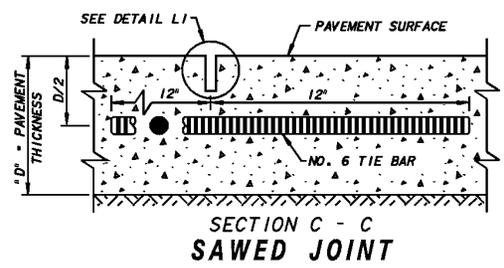


LONGITUDINAL JOINTS

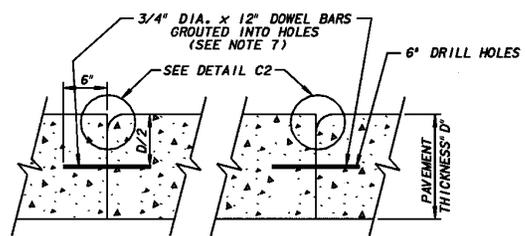
CONCRETE PAVEMENT REPAIR

1. TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.4 OF THE STANDARD SPECIFICATIONS. DOWEL BARS SHALL BE COATED IN CONFORMANCE WITH SUBSECTION 505.2.6 OF THE STANDARD SPECIFICATIONS.
2. DOWELL BARS SHALL BE INSTALLED PARALLEL TO THE PAVEMENT SURFACE.
3. THE C2 JOINTS MAY BE SKEWED (30 DEGREES MAX.) AS DIRECTED BY THE CONSTRUCTION ENGINEER TO FIT THE SKEW OF THE CRACK OR JOINT TO BE REPAIRED.

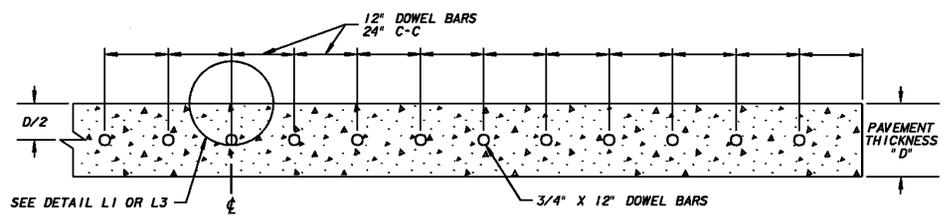
4. STANDARD SPECIFICATIONS ON THIS DETAIL REFER TO STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION - LATEST EDITION.
5. THE PREPARATION OF FOUNDATION FOR FULL DEPTH CONCRETE PAVEMENT REPAIR SHALL BE IN ACCORDANCE WITH SUBSECTION 211.4.4 OF THE STANDARD SPECIFICATIONS.
6. PRIOR TO THE PLACEMENT OF CONCRETE PAVEMENT AND/OR CONCRETE BASE IN THE TRENCH AREA, THE EXISTING PAVEMENT SHALL BE DRILLED TO A DEPTH OF 6 INCHES AT TWO FOOT INTERVALS, ON ALL SIDES. EACH HOLE SHALL BE DRILLED AT A MID-POINT OF THE DEPTH OF THE EXISTING CONCRETE PAVEMENT. NO. 6 (3/4 INCH DIAMETER) EPOXY COATED TIE BARS, 12 INCHES LONG, SHALL THEN BE FIRMLY EMBEDDED IN THE PREDRILLED HOLES. THE SUBGRADE SHALL BE RECOMPACTED IMMEDIATELY AFTER THE HOLES ARE DRILLED AND PRIOR TO THE TIE BARS BEING PLACED. ANY BARS THAT ARE DEEMED LOOSE BY THE CONSTRUCTION ENGINEER SHALL BE WEDGED IN TIGHTLY USING CONCRETE NAILS.
7. A QUICK SETTING NON-SHRINKING HIGH STRENGTH MORTAR OR EPOXY SHALL BE USED TO GROUT DOWEL BARS INTO THE DRILL HOLES. THE DRILL HOLES SHALL BE THOROUGHLY CLEANED OF DRILLING DUST, DEBRIS AND EXCESS MOISTURE PRIOR TO GROUTING. AMPLE MORTAR OR EPOXY SHALL BE PLACED IN THE BACK OF THE HOLE AND THE BAR INSERTED IN SUCH A MANNER THAT IT IS UNIFORMLY COATED WITH MORTAR OR EPOXY AND ALL VOIDS WITHIN THE DRILL HOLE ARE COMPLETELY FILLED. THE MORTAR OR EPOXY CONSISTENCY SHALL BE THICK ENOUGH TO PREVENT EXCESSIVE FLOW FROM THE INSTALLATION.



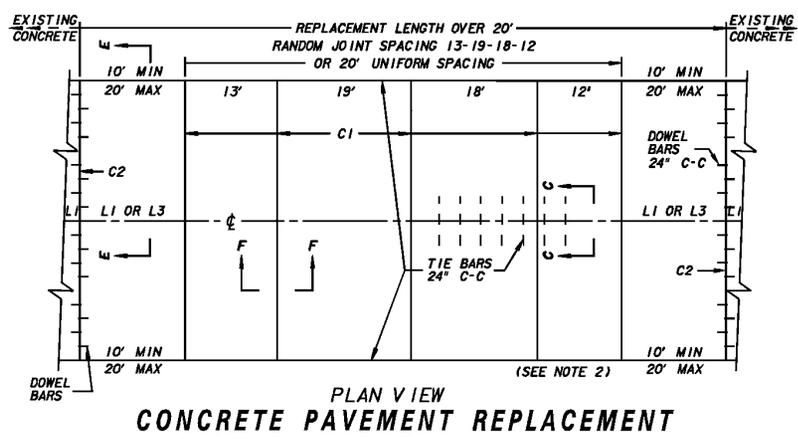
**SECTION C - C
SAWED JOINT**



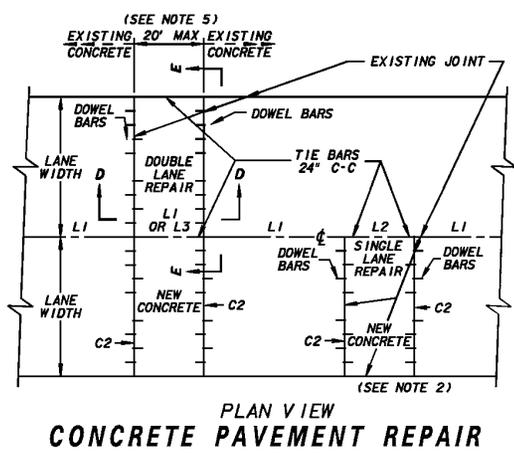
SECTION D - D



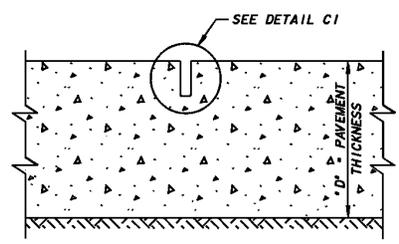
**SECTION E - E
DOWEL BAR SPACING ABUTTING EXISTING PAVEMENT**



**PLAN VIEW
CONCRETE PAVEMENT REPLACEMENT**



**PLAN VIEW
CONCRETE PAVEMENT REPAIR**



**SECTION F - F
CONTRACTION JOINT**

**This is the “Supplemental Schedule” of FIXED PRICES
Referenced to in Chapter 2.6.0 of the Specifications**

SPECIFICATION REFERENCE

1987 Water Specifications	ITEM	UNIT	PRICE
5.1.11	Water Service Alteration: Up to 1” Diameter Over 1” Diameter	Each Each	\$ 450.00 Agreed Upon
3.5.6	Sawing Concrete Pavements Full Depth With Water Cooled Saw Total footage of 0 to 200 feet Each additional foot Over 200 feet	Lump Sum Lineal Ft.	400.00 2.00
5.1.11	Reconnecting Existing House Sewers and Drains	Lineal Ft.	55.00
5.2.4	Sheathing and Bracing Left in Place (Includes Labor & Material)		Agreed Upon
	Concrete Cap – All Sizes of Pipe	Cubic Yd.	200.00
	Concrete Cradle – All Sizes of Pipe	Cubic Yd.	200.00
5.16.17 5.16.18	3” Thick Bituminous Premix/ Asphaltic Concrete	Square Yd.	Base Price 100.00 25.00 + Base
5.19.2	8” Thick Class A Concrete Base (Includes Removals): Up to 20 sq.yds. Over 20 sq.yds.	Square Yd. Square Yd.	45.00 35.00
5.19.2	8” Thick Class A Concrete Surface (Includes Removals): Up to 20 sq.yds. Over 20 sq.yds.	Square Yd. Square Yd.	50.00 40.00
5.19.2	5” Thick Class C Concrete Sidewalk (Including removals)	Square Ft.	7.00
5.19.2	7” Thick Class A Concrete Driveway (Includes Removals)	Square Ft.	9.00

SPECIFICATION REFERENCE

1987

Water

Specifications

	ITEM	UNIT	PRICE
5.19.2	3" Thick Class A Concrete Shim	Square Yd.	20.00
	Rock Excavation	Cubic Yd.	Time & Material
5.16.5	Slurry: Up to 5 Cu. Yds.	Cubic Yd.	100.00
	Over 5 Cu. Yds.	Cubic Yd.	60.00
	Place All Types of Concrete Curb & Gutter (Includes Removals): Up to 50 Lineal Ft.	Lineal Ft.	40.00
	Over 50 Lineal Ft.		Agreed Upon
	Dowel Bars	Each	7.00
	Lawn Replacement: Type A	Square Yd.	7.00
	Type B	Square Yd.	4.00
	Type C	Square Yd.	3.00

Repair of Water Main Break During Construction

Contractor shall repair all water main breaks on existing mains, which occur during normal working hours. The Water Dept. will operate the valves for shut-off.

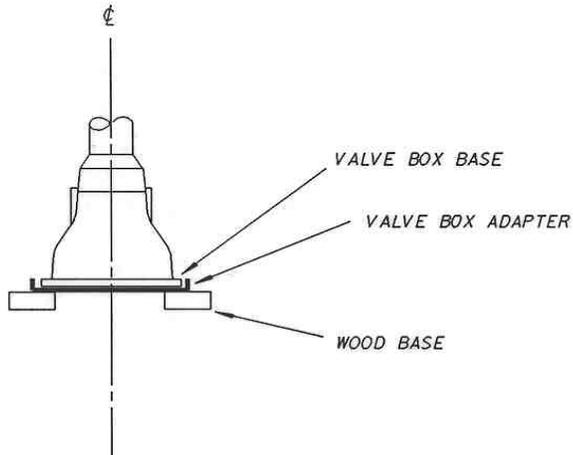
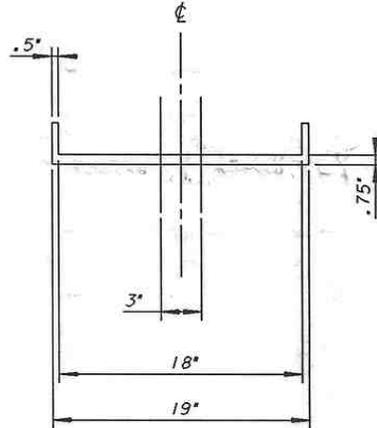
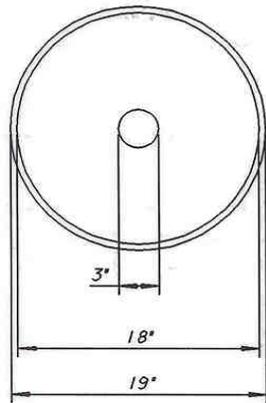
Where repairs are made on mains that will be abandoned, the Contractor shall furnish all repair material. The Contractor shall have a minimum of 2 repair clamps, 2 dual purpose sleeves, and 1 length of ductile iron, cast iron or PVC pipe of the existing pipe size on the job before the job starts and at all times thereafter. This repair material need not conform to Water Main Installation Specifications.

When repairs are required on mains that will remain in service, all repair materials shall be picked up by the Contractor at the pipeyard and their cost to be billed to the Contractor only if the break was caused by his negligence.

All breaks occurring as a result of the negligence of the Contractor shall be repaired at his own expense. Where the break occurs while exercising normal care, the Contractor will be compensated for the repair of each break as follows:

- | | | |
|----|--|-------------------|
| a. | Where the break can be repaired without replacing pipe, the Contractor will be paid. | \$ 1,000.00 |
| b. | Where the break can be repaired without replacing pipe
And the Contractor must excavate, the Contractor will be paid. | \$ 1,800.00 |
| c. | Where a piece of pipe must be removed and replaced
the Contractor will be paid | Time and Material |

Water Services or branches damaged as a result of the construction work shall be repaired by the Contractor at his own cost.



NOTES

- VALVE BOX BASE ADAPTER TO BE FURNISHED AND INSTALLED BY CONTRACTOR UNDER THE VALVE BOX BASE
- VALVE BOX BASE ADAPTER ADAPTOR II AS MANUFACTURED BY ADAPTOR'S INC. OR AN APPROVED EQUIVALENT
- THIS ADAPTER/VALVE BOX ASSEMBLY TO BE USED ONLY WITH GATE VALVES
- ADAPTER/VALVE BOX ASSEMBLY SHALL BE ADJUSTED OVER THE GATE VALVE JUST TO CLEAR THE OPERATING NUT.
- ADAPTER/VALVE BOX ASSEMBLY SHALL HAVE A SNUG FIT WITH THE BONNET ASSEMBLY.

Water Engineering Department of Public Works	
VALVE BOX BASE ADAPTER	
APPROVED DATE 1-12-00 MAINS DESIGN ENGINEER DATE 1-13-00 CHIEF DESIGN ENGINEER	DESIGNED BY KSR CHECKED BY SUM DRAWN BY KSR DATE 01-12-00
DRAWING NO. VBBA 1	

NO.	BY	REVISION	DATE

20. Water Main Disinfection Process

This process shall supersede chapter 5.18.0 of the water main installation specifications dated January 2, 1987, entitled "Safe Drinking Water Procedures and Tests". The contractor shall be required to disinfect all proposed water mains in this contract using either the continuous feed method per AWWA C651-99, Sec. 4.4.3 or the tablet method detailed below.

If the contractor chooses the continuous feed method, the water main shall be chlorinated following a successful pressure test. After chlorination (>10ppm chlorine residual), the contractor shall flush the super-chlorinated water out of the main and de-chlorinate the discharged water. The contractor shall then flush the water main for a period of 24 hours and begin the sampling process. The sampling process shall be done as detailed in step 6 of the tablet method. After successful water samples are obtained, the contractor shall begin the wet connection process. Following the first wet connection, the contractor shall flush the water main overnight prior to reconnecting services or making the next wet connection.

Tablet Method

- 1) The contractor shall supply and place calcium hypochlorite tablets in the water main as it is being installed. The placement of the tablets shall be per AWWA C651-99, Sec. 4.4.2. The tablets shall be attached to the top of the pipe with a food-grade adhesive (Loctite Gasket Sealant No. 2 or DAP 100% silicone rubber sealant or approved equal). The calcium hypochlorite tablets shall conform to AWWA C651-99, Sec. 4.1.3.
- 2) When installation is complete, the contractor shall fill the main with water at a rate to insure that the water within the main will flow at a velocity no greater than 1 ft/s (160gpm fill rate for an 8" water main). Precautions shall be taken to ensure that air pockets are eliminated. This water shall remain in the pipe for 24 hours.
- 3) Following the 24-hour waiting period, the construction section shall test for a chlorine residual of at least 5ppm at each end of the water main.
- 4) The contractor shall flush the super-chlorinated water out of the main. The contractor shall de-chlorinate the discharged water. The de-chlorinator shall be the "H2O Neutralizer" by Measurement Technologies, 704 – 228th Avenue NE, #601, Sammamish, WA 98074, (425) 868-8511, or equal.
- 5) Whether the chlorine residual was less than or greater than 5ppm, the construction section shall then pressure test the water main.
- 6) A) If the water main passed the pressure test and the chlorine residual was greater than 5ppm, then the contractor shall flush the water main for a period of 24 hours. Following the 24-hour flushing period, two samples shall be collected from the new main. One sample will be for a bacteriological test. The other sample will be tested for chlorine residual and turbidity. If the first samples are unsuccessful, another set of samples will be collected following an additional 24 hours of flushing. If the second set of samples is unsuccessful, re-chlorination will be required (See step 7). The contractor shall begin the wet connection process after obtaining successful samples. Following the first wet connection, the contractor shall flush the water main overnight prior to reconnecting services or making the next wet connection.

B) If the water main did not pass the pressure test, then the contractor shall make the necessary repairs and the water main shall be re-pressure tested. Following the successful pressure test, the contractor shall fill the water main. The construction section shall then chlorinate the water main by the continuous feed method per AWWA C651-99, Sec. 4.4.3. After successful chlorination (>10ppm chlorine residual), the contractor shall flush the super-chlorinated water out of the main and de-chlorinate the discharged water. The contractor shall then flush the main for a period of 24 hours. Following the 24-hour flushing period, two samples shall be collected from the new main. One sample will be for a bacteriological test. The other sample will be tested for chlorine residual and turbidity. If the first samples are unsuccessful, another set of samples will be collected following an additional 24 hours of flushing. If the second set of samples is unsuccessful, re-chlorination will be required (See Step 7). The contractor shall begin the wet connection process after obtaining successful samples. Following the first wet connection, the contractor shall flush the water main overnight prior to reconnecting services or making the next wet connection.

- C) If the water main passed the pressure test but the chlorine residual was less than 5ppm, then the contractor shall fill the water main and the construction section shall chlorinate the water main by the continuous feed method per AWWA C651-99, Sec. 4.4.3. After successful chlorination, the contractor shall flush the super-chlorinated water out of the main and de-chlorinate the discharged water. The contractor shall then flush the main for a period of 24 hours. Following the 24-hour flushing period, two samples shall be collected from the new main. One sample will be for a bacteriological test. The other sample will be tested for chlorine residual and turbidity. If the first samples are unsuccessful, another set of samples will be collected following an additional 24 hours of flushing. If the second set of samples is unsuccessful, re-chlorination will be required (See Step 7). The contractor shall begin the wet connection process after obtaining a successful sample. Following the first wet connection, the contractor shall flush the water main overnight prior to reconnecting services or making the next wet connection.
- 7) If acceptable bacteriological, chlorine residual, and turbidity samples cannot be obtained in two attempts, the construction section shall re-chlorinate the water main by the continuous feed method per AWWA C651-99, Sec. 4.4.3. After successful chlorination, the contractor shall flush the super-chlorinated water out of the main and de-chlorinate the discharged water. The contractor shall then flush the main for a period of 24 hours. Following the 24-hour flushing period, two samples shall be collected from the new main. One sample will be for a bacteriological test. The other sample will be tested for chlorine residual and turbidity. If the first samples are unsuccessful, another set of samples will be collected following an additional 24 hours of flushing. If the second set of samples is unsuccessful, the contractor will be required to excavate the water main to remedy the problem. If excavation is required, another successful pressure test will be needed prior to re-chlorination. The new water main connections to the distribution system cannot be made until successful samples are obtained.
- 8) Note: the construction section shall take the samples to the Linnwood Plant testing lab. A Bac-T test shall be run on one of the samples. The other sample shall be tested for a chlorine residual of less than 2ppm and turbidity NTU of less than 5.

21. Erosion Control Special Provision

The erosion control item on this contract shall include an Erosion Control Implementation Plan (ECIP). The ECIP shall be submitted to Mr. Thomas Moore of the Milwaukee Water Works, Water Engineering Section; Zeidler Municipal Building; 841 North Broadway, Rm. 403; Milwaukee, WI 53202, at least ten (10) working days prior to the scheduled start of work on the contract. The Milwaukee Water Works shall review the ECIP for meeting technical standards and notify the contractor if the plan meets the standard within seven (7) working days. Work shall not start until the ECIP meets technical standards. The contractor shall be required to have a copy of the ECIP on the job site for the entire duration of the contract. The ECIP shall include, but not be limited to:

- 1) A completed "Erosion Control Implementation Plan" application (Attached)
- 2) A plan showing all locations of erosion control devices and other Best Management Practices (BMP's).
- 3) A written description of all erosion control devices and BMP's to be used.
- 4) A written schedule of installing erosion control devices.
- 5) A written schedule of construction operations related to implementing erosion control devices and BMP's.
- 6) A written maintenance schedule for all erosion control devices and BMP's.

All costs associated with implementing the erosion control plan, such as furnishing, installing, maintaining, and removal of erosion control devices shall be included in the unit price bid for erosion control. There shall be no additional compensation for revising the ECIP or utilizing additional BMP's in order to comply with Chapter 290 of the City of Milwaukee Code of Ordinances. If the contractor is found not in compliance with the ECIP, the contractor will be subject to the penalties included in Chapter 290.

CITY OF MILWAUKEE

DEPARTMENT OF PUBLIC WORKS

Erosion Control Implementation Plan

The Erosion Control Implementation Plan (ECIP) is an effort to conform to Chapter 290 of the Code of Ordinances. The ECIP shall be submitted to the City Engineer at least ten (10) working days prior to the start of any construction activity. **NO** construction activity may begin without an ECIP approved by the Department of Public Works.

<i>FOR OFFICE USE ONLY</i>		Application No. _____	
Meets Technical Standards <input type="checkbox"/>	Does Not Meet Technical Standards <input type="checkbox"/>		
Date Application Received: _____	Date all Information Received: _____	Reviewed By: _____	
Fee Paid <input type="checkbox"/>	Check No. : _____		
	APPLICANT (Contractor)	Erosion Control Consultant/Engineer	
Name			
Address			
City/State/Zip			
Phone	()		()
Relationship to Project			
Principal Contact Responsible for Installation, Maintenance and removal of erosion control measures :			
Name			
Phone	()	Fax	()
Type of Construction			
Proposed Construction Start Date			
Any public waterway within 1,000 feet of any location.	YES <input type="checkbox"/>	NO <input type="checkbox"/>	

ECIP REQUIREMENTS:

- Attach a description of erosion control devices and other best management practices to be utilized on the project(s). The description should include, but not be limited to: type of products; i.e., *Geotex Fabric*, Manufacturer's Names and Types of Equipment (i.e.; self-contained power broom)
- Attach the intended timetable and sequence of construction activities.
- Attach the intended timetable and sequence of best management practices and devices to be implemented for erosion control.
- Attach a site plan showing approximate locations(s) of erosion control devices. The site plan shall be at a scale of no less than 1" = 100'. The plan shall also indicate the direction of runoff flow, the construction limits, temporary stockpiles and any other significant information.

Upon receipt of all required information, the ECIP will be reviewed within ten (10) working days and all involved parties will be notified whether or not the plan meets technical standards.

Applicant's Signature: _____ **Date:** _____

City of Milwaukee

Department of Public Works

Erosion Control – Simplified Checklist

Site Characteristics

The Contractor may utilize the City of Milwaukee plan set for this contract or provide a site diagram. The following information shall be included:

- The scale of the drawing (not less than 1"=100')
- A north arrow (towards the top or to the right of the plan)
- The name of all project streets and streets abutting the project
- Approximate location of all existing and proposed drainage structures
- The direction of water runoff (flow arrows)
- The limits of construction
- The approximate location of all erosion control devices
- Areas where vegetation will be disturbed and re-established
- For non right-of-way projects, locate watershed areas of overland and concentrated flow. Include area sizes in acres and representative soil type of disturbed areas.

Erosion Control Practices

- Storm water inlet protection:
 1. Any structure that is connected to the drainage system shall be protected from sediment entering the system.
 2. All storm water inlets adjacent to and on the project site shall have type M inlet protection.
 3. If the frame of any storm water inlet is removed or openings are in the masonry and storm water may enter, the protection device should be changed to a type R.
 4. Any manholes that the frame is removed or openings are in the masonry and storm water may enter shall have a type R erosion control.
- Temporary storage piles:
 1. Storage of erodible materials (i.e. gravel) should not be closer than 25 feet from a roadway or drainage way. If placed in the right-of-way, the stockpiles shall not be placed closer than 100 feet of an unprotected storm drain. Covering or surrounding with straw bales, silt fence or other measures, shall control erosion from stockpiles existing less than ten (10) days. Stockpiles existing longer than ten (10) days shall be seeded and mulched.
- Tracking:
 1. The project and surrounding roadways shall be kept free from materials that may enter the drainage system. Tracked roadways shall be cleaned immediately by means other than flushing with water.
 2. Tracking pads at ingress and egress points may be used to help control tracking of sediment onto roadway surfaces. The pads shall be constructed with a minimum of 2-inch size stone, 8-feet wide and a minimum of 50-feet long.
 3. The project roadways should be cleaned on a daily basis. Cleaning shall be done by means other than flushing with water.
- Location of sediment controls (i.e. silt fence, straw bales, waddles and other planned practices) that minimize the amount of sediment from leaving the site:
 1. The *"Wisconsin Construction Site Best Management Practices Handbook"* should be consulted.

- Dewatering:
 1. Water containing particles of 100 microns or greater shall be treated by use of temporary sediment basins or other devices designed to remove particles of 100 microns or greater.
- Vegetation:
 1. The construction activity should be staged as to limit the amount of time vegetation is stripped and reestablished.
- Maintenance:
 1. A schedule for maintaining all erosion control devices is necessary to maximize the effort of limiting sediment from entering the drainage system.
 2. All devices should be checked and maintained after a rainfall event that totals 0.50 inches.
 3. All devices should be checked and maintained at least once a week.

22. Bicycle Racks

The City of Milwaukee Street Maintenance Section will be responsible for the removal and replacement of bicycle racks impacted by water main installation. The Contractor, in coordination with City Inspection Staff, must notify Mr. Jeffery Dellemann, Street & Bridge Services Manager, at 414-286-2078, a minimum of five (5) days prior to construction activities impacting the bicycle rack.

The Contractor is responsible for any damage to bicycle racks due to neglecting to have them relocated.

23. Mechanical Joint Restraint (MJ Field Lok®) Revised 4/1/10

The intent of this supplemental installation specification is to identify the joint restraint options allowed by the City of Milwaukee, Milwaukee Water Works, for use on water main and fittings 4” – 16” in diameter. (For additional requirements, see section 11 of the Standard Plan Notes Regarding Water Main Construction and Section 5.3.19 of City of Milwaukee Water Main Installation Specifications.)

Mechanical Joint – Mechanical joints shall be restrained where required by City specifications or construction plans, either by the use of concrete buttresses, anchors, strapping, Tyton joint restraint gaskets (Field Lok 350®), or MJ Field Lok ® glands and gaskets. (*Note: A combination of restraint alternatives may be required to achieve the proper joint restraint at the mechanical joint fittings as well as the specified restrained length.*)

MJ Field Lok® application Notes

- 1) MJ Field Lok® may be utilized in conjunction with standard joint restraint methods currently approved (anchors, buttresses, strapping, Field Lok 350®) for use in the MWW system to achieve the proper joint restraint.
- 2) The contractor shall complete the “Optional Joint Restraint Application” included in the contract documents, and submit this form at the same time as the Erosion Control Implementation Plan. The intent of requirement is to insure the proper installation of the MJ Field Lok® and Field Lok® products.

- 3) Pre-Approval (completed form) must be given to the contractor prior to installation.
- 4) The approval from the City of Milwaukee to use the Field Lok products may require a preconstruction meeting to discuss the intended use and locations.
- 5) The City of Milwaukee may also require the contractor to submit a restraint plan.
- 6) The joint restraint gland and gasket shall be suitable for use with AWWA C110 Fittings.
- 7) The joint restraint system shall be provided as a kit containing all necessary accessories for proper assembly and installed per manufacturer's specifications.
- 8) The restraint system shall be completely integral to the gasket, requiring only standard mechanical joint assembly techniques.
- 9) The restraining system for Ductile Iron shall be pressure rated to 350 psi.
- 10) The restraining system shall be rated in accordance with the performance requirements of ANSI/AWWA C111/A21.11 Rubber Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
- 11) MJ Field Lok® is approved for use on Ductile Iron water main only, and shall not be utilized on Cast Iron. MJ Field Lok® is not approved for use on hydrant branches, due to the MWW oversized hydrant shoe.
- 12) Marking Tape
 - A. Description: Marking tape shall be Non-detectable, polyethylene (suitable for direct bury) to be installed when MJ Field Lok® or Field Lok 350 ®restraint is utilized as restraint alternatives.
 - B. Material: Marking tape shall be made of virgin polyethylene, non-detectable type. The physical properties of the tape shall be in accordance with ASTM D882, ASTM D671, ASTM D2103, ASTM D2578.
 - C. Design: Marking tape shall have the following properties
 - a. Color – Blue per APWA color code
 - b. Width – 3 inches minimum
 - c. Text – “CAUTION RESTRAINED JOINT BURIED BELOW”
 - d. Text shall continually repeat every 2 feet
 - e. Text color – Black
 - f. Text Size – 1 inch minimum
 - g. Thickness – 4mil minimum
 - D. Installation: Marking tape shall be placed along (longitudinally) the top of the water main following the installation of the required poly wrap for pipe and fittings, and taped to the poly wrap (around the water main) at 4 ft intervals for the limits of the installed joint restraint. The tape shall identify the complete restrained length.
 - E. Acceptable Brands
 - a. T. Christy's Enterprises Inc. – Non-Detectable Marking Tape

Contractor to submit documentation on products from manufacturers other than listed above.

CITY OF MILWAUKEE

DEPARTMENT OF PUBLIC WORKS

Optional Joint Restraint Request

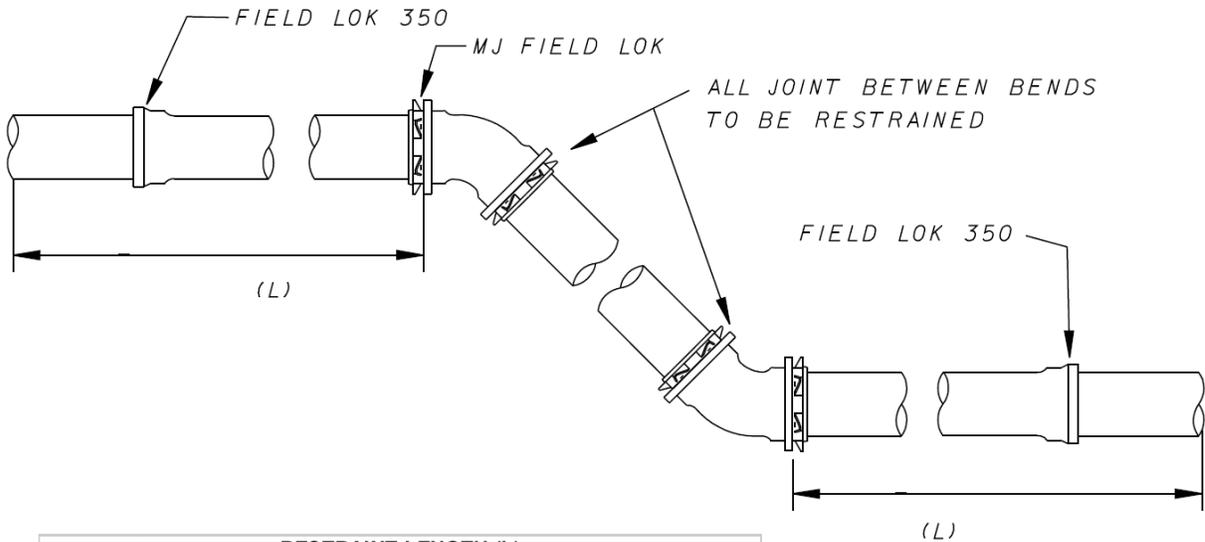
Use of Mechanical Joint Field Lok® and Field Lok 350® joint restraints will not be allowed without an approved application. (The intent of this submittal is to insure proper installation of the MJ Field Lok® and Field Lok® products.)

<i>FOR OFFICE USE ONLY</i>			
Date Application Received: _____		Joint Restraint Not Acceptable	<input type="checkbox"/>
Reviewed By: _____		Meeting Required prior to Acceptance	<input type="checkbox"/>
		Restraint Plan Required	<input type="checkbox"/>
		Joint Restraint Acceptable	<input type="checkbox"/>
APPLICANT (Contractor)			
Company Name			
Contact Name			
Address			
City/State/Zip			
Phone	()		
Fax	()		
PROJECT DESCRIPTION			
DPW Contract			
PROJECT LOCATION(S)		PLAN FILE NUMBER(S)	

- Identify all projects that approval is being requested in the space provided.
- All joint restraint shall meet the minimum requirements found in the City of Milwaukee Specifications for Water Main Installation.
- The approval from the City of Milwaukee to use the Field Lok products may require a preconstruction meeting to discuss the intended use and locations.
- The City of Milwaukee may also require the contractor to submit a restraint plan.
- By signing this application I acknowledge the following:
 - I have read and understand the City of Milwaukee specification regarding the use and installation of the MJ Field Lok® and Field Lok® products.
 - I have read and understand the manufacturer’s recommended installation instructions.
 - Additional standard restraints may be required in conjunction with the installation of the MJ Field Lok® and Field Lok® products.
 - The approval for the use of MJ Field Lok® and Field Lok® products, does not supersede the contractor’s responsibility for installing the proper restraint as identified in the plans and specifications.

Applicant’s Signature: _____ **Date:** _____

MECHANICAL JOINT RESTRAINT (4"-16")

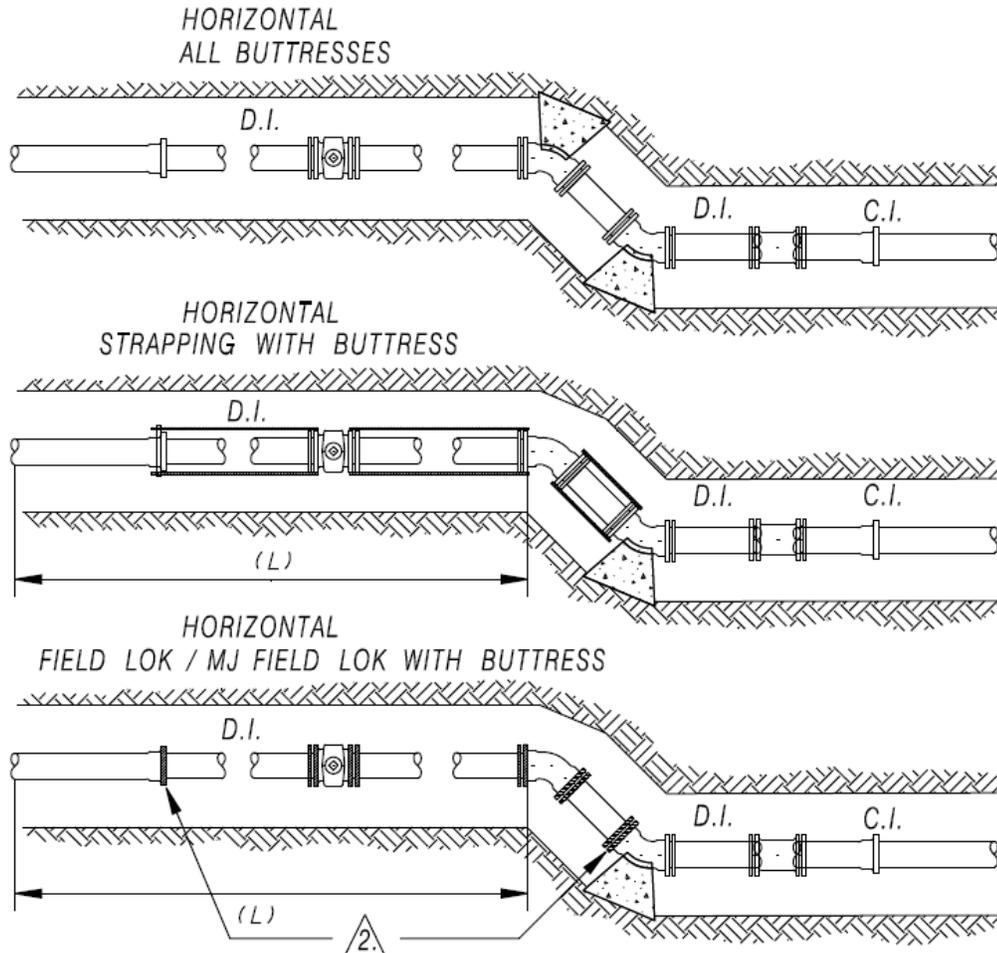


RESTRAINT LENGTH (L)						
PIPE DIA.	BENDS		OFFSETS			
	DEGREE OF BEND		OFFSET DIMENSION			
	22-1/2	45	6"	12"	18"	24"
4"	6'	12'	10'	14'	16'	N/A
6"	8'	16'	12'	16'	20'	35'
8"	12'	20'	16'	22'	24'	35'
12"	15'	26'	18'	24'	27'	35'
16"	18'	36'	19'	26'	30'	N/A

NOTES:

- 1) MATERIAL: JOINT RESTRAINT FOR MECHANICAL JOINT FITTINGS SHALL BE THE MJ FIELD LOK ® GLAND AND GASKET.
- 2) THE JOINT RESTRAINT GLAND AND GASKET SHALL BE SUITABLE FOR USE WITH AWWA C110 FITTINGS.
- 3) NOT TO BE USED ON HYDRANT BRANCHES..
- 4) THE RESTRAINT SYSTEM SHALL BE COMPLETELY INTEGRAL TO THE GASKET, REQUIRING ONLY STANDARD MECHANICAL JOINT ASSEMBLY TECHNIQUES.
- 5) THE RESTRAINING SYSTEM FOR DUCTILE IRON SHALL BE PRESSURE RATED TO 350 PSI.
- 6) THE RESTRAINING SYSTEM SHALL BE RATED IN ACCORDANCE WITH THE PERFORMANCE REQUIREMENTS OF ANSI/AWWA C111/A21.11 RUBBER GASKET JOINTS FOR DUCTILE-IRON PRESSURE PIPE AND FITTINGS.
- 7) MARKING TAPE REQUIRED "CAUTION RESTRAINED JOINT BURIED BELOW".
- 8) WHEN CONNECTING TO EXISTING WATER MAIN OR RESTRAINED LENGTH (L) IS NOT ABLE TO BE ACHIEVED, ADDITIONAL RESTRAINT WILL BE NECESSARY. (ANCHOR BLOCKS, BUTTRESSES, STRAPPING)
- 9) DRAWING NOT TO SCALE
- 10) FOR ADDITIONAL SPECIFICATION NOTES SEE THE STANDARD PLAN NOTES REGARDING WATER MAIN CONSTRUCTION.

**RESTRAINT STANDARDS (4-16")
WATER MAIN END CONNECTIONS**

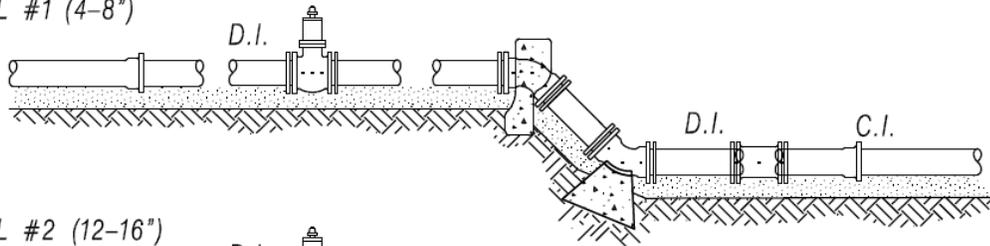


1. ALL BUTTRESSING PER DWG. NO. 7
 2. ALL ANCHOR BLOCKS PER DWG. NO. 10
 3. RESTRAINED LENGTH "L" PER DWG. NO. 16
- △ ALL JOINTS WITHIN LIMITS
TO BE RESTRAINED WITH
FIELD LOK 350® OR MJ FIELD LOK®

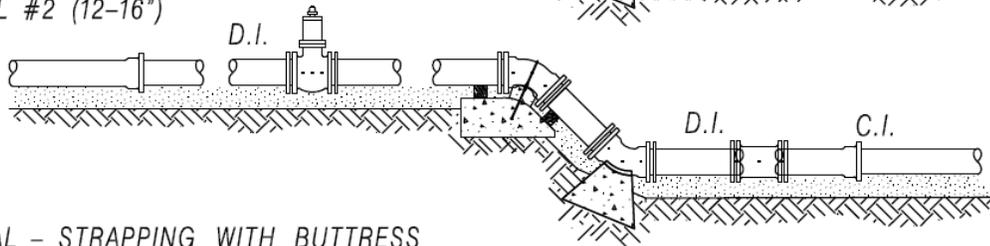
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**RESTRAINT STANDARDS (4-16")
WATER MAIN END CONNECTIONS**

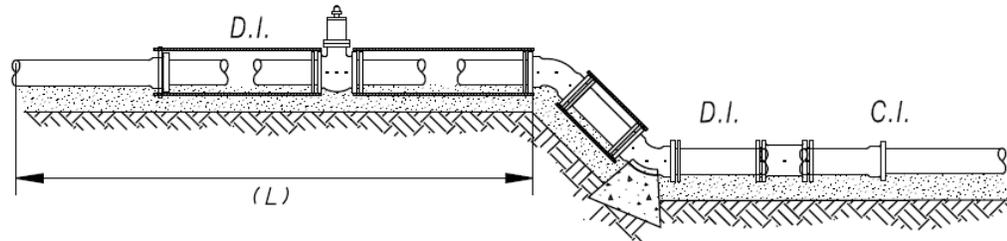
VERTICAL #1 (4-8")



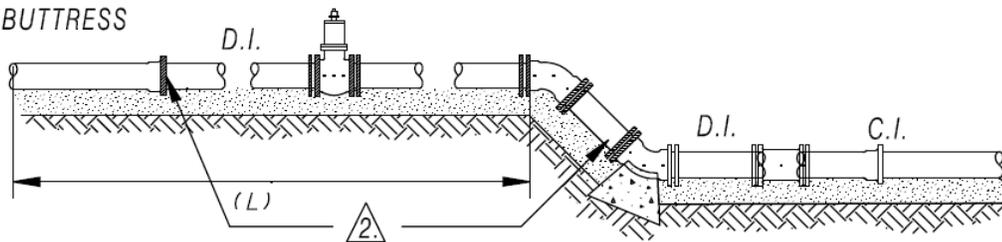
VERTICAL #2 (12-16")



VERTICAL - STRAPPING WITH BUTTRESS



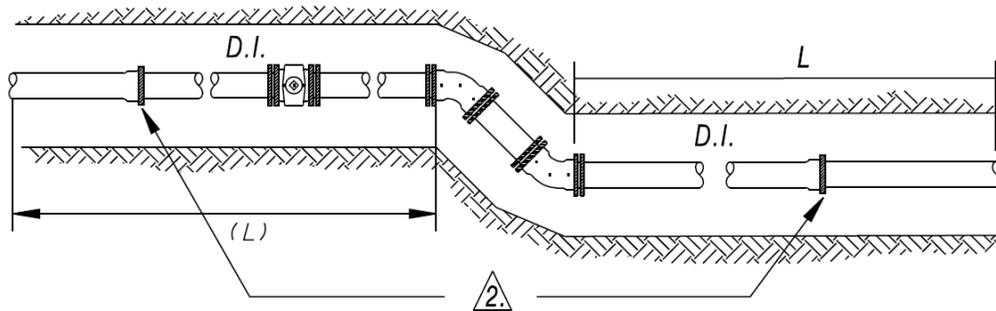
VERTICAL - FIELD LOK / MJ FIELD LOK
WITH BUTTRESS



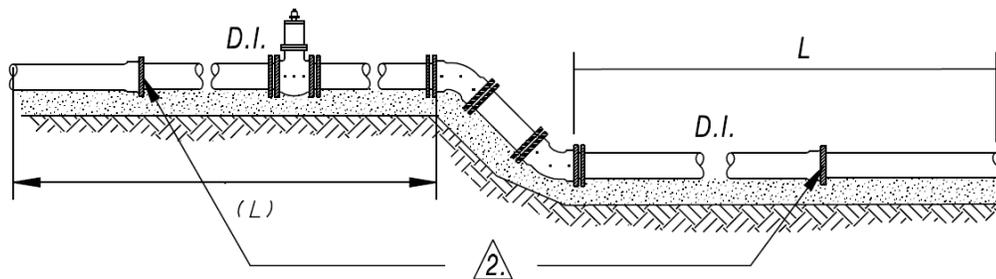
1. ALL BUTTRESSING PER DWG. NO. 7
 2. ALL ANCHOR BLOCKS PER DWG. NO. 10
 3. RESTRAINED LENGTH "L" PER DWG. NO. 16
- △ ALL JOINTS WITHIN LIMITS
TO BE RESTRAINED WITH
FIELD LOK 350® OR MJ FIELD LOK®

**RESTRAINT STANDARDS (4-16")
DUCTILE IRON WATER MAIN**

HORIZONTAL ALL FIELD LOK / MJ FIELD LOK



VERTICAL - ALL FIELD LOK / MJ FIELD LOK

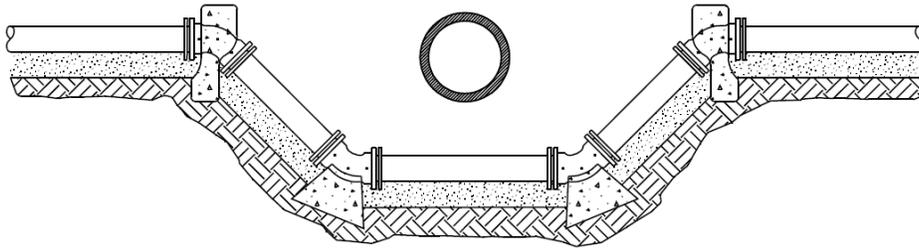


1. ALL BUTTRESSING PER DWG. NO. 7
 2. ALL ANCHOR BLOCKS PER DWG. NO. 10
 3. RESTRAINED LENGTH "L" PER DWG. NO. 16
2. ALL JOINTS WITHIN LIMITS
TO BE RESTRAINED WITH
FIELD LOK 350® OR MJ FIELD LOK®

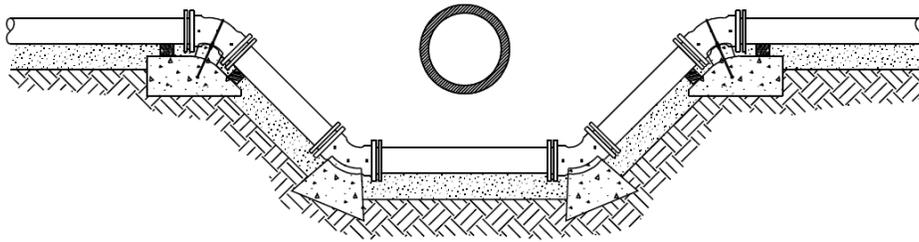
file = MJ Field Lok.dgn

**RESTRAINT STANDARDS (4-16")
VERTICAL OFFSET**

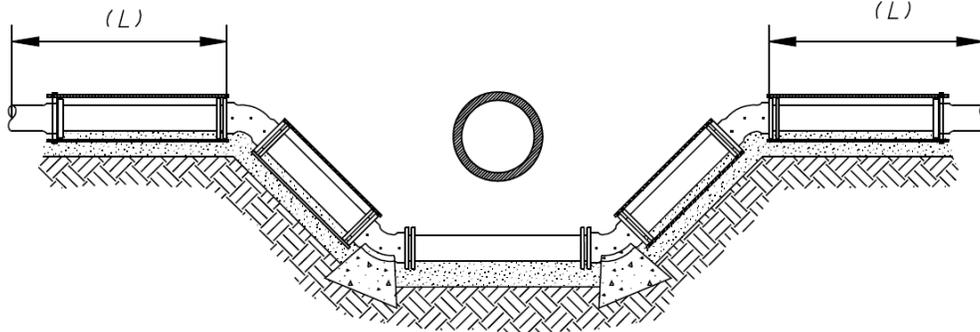
VERTICAL #1 (4-8")



VERTICAL #2 (12-16")



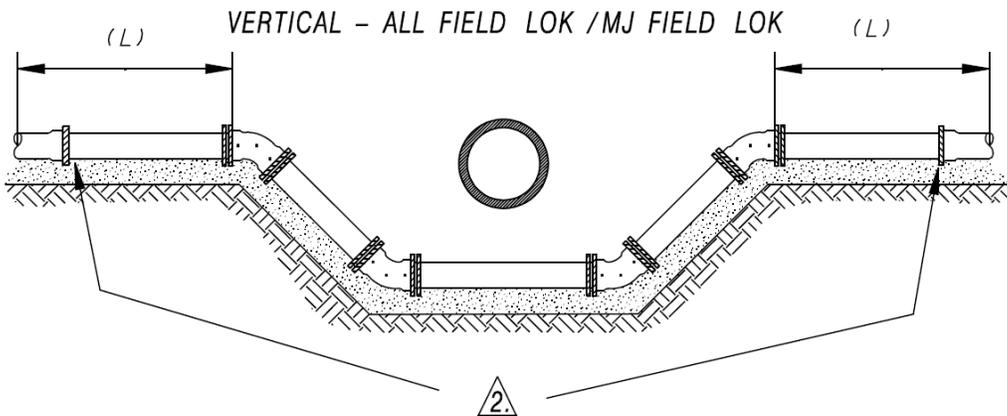
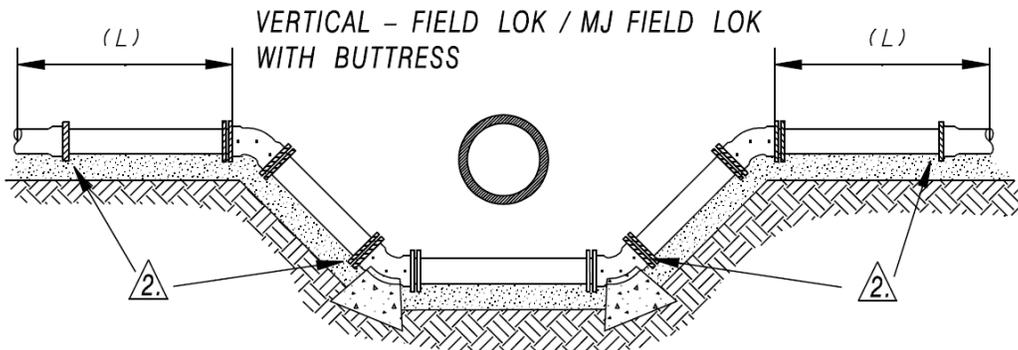
VERTICAL - STRAPPING WITH BUTTRESS



1. ALL BUTTRESSING PER DWG. NO. 7
2. ALL ANCHOR BLOCKS PER DWG. NO. 10
3. RESTRAINED LENGTH "L" PER DWG. NO. 16

△ ALL JOINTS WITHIN LIMITS
TO BE RESTRAINED WITH
FIELD LOK 350® OR MJ FIELD LOK®

**RESTRAINT STANDARDS (4-16")
VERTICAL OFFSET**



1. ALL BUTTRESSING PER DWG. NO. 7
 2. ALL ANCHOR BLOCKS PER DWG. NO. 10
 3. RESTRAINED LENGTH "L" PER DWG. NO. 16
2. ALL JOINTS WITHIN LIMITS
TO BE RESTRAINED WITH
FIELD LOK 350® OR MJ FIELD LOK®