City of Milwaukee

Department of Public Works
Infrastructure Services Division

Ghassan Korban
Commissioner of Public Works

Preston Cole
Director of Operations

Jeffrey S. Polenske
City Engineer

March 8, 2016

OFFICIAL NOTICE NO. 19-2016
PROJECT 1

ADDENDUM NO. 1

NOTICE TO CONTRACTORS intending to bid on Official Notice Number 19-2016, Project 1, which appeared in the Daily Reporter on February 24, 2016, with a Bid Opening Date on March 9, 2016 at 10:30 A.M.

1. The following Special Provisions shall be added to Plan File No. 229-39:

1. THERE ARE PROPERTIES WITHIN THE PROJECT LIMITS THAT MAY REQUIRE A BUILDING SEWER BYPASS. THE CONTRACTOR SHALL CONSTRUCT THE BUILDING SEWER BYPASS TO KEEP THE ACTIVE BUILDING SEWER SERVICE OPERATIONAL DURING THE ENTIRE DURATION OF THE INSTALLATION OF THE CURED-IN-PLACE LINER. AFTER THE SUCCESSFUL COMPLETION OF THE LINER INSTALLATION, THE CONTRACTOR SHALL REMOVE THE BYPASS AND SHALL RESTORE THE CONNECTION OF THE BUILDING SEWER. ALL COST ASSOCIATED WITH THIS WORK SHALL BE INCLUDED IN THE UNIT BID PRICE FOR "CONSTRUCT BUILDING SEWER BYPASS."

2. Bid item "50127 –CONSTRUCT BUILDING SEWER BYPASS" has been added to Plan File Number. 227-86.

3. The existing pages 4 and 5 of the Bid document shall be removed and replaced with the attached pages 4 and 5. This reflects the following bid item additions:

   - Construct Building Sewer Bypass – 4 Each

4. The "City of Milwaukee Standard Plan Notes for Water Main Construction" dated June 14, 2011 have been replaced by "City of Milwaukee – Milwaukee Water Works Special Provisions for Water Main Construction" dated January 20, 2016.

NOTE: The contractor shall acknowledge receipt of Addendum Number 1 on page 6 of the Bid Document titled "ACKNOWLEDGEMENTS PAGE."

Very truly yours,

Jeffrey S. Polenske, P.E.
City Engineer

ZY:bb
15-2
c: Samir Amin
Official Notice No. 19-2016 March 8, 2016 File O-15

ZY
TT

92 Lin. Ft. 15" Dia. Sanitary Cured in Place Lining

(Bid in figures) $_____ Lin. Ft.

(Bid in words) $_____ Lin. Ft.

154 Lin. Ft. 18" Dia. Combined Cured in Place Lining

(Bid in figures) $_____ Lin. Ft.

(Bid in words) $_____ Lin. Ft.

63 Lin. Ft. 21" Dia. Combined Cured in Place Lining

(Bid in figures) $_____ Lin. Ft.

(Bid in words) $_____ Lin. Ft.

91 Lin. Ft. 27" Dia. Combined Cured In Place Lining

(Bid in figures) $_____ Lin. Ft.

(Bid in words) $_____ Lin. Ft.

590 Lin. Ft. 30" Dia. Combined Cured in Place Lining

(Bid in figures) $_____ Lin. Ft.

(Bid in words) $_____ Lin. Ft.

57 Lin. Ft. Building Sewers & Drains

(Bid in figures) $_____ Lin. Ft.

(Bid in words) $_____ Lin. Ft.

1 Lump Sum Barricading

(Bid in figures) $_____ Lump Sum

(Bid in words) $_____ Lump Sum

1 Lump Sum Erosion Control

(Bid in figures) $_____ Lump Sum

(Bid in words) $_____ Lump Sum

46 Each Re-establish Connection

(Bid in figures) $_____ Each

(Bid in words) $_____ Each

4 Each Construct Building Sewer Bypass

(Bid in figures) $_____ Each

(Bid in words) $_____ Each

1 Lump Sum Abandon Existing Combined Manhole

(Bid in figures) $_____ Lump Sum

(Bid in words) $_____ Lump Sum

3 Each Re-establish 8" Dia Sewer Connection

(Bid in figures) $_____ Each

(Bid in words) $_____ Each

4 Vert. Ft. Manhole Repair

(Bid in figures) $_____ Vert. Ft.

(Bid in words) $_____ Vert. Ft.

205 Vert.Ft. Manhole Lining

(Bid in figures) $_____ Vert.Ft.

(Bid in words) $_____ Vert.Ft.

TOTAL SEWERS:

(Bid in figures) $_____

(Bid in words) $_____

1. General

All work shall be in accordance with the City of Milwaukee "Water Main installation Specifications", Dated January 2, 1987. Additionally, all work shall be in accordance with the City of Milwaukee "Special Provisions for Water Main Construction".

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

2. Safe Drinking Water Loan Program (Provision Applies Only if Specifically Stated in Contract Documents)

The City of Milwaukee has applied for funding for all projects in this contract through the Safe Drinking Water Loan Program (SDWLP) administered by the Wisconsin Department of Natural Resources.

This Contract is subject to the Davis-Bacon compliance provisions. Please see the Contract documents for additional information. The contractor shall use the higher wage rate table between the Prevailing Wage Rate issued by the State of Wisconsin and the Davis-Bacon Wage Rate Tables issued by the U.S. Department of Labor Wage and Hour Division.

All Iron and Steel products provided by the contractor shall be produced in the United States and comply with the American Iron and Steel Requirement (AIS). Contractor to provide AIS certification for all iron and steel products supplied for this contract.

3. Pre-Construction Meeting

Required pre-construction meetings will be held, at least ten (10) working days prior to the anticipated start date, for water main installation contracts. Contractor shall contact Mr. Karl Rohrbach, P.E. at 414-286-8148 following the Notice to Proceed. Project start requests will not be authorized prior to holding a pre-construction meeting. Pre-Construction Meetings will be held at

DPW Field Headquarters
3850 N 35th St
Milwaukee, WI 53216

4. Project Start Request

For each project in a contract the Contractor will request an "Approval to Start" by sending an email to watconst@milwaukee.gov a minimum five (5) working days prior to the anticipated start date. Project start requests will not be authorized without the Contractor providing copies of all permits to MWW.

5. Stake Out

Upon receiving approval to start a project, the Contractor shall contact DAAR Engineering for coordinating stakeout. The City of Milwaukee will pay for all costs for the initial stake out for projects unless otherwise specified on construction plans.

DAAR Engineering
518 W Cherry St, Suite 500
Milwaukee, WI 53202
(414)604-0674

Bill Henrichs
bill.henrichs@daarcorp.com

Peter Ritzman
peter.ritzman@daarcorp.com

6. Materials Request

The contractor shall provide a minimum **five (5) working day notice** prior to the Start Date of any project for material that is to be provided by the City of Milwaukee.

Kevin Gray
City of Milwaukee
Inventory Manager
Office: (414)286-0669
Cell: (414)708-2954

Ricardo Lopez
City of Milwaukee
Inventory Services Manager
Office: (414)286-6123
Cell: (414)708-2150

7. Inspection

The contractor shall allow a minimum **four (4) working day notice** prior to the Start Date of any project for scheduling material inspection and installation inspection prior to the start of construction.

Contact Steve Brengosz at 414-708-2808 or Alejandro Munoz at 414-286-6346 for materials inspection.
Contact Alejandro Munoz, at 414-286-6346 for installation inspection.

8. Water Distribution

The contractor shall provide a minimum **two (2) working day notice (8am)** to the Milwaukee Water Works Distribution when requesting a shut-off, wet connection, safe water sample, pressure testing, and chlorination. The contractor shall coordinate via email watconst@milwaukee.gov.

Tim Singbeil
Water Distribution Construction Manager
Office: (414)286-6305
Cell: (414)708-7176

9. Schedule and Hours of Work

Water main construction will not be allowed between the days of December 15 and March 15 of the following year unless authorized by the City of Milwaukee Commissioner of Public Works or his representative.

MWW Construction Inspector Hours 7:30 am to 3:00 pm. (Inspection outside of these hours will be approved and coordinated by the City of Milwaukee Commissioner of Public Works or his representative.)

In accordance with the City of Milwaukee Code of Ordinances, Chapter 80 Nuisances, Subchapter 2 Noise Control, the contractor shall not be allowed to work prior to 7am, unless authorized by the City of Milwaukee Commissioner of Public Works or his representative.

10. Project Identification

The Contractor shall post City of Milwaukee Project Identification ("Blue") signs as directed on each project in this contract. The Milwaukee Water Works, Engineering Construction Section will provide blank signs for the contractor to fill in contact information and post. The entire cost of this work shall be included in the Lump Sum Bid for Traffic Control and Barricading.

11. Resident and Business Notification

Milwaukee Water Works will provide resident and business notification following the award of the contract.

12. City of Milwaukee Underground Conduit

Contractor to support existing City Underground Conduit. Contractor to use caution during excavation. Contractor shall be responsible for any damage to City of Milwaukee Conduit. Report any damage to City Dispatcher at 414-286-3481.

13. City of Milwaukee Street Lighting

Contractor to support existing City Street Lighting facilities. Contractor to use caution during excavation. Contractor shall be responsible for any damage to City of Milwaukee Street Lighting Facilities. Report any Damage to Street Lighting Shop at 414-286-3015.

For any alterations of City of Milwaukee Street Lighting equipment, the contractor shall contact Mr. Eng-Kie Lee in Engineering at 414-286-2174.

14. City of Milwaukee Forestry

Contractor shall use equipment of a size that will not damage the crowns, trunks or roots of City owned trees. Any damage caused by the Contractor's Negligence shall be repaired by the Forestry Division at the Contractor's expense. Contact Mr. Dwayne Reinhardt, Forestry Section Inspector, at 414-708-2438 regarding all forestry work.

Contractor shall maintain the following clearances for all City owned trees:

- Less than 3-inch Diameter tree – 3 feet of clearance
- 3-inch to 8-inch Diameter tree – 6 feet of clearance
- 8-inch to 14-inch diameter tree – 8 feet of clearance
- Greater than 14-inch diameter tree – 10 feet of clearance

Service Replacements – The contractor shall maintain minimum clearances from trees as detailed above. In instances where more than 4' of offset from the existing service line is necessary to obtain the minimum clearance, trenchless technology shall be utilized to install the service within the clearance limits (a point in the roadway to within 2 feet of the property line). This requirement is reflected in the new service line locations shown on the construction plans.

15. Quality of Materials

Per Section 4.2.1 Quality of Materials. It is the intent of these specifications to secure new first class materials. Any material not meeting this requirement shall be removed from the project. Materials provided by the Contractor that are more than 2 years from the date of manufacture shall not be permitted.

16. Material Handling

Shall be in accordance with
Section 4.2.6 Material Storage on Work Site
Section 4.2.7 Handling and Protecting Pipe and Appurtenances
Section 4.2.8 Repair of Damaged Outer Protective Coating
Section 4.2.9 Storage of Yarning, Rubber Gasket Materials, and Polyethylene Film

All pipe and materials shall be stored on site to prevent contamination. Only materials free from foreign material shall be allowed to be installed by the contractor. If it is determined by the Milwaukee Water Works Engineering Section that the pipe and material is not free of debris then the contractor shall clean the material in accordance with Section 5.3.11 Cleaning Interior of Pipe prior to installation.

17. Hydrant Installation

Hydrants are to be installed with the 4-1/2" Nozzle facing the roadway. Contractor shall rotate the hydrant head following installation. The contractor shall not be paid for the hydrant installation until this rotation is complete. All costs for modifying the hydrant shall be included in the Unit Price Bid for Install Hydrant.

The Contractor shall be responsible for installing the hydrant frangible coupling (flange) within 0.2' of the plan grade. The Contractor shall be responsible for verifying grades prior to installation of hydrants. Hydrant extensions will not be permitted unless the hydrant installed is an 8.5 ft Bury Length. All other hydrants shall be exchanged for the correct size hydrant. Contractor is responsible for returning hydrant to be exchanged and delivery of correct size hydrant. Standard hydrants in stock – 6.5, 7.0, 7.5, 8.0, 8.5. All costs for verifying and/or exchanging hydrants shall be included in the Unit Price Bid for Install Hydrant.

Hydrant Extensions will only be permitted upon the approval of the Milwaukee Water Works Construction Engineer or the Milwaukee Water Works Distribution Construction Manager.

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.

18. Abandoned Hydrants

The Contractor shall return all abandoned hydrants to the DPW Field Headquarters – Infrastructure, Operations, Water Works. Contact Mr. Ben Glatzel at 414-708-2839 for additional information.

19. 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 $675.00 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 $675.00 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 $675.00 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
MWW Meter Services, 414-286-8010

20. 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 ¾" 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.

21. Erosion Control Special Provision

The Contractor shall submit an Erosion Control Implementation Plan (ECIP) to Milwaukee Water Works, Engineering Section; Zeidler Municipal Building, 841 N Broadway, Rm. 403 Milwaukee, WI 53202, at least **ten (10) working days prior** to the scheduled start of work on the contract. A confirmed Start Date will not be provided to the Contractor if an ECIP has not been approved.
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.

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.

22. Water Services – Service Insulator

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). 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. 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.

23. Water Services – Location

The City shall field locate the approximate location of the corporation stop prior to the start of the water main construction.

Contractor shall field locate using a pipe locator, similar to a Rigid pipe locator, all branches and service prior to tapping the new water main. All costs shall be included in the unit price bid for connect original service.

24. Water Services Tapping

All tapping for services shall be made by the contractor. Taps shall be made and corporation stops installed in the closed position prior to pressure testing. All costs shall be included in the unit price bid for connect original service.

25. 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.

26. Joint Restraint (MJ Field Lok®, Field Lok®)

Ductile Iron pipe and fittings (except hydrant branches) may be restrained using Fieldlok or MJ Fieldlok restraint. A request submittal will not be required.
Mechanical and push-on 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.)*

27. 4" Asphaltic Concrete Pavement Replacement

The bid item for 4" Asphaltic Concrete shall consist of 4" of asphaltic concrete on 2" of ¾" 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.

28. Water Main Disinfection Process – Chlorination – Wet Connections

In accordance with the requirements of AWWA C651

1) Sanitary construction practices must be followed during installation of the final connection so that there is no contamination of the new or existing water main with foreign material or groundwater.
2) The new pipe, fittings, and valve(s) required for the connection may be spray disinfected or swabbed with a minimum 1 percent solution of chlorine just before being installed.

29. Water Main Disinfection Process - Chlorination

The contractor shall be required to disinfect all proposed water mains in this contract using one of the following methods:

1) Continuous feed method per AWWA C651
2) Tablet method

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. 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.

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. Milwaukee Water Works shall then chlorinate the water main by the continuous feed method per AWWA C651. 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 Milwaukee Water Works shall chlorinate the water main by the continuous feed method per AWWA C651. 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, Milwaukee Water Works shall re-chlorinate the water main by the continuous feed method per AWWA C651. 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: Milwaukee Water Works 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.

30. 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.

31. Valves

Contractor is responsible for verifying all new water main, hydrant and branch valves (unless valves are required to be closed) are in the open position prior to pressure testing and chlorination.

Contractor is responsible for verifying all new water main, hydrant and branch valves are in the open positions following the final wet connection. All City of Milwaukee Valves are open Right "Clockwise".

32. Valve Box Base Adapters

All valve boxes shall be installed on gate valves with the use of the valve box base adapters, "Adaptor II" as manufactured by Adaptor Inc. or an approved equal. The adapter shall be installed in addition to the hardwood blocking. Cost of the adapter shall be included in the unit price bid to Furnish and Install Water Main.

Revisions to Water Main Installation Specifications Dated January 2, 1987

The following sections of the Water Main Installation Specifications shall be revised as indicated below.

SECTION 3.2.7 Construction Engineer

DELETE – "Sewer and Water Section of the Construction Division"
ADD – "Milwaukee Water Works Engineering Section"

SECTION 3.2.9 Division

DELETE – "Division"
ADD – "Milwaukee Water Works Engineering"

DELETE – "Water Engineering Division or Construction division, of the Bureau of Engineers. Plans and specifications are prepared and materials are inspected by the Water Engineering Division; Installation Inspection and Construction Supervision are performed by the Construction Division."
ADD – Plans, specifications, material inspection, installation inspection and Construction supervision are performed by the Milwaukee Water Works Engineering Section.

SECTION 3.2.11 Engineer in Charge, Construction Division

DELETE – "Engineering in Charge, Construction Division"
ADD –"Construction Engineer, Milwaukee Water Works Engineering"

DELETE – "The Engineer in Charge of the Construction Division of the Bureau of Engineers."
ADD – "The Engineer in Charge of Construction Management for Milwaukee Water Works."

SECTION 3.2.12 Engineer in Charge, Water Engineering Division

DELETE – "Engineer in Charge, Water Engineering Division"
ADD – "Mains Design Engineer, Milwaukee Water Works Engineering"

DELETE – "The Engineer in Charge of the Water Engineering Division of the Bureau of Engineers."
ADD – "The Engineer in Charge of water main Design for Milwaukee Water Works.

SECTION 3.2.23 Special Layout Engineer

DELETE – SECTION 3.2.23

SECTION 3.4.1 Requests for Primary Line and Grades

DELETE – "The Contractor shall notify the Special Layout Engineer of the Department of Public Works"
ADD – "The Contractor shall notify the Milwaukee Water Works Construction Engineer"

SECTION 3.4.2 Request for Inspector

DELETE – "The Contractor shall notify the Construction Division Office that an inspector is required at least 2 working days before commencing work, or adding another crew after construction has started. See Section 3.4.13."
ADD – "The Contractor shall notify the Milwaukee Water Works, Engineering Construction Section that a construction inspector is required at least four working days prior to commencing work."

SECTION 3.4.3 Request for Materials Furnished by City
SECTION 3.4.4 Request for Water Distribution Division Crew
SECTION 3.4.7 Permit and Notice for State Highways
SECTION 3.4.9 Notice for Arterial Street or Highway
SECTION 3.4.10 Notice to Milwaukee County Transit System
SECTION 5.3.8 Caulker – Joint Assembler

DELETE – "Construction Division"
ADD – "Milwaukee Water Works, Engineering Construction Section"

SECTION 3.4.5 Request for Water Service Taps

DELETE – SECTION 3.4.5

SECTION 3.4.13 Notice to W.E.D. for Material Inspection

DELETE – "Notice to W.E.D. for Material Inspection"
ADD – "Notice to Milwaukee Water Works, Engineering for Material Inspection"

DELETE – "The Contractor shall notify the Water Engineering Division Office for inspection of materials at least 4 working days prior to starting work. See Section 3.4.2."
ADD – "The Contractor shall notify the Milwaukee Water Works, Engineering Construction Section for inspection of materials at least 4 working days prior to starting work. See Section 3.4.2."

SECTION 3.5.9 Primary Line and Grade

DELETE – "Field Engineers"
ADD – "Engineering Consultant"

SECTION 3.5.10 Construction Line and Grade Responsibility

DELETE – "Field Engineers"
ADD – "Engineering Consultant"

SECTION 3.5.11 Time Allowed for Completion of Work

DELETE - "The amount of the per diem charge for inspection as referred to in Section 2.5.11 shall be $210.00."
ADD - "The amount of the per diem charge for inspection as referred to in Section 2.5.11 shall be $325.00."

SECTION 4.1.1 Current Specifications

DELETE – "Specifications for certain materials are not included herein are on file in the Water Engineering Division (W.E.D.) Office as separate documents. Copies are available upon request. These materials are as follows:"
DELETE – "W.E.D Specification No."
ADD – "Milwaukee Water Works maintains material specifications for the following materials:"
ADD – "Current specifications may be found at http://milwaukee.gov/water/business/standardspecs.htm, copies are also available upon request from the Milwaukee Water Works Engineering Construction Section."

SECTION 4.2.4 Cost of Tests

DELETE – "The cost of obtaining and delivering initial samples to W.E.D. or the City of Milwaukee Testing Lab, shall be borne by the Contractor. The cost of initial tests shall be at the City's expense."
ADD – "The costs of obtaining and delivering initial samples to Milwaukee Water Works Engineering Section shall be borne by the Contractor and/or Vendor. Material testing shall be completed by a certified testing laboratory chosen by Milwaukee Water Works. Costs for additional testing following failure of a material shall be the responsibility of the Contractor and/or Vendor and in accordance with Milwaukee Water Works Material testing procedures."

SECTION 4.3.2 City Delivery

DELETE – "City Delivery"
ADD – "Delivery of Material Provided by the City"

DELETE – "The City will deliver all material furnished by the City and specified in Section 4.3.1 unless otherwise noted on the plan(s)."
ADD – "The Contractor shall deliver all material furnished by the City and specified in Section 4.3.1 unless otherwise noted on the plan(s)."

ADD – "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 Manager at 414-286-0669 for additional information."

SECTION 4.3.4 Return of Materials

DELETE – "Stores Division Yard at 3715 W. Lincoln Av."

ADD – "DPW Field Headquarters – Infrastructure, Operations, 3850 N 35th St Milwaukee, WI 53216"

SECTION 4.6.1 Bedding

ADD – "Bedding Chips – 1/4" for mains 16" diameter and smaller"

Sieve Sizes	Percentage Passing By Weight
1/2 inch	100
3/8 inch	90 – 100
No. 4	–
No. 8	0 – 50
No. 16	–
No. 30	0 – 5

SECTION 4.6.2 Gravel Backfill

ADD – "Additional options for Backfill of mains 16" diameter and smaller"

Option No. 1	Crushed Gravel	Crushed Stone
Sieve Size	**Percentage Passing By Weight**	
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	1/4" Screenings
Sieve Size	**Percentage Passing By Weight**
1/2 inch	100
3/8 inch	–
No. 4	75 – 100
No. 8	–
No. 16	–
No. 30	–
No. 100	10 – 25

SECTION 4.6.6 Aggregate Slurry Backfill

DELETE – "Aggregate slurry backfill shall consist of No. 1 and No. 2 coarse aggregate Class "C" concrete mix with the cement deleted.

The material shall be mixed with water to inundate the aggregate sufficient to provide approximately a 3 inch slump. The mix shall be deposited in the trench directly from a concrete transit mix truck."

ADD – "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 Construction Engineer 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."

SECTION 5.16.1

DELETE – "Gravel Backfill (Type "B")"
ADD – "Gravel Backfill (Type "B") or Option 1, 2, 3, as amended by this document in SECTION 4.6.2"

DELETE – "consolidated by flooding"

SECTION 5.16.10 Consolidation of Backfill

DELETE – "(A) Flooding of Gravel Backfill - Gravel backfill shall be settled by flooding the trench with water from the bottom of the trench to the top of the trench. The hoses used for flooding shall be equipped with a regulating valve which permits the hydrant valve to be fully open during use. The hoses shall have a minimum diameter of 1 1/2 inches, a pipe nozzle a minimum diameter of 1 1/2 inches and a minimum length of 4 feet. A longer nozzle shall be used if deemed necessary by the Commissioner. During the flooding operation the nozzle shall be inserted at various angles and depths into the backfill without damaging the water main, adjacent structures or their foundations, buttresses and anchors or displacing bedding material. The insertions shall be made at intervals of 3 feet or less maintained until the backfill is saturated. Depressions caused by flooding shall be immediately backfilled until there is no further settlement. The Contractor shall provide an adequate supply of water."

DELETE – "(C) Mechanical Compaction of Gravel Material - Where specified, mechanical vibratory compactors shall be used to achieve uniform consolidation of the gravel material. The depth of the initial lift and subsequent horizontal lifts shall be as indicated in (B) above. When gravel aggregate contains sufficient clay fines to form a cohesive soil aggregate, that gravel shall be so compacted so as to result in 100 percent of the density of the existing material in the trench."

DELETE – "(D) Flooding Excavated Material - Where permitted, the flooding of excavated material shall be completed as indicated in (A) above, for flooding of gravel backfill."

ADD – "(C) Mechanical Compaction of Gravel Material - 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.

SECTION 5.17.3 Hydrostatic Pressure and Leakage Tests

DELETE – "Allowable leakage shall not exceed the number of gallons per hour (GPH) as determined by the following formula for rubber gasket joints:

$$GPH = \frac{ND\sqrt{P}}{3700}$$

GPH=ND√P/3700
N = Number of Joints under test
D = Nominal Diameter of main in inches
P = Average pressure in pounds per square inch gauge during the test."

ADD – "Allowable leakage shall not exceed the number of gallons per hour (GPH) as determined by the following formula for rubber gasket joints:

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

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"

SECTION 5.18.1 Bacterial Test

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

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

SECTION 5.18.2 Flushing Distribution Mains

DELETE – "Shortly after the installation of the main is completed, Water Distribution Division Crews will operate the necessary valves admitting water to the new mains. Contractors are NOT to operate valves under any circumstances. The Contractor, upon notification to proceed with flushing the main, shall attach a valve to the nozzle of a hydrant or air vent as required by the Commissioner. The Contractor shall attach a 1-1/2" hose to the outlet of the valve to direct the flow of water to a point of safe and adequate drainage such as storm sewers or surface drainage. The main shall then be flushed by the contractor by fully opening the hydrant, of air vent, and throttling the installed valve to control the flow."

ADD – "Flushing procedures shall be as specified in the Chlorination Procedures in Milwaukee Water Works Special Provisions."

SECTION 5.18.3 Chlorinating Distribution Mains

DELETE – "When indicated on the plans or when, because of unsatisfactory results by flushing alone, the Commissioner has issued orders to disinfect the main by chlorination, the Contractor shall provide a tight-sheathed excavation around the main at the point of chlorination as directed at no cost to the City. After the excavation is prepared, the City will tap the main and connect and operate a chlorinator without cost to the Contractor.

When a satisfactory chlorine residual has been obtained, the Contractor, after a minimum of 24 hours and a maximum of 72 hours, shall proceed with the flushing of the main as specified in Section 5.18.2."

ADD – "All newly installed water mains require chlorination by the contractor. Chlorination procedures are specified in Milwaukee Water Works Special Provisions."

SECTION 5.18.9 Calcium Hypochlorite Treatment

DELETE – SECTION 5.18.9

This is the "Supplemental Schedule" of FIXED PRICES
Referenced to in Chapter 2.6.0 of the Specifications

1987 Water Specifications	ITEM	UNIT	PRICE
5.1.11	Water Service Alteration:		
	Up to 1" Diameter	Each	1,000.00
	Over 1" Diameter	Each	Agreed Upon
	Water Service Repair	Each	1,000.00
3.5.6	Sawing Concrete Pavements Full Depth With Water Cooled Saw Total Footage		
	0 to 200 feet	Lump Sum	400.00
	Each Additional Foot over 200 feet	Lineal Ft.	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 and 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	3" Asphalt Pavement (Temp Cold Mix)	Square Yd.	30.00
5.16.18	3" Asphalt Pavement (Hot Mix/Temp Hot Mix)	Square Yd.	25.00
5.19.2	8" Thick Class A Concrete Base (Includes Removals)		
	Up to 20 sq. yds.	Square Yd.	45.00
	Over 20 sq. yds.	Square Yd.	35.00
5.19.2	8" Thick Class A Concrete Surface(Includes Removals)		
	Up to 20 sq. yds.	Square Yd.	50.00
	Over 20 sq. yds.	Square Yd.	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
5.19.2	3" Thick Class A Concrete Temporary Pavement Cap	Square Yd.	25.00
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 Cub and Gutter (Includes Removals)	Lineal Ft.	40.00
	Dowel Bars	Each	7.00

1987 Water Specifications	ITEM	UNIT	PRICE
	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.

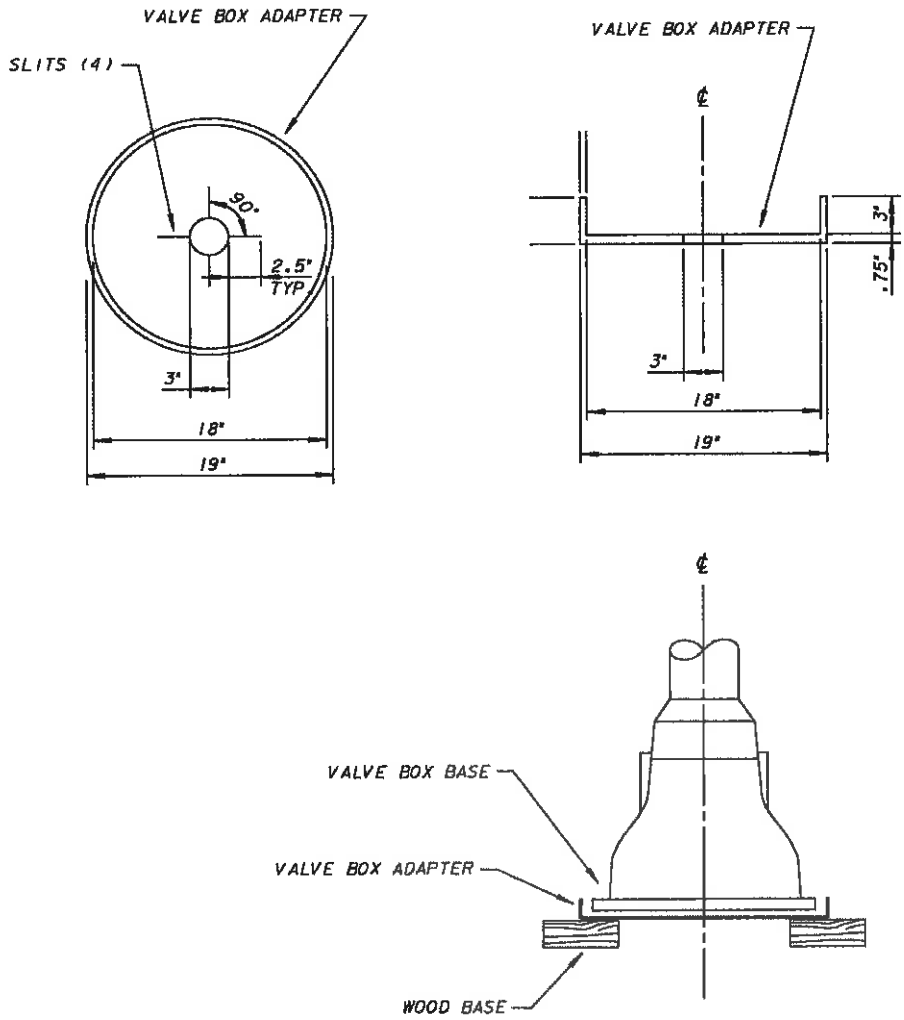
Where repairs are made on mains that will be abandoned, the Contractor shall furnish all repair material. The Contractor shall have a minimum of 2 repair clamps, 2 dual purpose sleeves, and 1 length of ductile iron, cast iron or PVC pipe of the existing pipe size on the job before the job starts and 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 pipe yard 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:

Where the break can be repaired without replacing pipe, the Contractor will be paid.	Each	$ 1,500.00
Where the break can be repaired without replacing pipe And the Contractor must excavate, the Contractor will be paid.	Each	$ 2,500.00
Where a piece of pipe must be removed and replaced the Contractor will be paid	Time and Material	

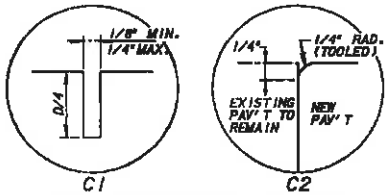
Water Services or branches damaged as a result of the construction work shall be repaired by the Contractor at his own cost.



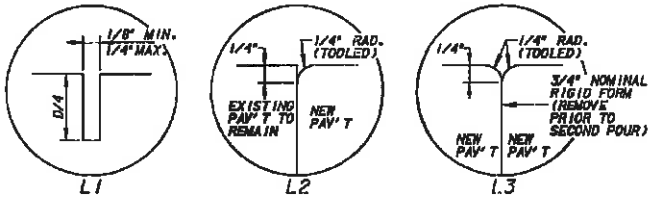
NOTES

- VALVE BOX BASE ADAPTER TO BE FURNISHED AND INSTALLED BY CONTRACTOR UNDER THE VALVE BOX BASE
- VALVE BOX BASE ADAPTER ADAPTOR II AS MANUFACTED BY ADAPTORS INC. OR AN APPOVED 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.

APPROVED	DATE		
	6-13-2012 MAINS DESIGN ENGINEER	Milwaukee Water Works	Water Engineering Department of Public Works
	6-13-2012 CHIEF DESIGN ENGINEER	VALVE BOX BASE ADAPTER	
	6-13-2012 SPECIAL DEPUTY COMMISSIONER OF PUBLIC WORKS	CHECKED BY E.J.F. / DRAWN BY K.S.R. / DATE 06-13-12	DRAWING NO. VBBA1



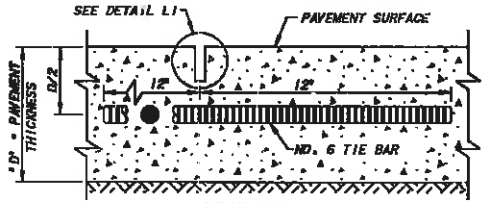
TRANSVERSE JOINTS



LONGITUDINAL JOINTS

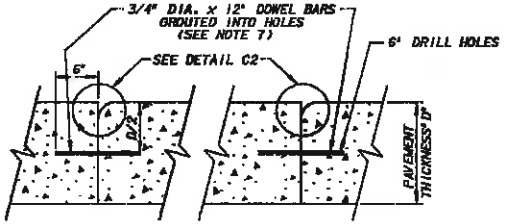
CONCRETE PAVEMENT REPAIR

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 WISONCSIN 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 THOUROUGHLY 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.

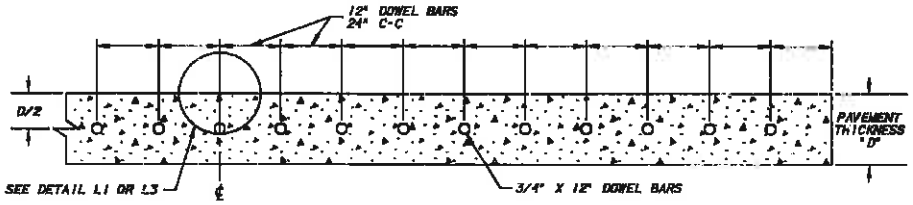


SECTION C - C

SAWED JOINT

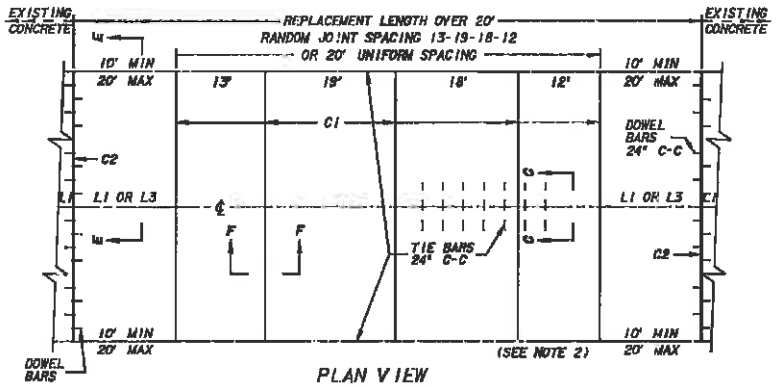


SECTION D - D



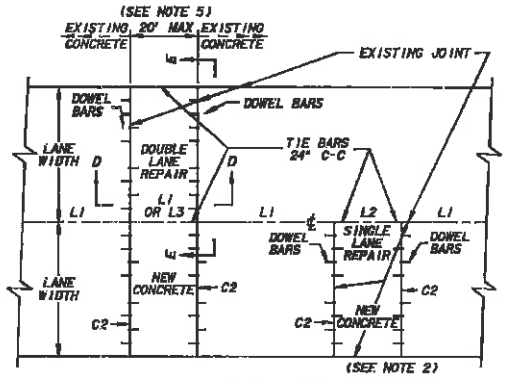
SECTION E - E

DOWEL BAR SPACING ABUTTING EXISTING PAVEMENT



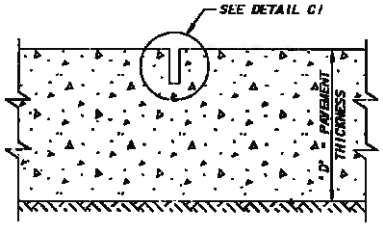
PLAN VIEW

CONCRETE PAVEMENT REPLACEMENT



PLAN VIEW

CONCRETE PAVEMENT REPAIR



SECTION F - F

CONTRACTION JOINT

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.

FOR OFFICE USE ONLY		**Application No.** _____
Meets Technical Standards ☐	**Does Not Meet Technical Standards** ☐	
Date Application Received: _____	**Date all Information Received:** _____	**Reviewed By:** _____
Fee Paid ☐	**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 ☐	NO ☐	

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 erodable 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, waddies 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.

CITY OF MILWAUKEE
DEPARTMENT OF PUBLIC WORKS
Optional Joint Restraint

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

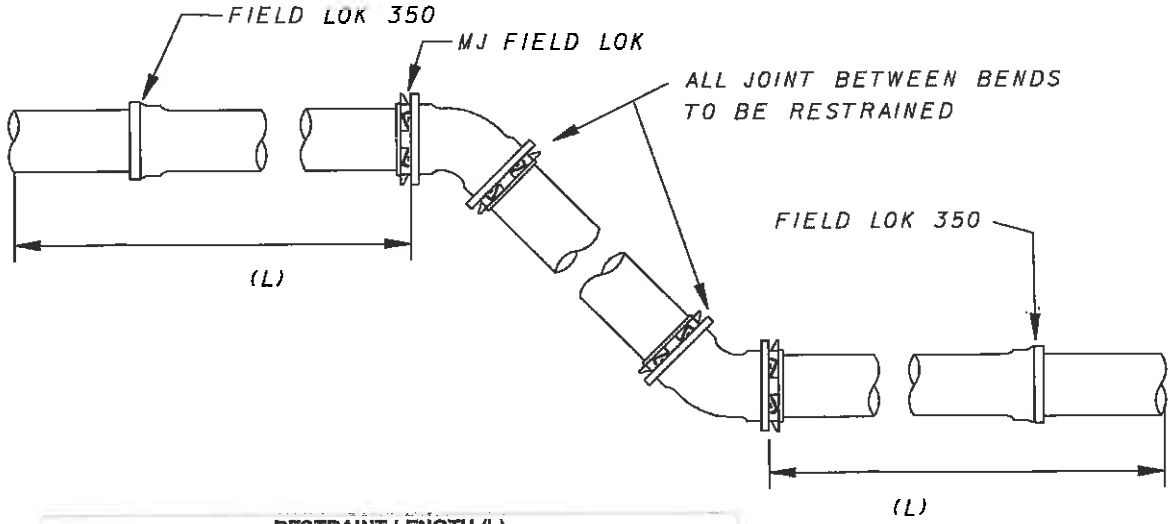
    D. Installation: Marking tape shall be placed along (longitudinally) the top of the water main following the installation of the required poly wrap for pipe and fittings, and taped to the poly wrap (around the water main) at 4 ft intervals for the limits of the installed joint restraint. The tape shall 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.

MECHANICAL JOINT RESTRAINT (4"–16")



RESTRAINT LENGTH (L)

	BENDS		OFFSETS			
PIPE	DEGREE OF BEND		OFFSET DIMENSION			
DIA.	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 SPECIFICAITON NOTES SEE THE STANDARD PLAN NOTES REGARDING WATER MAIN CONSTRUCTION.

file - MJ Field Lok.dgn

Milwaukee Water Works

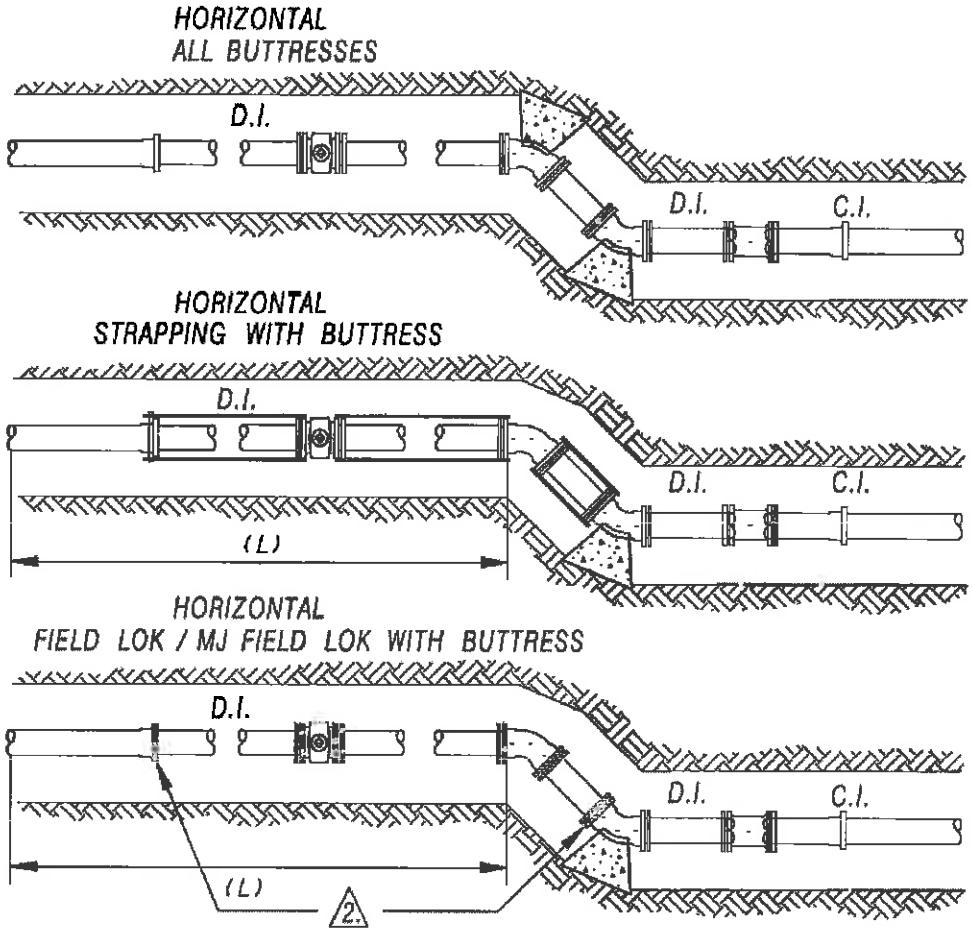
Water Engineering

Department of Public Works

R-2

REVISED: 02-14-10

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

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

file - MJ Field Lok.dgn

Milwaukee
Water Works

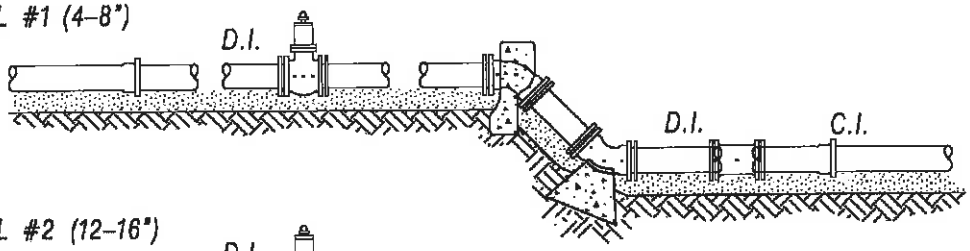
Water Engineering

Department of Public Works

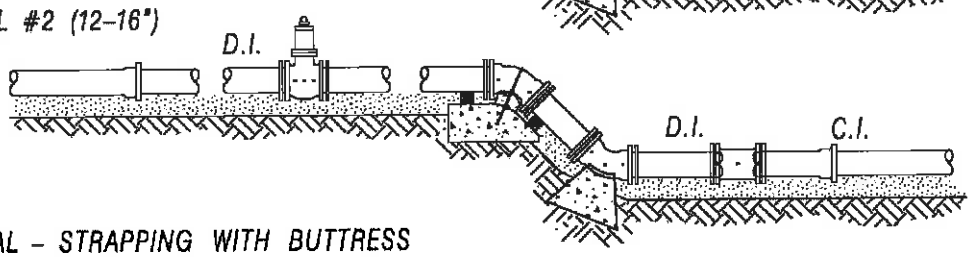
R-3
REVISED: 02-24-10

RESTRAINT STANDARDS (4–16")
WATER MAIN END CONNECTIONS

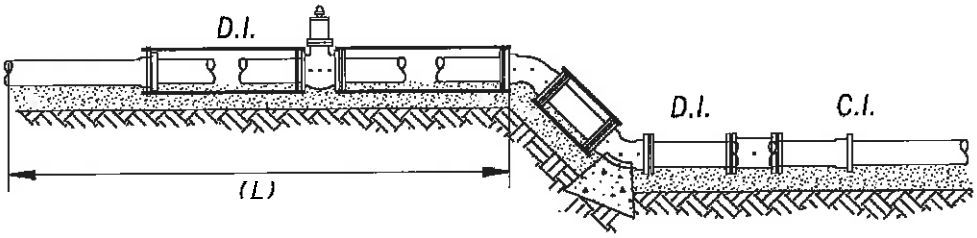
VERTICAL #1 (4–8")



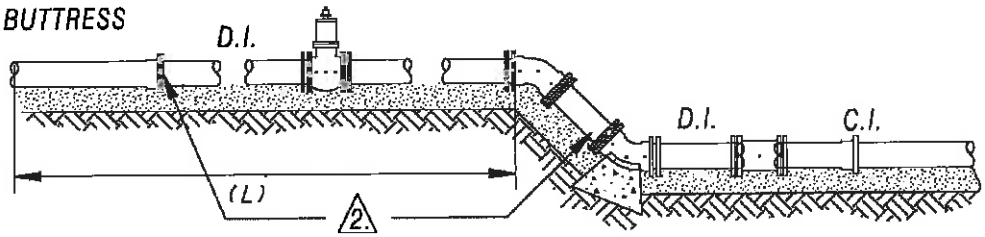
VERTICAL #2 (12–16")



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

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

file = MJ Field Lok.dgn

Milwaukee Water Works

Water Engineering

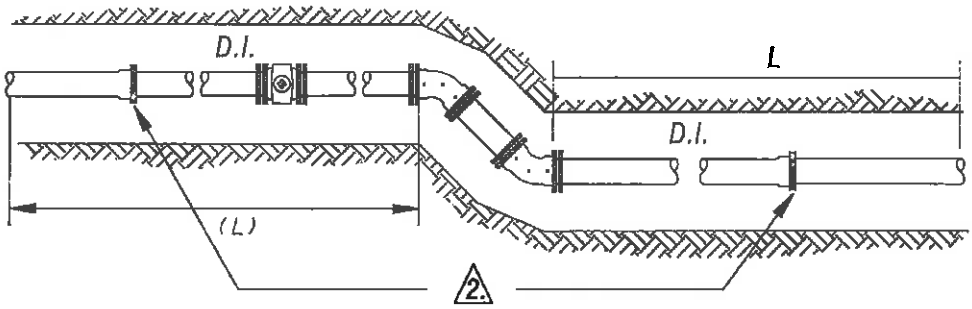
Department of Public Works

R-4

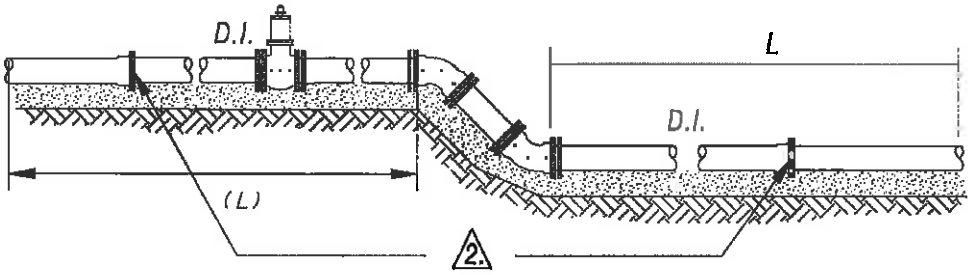
REVISED: 02-24-10

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®

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Milwaukee Water Works

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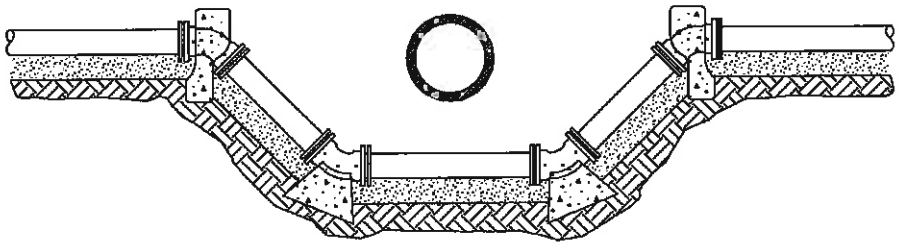
Department of Public Works

R-5

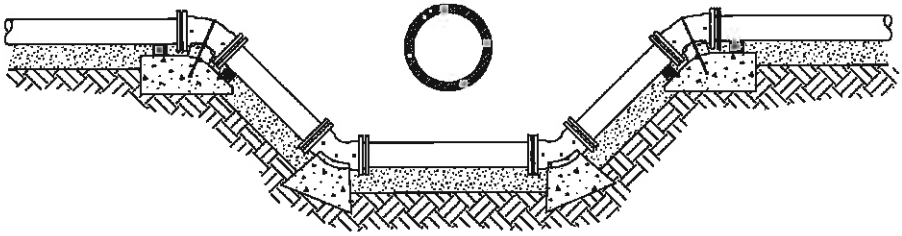
REVISED: 02-24-10

RESTRAINT STANDARDS (4–16")
VERTICAL OFFSET

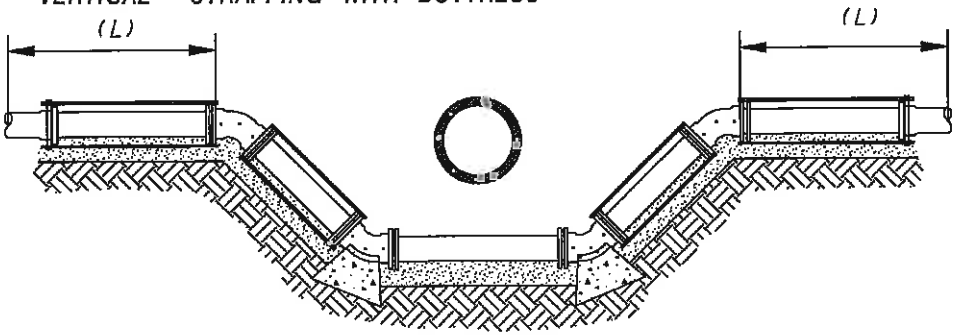
VERTICAL #1 (4–8")



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

⚠2. ALL JOINTS WITHIN LIMITS TO BE RESTRAINED WITH FIELD LOK 350® OR MJ FIELD LOK®

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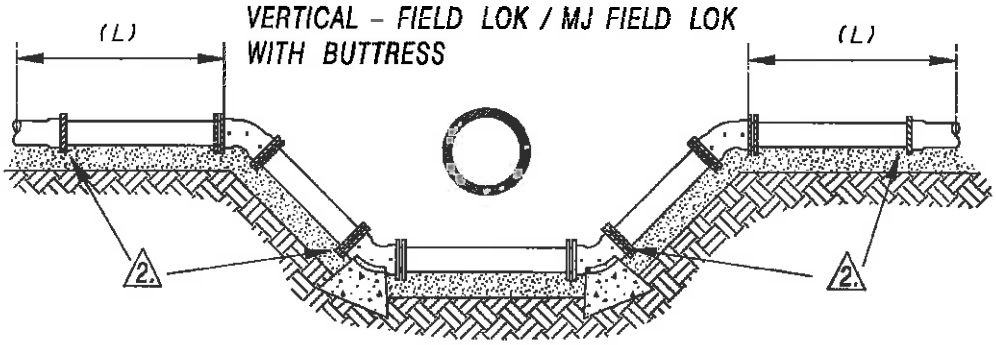
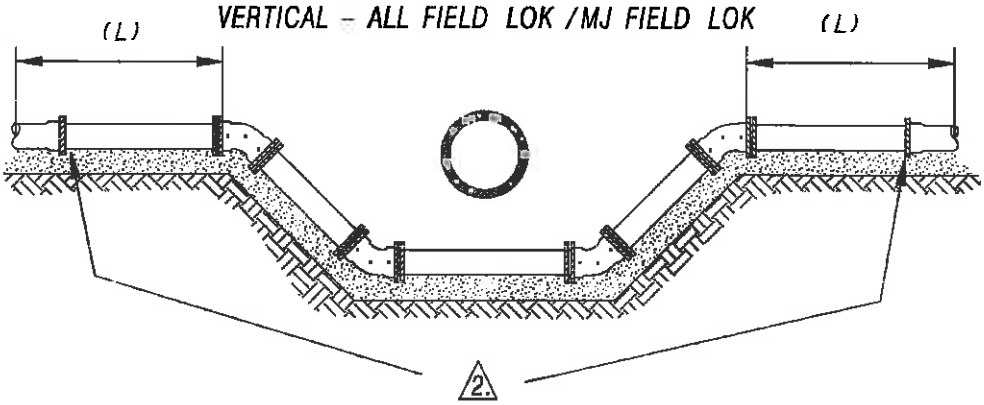
R-6

REVISED: 02-24-10

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®

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