

SPECIFICATIONS

FOR

2023

WENONAH STREET

WATER

PROJECT



Prepared by:

Mark Daavettila, P.E.

City of Negaunee

319 W Case Street

Negaunee, MI 49866

(906) 475-9991

January 2023

2023 WENONAH WATER PROJECT
CITY OF NEGAUNEE, MICHIGAN

TABLE OF CONTENTS

Cover Page
Table of Contents
Addenda (if and when used)

Bidding Requirements

Advertisement for Bids

* **Bid Form**

* **Contractor Supplied Certified Check or Satisfactory Bid Bond (5%)**

Contracting Requirements

City of Negaunee Agreement between Owner and Contractor

Specifications

Special Provisions

Sanitary Sewer Crossing

Slope Restoration

Traffic Control

Water Items

City of Negaunee – Water Distribution System General Specifications

Permits

Owner Supplied

Contractor Supplied

* **Items to be included in BID**

BIDDING REQUIREMENTS

ADVERTISEMENT FOR BIDS

CITY OF NEGAUNEE

Sealed bids are solicited for the: Construction of **2023 Wenonah Water Project**, City of Negaunee, Marquette County, Michigan. The project includes approximately 350 feet of watermain replacement on Wenonah Street and Owaissa Street. The project will include water service replacement, subbase, gravel, HMA paving, sidewalk, slope restoration, and traffic control.

Bids will be received by the City of Negaunee and addressed to: **Negaunee City Clerk, City of Negaunee, P.O. Box 70, 319 W. Case Street, Negaunee, MI 49866** until 10:00 a.m. ET, February 23, 2023, at which time these sealed Bids will be publicly opened and read aloud at the City of Negaunee Office. Contractors please clearly mark "*BID ENCLOSED: 2023 Wenonah Water Project*" on the outside envelope of sealed bid.

The Contractors Name and Address shall also be clearly marked on the outside envelope. Bids must be Mailed or Hand-Delivered; email or fax bids will be not be accepted.

Contractors can request PDF copies of the Contract Documents from the **City of Negaunee Public Works office located at 600 Cherry Street, Negaunee, MI 49866 (906) 475-9991**.

No Bid shall be received unless accompanied by a certified check or satisfactory Bid Bond payable to the Owner in an amount no less than five percent (5%) of the maximum bid as a guarantee, that if the Bid is accepted, the Bidder will execute and file the Contract, Performance and Payment Bonds, and Insurance Certification, as required by the Contract Documents within fifteen (15) days after the Notice of Award and may not be withdrawn for a period of 60 days after bid deadline.

The Owner reserves the right to waive any informalities or to reject any or all bids.

Contractors are encouraged to visit the project site and can call the DPW for questions arising during bidding or for more information.

City of Negaunee
DPW Director / City Engineer
Mark Daavettila
906 475-9991

City of Negaunee

2023 WENONAH WATER PROJECT

BID FORM (page 1 of 2)

<u>Pay Item</u>	<u>Description</u>	<u>Qty</u>	<u>Units</u>	<u>Unit Price</u>	<u>Total</u>
1100001	Mobilization, Max 10%	1	LSUM		
2040020	Curb and Gutter, Rem	170	Ft		
2040055	Sidewalk, Rem	96	Syd		
2050016	Excavation, Earth	788	Cyd		
2080020	Erosion Control, Inlet Prot, Fab Drop	4	Ea		
2080036	Erosion Control, Silt Fence	100	Ft		
3010002	Subbase, CIP	280	Cyd		
3020020	Aggregate Base, 8 inch	1,520	Syd		
3060021	Maintenance Gravel, LM	50	Cyd		
5010005	HMA Surface, Rem	1,520	Syd		
5012025	HMA, 4EML	170	Ton		
5012037	HMA, 5EML	130	Ton		
8020038	Curb and Gutter, Conc, Det F4	140	Ft		
8030010	Detectable Warning Surface	10	Ft		
8030030	Curb Ramp Opening, Conc	30	Ft		
8030044	Sidewalk, Conc, 4 inch	525	Sft		
8032002	Curb Ramp, Conc, 6 inch	330	Sft		
8127051	_Traffic Control	1	LSUM		
8167011	_Slope Restoration	200	Syd		
8230051	Gate Valve and Box, 6 inch	2	Ea		
8230052	Gate Valve and Box, 8 inch	1	Ea		
8230151	Water Main, DI, 6 inch, Tr Det G	28	Ft		
8230156	Water Main, DI, 8 inch, Tr Det G	335	Ft		
8237001	_Water Service, 1 inch	174	Ft		
8237050	_Curb Stop & Box, 1 inch	7	Ea		
8237050	_Watermain Connection	3	Ea		
8237050	_Sanitary Sewer Crossing	1	Ea		
8237051	_Temporary Water	1	LSUM		

TOTAL BID

\$

(words)

BID FORM (page 2 of 2)

BIDDER:

By:

[Signature] _____

[Printed name] _____

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

Bidder's License No.: _____

(where applicable)

CONTRACTING REQUIREMENTS

CITY OF NEGAUNEE

AGREEMENT
BETWEEN OWNER AND CONTRACTOR FOR
CONSTRUCTION CONTRACT (UNIT PRICE)

PROJECT NAME: 2023 Wenonah Street Water Project

PROJECT NO: 2023-W1

THIS AGREEMENT, made this _____ day of _____, 20____, between the City of Negaunee, a Michigan Municipal Corporation, hereinafter called the "City" of 319 W. Case Street, Negaunee, MI 49866, and _____ of _____, a _____, holding license number _____ (Corporation, Partnership or Sole Proprietorship) hereinafter called "Contractor".

WITNESSETH: That for and in consideration of the payments and Agreements hereinafter mentioned, the parties hereby agree as follows:

ARTICLE 1 - CONTRACT DOCUMENTS

- A. The "Contract Documents" consist of the following:
1. This Agreement (Pages 1 to 10)
 2. Contractor's Performance Bond
 3. Contractor's Payment Bond
 4. Specifications
 5. Drawings consisting of 3 sheets with each sheet bearing the following general title: 2023 Wenonah Water Project
 6. Addenda (numbers to , inclusive)
 7. Exhibits to this Agreement

- a. Contractor's Bid.
- 8. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.
 - b. Change Orders,
- B. These Contract Documents represent the entire Agreement and understanding between the parties hereto.

ARTICLE 2 - SCOPE OF THE WORK

- A. Contractor will furnish all the materials, supplies, tools, equipment, labor and other services necessary for the construction and completion of the project described in the Contract Documents. The Work is generally described as follows:
350 feet of watermain replacement on Wenonah Street in Negaunee.

ARTICLE 3 - THE PROJECT

- A. The Project, of which the Work under the Contract Documents is a part, is generally described as follows: 2023 Wenonah Street Water Project.

ARTICLE 4 - MATERIALS, APPLIANCES, and EMPLOYEES

- A. Except as otherwise noted, the Contractor shall provide and pay for all materials, labor, tools and other items necessary to complete the Work. Unless otherwise specified, all materials shall be new, and both workmanship and materials shall be of good quality. All workmen shall be skilled in their trades.

ARTICLE 5 - TIME OF COMPLETION

- A. The commencement date of this project is _____, 20____, and the completion date of this project is September 17, 2023.

- B. The Contractor shall be penalized in the amount of \$ 1,000 per day if the project is not completed by the contract completion date unless the period for completion is extended by change order.

ARTICLE 6 - CONTRACT PRICE

- A. The City shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:
1. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 7 - PAYMENT PROCEDURE

- A. Submittal and Processing of Payments
1. Contractor shall submit Application for Payments to the City on a monthly basis.
- B. Progress Payments
1. City shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 3rd Monday of each month.
 2. Prior to Project Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as the City may withhold, including but not limited to liquidated damages, and:
 - a. 95 percent of Work completed (with the balance being retainage).

3. Upon Project Completion and Acceptance of Work, the City shall pay the final payment of the Work completed including the 5 percent retainage withheld.

ARTICLE 8 - CONTRACTOR'S OBLIGATIONS

- A. All work shall be in accordance to the provisions of the Contract Documents. All systems shall be in good working order.
- B. All work shall be completed in a workmanlike manner and shall comply with all applicable laws.
- C. Contractor shall obtain all necessary permits for the work to be completed.
- D. Contractor shall remove all construction debris and leave the project in a "broom clean" condition.
- E. Upon satisfactory payment being made for the work performed by Contractor, Contractor shall furnish a full and unconditional Release of Lien for the work for which payment has been made.
- F. Safety and Fire Protection: The Contractor shall be responsible for safety at the construction site. The Contractor will further comply with all applicable laws, rules and regulations of the Michigan Department of State Police, Fire Marshall Division, the State Fire Safety Board, Michigan Occupational Safety and Health Administration, and Local Agencies. Precaution shall be exercised at all times for the protection of persons and of property. The safety provisions of applicable laws, rules, regulations, building and construction codes shall be followed. Safety Hazards shall be guarded in accordance with safety provisions of the Manual of Accident Prevention in Construction published by The Associated General

Contractors of America to the extent that such provisions are not in conflict with applicable laws.

ARTICLE 9 - CONTRACTOR'S STATUS AS INDEPENDENT ENTITY

- A. The City shall not assume any liability for the Contractor in the performance of the construction project, methods, techniques, sequences or programs in connection with the project since these are solely the Contractor's responsibility.

ARTICLE 10 - CHANGE ORDERS AND PAYMENT

- A. A change order is any change to the original plans and/or specifications. All change orders need to be agreed upon between the parties hereto, and address additional costs, time, consideration and dates when the work will begin and be completed. Change orders are not effective unless signed by both parties who shall not unreasonably withhold approval of the same. However, should the Contractor unreasonably refuse to approve a change order reasonably and in good faith submitted by the City, the City Manager shall be empowered to make a final and fair determination as to the necessity for the change order and the fair and equitable cost to the Contractor and shall further be empowered to issue a final payment to the Contractor. Should the Contractor refuse to accept said final payment, the funds may be deposited in an Escrow Account by the City for the benefit of the Contractor.

ARTICLE 11 - INSURANCE

- A. The Contractor shall purchase and maintain Workman's Compensation and Liability Insurance coverage as required by law and deemed necessary for its own protection. Said insurance shall be written by an insurance carrier having at least an "A, VII" rating. The Contractor shall further name the City as an

additional named insured on all certificates of insurances covering the project. Said insurance shall be in minimum limits of at least \$1,000,000.00 for both general liability and automobile liability. The Contractor shall further maintain such insurance as will protect it from claims under worker's compensation acts and other employee benefits acts, from claims for damages because of bodily injury, including death, and from claims for damages to property which may arise both out of and from claims for damages to property which may arise both out of and during operations under this contract, whether such operations are by Contractor or by anyone directly or indirectly employed by the Contractor. This insurance shall be written for not less than any limits of liability specified as part of the Contract Documents. Certificates of such insurance shall be filed with the City.

ARTICLE 12 - INDEMNIFICATION

- A. To the extent allowed by MCL 691.991, the Contractor hereby agrees to save and indemnify and keep harmless the City against all liability claims and judgments or demands for damages arising from accidents to persons or property occasioned by the Contractor, its agents or employees, and against all claims or demands for damages arising from accidents to the Contractor, its agents or employees, whether occasioned by said Contractor or its employees or by City or its employees or any other person or persons, and the said Contractor will defend any and all suits that may be brought against the City on account of any such accidents and will make good to, and reimburse, the City for any expenditures that said City may make by reason of such accidents;

provided, however, that the Contractor shall not be responsible to the City on indemnity for damages caused by or resulting from the City's sole negligence.

ARTICLE 13 - CITY'S RIGHT TO TERMINATE THE CONTRACT

- A. Should the Contractor neglect to perform the work properly or fail to perform any provision of the Contract, the City, after seven (7) days' written notice to the Contractor, and its surety, if any, may, without prejudice to any other remedy the City may have, make good the deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor or, at its option, may terminate the Contract and take possession of all materials, tools and appliances and finish the work by such means as it sees fit, and if the unpaid balance of the contract price exceeds the expense of finishing the work, such excess shall be paid to the Contractor, but if such expense exceeds such unpaid balance, the Contractor shall pay the difference to the City.

ARTICLE 14 - CONTRACTOR'S RIGHT TO TERMINATE CONTRACT

- A. Should the work be stopped by any public authority for a period of ninety (90) days or more, through no fault of the Contractor, or should the work be stopped through act or neglect of the City for a period of ninety (90) days, then the Contractor, upon seven (7) days' written notice to the City, may stop work or terminate the Contract and recover from the City payment for all work executed.

ARTICLE 15 - ACCESS TO WORK

- A. The Contractor shall permit and facilitate observation of the work by the City and its agents and public authorities at all times.

ARTICLE 16 - WARRANTY

- A. At the completion of this project, Contractor shall execute an instrument to City warranting the project for one (1) year against defects in workmanship or materials utilized. The manufacturer's warranty shall prevail.
- B. At the time of completion, the Contractor shall furnish to the City material containing complete operation and maintenance instructions for all equipment in the project. The Contractor shall also furnish to the City at the time of completion all documents, warranties and guarantees on all equipment and services provided.
- C. The Contractor shall re-execute any work that fails to conform to the requirements of the Contract and that appears during the progress of the work and shall remedy any defects due to faulty workmanship, which appear within a period of one (1) year from the date of completion of the Contract or such longer period of time as may be prescribed by laws or regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents. All equipment and materials will be warranted and guaranteed under the original equipment manufacturer's warranties and guarantees.
- D. The Contractor shall restore any work damaged in fulfilling the terms and conditions of this Article. After such repair or replacement has been satisfactorily completed, the Contractor's warranty with respect to such work repaired or replaced will be extended for an additional period of one (1) year beyond the warranty period described above. Contractor's obligations under this paragraph are in addition to any other obligation or warranty.

ARTICLE 17 - INTEGRATION

- A. This Agreement represents the entire understanding between the parties hereto and may not be amended, except in writing that is signed by both parties hereto.

ARTICLE 18 - BINDING AGREEMENT

- A. This Agreement will bind and inure to the benefit of the heirs, executors, administrators, successors and assigns of the parties.

IN WITNESS WHEREOF, the City and Contractor have signed this Agreement.

This Agreement will be effective on _____.

CONTRACTOR:

By: _____

Title: _____

Attest: _____

Title: _____

Address for giving notices:

OWNER:

City of Negaunee _____

By: _____

Title: _____

Attest: _____

Title: _____

Address for giving notices:

PO Box 70 _____

319 W Case Street _____

Negaunee, MI 49866 _____

SPECIFICATIONS

SPECIAL PROVISIONS

Definitions

Subsection 101.02 of the Michigan Department of Transportation 2020 Standard Specifications is hereby amended to include the following definitions:

Owner:

City of Negaunee, council and staff of City of Negaunee, Marquette County.

Engineer:

City of Negaunee, its officers, agents and employees.

Standard Specifications:

Applicable provisions of the Michigan Department of Transportation 2020 Standard Specifications for Construction shall apply, except as modified herein by the other contract provisions included in this specification.

CITY OF NEGAUNEE
SPECIAL PROVISION
FOR
SANITARY SEWER & STORM SEWER CROSSING

NEG:MPD

1 of 2

01/20/23

a. **Description.** This work consists of installing watermain at each of the sanitary and storm sewer crossings at or near the locations shown on the plans. This work includes trench excavation, miscellaneous watermain bends/fittings, removal and replacement of sanitary/storm pipe, jack and boring, directional drilling, dewatering, sheeting and/or bracing, backfilling, testing of the pipe, disposal of waste materials, connections to existing systems, maintaining sanitary/storm service, bypass pumping, and all labor and related work necessary to complete the watermain construction over/under the existing sanitary or storm sewer.

This work shall be done in accordance with the requirements of Section 203, 206, 401, 402, 403, and 823 of the Michigan Department of Transportation 2020 Standard Specifications for Construction.

b. **Materials.**

Provide materials conforming to the MDOT 2020 Standard Specifications for Construction, ASTM standards, as well as federal, state and local requirements.

The manufacturer of the pipe shall furnish a certified statement that all pipe furnished has been inspected and tested in accordance with applicable specifications. Pipe will be subject to inspection and approval upon delivery. Each pipe shall be stamped or indelibly marked with its type and class and the manufacturer's name or mark.

c. **Construction Methods.** Perform all work in accordance with sections 203, 206, 401, 402, 403, and 823 of the MDOT 2020 Standard Specifications for Construction, as well as federal, state and local requirements. Perform work in accordance with MDOT Standard Plan R-83-C Utility Trench details and trench detail E (for utility crossings).

The contractor, at the preconstruction meeting, shall submit a plan detailing the method and materials to utilize at each crossing. An example of methods includes jack and bore, temporary bracing, remove and replace pipe, fittings/bends for watermain, or other means identified by the contractor.

Ensure all materials are as recommended by the pipe or fitting manufacturer.

Maintain water, storm, and sanitary service at all times during construction temporary pumping, construction staging or other means as approved by the Engineer.

Work may need to be performed on weekends, holidays or off-peak hours. Coordinate scheduling of connections with the municipality DPW and receive approval from the Engineer.

d. Measurement and Payment. The completed work as measured will be paid for at the contract unit price for the following contract item (pay item):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Sanitary Sewer Crossing.....	Ea

Sanitary Sewer Crossing and **Storm Sewer Crossing** will be measured for each crossing of the new watermain at the existing sanitary sewer main/laterals and storm sewer pipe. The price includes payment in full for furnishing all excavation and backfill, materials, labor, and equipment required to perform the work necessary to complete the construction. The work may include removal and replacement, bracing, temporary supports, sheeting, blocking, temporary connections, temporary pumping, jack and bore, directional drill, or/and all other miscellaneous items necessary to facilitate the installation of the crossing. This price shall include all additional costs associated with crossing over or under existing sanitary sewer and storm sewer.

CITY OF NEGAUNEE
SPECIAL PROVISION
FOR
SLOPE RESTORATION

NEG:MPD

1 of 1

01/20/23

a. Description. Shape all disturbed areas requiring seeding; place topsoil, seed, fertilizer and mulch; and anchor mulch as shown on plans and typical cross sections. Complete this work according to Section 816 of the 2020 Michigan Department of Transportation Standard Specifications for Construction and as directed by the Engineer.

b. Materials. Use materials meeting subsection 816.02 of the Standard Specifications for Construction and the following:

1. Seeding, Mixture TUF
2. Fertilizer, Chemical Nutrient, Class A
3. Topsoil Surface, Furn, 4 inch
4. Mulch Blanket

c. Construction Methods. Place materials at rates described in the Standard Specifications for Construction or as directed by the Engineer. It may be necessary, as directed by the Engineer, to place the materials by hand methods due to the areas location or small size. Begin restoration activities in the areas designated for Slope Restoration, Modified as soon as possible after the final grading of the slopes.

If an area washes out after this work is properly completed and approved by the Engineer, make required corrections to prevent future washouts and replace the topsoil, fertilizer, seed and mulch. This replacement will be paid for as extra work.

If an area washes out for reasons attributable to construction methods or activities, replace as described above. All costs associated with this replacement will be borne by the Contractor.

d. Measurement and Payment. The completed work as measured will be paid for at the contract unit price for the following contract item (pay item):

Contract Item (Pay Item)	Pay Unit
Slope Restoration	Square Yard

Slope Restoration will be measured by area by the square yard in place. Payment includes Topsoil Surface, Furn, 4 inch; Seeding, Mixture TUF; Fertilizer, Chemical Nutrient, Class A; Mulch Blanket. No separate payment will be made for these various items of work.

CITY OF NEGAUNEE
SPECIAL PROVISION
FOR
MAINTAINING TRAFFIC

NEG:MPD

Page 1 of 2

01/20/23

GENERAL

Traffic shall be maintained in accordance with Sections 812 and 922 of the 2020 Standard Specifications for Construction, including any Supplemental Specifications, and as herein specified.

The contractor shall notify the owner a minimum of 72 hours prior to the implementation of any lane closures.

CONSTRUCTION INFLUENCE AREA (CIA)

The CIA shall include the right-of-way of the following roadways, within the approximate limits described below:

Wenonah Street from Owaissa Street to Opechee Street
Owaissa Street from Maas Street to Nakomis Street

TRAFFIC RESTRICTIONS

No work shall be performed or lane closures allowed during the Memorial Day, July 4th, or Labor Day.

All work shall be conducted during day time hours only. Work on Sundays, if approved, shall be as directed by the Engineer.

Traffic shall be maintained at all times on Wenonah Street. Signing and barricades shall be placed as stated herein and as directed by the Owner/Engineer. Local traffic access shall be maintained during the time the road is closed to traffic.

During construction, access to drives and crossroads shall be maintained at all times. Salvaged crushed material shall be utilized as necessary to maintain access.

TRAFFIC CONTROL DEVICES

General

All traffic control devices and their usage shall conform to the Michigan Manual of Uniform Traffic Control Devices (MMUTCD), 2011 edition, and as specified herein.

Temporary Signs

All diamond-shaped warning signs shall be 48 inches x 48 inches. Where they are no longer applicable, they shall be removed.

All diamond-shaped warning signs shall be 48 inches x 48 inches. Where they are no longer applicable, they shall be removed.

MEASUREMENT AND PAYMENT

Payment for all devices required to maintain traffic in accordance with the MMUTCD, including temporary pavement markings, traffic regulator control, arrowboards, minor traffic devices, barricades, drums for this project are included in the pay item **Traffic Control**.

Payment for temporary signs will be included in the item **Traffic Control**.

Traffic Control lump sum item includes at a minimum, the following quantities:

30	Ea	Plastic Drum, High Intensity, Furn and Oper
182	Sft	Sign, Type B, Temp, Prismatic, Furn and Oper
		6 "Road Work Ahead" signs (4x4)
		3 "Road Closed Ahead" signs (4x4)
		3 "Road Closed to Thru Traffic" signs (5x2.5)
12	Ea	Barricade, Type III, High Intensity, Lighted, Furn and Oper
1	LSUM	Minor Traf Devices
1	LSUM	Traf Regulator Control

Any additional signing, arrowboards, drums, or maintaining traffic devices required to expedite the construction or shall be at the contractor's expense.

CITY OF NEGAUNEE
SPECIAL PROVISION
FOR
WATER ITEMS

NEG:MPD

1 of 2

01/20/23

a. **Description.** This work consists of installing water services, curb stop & boxes, making connections to existing water main, and providing temporary watermain at or near the locations shown on the plans.

This work shall be done in accordance with the requirements of Section 823 of the Michigan Department of Transportation 2020 Standard Specifications for Construction, and City of Negaunee Water Distribution System General Specifications.

b. **Materials.**

Provide materials conforming to 823.02 and 923 of the MDOT 2020 Standard Specifications for Construction and City of Negaunee Water Distribution System General Specifications.

c. **Construction Methods.** Perform all work in accordance with sections 823 of the MDOT 2020 Standard Specifications for Construction and City of Negaunee Water Distribution System General Specifications, as well as federal, state and local requirements.

d. **Measurement and Payment.** The completed work as measured will be paid for at the contract unit price for the following contract item (pay item):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Water Service, 1 inch.....	Ft
Curb Stop & Box, 1 inch.....	Ea
Watermain Connection.....	Ea
Temporary Watermain.....	LSUM

The unit price for **Water Service, 1 inch** include the cost of the following:

1. Earth excavation
2. Providing and installing type K copper tubing, service saddle, corporation stops
3. Disinfecting
4. Providing, placing, and compacting backfill
5. Miscellaneous material, equipment, or operations.
6. All materials needed for connecting new water service to existing water service

The unit price for **Curb Stop & Box, 1 inch** include the cost of the following:

1. Earth excavation
2. Providing and installing service stops and service box

The unit price for **Temporary Watermain** will be in addition to the Water Main, DI, _ inch, Tr Det G and will include the cost of the following:

1. Providing temporary water system to maintain service during construction.

The unit price for **Watermain Connection** will be in addition to the Water Main, DI, _ inch, Tr Det G and will include the cost of the following:

1. Providing and installing fittings, gaskets, bracing or sheeting, blocking and miscellaneous items for installing pipe and reconnecting to the Municipal Water System.

**CITY OF NEGAUNEE
WATER DISTRIBUTION SYSTEM**

GENERAL SPECIFICATIONS

PART 1 – GENERAL

A. REFERENCE STANDARDS

1. American Water Works Association (AWWA)
2. American Society for Testing and Materials (ASTM)
3. American Society of State Highway and Transportation Officials (AASHTO)

PART 2 - PRODUCTS

A. DUCTILE IRON PIPE

1. Conform with AWWA C150, C151, and NSF61
2. Coatings and linings:
 - a. Cement mortar lining and real coating.
3. Push-on joint pipe
 - a. Pressure Class 350
 - b. Joint:
 - 1) Conform to AWWA C111
 - 2) Gaskets: plain rubber
4. Conductivity straps: Copper. Straps also required around all valves.
5. Factory install continuity straps, field install straps by cad weld as needed.
6. ANSI/NSF Standard 61, the exterior wall must bear NSF-PW identification.
7. Gaskets with conductivity wedges will not be accepted.

B. FITTINGS

1. Ductile iron or grey iron conforming to AWWA C110
2. Fittings shall be mechanical joint
3. Fittings shall be installed with Cor-Blue bolts
4. Coatings and Linings
 - a. Interior: standard thickness of cement mortar conforming to AWWA C104
 - b. Exterior: asphaltic coating 1 mil thick
5. Gaskets: Conform to AWWA C111

C. RESTRAINT

1. Restraint Devices shall be MEGALUG® Mechanical Joint Restraint Series 1100, or Engineer approved equal.
 - a. Restraint devices for nominal pipe sizes 3 inch through 48 inch shall consist of multiple gripping wedges incorporated into a follower gland meeting the applicable requirements of AWWA C110.
 - b. The devices shall have a working pressure rating of 350 psi for 3-16 inch sizes. Ratings are for water pressure and must include a minimum safety factor of 2 to 1 in all sizes

D. HYDRANTS

1. Shall be East Jordan Iron Works Watermaster #5BR250, Product #57927D conforming to AWWA C502, UL 246, dry barrel type, inside dimension of 7-3/8 inches minimum, with minimum 5-1/4 inches diameter valve seat opening; minimum net water area of barrel no less than 190 percent of valve opening; 6 inch mechanical joint bell inlet connection with accessories, gland bolts, and gaskets. Two tapped and plugged weep holes, opens left. 1-1/2" pentagon nut with weather shield.
2. Depth of Bury: 7 foot minimum (measured from the top of inlet to the hydrant ground line).
3. Finish: Primer and two coats of enamel, red color.
4. Hose and Pumper Connection: Two 2-1/2" hose nozzles, one 4-1/2" pumper nozzle, with Detroit style threads. Chain keepers for nozzle caps.
5. Hydrant shall be equipped with a break-away safety flange and coupling at the ground line.
6. Bolts used to assemble and install hydrants shall be Cor-Blue.

E. VALVES

1. Resilient Wedge Gate Valve
 - a. Shall be American Flow Control 2500, E.J. Flowmaster.
 - b. Conform with AWWA C515
 - c. Stem: non-rising
 - d. Working pressure: 250 psi
 - e. Coating: valve body and bonnet shall be epoxy coated inside and out, conforming to AWWA C550.
 - f. Waterway shall be smooth with no cavities or depressions in seat area.
 - h. Valve shall comply with NSF61.
 - i. Bolts used to assemble and install valves shall be Cor-Blue.
2. Valve Boxes
 - a. Shall be Tyler #6860, E.J. 8560 series, or Engineer approved equal.
 - b. Three piece screw-type
 - c. Shaft: 5-1/4 inch
 - d. Lid: shall be the drop type, anti-rattle and marked "water"
 - e. Base: round or oval sized to fit valve

F. WATER SERVICE MATERIAL

1. Copper Tubing
 - a. Type "K" conforming with ASTM B88 and NSF61
2. Corporation Stops
 - a. Shall be Mueller #B-25008, Ford FB-1000, or approved equal.
 - b. Conform with AWWA C800 and NSF61
 - c. Inlet: AWWA standard thread
 - d. Outlet: compression or flared
 - e. Corporation stops shall be low lead brass
3. Curb Stops, Minneapolis Style
 - a. Shall be Mueller #P-25155, Ford (B44-M-NL), or approved equal.
 - b. Conform with AWWA C800 and NSF61
 - c. Inlet and outlet: compression or flared
 - d. Curb stops shall be low lead brass

- e. Each curb stop shall be furnished with a Mueller #83299, Ford #ROD-72 stationary rod
- 4. Curb Boxes, Minneapolis Style
 - a. Curb boxes shall be Mueller #H-10302, Ford EM2-56 or equal
 - 1. Shut-off rods – Mueller Cat. #H-10321
 - 2. Keys – pentagon style – Mueller Cat. #H-10323
 - b. Stationary rod shall be included
 - c. Base size: match curb stop size
 - d. Length: 7 feet when extended
- 5. Couplings and Connections
 - a. Couplings and connections shall be copper by copper, copper by IP, and copper by plastic, as needed.
 - b. All curb and corp fittings shall be conductive pack joint, grip-type/

G. PIPE BEDDING

- 1. Material shall be MDOT Class II Sand with the following dimensions:
 - a. Depth: From bottom of trench to 12 inches above the pipe
 - b. Width: Minimum of pipe diameter plus 24 inches

H. PIPE FOUNDATION MATERIAL

- 1. Material shall be MDOT 6A Coarse Aggregate.
 - a. To be used in wet excavations
 - b. Depth: From bottom of trench to top of pipe
 - b. Width: Minimum of pipe diameter plus 24 inches

I. THRUST BLOCKING

- 1. Shall be 3,000 psi concrete conforming to the following:
 - a. Aggregate: 3/4"
 - b. Cement: 4.75 bags/CY minimum
 - c. Air: 6% plus or minus 1%
 - d. Slump: 3 - 4 inches

J. INSULATION

- 1. Extruded polystyrene, Foamular 250 or equal
- 2. Two inches thick by four feet wide
- 3. Provide where directed by Engineer
- 4. Joints should be overlapped or taped.
- 5. Installation shall include a six inch granular bed below the insulation board and six inches of granular cover material

PART 3 – EXECUTION

A. PIPE INSTALLATION

- 1. Lay pipe to line and depth shown on plans.
- 2. All water main pipes shall be accompanied by a copper clad stainless steel tracer wire.
- 3. When the depth is not shown on the plans, the pipe shall be buried with 7.0 feet of cover for Ductile Iron as determined from the top of pipe.

4. Bedding material shall be placed to a minimum of 4 inches below the bottom of the pipe and to a height of 12 inches above the top of pipe.
5. Keep pipe, fittings and hydrants free of debris and foreign matter.
6. Assemble all joints in accordance with manufacturer's recommendations.
7. Utilize full lengths of pipe, except at fittings.
8. Provide reaction blocking and restraints at the following locations:
 - a. Bend deflecting 22-1/2 degrees or more
 - b. Hydrants
 - c. Valves and tees
 - d. Plugs and caps

B. HYDRANTS

1. Install as shown on plans or as directed by Engineer.
2. Hydrants shall be plumb with nozzles 30 inches above flange.
3. Hydrants shall be installed with weep holes plugged.

C. VALVES

1. Install as shown on plans.
2. Provide gate valves for sizes to 12 inches.
3. Provide butterfly valves for sizes 14 inches and larger.
4. Install valve boxes plumb and centered over valve operating nut:
 - a. Install in a manner which will prevent shock loads and stress being transmitted to the valve and water main.

D. WATER SERVICES

1. Provide in sizes and locations as shown on plans.
2. Services shall terminate at the property line.
3. Unions may not be used.
4. Corporation stops shall be installed by direct tapping the main.
5. Multiple taps shall be spaced a minimum of eighteen inches apart and staggered 30° around the circumference of the water main.
6. When a private line lead or galvanized service is discovered, notify the Owner immediately.

E. INSULATION (AS ORDERED)

1. Insulation shall be centered 12 inches above the watermain on a six inch bed of sand.
2. The bed shall be struck level so that the insulation is supported throughout its entire length and width.
3. The insulation shall be overlapped.
4. After in place, the insulation shall be covered with six inches of sand.

F. PRESSURE AND LEAKAGE TEST

1. Conditions to Prevail Before Commencement of Test
 - a. Backfill to a minimum two feet over the pipe
 - b. Reaction backing and restraints shall be in place
 - c. Fill with water
 1. Fill each valved section with water slowly, expelling air completely from the pipeline, valves and hydrants.

2. Where permanent air vents are not located at all high points or dead ends, Contractor shall install corporation cocks at such points so that air can be expelled as the line is filled with water.

a) Close all these corporation cocks before applying pressure or leakage tests.

b) At the conclusion of the leakage and pressure test, the corporation cocks shall be removed and plugged, or left in at the discretion of the Owner.

d. Pressurize to normal working pressure.

1. After test connections are made and pipeline is filled with water, the pipeline shall be subjected to water pressure normal for that segment of the system being tested.

2. Pressure Test

a. Test procedure shall be not less than 150 lbs per square inch at the highest point of elevation of the segment being tested.

1. The minimum test pressures specified above may require that the installed system be tested in several segments in order to attain the proper pressure.

b. Pressurize the system being tested to pressure required above by adding water with high pressure test pump.

c. Repair any visible leaks occurring due to test pressure application.

d. Repeat pressurizing of system to test pressure until no visible leaks can be found.

e. Duration of pressure test.

1. Test period shall be two hours with no visible leaks occurring.

2. Pressure during test period shall be maintained within plus or minus 5 lbs of the required test pressure by adding water with the test pump.

3. Leakage Test

a. Leakage test shall be conducted after satisfactory completion of the pressure test.

b. At the option of the Contractor, pressure and leakage tests may be run concurrently.

1. This option must have the approval of the Engineer.

2. If this option is agreed upon, then the test pressures required for pressure tests shall prevail for both pressure and leakage tests.

c. When leakage test is conducted after satisfactory completion of the pressure test, the test section shall be subjected to 150 pounds per square inch gauge pressure at the highest elevation of the section of the main being tested.

d. Leakage is defined as the quantity of water to be supplied to the newly laid pipe, or any valved section of it, necessary to maintain the specified leakage test pressure after the main has been filled with water and the air expelled.

e. Leakage shall not exceed the number of gallons per hour as determined by the following formula:

$$L = S * D * (P)^{0.5} / 148,000$$

Where:

L = Allowable Leakage in Gallons/Hour

S = Total Length of Pipe Tested in Feet

D = Nominal Pipe Diameter in Inches

P = Average Test Pressure in lbs/sq in

f. When the section under test contains various diameters of pipe, the available leakage will be the sum of the computed leakage for each size of pipe.

g. Should any test section fail to meet the leakage test, the Contractor shall make the necessary repairs at its own expense.

h. Duration of final leakage test shall be two hours with leakage within the allowable limits during the test.

4. Service Line Leakage Test

a. The Contractor shall test each new service lateral between the corporation and curb stop prior to reconnection of the service at the curb stop.

b. The test shall pressurize the line at 100 psi for a one minute period.

1. A PASSING line shall have no (<1 psi) loss in pressure after one minute.

2. A FAILING line shall be considered on that has a noticeable (> 1 psi) loss in pressure after one minute.

c. Forward all results to Owner immediately following results.

G. CONTINUITY TESTING

1. The pipeline and hydrants shall be tested for electrical continuity and current capacity.

2. The test shall be made after hydrostatic testing is completed and while the line is at normal operating pressure.

3. A direct current of 200 amperes +/- 10%, shall be passed through the section under test for a period of five minutes.

4. Current flow shall be continuously monitored with a suitable ammeter.

5. Insufficient current, excessive fluctuation, or arcing shall be indicative of defective electrical contact, and the cause shall be isolated and corrected.

6. Caution: In order to prevent inadvertent hazardous electrical grounding paths through customer's water services, the continuity test shall be conducted using a non-grounded current circuit.

H. DISINFECTION

1. Disinfection

a. New water main

b. Existing water main when cut into or repaired

c. Disinfect and flush system until samples test safe

2. Bacteriological Testing

a. Contractor will perform sampling and have an independent laboratory (certified by the Michigan Department of Environmental, Great Lakes, & Energy) perform bacteriological testing to certify that water is free of coliform bacteria.

3. Water Quality Certificate

a. Certify water conforms to quality MDEGLE standards, suitable for human consumption.

END OF SECTION

PERMITS

Owner Supplied Permits:

MDEGLE Water Supply System Permit (pending)

Contractor Supplied Permits:

SESC Permit