



# **PROJECT MANUAL**

**PROJECT NO. 13105**

**WATER MAIN AND APPURTENANCES**

**FOR**

**ROWAN ESTATES WATER MAIN RELAY**

**FOR**

**OAK CREEK WATER AND SEWER UTILITY**

**170 W. Drexel Avenue  
Oak Creek, WI 53154  
Telephone: (414) 570 - 8200  
[www.water.oak-creek.wi.us](http://www.water.oak-creek.wi.us)**



DOCUMENT 00 01 07

TITLE AND SEALS PAGE

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**PROJECT NO. 13105**

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**FOR**

**ROWAN ESTATES WATER MAIN RELAY**

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SEAL  
[ENGINEER]

**Project Design & Construction Coordination**

**Ron J. Pritzlaff, P.E.**

**Utility Engineer**

**Phone: (414) 570-8210**

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**ADVERTISEMENT FOR BIDS**

**Water Main and Appurtenances for  
Rowan Estates Water Main Relay for  
Oak Creek Water and Sewer Utility**

**Project No. 13105**

**BID DATE: Thursday, November 7, 2013**

**BID OPENING:**

Sealed bids will be received by Owner until 9:00 a.m. on Thursday, November 7, 2013 at the office of the Oak Creek Water and Sewer Utility, 170 W. Drexel Avenue, Oak Creek, WI. 53154.

Bids submitted after this time will not be accepted. Bids will be opened and publicly read aloud immediately after specified closing time. Interested parties are invited to attend.

**PROJECT**

**DESCRIPTION:** The work, officially known as Project No. 13105, ROWAN ESTATES WATER MAIN RELAY, consists of constructing the following approximate quantities:

<b>Item Description</b>	<b>Quantity</b>
8-inch PVC Water Main, 3/4-inch T.B.B.F., Surf Rest.	7,150 LF
12-inch PVC Water Main, 3/4-inch T.B.B.F., Surf Rest.	349 LF
8-inch PVC Water Main, Spoil B.F., Surf Rest.	8,100 LF
12-inch PVC Water Main, Spoil B.F., Surf Rest.	635 LF
Connect to Existing 6-inch Water Main	3 EA
Connect to Existing 8-inch Water Main	10 EA
Connect to Existing 12-inch Water Main	1 EA
Hydrant, Lead and 6-Inch Gate Valve	42 EA
6-inch Gate Valve	1 EA
8-inch Gate Valve	40 EA
12-inch Gate Valve	3 EA
1-1/4-inch Water Laterals (Polyethylene) Open Cut	96 EA

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**Advertisement to Bid**

<b>Item Description (Cont.)</b>	<b>Quantity</b>
1-1/4-inch Water Laterals (Polyethylene) Directional Drill	119 EA
Erosion Control	1 LS
Traffic Control	1 LS
13-inch x 9-inch Driveway CMP Culverts	16 EA
17-inch x 13-inch Driveway CMP Culverts	6 EA
21-inch x 15-inch Driveway CMP Culverts	17 EA
12-inch Diameter Round Driveway CMP Culverts	22 EA
15-inch Diameter Round Driveway CMP Culverts	15 EA
Salvage and Delivery of Existing Hydrants	1 LS
Abandonment of Existing Valve and Valve Box	1 LS
Asphalt/Concrete Pavement Removal	3,800 SY
5-Inch Asphalt Concrete Pavement	1,100 Tons
3-Inch Asphalt Concrete Binder Pathway	80 Tons
4-Inch Water Service Lateral (PVC), 4-Inch Gate Valve, 3/4-Inch T.B.B.F., Surf Rest., Open-Cut	1 EA

**BASIS OF BIDS REQUIRED:**

Bids shall be on a unit price basis.

**PROJECT SCHEDULE:**

The starting date for work under this contract shall be at the discretion of the Contractor, subject to the following:

Preconstruction meeting as arranged by the Utility Engineer.

Issuance of the Notice to Proceed by the Utility Engineer.

**Project Milestone Dates:**

**Rowan Estates Water Main Relay Dates of Importance:**

**Carollton Drive** water main and water service laterals work shall not begin before **Monday, June 9, 2014.**

**Carollton Drive** water main, water service laterals and final restoration of Pavements and lawns shall be completed on or before **Friday, July 18, 2014.**

**Rowan Estates Water Main Relay**, including surface restoration shall be completed no later than **Saturday, September 20, 2014**.

It shall be understood by the Contractor that the date of starting construction and the date of completion of the work to be done hereunder are essential conditions of this contract, and it is further understood and agreed that the work shall be commenced as aforementioned.

Contractor agrees that the work shall be pursued regularly, diligently, and uninterruptedly at such rate of progress as will assure completion of the work on the dates as stated in the proposal.

#### **EXTENSIONS OF TIME**

Extensions of time may be allowed by the Utility for reasonable delays due exclusively to causes beyond the control and without the fault of the Contractor including but not restricted to owner purchased material delivery delays, extra work or supplemental contract work added to the original contract, fires, strikes, unusual floods, accidents and unreasonable delays in receiving ordered materials and equipment.

It should be understood by the Contractor that rain events occur and fluctuate from year to year and shall not be considered cause for a time extensions.

All requests for extensions of time shall be presented in writing to the Utility Engineer within ten calendar days after the occurrence of the claimed delay, accompanied by all necessary supporting data, and, if based on valid grounds will be considered by the Utility and such extensions of time shall be granted as may seem to be fair and reasonable.

However, no claims will be considered when based on delays caused by conditions existing at the time bids were received and of which the Contractor might be reasonably expected to have knowledge at the time of bidding, or upon delays caused by failure on the part of the Contractor to anticipate properly the requirements of the work contracted for as to the securing of needed materials, labor and equipment.

#### **EXAMINATION AND DISTRIBUTION OF DOCUMENTS:**

Bidding documents may be obtained at the Oak Creek Water and Sewer Utility Website at: [www.water.oak-creek.wi.us](http://www.water.oak-creek.wi.us) under the "Public Contracts" section after October 17, 2013.

#### **BID SECURITY:**

Bids shall be accompanied by Bid Security made payable to Owner in an amount of five (5) percent of Bidder's maximum Bid Price in the form of a Bid Bond, certified check, or cashier's check.

## **PUBLIC CONTRACT REQUIREMENTS:**

Procurement of the work and the award of the contract will be in accordance with the provisions of Wis. Stat. S.62.15, S.66.0901, and S.779.16.

This project is federally funded and will require compliance with the Davis-Bacon Act for prevailing wages and related clauses.

Bidders shall comply with the federal Davis-Bacon Act prevailing wage rates, hours of labor and hourly basic pay rates for each trade or occupation established on this project.

The Davis-Bacon Act requires that all contractors and subcontractors performing on federal contracts (and contractors or subcontractors performing on federally assisted contracts under the related Acts) in excess of \$2,000 pay their laborers and mechanics not less than the prevailing wage rates and fringe benefits listed in the contract's Davis-Bacon wage determination for corresponding classes of laborers and mechanics employed on similar projects in the area. Davis-Bacon labor standards clauses must be included in covered contracts.

Apprentices may be employed at less than predetermined rates if they are in an apprenticeship program registered with the Department of Labor or with a state apprenticeship agency recognized by the Department. Trainees may be employed at less than predetermined rates if they are in a training program certified by the Department.

Contractors and subcontractors on prime contracts in excess of \$100,000 are required, pursuant to the Contract Work Hours and Safety Standards Act, to pay employees one and one-half times their basic rates of pay for all hours over 40 worked on covered contract work in a workweek. Covered contractors and subcontractors are also required to pay employees weekly and to submit weekly certified payroll records to the contracting agency.

This information is bound into the Bidding Documents as Appendix A – Davis-Bacon Prevailing Wage Rate Requirements.

## **EQUAL OPPORTUNITY:**

The Oak Creek Water and Sewer Utility hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the ground of race, color, sex, or national origin in consideration for an award.

We encourage DBEs, including MBEs and WBEs, to submit bid proposals.

**RIGHT TO REJECT BIDS:**

The Oak Creek Water and Sewer Utility Commission reserves the right to reject any and all Bids, to waive any and all informalities not involving price, time, or changes in the Work, and the right to disregard all non-conforming, non-responsive, unbalanced, or conditional Bids.

**CONTRACT SECURITY:**

Bidder awarded a contract for the Work shall be required to furnish a Performance Bond and a Payment Bond in the full amount of the contract price.

**SPECIAL REQUIREMENTS:**

Any contract awarded under this Advertisement for Bids will be funded in part by a loan from State of Wisconsin Department of Natural Resources, Clean Water Fund Program (CWFP), Safe Drinking Water Loan Program (SDWLP) and shall comply with the EPA's Disadvantaged Business Enterprise (DBE) regulations.

**CONTRACT AWARD:**

Owner reserves the right to postpone the award of the Contract for a period not exceeding 30 days from the date of bid opening. Bids shall remain firm for that period of time.

**PREBID CONFERENCE:**

A Pre-Bid meeting will not be scheduled for this project.

**Published by authority of:**

**City of Oak Creek Water and Sewer Utility**

Name of Owner

**Ron J. Pritzlaff, P.E.**

Authorized Official

**Utility Engineer**

Title

**October 17, 2013 and October 24, 2013**

Date(s) of Publication

**END OF DOCUMENT**

**10/17/2013**

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**Advertisement to Bid**

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## **DOCUMENT 00 21 13**

### **INSTRUCTIONS TO BIDDERS**

#### **ARTICLE 1 – DEFINED TERMS**

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions.

#### **ARTICLE 2 – COPIES OF BIDDING DOCUMENTS**

- 2.01 Complete sets of the Bidding Documents stated in Advertisement for Bids may be obtained from the Oak Creek Water and Sewer Utility's website at [www.water.oak-creek.wi.us](http://www.water.oak-creek.wi.us), listed under the "Public Contracts" category.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from use of incomplete sets of Bidding Documents.
- 2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

#### **ARTICLE 3 – QUALIFICATIONS OF BIDDERS**

- 3.01 Bidder qualification is not required by the Utility.
- 3.02 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

#### **ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE**

- 4.01 Subsurface and Physical Conditions;
- A. The Supplementary Conditions identify:
1. Those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site.
  2. Those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

- B. Copies of reports and drawings referenced in Paragraph 4.01.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions has been identified and established in Paragraph 4.02 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any “technical data” or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.02 Underground Facilities;

- A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

4.03 Hazardous Environmental Condition;

- A. The Supplementary Conditions identify any reports and drawings known to Owner relating to a Hazardous Environmental Condition identified at the Site.
- B. Copies of reports and drawings referenced in Paragraph 4.03.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.06 of the General Conditions has been identified and established in Paragraph 4.06 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any “technical data” or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.04 Provisions concerning responsibilities for adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 4.02, 4.03, and 4.04 of the General Conditions. Provisions concerning responsibilities for adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 4.06 of the General Conditions.

4.05 On request, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon



completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.

4.06 Work by Owner;

- A. Reference is made to Article 7 of the Supplementary Conditions for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of contract documents (other than portions thereof related to price) for such other work.

4.07 It is the responsibility of each Bidder before submitting a Bid to:

- A. examine and carefully study the Bidding Documents, and the other related data identified in the Bidding Documents;
- B. visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in Paragraph 4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph 4.06 of the Supplementary Conditions as containing reliable "technical data";
- E. consider information known to Bidder; information commonly known to contractors doing business in locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to effect of such information, observations, and documents on (1) cost, progress, and performance of the Work; (2) means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs;
- F. agree at time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for determination of its Bid for performance of the Work at price(s) bid and within times required, and in accordance with other terms and conditions of the Bidding Documents;

- G. become aware of general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
  - H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that written resolution thereof by Engineer is acceptable to Bidder; and
  - I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance of the Work.
- 4.08 Submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of terms and conditions for performing and furnishing the Work.

#### **ARTICLE 5 – PRE-BID MEETING**

- 5.01 A Pre-Bid meeting will not be scheduled for this project.

#### **ARTICLE 6 – SITE AND OTHER AREAS**

- 6.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

#### **ARTICLE 7 – INTERPRETATIONS AND ADDENDA**

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than ten days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer.

## **ARTICLE 8 – BID SECURITY**

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of five percent (5%) of Bidder's maximum Bid price and in the form of a certified check, bank money order, or a Bid Bond, issued by a surety meeting requirements of Paragraphs 5.01 and 5.02 of the General Conditions.
- 8.02 Bid security of Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished required contract security and met other conditions of the Notice of Award, whereupon Bid security will be returned. If Successful Bidder fails to execute and deliver the Contract Documents and furnish required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults. Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Agreement or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.
- 8.03 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within seven days after the Bid opening.

## **ARTICLE 9 – CONTRACT TIMES**

- 9.01 Dates by which the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

## **ARTICLE 10 – LIQUIDATED DAMAGES**

- 10.01 Provisions for liquidated damages, if any, are set forth in the Agreement.

## **ARTICLE 11 – SUBSTITUTE AND “OR-EQUAL” ITEMS**

- 11.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration of possible substitute or “or-equal” items. Whenever it is specified or described in the Bidding Documents that a substitute or “or-equal” item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after Effective Date of the Agreement.

## **ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS AND OTHERS**

- 12.01 Apparent successful Bidder, and any other Bidder, shall submit list to Owner of all Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work with

their bid. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute, without an increase in the Bid.

- 12.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to giving Notice of Award will be deemed acceptable to Owner and Engineer subject to revocation of such acceptance after Effective Date of the Agreement as provided in Paragraph 6.06 of the General Conditions.
- 12.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

### **ARTICLE 13 – PREPARATION OF BID**

- 13.01 The Bid Form is included with the Bidding Documents. Additional copies may be obtained from the Oak Creek Water and Sewer Utility's website at [www.water.oak-creek.wi.us](http://www.water.oak-creek.wi.us), listed under the "Public Contracts" category.
- 13.02 All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by person signing the Bid Form. Bid prices must be written out in words and also entered as numeric figures for each item listed therein. In case of variation, the written prices will prevail. In the case of optional alternatives the words "No Bid," "No Change," or "Not Applicable" may be entered.
- 13.03 A Bid by a corporation shall be executed in corporate name by president or a vice-president or other corporate officer accompanied by evidence of authority to sign. Corporate seal shall be affixed and attested by secretary or an assistant secretary. Corporate address and state of incorporation shall be shown.
- 13.04 A Bid by a partnership shall be executed in partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. Official address of partnership shall be shown.
- 13.05 A Bid by a limited liability company shall be executed in name of firm by a member and accompanied by evidence of authority to sign. State of formation of firm and official address of firm shall be shown.
- 13.06 A Bid by an individual shall show Bidder's name and official address.
- 13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the

Bid Form. Official address of the joint venture shall be shown.

- 13.08 All names shall be printed in ink below signatures.
- 13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.10 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.11 The Bid shall contain evidence of Bidder's authority and qualification to do business in state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

#### **ARTICLE 14 – BASIS OF BID; COMPARISON OF BIDS**

- 14.01 Unit Price;
  - A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid schedule.
  - B. The total of all estimated prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price. The final quantities and Contract Price will be determined in accordance with Paragraph 11.03 of the General Conditions.
  - C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

#### **ARTICLE 15 – SUBMITTAL OF BID**

- 15.01 A Bid shall be submitted no later than the date and time prescribed and at place indicated in Advertisement for Bids and shall be enclosed in a plainly marked package with the Project title (and, if applicable, designated portion of the Project for which the Bid is submitted), name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to "Oak Creek Water and Sewer Utility, 170 West Drexel Avenue, Oak Creek, WI. 53154". Electronically transmitted Bids will not be accepted.
- 15.02 See Bid Form for a list of documents required to be submitted with the Bid.

#### **ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID**

10/17/2013

00 21 13 - 7

Instructions to Bidders

- 16.01 A Bid may be modified or withdrawn by an appropriate document duly executed in same manner that a Bid must be executed and delivered to place where Bids are to be submitted prior to date and time for opening Bids.
- 16.02 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to reasonable satisfaction of Owner that there was a material and substantial mistake in preparation of its Bid, that Bidder may withdraw its Bid, and Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

#### **ARTICLE 17 – OPENING OF BIDS**

- 17.01 Bids will be opened at the time and place indicated in the Advertisement or Invitation to Bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

#### **ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE**

- 18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

#### **ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT**

- 19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in best interest of the Project to make an award to that Bidder.
- 19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and rejection of all Bids in which that Bidder has an interest.
- 19.03 In evaluating Bids, Owner will consider whether or not the Bids comply with prescribed requirements, and any alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- 19.04 In evaluating Bidders, Owner will consider qualifications of Bidders and may consider qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.

- 19.05 Owner may conduct such investigations as Owner deems necessary to establish responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work in accordance with the Contract Documents.
- 19.06 If the Contract is to be awarded, Owner will award the Contract to the Bidder whose Bid is in best interests of the Project.

## **ARTICLE 20 – CONTRACT SECURITY AND INSURANCE**

- 20.01 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder executes the Agreement with the Oak Creek Water and Sewer Utility, it shall be accompanied by such bonds.
- 20.02 Where the contract is over \$10,000.00, the contractor will be required to furnish a satisfactory performance bond in the amount of 100 percent of the contract. The Contractor shall pay the total cost of this bond. Such bond shall be executed by an authorized surety company and shall remain in full force and effect for a period of one year after the final payment for the work to guarantee workmanship and materials. A performance bond shall not be required for public works contracts below \$10,000.00 regardless of bond requirement.
- 20.03 The Contractor shall agree and guarantee that the material and workmanship supplied by them shall be free from all defects, and strictly in accordance with the Drawings and Specifications, at the time of its completion and acceptance by the municipality, and for a time of one year thereafter, the Contractor agrees to forthwith repair the same upon notification by the municipality using the same material required by these specifications.
- 20.04 In case the Contractor shall fail to make such repairs or cause the same to be made, the Contractor agrees and guarantees to pay on demand the cost thereof, to said municipality upon the completion of such repairs, and the Contractor further agrees and guarantees to pay for all labor and material used in or about the construction of said work in his contract, which may become a lien or a claim against the municipality.

## **ARTICLE 21 – SIGNING OF AGREEMENT**

- 21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement along with the other Contract Documents which are identified in the Agreement as attached thereto. Within 15 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. Within ten days thereafter, Owner shall deliver one fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

## **ARTICLE 22 – RETAINAGE**

22.01 Provisions concerning Contractor's rights to deposit securities in lieu of retainage are set forth in the Agreement.

## **ARTICLE 23 – DISADVANTAGED BUSINESS ENTERPRISES (DBE'S) AND WOMAN-OWNED BUSINESS ENTERPRISES (WBE'S)**

23.01 The Prime Contractor will take the following steps in awarding subcontracts to ensure that all DBE's and WBE's have the opportunity to compete for procurement projects funded by the Environmental Protection Agency's (EPA's) financial assistance dollars.

- A. Ensure DBE's and WBE's are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For Tribal, Local and Governmental recipients, this will include placing DBE's and WBE's on solicitation lists and soliciting them whenever they are potential sources.
- B. Make information on forthcoming opportunities available to DBE's and WBE's and arrange timeframes for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBE's and WBE's in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid proposal closing date.
- C. Consider in the contracting process whether firms competing for large contracts could subcontract with DBE's and WBE's. For Tribal and local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBE's and WBE's in the competitive process.
- D. Encourage contracting with a consortium of DBE's and WBE's when a contract is too large for one of these firms to handle individually.
- E. Use the services and assistance of the Small Business Administration (SBA) and the Minority Business Development Agency of the U.S. Department of Commerce.

**END OF DOCUMENT**



**DOCUMENT 00 41 00**

**BID FORM**

**Water Main and Appurtenances for  
Rowan Estates Water Main Relay for  
Oak Creek Water and Sewer Utility**

**Project No. 13105**

**BID DATE: Thursday, November 7, 2013**

Sealed bids will be received by Owner until 9:00 a.m. on Thursday, November 7, 2013, at the office of the Oak Creek Water and Sewer Utility, 170 West Drexel Avenue, Oak Creek, WI 53154.

**ARTICLE 1 BID RECIPIENT**

1.01 This Bid is submitted to the OWNER:

**Oak Creek Water and Sewer Utility  
170 West Drexel Avenue  
Oak Creek, WI 53154**

1.02 The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

**ARTICLE 2 BIDDER'S ACKNOWLEDGEMENTS**

2.01 BIDDER accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of bid security. This Bid will remain subject to acceptance for thirty (30) days after the day of Bid opening, or for such longer period of time that BIDDER may agree to in writing upon request of OWNER.

**ARTICLE 3 BIDDER'S REPRESENTATIONS**

3.01 In submitting this Bid, BIDDER represents that:

- A. BIDDER has examined and carefully studied the Bidding Documents, and the following Addenda, receipt of all which is hereby acknowledged.

Date

Number

- B. BIDDER has visited the site and become familiar and is satisfied as to the general, local and Site conditions that may affect cost, progress, and performance of the Work.
- C. BIDDER is familiar with and satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. BIDDER has carefully studied all: (1) reports or explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface of subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in SC-4.02, and (2) reports and drawings of Hazardous Environmental Conditions, if any, that have been identified in SC-4.06.
- E. BIDDER has obtained and carefully studied (or accepts the consequences for not doing so) all additional or supplementary examinations, investigations, explorations, test, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect the cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by BIDDER, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by the BIDDER, and safety precautions and programs incident thereto.
- F. BIDDER does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.
- G. BIDDER is aware of the general nature of work to be performed by OWNER and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.
- I. BIDDER has given OWNER written notice of all conflicts, errors, ambiguities, or discrepancies that BIDDER has discovered in the Bidding Documents, and the written

resolution thereof by OWNER is acceptable to BIDDER.

- J. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance of the Work for which this Bid is submitted.
- K. BIDDER will submit written evidence of its authority to do business in the state where the Project is located not later than the date of execution of the Agreement.

#### **ARTICLE 4 FURTHER REPRESENTATIONS**

4.01 BIDDER further represents that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation;
- B. BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. BIDDER has not solicited or induced any individual or entity to refrain from bidding; and
- D. BIDDER has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER.

#### **ARTICLE 5 BASIS OF BID**

5.01 BIDDER will complete the Work in accordance with the Bidding Documents for the following price(s):

<b>Item No.</b>	<b>Item Description</b>	<b>Bid Quantity</b>	<b>Units</b>	<b>Unit Price (Words)</b>	<b>Unit Price (Numeric Figure)</b>	<b>Total Price</b>
1	8-inch PVC Water Main, 3/4-inch T.B.B.F., Surf Rest.	LF	7,150			
2	12-inch PVC Water Main, 3/4-inch T.B.B.F., Surf Rest.	LF	349			
3	8-inch PVC Water Main, Spoil B.F., Surf Rest.	LF	8,100			

<b>Item No.</b>	<b>Item Description</b>	<b>Bid Quantity</b>	<b>Units</b>	<b>Unit Price (Words)</b>	<b>Unit Price (Numeric Figure)</b>	<b>Total Price</b>
4	12-inch PVC Water Main, Spoil B.F., Surf Rest.	LF	635			
5	Connect to Existing 6-inch Water Main	EA	3			
6	Connect to Existing 8-inch Water Main	EA	10			
7	Connect to Existing 12-inch Water Main	EA	1			
8	Hydrant, Lead and 6-Inch Gate Valve	EA	42			
9	6-inch Gate Valve	EA	1			
10	8-inch Gate Valve	EA	40			
11	12-inch Gate Valve	EA	3			
12	1-1/4-inch Water Service Laterals (Polyethylene) Open Cut	EA	96			
13	1-1/4-inch Water Service Laterals (Polyethylene) Directional Drill	EA	119			
14	Erosion Control	LS	1			
15	Traffic Control	LS	1			

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Bid Form

<b>Item No.</b>	<b>Item Description</b>	<b>Bid Quantity</b>	<b>Units</b>	<b>Unit Price (Words)</b>	<b>Unit Price (Numeric Figure)</b>	<b>Total Price</b>
16	13-inch x 9-inch Driveway CMP Culverts, with Flared End Sections	EA	16			
17	17-inch x 13-inch Driveway CMP Culverts, with Flared End Sections	EA	6			
18	21-inch x 15-inch Horizontal Elliptical Driveway CMP Culverts, with Flared End Sections	EA	17			
19	12-inch Diameter Round Driveway CMP Culverts, with Flared End Sections	EA	22			
20	15-inch Diameter Round Driveway CMP Culverts, with Flared End Sections	EA	15			
21	Salvage and Delivery of Existing Hydrants	LS	1			
22	Abandonment of Existing Valve and Valve Box	LS	1			
23	Asphalt/Concrete Pavement Removal	SY	3,800			

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Bid Form

Item No.	Item Description	Bid Quantity	Units	Unit Price (Words)	Unit Price (Numeric Figure)	Total Price
24	5-Inch Asphalt Concrete Pavement (As identified on Drawings for Chicago Road, Madeira Drive and Charmaine Circle)	Tons	1,100			
25	3-Inch Asphaltic Concrete Binder Pathway (Oak Creek Dr. to Carrollton Dr.)	Tons	80			
26	4-inch Water Service Lateral (PVC), 4-inch Gate Valve, 3/4-inch T.B.B.F., Surf Rest., Open-Cut	EA	1			

**BASE BID TOTAL (ITEMS 1 –26) INCLUSIVE:** \_\_\_\_\_

\_\_\_\_\_ (\$ \_\_\_\_\_)  
 (Use Words) (Figures)

Unit Prices have been computed in accordance with Paragraph 11.03B of the General Conditions.

BIDDER acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

#### **ARTICLE 6 SUBCONTRACTORS LIST**

BIDDER shall identify and submit the following list of Subcontractors with their bid:

Excavation Subcontractor \_\_\_\_\_

Asphalt Paving Subcontractor \_\_\_\_\_

Concrete Paving Subcontractor \_\_\_\_\_

Landscaping Subcontractor \_\_\_\_\_

Plumbing Subcontractor \_\_\_\_\_

Traffic Control Subcontractor \_\_\_\_\_

BIDDER shall identify and list the Supplier(s) of the following items of major materials and products upon which this bid is based, with their bid.

Water Main Piping Manufacturer/Supplier \_\_\_\_\_

Water Main Valve Manufacturer/Supplier \_\_\_\_\_

Water Main Fire Hydrant Manufacturer/Supplier \_\_\_\_\_

Traffic Bond (Type A2) Backfill Supplier \_\_\_\_\_

#### **ARTICLE 7 TIME OF COMPLETION**

7.01 BIDDER agrees that the Work will be substantially complete on or before August 30, 2014 and completed and ready for final payment in accordance with Paragraph 14.07B of the General Conditions on or before September 20, 2014.

7.02 BIDDER accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the Contract Times.

#### **ARTICLE 8 BIDDING DOCUMENTS**

8.01 The Drawings and Specifications upon which this proposal is based are as follows:

- A. Specifications bound along with this proposal form into the Project Manual dated October 17, 2013.
- B. Drawings dated October 17, 2013 and consisting of the following:

<u>Sheet No.</u>	<u>Description</u>
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01	Cover Sheet
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<b><u>Sheet No. (Cont.)</u></b>	<b><u>Description (Cont.)</u></b>
02	Rowan Estates Proposed Water Main Relay
03	S. 15 <sup>th</sup> Avenue FR: E. Bonnie Dr. TO: E. Puetz Road
04	E. Puetz Road FR: S. 15 <sup>th</sup> Ave. TO: Patricia Blvd.
05	E. Puetz Road FR: 1100 ft. West of S. 11 <sup>th</sup> Ave. TO: S. 11 <sup>th</sup> Ave.
06	E. Bonnie Drive FR: S. 15 <sup>th</sup> Ave. TO: Patricia Blvd.
07	E. Bonnie Drive FR: S. Patricia Blvd. TO: Carol Court
08	E. Bonnie Drive FR: Carol Court TO: S. Chicago Rd. (STH 32)
09	S. 11 <sup>th</sup> Avenue FR: 120 ft. South of E. Madeira Dr. TO: E. Bonnie Drive
10	S. 11 <sup>th</sup> Avenue FR: E. Bonnie Dr. TO: E. Puetz Rd.



<b><u>Sheet No. (Cont.)</u></b>	<b><u>Description (Cont.)</u></b>
11	Carol Court FR: E. Bonnie Dr. TO: 650 ft. North of E. Bonnie Dr.
12	Carol Court FR: 200 ft. West of S. Patricia Blvd. TO: Ruth Ellen Ln.
13	Carol Court FR: Ruth Ellen Ln. TO: E. Bonnie Dr.
14	S. Chicago Road (STH 32) FR: 200 ft. South of E. Madeira Dr. TO: E. Bonnie Dr.
15	S. Chicago Road (STH 32) FR: E. Bonnie Dr. TO: 650 ft. North of E. Bonnie Dr.
16	S. Patricia Boulevard FR: E. Bonnie Dr. TO: Carol Court
17	Charmaine Circle FR: E. Bonnie Dr. TO: Cul de Sac
18	Ruth Ellen Lane FR: Carol Ct. TO: S. 11 <sup>th</sup> Ave.
19	E. Carrollton Drive FR: 175 ft. of S. Patricia Blvd. TO: 100 ft. North of Madeira Dr.

**Sheet No. (Cont.)   Description (Cont.)**

- |    |   |
|----|---|
| 20 | E. Carrollton Drive<br>FR: 100 ft. North of E. Madeira Dr.<br>TO: 875 ft. South of E. Madeira Dr.   |
| 21 | Easement (175 ft. East of S. Patricia Blvd.)<br>FR: E. Carrollton Dr.<br>TO: E. Oak Creek Dr.       |
| 22 | E. Madeira Drive<br>FR: E. Carrollton Drive<br>TO: S. Chicago Rd. (STH 32)                          |
| 23 | E. Oak Creek Drive<br>FR: 1050 ft. West of S. 11 <sup>th</sup> Ave.<br>TO: S. 11 <sup>th</sup> Ave. |
| 24 | S. 15 <sup>th</sup> Avenue<br>FR: E. Bonnie Dr.<br>TO: E. Puetz Rd.                                 |
| 25 | E. Puetz Road<br>FR: S. 15 <sup>th</sup> Ave.<br>TO: S. 11 <sup>th</sup> Ave.                       |
| 26 | S. Chicago Road (STH 32)<br>FR: E. Madeira Dr.<br>TO: E. Puetz Rd.                                  |

**ARTICLE 9   ATTACHMENTS TO THIS BID**

9.01    The following documents are attached to and made a condition of this Bid:

- A.      Required Bid Security in the form of \_\_\_\_\_.
- B.      List of proposed Subcontractors and Suppliers.
- C.      Affidavit of Non-Collusion.

D. List other documents as pertinent:

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#### **ARTICLE 10 BIDDER'S CONTACT**

10.01 Communications concerning the preparation of this Bid shall be addressed to the following person(s) in the Bidder's Office:

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#### **ARTICLE 11 DEFINED TERMS**

11.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

SUBMITTED ON \_\_\_\_\_, 20\_\_.

An Individual

By \_\_\_\_\_ (SEAL)  
(Individual's Name)

doing business as \_\_\_\_\_

Business Address: \_\_\_\_\_

\_\_\_\_\_

Phone and Fax No.: \_\_\_\_\_

A Partnership

By \_\_\_\_\_ (SEAL)  
(Firm Name)

\_\_\_\_\_

(General Partner)

Business Address: \_\_\_\_\_

\_\_\_\_\_

Phone and Fax No.: \_\_\_\_\_

A Corporation

By \_\_\_\_\_  
(Corporation Name)

\_\_\_\_\_

(State of Incorporation)

By \_\_\_\_\_  
(Name of Person Authorized to Sign)

\_\_\_\_\_

(Title)

(Corporate Seal)

Attest \_\_\_\_\_  
(Secretary)

Business Address: \_\_\_\_\_

\_\_\_\_\_

Phone and Fax No.: \_\_\_\_\_

A Joint Venture

By \_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Address)

By \_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Address)

Phone and Fax No. \_\_\_\_\_

(Each member firm of the joint venture must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

**END OF DOCUMENT**



**DOCUMENT 00 52 00**

**AGREEMENT FORM  
BETWEEN OWNER AND CONTRACTOR  
FOR CONSTRUCTION CONTRACT**

THIS AGREEMENT is by and between **Oak Creek Water and Sewer Utility (“Owner”)** and [ ] (“Contractor”). Owner and Contractor hereby agree as follows:

**ARTICLE 1 – WORK**

- 1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

Installation of new PVC water main and related appurtenances, water service laterals, new driveway culvert installation, salvage and delivery of existing hydrants, abandonment of existing valves and valve boxes, new hydrant installation, new driveway culvert installation, erosion control, traffic control, milling of existing asphalt and asphalt concrete overlay.

**ARTICLE 2 – THE PROJECT**

- 2.01 The Project for which the Work under the Contract Documents shall be known as follows:

“Rowan Estates Water Main Relay”

**ARTICLE 3 – ENGINEER**

- 3.01 The Oak Creek Water and Sewer Utility will act as the Owner’s representative, assume all duties and responsibilities, and have rights and authority assigned to the Engineer in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents. The Owner’s Representative (Engineer) shall also be referenced as the Utility Engineer within this Project Manual.
- 3.02 The term Design Engineer shall mean Graef-USA Inc., 125 South 84<sup>th</sup> Street, Suite 401, Milwaukee, WI. 53214.

**ARTICLE 4 – CONTRACT TIMES**

- 4.01 Time of the Essence;
- A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 Dates for Substantial Completion and Final Payment;

- A. The Work will be substantially completed on or before September 20, 2014, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before October 24, 2014.

4.03 Liquidated Damages;

- A. When the work embraced in the contract is not completed within the time stated in the documents for the water main construction, and/or for the entire work, including testing, flushing, and surface restoration, as stated, and within such extra time as may be allowed by extensions, the Contractor shall pay to the Oak Creek Water and Sewer Utility the following sum for each and every calendar day that the time consumed in final completion exceeds the time allowed therefore, plus the engineering and inspection costs incurred during the time used beyond the allowed time:

Original Contract Amount		Daily Charge
From More Than	To and Including	Calendar Day
\$0	\$50,000	\$200.00
\$50,000	\$100,000	\$250.00
\$100,000	\$300,000	\$350.00
\$300,000	\$500,000	\$500.00
\$500,000	\$1,000,000	\$700.00
\$1,000,000	\$1,500,000	\$1,000.00
\$1,500,000	\$2,000,000	\$1,350.00
\$2,000,000	\$2,500,000	\$1,400.00
\$2,500,000	---	\$1,550.00

- B. Completion of the work under this contract on the specified time schedules is necessary and vital to the Utility. Failure to complete the project on or before specified working days or calendar dates will result in loss of revenues, loss of timely use of the proposed facilities, delays, and possibly inflated costs for related or subsequent improvement installations, detrimental to the economic development of the City and Utility, as well as the additional cost of engineering expenses which will be required to be paid by the Utility.



- C. Said sum in view of the difficulty of accurately ascertaining the loss which the Utility will suffer by reason of delay in completion is hereby fixed and agreed by the parties hereto as the liquidated damages that will be suffered by reason of such delay, and not as a penalty.
- D. The Utility will deduct and retain out of the monies which may become due hereunder, the amount of any such liquidated damages and in case the amount which may become due hereunder shall be less than the amount of liquidated damages suffered, the Contractor shall be liable to pay the difference upon demand by the Utility.

## **ARTICLE 5 – CONTRACT PRICE**

- A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.
- B. The Bid prices for Unit Price Work set forth as of Effective Date of the Agreement are based on estimated quantities. As provided in Paragraph 11.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer as provided in Paragraph 9.07 of the General Conditions.

## **ARTICLE 6 – PAYMENT PROCEDURES**

### **6.01 Submittal and Processing of Payments;**

- A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Oak Creek Water and Sewer Utility as provided in the General Conditions.

### **6.02 Progress Payments; Retainage;**

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the day of each month established during the pre-construction meeting with the Utility. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.
  - 1. Prior to Substantial 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 Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions.
  - 2. Up to 50 Percent Completion: Up until the Work has been 50 percent completed as determined by Engineer, and if character and progress of the Work have been

satisfactory to Owner and Engineer, Owner, on recommendation of Engineer, will retain five (5) percent of payment due.

3. 50 Percent to Substantial Completion: Between the time the Work is 50 percent complete and date of Substantial Completion as determined by the Engineer, Owner and Engineer may determine that as long as character and progress of the Work remain satisfactory to them, there will be no additional retainage held on account of Work completed in which case remaining progress payments prior to Substantial Completion will be in an amount equal to 100 percent of the Work completed.
4. Upon Substantial Completion: Owner shall pay an amount sufficient to increase total payments to Contractor to 97 percent of the Work completed, less such amounts as Engineer shall determine in accordance with the General Conditions and less 100 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on tentative list of items to be completed or corrected attached to certificate of Substantial Completion.

#### 6.03 Final Payment;

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07.

### ARTICLE 7 – INTEREST

- 7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the rate of 3.25 percent per annum.

### ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

- 8.01 In order to induce Owner to enter into this Agreement, Contractor makes the following representations:
- A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
  - B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
  - C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

- D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in Paragraph SC-4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph SC-4.06 of the Supplementary Conditions as containing reliable "technical data."
- E. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor's safety precautions and programs.
- F. Based on the information and observations referred to in Paragraph 8.01.E above, Contractor does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.
- G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

## **ARTICLE 9 – CONTRACT DOCUMENTS**

### **9.01 Contents;**

- A. The Contract Documents consist of the following:
  - 1. This Agreement (pages 00 52 00 - 1 to 00 52 00 - [\_\_\_\_], inclusive).
  - 2. Performance bond (pages 1 to \_\_\_\_, inclusive).
  - 3. Payment bond (pages 1 to \_\_\_\_, inclusive).

4. Other bonds (pages [ ] to { }, inclusive).
    - a. [ ] (pages [ ] to [ ], inclusive).
    - b. [ ] (pages [ ] to [ ], inclusive).
  5. General Conditions (pages 00 72 00 - 1 to 00 72 00 - 62, inclusive).
  6. Supplementary Conditions (pages 00 73 00 - 1 to 0 73 00 - [ ], inclusive).
  7. Specifications as listed in the table of contents of the Project Manual.
  8. [Drawings consisting of [ ] sheets with each sheet bearing the following general title: [“ ”]] [Drawings listed on attached sheet index].
  9. Addenda (numbers [ ] to [ ], inclusive).
  10. Exhibits to this Agreement (enumerated as follows):
    - a. Contractor’s Bid (pages 00 41 00 - 1 to 00 41 00 - [ ], inclusive).
    - b. Documentation submitted by Contractor prior to Notice of Award (pages [ ] to [ ], inclusive).
    - c. List other required attachments (if any), such as documents required by funding or lending agencies.
  11. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
    - a. Notice to Award (pages [ ] to [ ], inclusive).
    - b. Notice to Proceed (pages [ ] to [ ], inclusive).
    - c. Work Change Directives.
    - d. Change Orders.
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

## **ARTICLE 10 – STARTING WORK BEFORE NOTIFICATION**

- 10.01 No work shall be performed under the contract and no materials or equipment shall be delivered to the site of the work prior to the date stated in the Oak Creek Water and Sewer Utility Engineer’s written Notice to Proceed.

## **ARTICLE 11 – MISCELLANEOUS**

11.01 Terms;

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

11.02 Assignment of Contract;

- A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

11.03 Successors and Assigns;

- A. Owner and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

11.04 Severability;

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

11.05 Contractor's Certifications;

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 11.05:
  - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;
  - 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

11.06 Other Provisions;

- A. Insert other provisions here if applicable.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf. This Agreement will be effective on [\_\_\_\_], 20[\_\_\_\_] (which is the Effective Date of the Agreement). The Effective Date of the Agreement and the dates of any Construction Performance Bond (EJCDC C-610) and Construction Payment Bond (EJCDC C-615) should be the same, if possible. In no case may the date of any bonds be earlier than the Effective Date of the Agreement.

Contractor Witnesses:

[Name of Contractor]  
[Address of Contractor]  
[\_\_\_\_\_]

\_\_\_\_\_  
\_\_\_\_\_

By: \_\_\_\_\_

Other Witnesses:

CITY OF OAK CREEK WATER & SEWER  
UTILITY COMMISSION

\_\_\_\_\_

By: \_\_\_\_\_  
Gerald Wille, Chairman

ATTEST:

\_\_\_\_\_

\_\_\_\_\_  
Fredrick Siepert, Secretary

**COUNTERSIGNED:**

I hereby certify that sufficient funds  
are in the Treasury to meet the expense  
hereof.

\_\_\_\_\_  
Bridget M. Souffrant  
Finance Director / Comptroller

Examined and approved as to form this  
\_\_\_\_\_ day of [\_\_\_\_\_] [\_\_\_\_], 2013.

\_\_\_\_\_  
Lawrence J. Haskin  
City Attorney - City of Oak Creek





## PAYMENT BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER: Oak Creek Water and Sewer Utility  
170 West Drexel Avenue  
Oak Creek, WI. 53154

### CONTRACT

Date:  
Amount:  
Description (Name and Location):

### BOND

Bond Number:  
Date (Not earlier than Contract Date):  
Amount:  
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Payment Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

#### CONTRACTOR AS PRINCIPAL

Company:

Signature: \_\_\_\_\_ (Seal)  
Name and Title:

(Space is provided below for signatures of additional parties, if required.)

#### CONTRACTOR AS PRINCIPAL

Company:

Signature: \_\_\_\_\_ (Seal)  
Name and Title:

#### SURETY

\_\_\_\_\_  
Surety's Name and Corporate Seal (Seal)

By: \_\_\_\_\_  
Signature and Title  
(Attach Power of Attorney)

Attest: \_\_\_\_\_  
Signature and Title

#### SURETY

\_\_\_\_\_  
Surety's Name and Corporate Seal (Seal)

By: \_\_\_\_\_  
Signature and Title  
(Attach Power of Attorney)

Attest: \_\_\_\_\_  
Signature and Title:

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.

2. With respect to Owner, this obligation shall be null and void if Contractor:

2.1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and

2.2. Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.

3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.

4. Surety shall have no obligation to Claimants under this Bond until:

4.1. Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the addresses described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2. Claimants who do not have a direct contract with Contractor:

1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and

2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and

3. Not having been paid within the above 30 days, have sent a written notice to Surety and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.

5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.

6. When a Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at Surety's expense take the following actions:

6.1. Send an answer to that Claimant, with a copy to Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2. Pay or arrange for payment of any undisputed amounts.

7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.

8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.

9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related Subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

#### 15. DEFINITIONS

15.1. Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and Contractor's Subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

15.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

**FOR INFORMATION ONLY – Name, Address and Telephone  
Surety Agency or Broker:  
Owner's Representative (engineer or other party):**

## PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER: Oak Creek Water and Sewer Utility  
170 West Drexel Avenue  
Oak Creek, WI. 53154

### CONTRACT

Date:  
Amount:  
Description (Name and Location):

### BOND

Bond Number:  
Date (Not earlier than Contract Date):  
Amount:  
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

#### CONTRACTOR AS PRINCIPAL

Company:

Signature: \_\_\_\_\_ (Seal)  
Name and Title:

(Space is provided below for signatures of additional parties, if required.)

#### CONTRACTOR AS PRINCIPAL

Company:

Signature: \_\_\_\_\_ (Seal)  
Name and Title:

#### SURETY

\_\_\_\_\_  
(Seal)  
Surety's Name and Corporate Seal

By: \_\_\_\_\_  
Signature and Title  
(Attach Power of Attorney)

Attest: \_\_\_\_\_  
Signature and Title

#### SURETY

\_\_\_\_\_  
(Seal)  
Surety's Name and Corporate Seal

By: \_\_\_\_\_  
Signature and Title  
(Attach Power of Attorney)

Attest: \_\_\_\_\_  
Signature and Title:

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

2. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 3.1.

3. If there is no Owner Default, Surety's obligation under this Bond shall arise after:

3.1. Owner has notified Contractor and Surety, at the addresses described in Paragraph 10 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and

3.2. Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 3.1; and

3.3. Owner has agreed to pay the Balance of the Contract Price to:

1. Surety in accordance with the terms of the Contract;
2. Another contractor selected pursuant to Paragraph 4.3 to perform the Contract.

4. When Owner has satisfied the conditions of Paragraph 3, Surety shall promptly and at Surety's expense take one of the following actions:

4.1. Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or

4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and Contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
2. Deny liability in whole or in part and notify Owner citing reasons therefor.

5. If Surety does not proceed as provided in Paragraph 4 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 4.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

6. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To a limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

6.1. The responsibilities of Contractor for correction of defective Work and completion of the Contract;

6.2. Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions or failure to act of Surety under Paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

7. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

8. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

12.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.

12.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

12.4 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

FOR INFORMATION ONLY – Name, Address and Telephone  
Surety Agency or Broker  
Owner's Representative (engineer or other party)

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

**ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE**

and

Issued and Published Jointly by



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*A Practice Division of the*  
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Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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## ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

### 1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
  2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
  3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
  4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
  5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
  6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
  7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
  8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
  9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
  10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
  11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
16. *Cost of the Work*—See Paragraph 11.01 for definition.
17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 1 of the Specifications.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

## 1.02 *Terminology*

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
  - a. does not conform to the Contract Documents; or
  - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
  - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
  2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
  3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
  4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

## **ARTICLE 2 – PRELIMINARY MATTERS**

### **2.01   *Delivery of Bonds and Evidence of Insurance***

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

### **2.02   *Copies of Documents***

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

### **2.03   *Commencement of Contract Times; Notice to Proceed***

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.



## 2.04 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

## 2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
  - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
  - 2. a preliminary Schedule of Submittals; and
  - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

## 2.06 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

## 2.07 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
  - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of

the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

### **ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE**

#### **3.01 *Intent***

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

#### **3.02 *Reference Standards***

- A. Standards, Specifications, Codes, Laws, and Regulations
  1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
  2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

#### **3.03 *Reporting and Resolving Discrepancies***

##### **A. *Reporting Discrepancies:***

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
  - a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or
  - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
  1. A Field Order;
  2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

### 3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier shall not:
  1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or
  2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

### 3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

## **ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS**

### 4.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the

Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

#### 4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

- 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
- 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

- 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
- 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
- 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

#### 4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

- 1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
- 2. is of such a nature as to require a change in the Contract Documents; or
- 3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

- B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
  - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
  - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
  - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
  - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
  - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

#### 4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
  - a. reviewing and checking all such information and data;
  - b. locating all Underground Facilities shown or indicated in the Contract Documents;
  - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
  - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

#### 4.05 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

#### 4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
  - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
  - 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
  - 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to



permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.

- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

## ARTICLE 5 – BONDS AND INSURANCE

### 5.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

### 5.02 *Licensed Sureties and Insurers*

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

### 5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

#### 5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
  - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
  - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
  - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
  - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
    - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
    - b. by any other person for any other reason;
  - 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
  - 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:
  - 1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners,

employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
6. include completed operations coverage:
  - a. Such insurance shall remain in effect for two years after final payment.
  - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

#### 5.05 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

#### 5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
  1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of

them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;

2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
  3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
  4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
  5. allow for partial utilization of the Work by Owner;
  6. include testing and startup; and
  7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

#### 5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:
1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
  2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

#### 5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

#### 5.09 *Acceptance of Bonds and Insurance; Option to Replace*

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

#### 5.10 *Partial Utilization, Acknowledgment of Property Insurer*

- A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

## ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

### 6.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

### 6.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner’s written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

### 6.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.



#### 6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
  2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

#### 6.05 *Substitutes and “Or-Equals”*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or “or-equal” item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
1. *“Or-Equal” Items:* If in Engineer’s sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an “or-equal” item, in which case review and approval of the proposed item may, in Engineer’s sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
    - a. in the exercise of reasonable judgment Engineer determines that:
      - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
      - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and
      - 3) it has a proven record of performance and availability of responsive service.
    - b. Contractor certifies that, if approved and incorporated into the Work:
      - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
      - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

## 2. *Substitute Items:*

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
  - 1) shall certify that the proposed substitute item will:
    - a) perform adequately the functions and achieve the results called for by the general design,
    - b) be similar in substance to that specified, and
    - c) be suited to the same use as that specified;
  - 2) will state:
    - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
    - b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
    - c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
  - 3) will identify:
    - a) all variations of the proposed substitute item from that specified, and
    - b) available engineering, sales, maintenance, repair, and replacement services; and
  - 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

#### 6.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or

entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
  - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
  - 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

#### 6.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its

use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

#### 6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

#### 6.09 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner

and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

#### 6.10 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

#### 6.11 *Use of Site and Other Areas*

##### *A. Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

- D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

## 6.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

## 6.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
  - 1. all persons on the Site or who may be affected by the Work;
  - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
  - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts

any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

- F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

#### 6.14 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

#### 6.15 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

#### 6.16 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

#### 6.17 *Shop Drawings and Samples*

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

##### 1. *Shop Drawings:*

- a. Submit number of copies specified in the General Requirements.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

##### 2. *Samples:*

- a. Submit number of Samples specified in the Specifications.



- b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.
- B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures:*

- 1. Before submitting each Shop Drawing or Sample, Contractor shall have:
  - a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
  - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
  - c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
  - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
- 2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
- 3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review:*

- 1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
- 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the

Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
  1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
  2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
  1. observations by Engineer;
  2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
4. use or occupancy of the Work or any part thereof by Owner;
5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
6. any inspection, test, or approval by others; or
7. any correction of defective Work by Owner.

#### 6.20 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
  1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
  2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

## 6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

## **ARTICLE 7 – OTHER WORK AT THE SITE**

### 7.01 *Related Work at Site*

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
  - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
  - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe

access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

#### 7.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
  - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
  - 2. the specific matters to be covered by such authority and responsibility will be itemized; and
  - 3. the extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

#### 7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

## ARTICLE 8 – OWNER’S RESPONSIBILITIES

### 8.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

### 8.02 *Replacement of Engineer*

- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

### 8.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

### 8.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

### 8.05 *Lands and Easements; Reports and Tests*

- A. Owner’s duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner’s identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

### 8.06 *Insurance*

- A. Owner’s responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

### 8.07 *Change Orders*

- A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

### 8.08 *Inspections, Tests, and Approvals*

- A. Owner’s responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

### 8.09 *Limitations on Owner’s Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws

and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

**ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION**

9.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.

9.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

### 9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

### 9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

### 9.05 *Rejecting Defective Work*

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

### 9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

### 9.07 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations



on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of,

and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.

- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

#### 9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

### **ARTICLE 10 – CHANGES IN THE WORK; CLAIMS**

#### 10.01 *Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

#### 10.02 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

#### 10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
  - 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
  - 2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
  - 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of

executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

#### 10.04 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

#### 10.05 *Claims*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).
- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
  - 1. deny the Claim in whole or in part;
  - 2. approve the Claim; or
  - 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

## **ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK**

### **11.01 *Cost of the Work***

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:
  - 1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
  - 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
  - 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
  - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
  - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
  - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
  - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
  - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
  - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
  - g. The cost of utilities, fuel, and sanitary facilities at the Site.
  - h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.
  - i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
  2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
  3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
  4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
  5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.
- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.
- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

## 11.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances:*
1. Contractor agrees that:
    - a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
    - b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in

the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance:*

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
  1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
  2. there is no corresponding adjustment with respect to any other item of Work; and
  3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

## **ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES**

12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
  2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
  3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).
- C. *Contractor's Fee*: The Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
  2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
    - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
    - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;
    - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
    - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
    - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
    - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.



## 12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

## 12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.
- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

## **ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK**

### **13.01 *Notice of Defects***

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

### **13.02 *Access to Work***

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

### **13.03 *Tests and Inspections***

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
  - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
  - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
  - 3. as otherwise specifically provided in the Contract Documents.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

#### 13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

#### 13.05 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

#### 13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers,

architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

### 13.07 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
  - 1. repair such defective land or areas; or
  - 2. correct such defective Work; or
  - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
  - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

### 13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

### 13.09 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.
- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

## **ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION**

### **14.01 *Schedule of Values***

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

### **14.02 *Progress Payments***

#### **A. *Applications for Payments:***

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

#### **B. *Review of Applications:***

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's

review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

- a. the Work has progressed to the point indicated;
  - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and
  - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
- a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
  - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
- a. to supervise, direct, or control the Work, or
  - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
  - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
  - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
  - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

*C. Payment Becomes Due:*

- 1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

*D. Reduction in Payment:*

- 1. Owner may refuse to make payment of the full amount recommended by Engineer because:
  - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
  - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
  - c. there are other items entitling Owner to a set-off against the amount recommended; or
  - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
- 2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.
- 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

**14.03 Contractor's Warranty of Title**

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.



#### 14.04 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

#### 14.05 *Partial Utilization*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.
2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

#### 14.06 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

#### 14.07 *Final Payment*

##### A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
  - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
  - b. consent of the surety, if any, to final payment;
  - c. a list of all Claims against Owner that Contractor believes are unsettled; and

- d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

*B. Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

*C. Payment Becomes Due:*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

*14.08 Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

## 14.09 *Waiver of Claims*

### A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

## **ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION**

### 15.01 *Owner May Suspend Work*

- #### A.
- At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

### 15.02 *Owner May Terminate for Cause*

#### A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
3. Contractor's repeated disregard of the authority of Engineer; or
4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

#### B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and
  3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

#### 15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
  2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
  3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other

dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

#### 15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

### **ARTICLE 16 – DISPUTE RESOLUTION**

#### 16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or

2. agrees with the other party to submit the Claim to another dispute resolution process; or
3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

## **ARTICLE 17 – MISCELLANEOUS**

### **17.01 *Giving Notice***

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
  1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
  2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

### **17.02 *Computation of Times***

- A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

### **17.03 *Cumulative Remedies***

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

### **17.04 *Survival of Obligations***

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

### **17.05 *Controlling Law***

- A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.



**DOCUMENT 00 73 00**

**SUPPLEMENTARY CONDITIONS**

These Supplementary Conditions amend or supplement the Document 00 72 00 - Standard General Conditions of the Construction Contract (EJCDC Document C-700, 2007 Edition). All provisions which are not so amended or supplemented remain in full force and effect.

**SC-1.01 Defined Terms;**

Terms used in these Supplementary Conditions will have meanings indicated in the General Conditions. Additional terms used in these Supplementary Conditions have meanings indicated below, which are applicable to both singular and plural thereof. Address system used in these Supplementary Conditions is the same as address system used in the General Conditions, with added prefix of "SC."

**S.C.-1.01.A.29 Owner;**

Amend term OWNER by ADDING the following language:

Oak Creek Water and Sewer Utility  
170 West Drexel Avenue  
Oak Creek, WI 53154

**S.C.-1.01.A.36 Resident Project Representative;**

Amend definition of Resident Project Representative by DELETING word "ENGINEER" and REPLACING with word "OWNER."

**SC-4.02 Subsurface and Physical Conditions;**

DELETE Paragraphs 4.02.A and 4.02.B in their entirety and REPLACE with the following:

- A. No reports of explorations or tests of subsurface conditions at or contiguous to the Site, or drawings of physical conditions relating to existing surface or subsurface structures at the Site, are known to OWNER.

**SC-4.06 Hazardous Environmental Conditions at Site;**

DELETE Paragraphs 4.06.A and 4.06.B in their entirety and REPLACE with the following:

- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to OWNER.

**SC-5.04 Contractor's Insurance;**

ADD the following new paragraph immediately after Paragraph 5.04.B:

C. General:

1. The Contractor shall not commence work under this contract until they have obtained all insurance required under this paragraph and such insurance has been approved by the Utility and insurance certificates have been filed with the Utility, nor shall the Contractor allow any Subcontractor to commence work on their subcontract until all similar insurance required of the Subcontractor has been so obtained and approved in accordance with the General Conditions, Supplemental Conditions and General Requirements provisions.

D. Compensation Insurance:

1. The Contractor shall take out and maintain during the life of this contract, Worker's Compensation Insurance for all of their employees at the site of the project and in case any work is sublet, the Contractor shall require the Subcontractor similarly to provide Worker's Compensation Insurance for all of the latter's employees, unless such employees are covered by the protection afforded by the Contractor.
2. In case any class of employees engaged in hazardous work under this contract at the site of the project is not protected under the Worker's Compensation Statute, the Contractor shall provide and shall cause each Subcontractor to provide adequate insurance coverage for the protection of his employees not otherwise protected.

E. Public Liability, Property Damage, And Contractual Liability Insurance:

1. The Contractor shall take out and maintain during the life of this contract, public liability, property damage, and contractual liability insurance in the following minimum amounts:
  - a. Bodily Injury                      \$1,000,000 per occurrence  
   \$1,000,000 aggregate
  - b. Property Damage                      \$500,000 per occurrence  
   \$500,000 aggregate

2. These policies shall protect the Contractor and any Subcontractor performing work covered by this contract from the claims and damages for personal injury, including accidental death, as well as claims for property damage, which may arise from the performance of the work or under the hold-harmless and indemnifying clauses which are a part of this contract. The said policies are to cover not only the Contractor or Subcontractor but also any other directly or indirectly employed by either of them.

F. Insurance Against The Following Special Hazards:

1. The following respective amounts shall be procured by the Contractor or Subcontractor before the commencement of any operation by the Contractor, or the happening of any circumstance creating or tending to create the particular special hazard:

<u>Kind</u>	<u>Amount</u>
Operating of elevators or hoists .....	\$25,000.00
Use and operation of automobiles and truck .....	\$25,000.00
Structural alterations or demolitions .....	\$25,000.00
Undermining adjacent structures .....	\$10,000.00
Blasting operations.....	\$10,000.00
Operation of excavating machinery in streets and highways .....	\$10,000.00
Operation within other public or private right-of-way (including railroad right-of-way).....	As Required

G. List of Additional Insureds:

- a. The following persons or entities shall be listed on Certificate of Insurance as Additional Insureds:
  - 1) City of Oak Creek Water and Sewer Utility
  - 2) Graef-USA Inc.

**SC-6.06 Concerning Subcontractors, Suppliers, and Others;**

ADD a new paragraph immediately after Paragraph 6.06.G:

- H. Owner may furnish to any Subcontractor or Supplier, to extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by a particular Subcontractor or Supplier.

## **SC-6.09 Laws and Regulations;**

ADD a new subparagraph to Paragraph 6.09 of the General Conditions to read as follows:

- 6.09.D        The Work is funded in part by the Wisconsin Department of Natural Resources, Clean Water Fund Program (CWFP), Safe Drinking Water Loan Program (SDWLP) and shall comply with the EPA's Disadvantaged Business Enterprise (DBE) regulations and as such is subject to certain statutory or regulatory requirements applicable to condition or performance of Work. These requirements or information relative to them is bound as a separate section of these Contract Documents.

## **SC-7.02 Coordination;**

DELETE Paragraph 7.02.A in its entirety and REPLACE with the following:

- A.        Prime Contractor for installation of Water Main is designated as Construction Coordinator for this Work. Construction Coordinator shall have sole authority and responsibility for and have authority to coordinate various activities among subcontractors for this Work. This responsibility shall include but not be limited to the following:
1.        Safety precautions and procedures at the Site, GC-6.13, 6.14, 6.15, 6.16.
  2.        Obtaining permits, GC-6.08.
  3.        Monitoring compliance with Laws and Regulations applicable to performance of the Work, GC-6.09.
  4.        Establishing quality control procedures and rejecting Defective Work, GC-9.05.
  5.        Coordinating Tests and Inspections, GC-13.03.
  6.        Scheduling and coordinating activities of various Contractors at Site, GC-7.02.
  7.        Preparation, submittal, revision, and update of Project schedule involving work of all Contractors. This schedule will be based on information submitted to Construction Coordinator by all Contractors engaged on the Project, GC-6.04.
  8.        Keeping Site clean during construction, GC-6.11.
  9.        Coordination of use of temporary construction facilities. (GC-6.11).

10. Coordination of Record Drawings, GC-6.12.

**SC-7.04 Claims between Contractors;**

ADD the following new paragraph immediately after paragraph GC-7.03:

**SC-7.04 Claims between Contractors;**

- A. Should Contractor cause damage to the work or property of any other contractor at the Site, or should any claim arising out of Contractor's performance of the Work at the Site be made by any other contractor against Contractor, Owner, Engineer, or construction coordinator, then Contractor (without involving Owner, Engineer, or construction coordinator) shall either (1) remedy damage, (2) agree to compensate other contractor for remedy of damage, or (3) remedy damage and attempt to settle with such other contractor by agreement, or otherwise resolve dispute by mediation or at law.
- B. Contractor shall, to fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner, Utility Engineer, Design Engineer, and their officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including, but not limited to, fees and charges of engineers, architects, attorneys, and other professionals and court and arbitration costs) arising directly, indirectly, or consequentially out of any action, legal or equitable, brought by any other contractor against Owner, Engineer, consultants, or construction coordinator to the extent said claim is based on or arises out of Contractor's performance of the Work. Should another contractor cause damage to the Work or property of Contractor or should performance of work by any other contractor at the Site give rise to any other Claim, Contractor shall not institute any action, legal or equitable, against Owner, Engineer, or construction coordinator or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any mediator which seeks to impose liability on or to recover damages from Owner, Engineer, or construction coordinator on account of any such damage or Claim.
- C. If Contractor is delayed at any time in performing or furnishing the Work by any act or neglect of another contractor, and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a Claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be Contractor's exclusive remedy

with respect to Owner, Engineer, and construction coordinator for any delay, disruption, interference, or hindrance caused by any other contractor. This paragraph does not prevent recovery from Owner, Engineer, or construction coordinator for activities that are their respective responsibilities.

#### **SC-16 Dispute Resolution;**

DELETE content of Article 16 in its entirety and REPLACE with the following:

##### **16.1 Methods and Procedures**

- A. All questions in dispute under this Agreement shall be submitted to Mediation, including those of subcontractor and sub-subcontractor. Upon written notice of either party to other of election to submit any dispute under this Agreement to mediation, each party shall designate their representative and shall meet within five (5) days after service of notice. Parties themselves shall then attempt to resolve dispute within ten (10) days of meeting.
- B. Should parties themselves be unable to agree on a resolution of dispute, then parties shall appoint a third party, who shall be a competent and impartial party and who shall be acceptable to each party, to mediate dispute. Third party shall meet to hear dispute within ten (10) days of selection and attempt to resolve dispute within fifteen (15) days of first meeting.
- C. Each party shall pay an equal share of fees and expenses of third party mediator.
- D. Any third party mediator designated to serve in accordance with provisions of this Agreement shall be disinterested, qualified to evaluate performance of both parties, and familiar with design and construction process.
- E. Procedure outlined in this Section is a process aimed at resolving disputes between parties to the Agreement as expeditiously as possible. This process shall be considered a condition precedent to moving to other dispute resolution methods acceptable to both parties or to a judicial process. Binding Arbitration shall not be considered a remedy to the dispute.
- F. If Claim is not resolved by mediation, ENGINEER'S action under Paragraph 10.05.C, or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of mediation unless, within that time period, OWNER or CONTRACTOR:

1. gives to other party written notice of intent to submit Claim to a court of competent jurisdiction, or
  2. agrees with other party to submit Claim to another dispute resolution process.
- G. Notwithstanding any applicable statute of limitations, a party giving notice under Paragraph SC-16.01.F.1 shall commence an action on Claim within one year of giving such notice. Failure to do so shall result in Claim being time-barred and ENGINEER'S action or denial shall become final and binding.
- H. Contractor shall include this dispute resolution process in all subcontracts required by Paragraph 6.06.G of the General Conditions.

**END OF DOCUMENT**





## **SECTION 01 10 00**

### **SUMMARY OF WORK**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

**A. Section Includes:**

1. Contract Description.
2. Work by Oak Creek Water and Sewer Utility or Other Contractors.
3. Notices and Permit Requirements.
4. Applicable Specification Standards.
5. Complying with the Contract Documents and Technical Specifications.
6. Inspection Requirements.
7. Work in Private Right-of-Way (Easements).
8. Approval of Easement Restoration.
9. Contractor's Use of Site.
10. Contractor's Control of Construction Operations.
11. Prosecution of Work.
12. Property Owner Occupancy.

**B. Related Documents and Sections:**

1. Applicable provisions of Division 00 shall govern all work under this Section.
2. Applicable provisions of Division 01 shall govern all work under this Section.

##### **1.2 CONTRACT DESCRIPTION**

**A. Work of the Project includes:**

1. Installation of new PVC water main and related appurtenances, water service laterals, removal of existing driveway culverts, salvage and delivery to Owner of existing hydrants, abandonment of existing valves and valve boxes, new hydrant installation, new driveway culvert and flared ends installation, erosion control, traffic control, removal and disposal of existing concrete pavement, sidewalk and curb and gutter and concrete pavement, sidewalk and curb and gutter replacement, removal and disposal of existing asphalt and asphalt concrete pavement replacement.

##### **1.3 WORK BY OAK CREEK WATER AND SEWER UTILITY OR OTHER CONTRACTORS**

- A.** Work by the Oak Creek Water and Sewer Utility or by other Contractors will be discussed at the Pre-Construction Meeting.
- B.** Coordinate Work with public utilities and public or private agencies.

##### **1.4 NOTICES AND PERMIT REQUIREMENTS**

**A. General Utility Notification:**

1. Please note: Section 66.0831 of Wisconsin Statutes makes it mandatory that:

"66.0831 Interference with public service structure. A contractor with a contract for work upon, over, along or under a public street or highway may not interfere with, destroy or disturb the structures of a public utility, including a telecommunications carrier as defined in s. 196.01 (8m), encountered in the performance of the work in a manner that interrupts, impairs or affects the public service for which the structures may be used, without first obtaining written authority from the commissioner of public works or other appropriate authority. A public utility, if given reasonable notice by the contractor of the need for temporary protection of, or a temporary change in, the utility's structures, determined by the commissioner of public works or other appropriate authority to be reasonably necessary to enable the work, shall temporarily protect or change its structures located upon, over, along or under the surface of a public street or highway. The contractor shall pay or assure to the public utility the reasonable cost of the temporary structure or change, unless the public utility is otherwise liable. If work is done by or for the state or by or for any county, city, village, town sanitary district, metropolitan sewerage district created under ss. 200.01 to 200.15 or 200.21 to 200.65 or town, the cost of the temporary protection or temporary change shall be borne by the public utility."

2. Excavation Notification Requirements:

- a. Contractor, prior to any excavation work, shall notify (1) a designated locating service; (2) all utilities, governmental agencies, entities, known to, or which can reasonably be assumed to have above or below ground pipe, conduit cables, structures, or similar items within limits of project; to locate and mark location of such items.
- b. In accordance with Wisconsin Statute 182.0175, "Damage to Transmission Facilities," Excavator, as defined in 182.0175(1)(bm), shall be solely responsible to provide advance notice to "Diggers Hotline, Inc." (800-242-8511) not less than three working days prior to commencement of any Excavation, as defined in the statute, required to perform work contained in this Project, and further, Excavator shall comply with all other requirements of this Statute relative to Excavation.
- c. The Contractor shall refer to Chapter 1.2.0 (Pages 1-9) of the Standard Specifications for Sewer and Water Construction in Wisconsin, in regard to necessary notices and permits required. These provisions shall be strictly adhered to at the start of any part of the project. In particular, the following requirements shall apply as identified below.

B. Notification to WE Energies (Electric and Gas Utility):

1. In accordance with the provisions of the Wisconsin State Statutes, with regard to the maintenance of a certain clearance from energized conductors and with regard to notification where work might affect public utility facilities, it is the requirement herein that the Contractor shall be responsible for and duty-bound to notify the We Energies in writing in advance of work to be done near electric or gas facilities. Such notice shall be directed to:

We Energies – Electric Operations:  
4800 W. Rawson Avenue  
Franklin, Wisconsin 53132

Phone: (414) 423-6112

2. Emergency or additional notification, if any is required during construction, shall be done by contacting their office at 221-3700.

We Energies - Gas Operations:  
4800 West Rawson Avenue  
Franklin, WI 53132  
Phone: (414) 423-5062

C. Notification to AT&T:

1. The Contractor shall notify the communication utilities that have facilities located within the project limits of their construction schedule as it affects said each company as prescribed by the Wisconsin State Statutes.
  - a. Such notice shall be directed to the following Utilities:

AT&T  
Cable Location Plant  
435 S. 95th Street  
Milwaukee, WI 53214  
Phone: (262) 896-7434

D. Notification to Time Warner Cable:

1. The Contractor shall notify Time Warner Cable of their construction schedule as it affects said cable communications company as prescribed by the Wisconsin State Statutes. Notice shall be directed to:

Time Warner Cable  
5475 West Abbott Avenue  
Greenfield, WI 53220

- a. Additional notification, if any is required during construction, shall be done by contacting their office by phone at 414/277-4280.

E. Notification to City's Street, Fire, and Police Departments, and Oak Creek Water and Sewer Utility:

1. Prior to starting construction within any street, three (3) days' written notice shall be given to the following departments:
  - a. Street Division, 800 W. Puetz Road, (414) 768-6553
  - b. Fire Department, 7000 S. 6<sup>th</sup> Street, (414) 570-5630
  - c. Police Department, 301 W Ryan Road, (414) 768-8200
  - d. Oak Creek Public Schools, 7630 South Tenth Street (414) 768-5880

- e. Oak Creek Water & Sewer Utility, 170 W. Drexel Avenue, (414) 570-8210
  - f. Oak Creek Streets, Parks, & Forestry Department, 800 W. Puetz Road,  
Urban Forester: Ms. Rebecca Lane, (414) 768-5861.
- F. Oak Creek Water and Sewer Utility Water Use Permit:
- 1. The Contractor will be permitted to use the Utility water supply where available for incidental uses, providing a permit is first obtained from the Oak Creek Water and Sewer Utility, 170 West Drexel Avenue, Oak Creek, Wisconsin.
  - 2. There will be no charge for this water use unless the amount is determined to be excessive as defined by the Utility Engineer. The included water will include water needed for filling, testing, and flushing of new water mains.
  - 3. If an invoice is issued and said bill is not paid by completion of the project, the amount of said bill will be deducted from the final contract payment.

## 1.5 APPLICABLE SPECIFICATION STANDARDS

- A. City of Oak Creek Engineering Design Manual, Current Edition.
- B. City of Oak Creek – Chapter 13. Land Use Regulations, Current Edition.
- C. State of Wisconsin Department of Transportation – Standard Specifications for Highway and Structure Construction, Current Edition. (WisDOT)
- D. State of Wisconsin Department of Transportation – Erosion Control Product Acceptability Lists for Multimodal Applications, Current Edition. (WisDOT-PAL)
- E. State of Wisconsin Department of Natural Resources (WDNR), Chapter NR 151 – Runoff Management.
- F. State of Wisconsin Department of Natural Resources (WDNR):
  - 1. Storm Water Construction Technical Standards.
  - 2. Storm Water Post-Construction Technical Standards.
- G. Standard Specifications for Sewer and Water Construction in Wisconsin (SSSW):
  - 1. Standard Specifications for Sewer and Water Construction in Wisconsin, Current Edition, with Addendum.
- H. ASTM International (ASTM):
  - 1. All referenced ASTM standards, test methods and practices identified in technical specifications.
- I. American Water Works Association (AWWA):
  - 1. All referenced AWWA standards, test methods and practices identified in technical specifications.
- J. NSF International (NSF):
  - 1. All referenced NSF standards, test methods and practices identified in technical specifications.

- K. American Association of State Highway and Transportation Officials (AASHTO).
  - 1. All referenced AASHTO standards, test methods and practices identified in technical specifications.
- L. Association of Official Seed Analysts, Inc. (AOSA):
  - 1. All referenced AOSA standards, test methods and practices identified in technical specifications.
- M. National Utility Contractors Association (NUCA):
  - 1. NUCA - HDD Installation Guidelines.
- N. Underwriters Laboratories, Inc. (UL):
  - 1. UL 246 - Hydrants for Fire-Protection Service.
- O. All other referenced standards, test methods and practices not specifically identified in this Article, but included within the project technical specifications.
- P. All referenced standards, test methods and practices shall be from the most current available edition.

#### 1.6 COMPLYING WITH THE CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

- A. The Contractor shall comply with the contract documents and technical specifications and ably perform all operations to the extent that the first-class work will be obtained.
- B. A representative of the Oak Creek Water and Sewer Utility will serve as the Inspector for the work as it progresses to determine full compliance with the contract documents and technical specifications.
- C. The Inspector shall notify the Utility Engineer of any noncompliance and have authority to stop any work not being performed in accordance with the contract documents and technical specifications, in order that the Utility Engineer may investigate such noncompliance.
- D. Any work performed after the work has been ordered stopped by the Inspector shall not be considered as work performed under the contract, and consequently will not be accepted by the Oak Creek Water and Sewer Utility nor allowed in any monthly or final payment until corrected to the satisfaction of the Utility Engineer.
- E. The Technical Specifications contained within this project manual for describing the sewer and water construction, shall apply for all sewer and water main construction unless otherwise noted in the form of a contract modification.
- F. The Highway and Structure Construction - Standard Specifications Department of Transportation, Division of Highways, State of Wisconsin and Supplemental Specifications (herein referred to as the State Specifications), shall apply for pavement restoration. The MUTCD and State Specifications shall apply to all traffic control.

## 1.7 INSPECTION REQUIREMENTS

- A. Contractor will be allowed to work only while there is an Inspector at the site at any or all times and the Contractor must notify the Oak Creek Water and Sewer Utility Engineer prior to commencing with any of the work specified for this project including excavation, shoring, sheathing, bedding, laying pipe, backfilling, clean-up, or any related type of work.
- B. An Inspector will be provided to the Contractor by the Oak Creek Water and Sewer Utility at no cost to the Contractor, except that inspection time shall be charged to the Contractor in addition to the specified liquidated damages after they have exceeded their time of completion.
- C. If the Contractor requests to work on Sundays or declared Water and Sewer Utility holidays, an Inspector will be provided but the Contractor must pay for the Inspector's wages for such work. A list of official holidays can be obtained from the City of Oak Creek Engineering Department.

## 1.8 WORK IN PRIVATE RIGHT-OF-WAY (EASEMENTS)

- A. Whenever the work is to be prosecuted through private property for which the Oak Creek Water and Sewer Utility has obtained a license or an easement, the Contractor shall abide fully with the terms of the license or the easement, a copy of which is on file with the Oak Creek Water and Sewer Utility.

## 1.9 APPROVAL OF EASEMENT RESTORATION

- A. Prior to final payment, the Contractor shall send a notice to all easement grantors by certified mail, return receipt requested, a copy of which shall be filed with the Oak Creek Water and Sewer Utility, said notice to be similar to the following:

“The undersigned Contractor has completed the restoration of the construction site on which you have granted an easement for installation of certain utilities and improvements. If said site restoration is not completed to your satisfaction, please contact Ron J. Pritzlaff, P.E., Utility Engineer, Oak Creek Water and Sewer Utility, 170 West Drexel Avenue, Oak Creek, WI. 53154, in writing and arrangements will be made immediately to view the site and restore the site in conformance with our contract obligations.

If Ron J. Pritzlaff, P.E., Utility Engineer, Oak Creek Water and Sewer Utility, 170 West Drexel Avenue, Oak Creek, WI. 53154 does not hear from you in writing within ten days from the above date, site restoration of your property will be deemed completed and approved by you.

(Name of Contractor)  
(Address of Contractor)”

## 1.10 CONTRACTOR'S USE OF SITE

- A. Limit use of Site to allow:
  - 1. Property owner occupancy.
  - 2. Work by Oak Creek Water and Sewer Utility.
  - 3. Work by Others.

4. Use of Site by the public.

#### 1.11 CONTRACTOR'S CONTROL OF CONSTRUCTION OPERATIONS

##### A. Scheduling Work:

1. The Contractor will not be permitted to start new phases of the project until previously started phases are fully completed or continuous work, in the opinion of the Oak Creek Water and Sewer Utility Engineer is being done to fully complete the previously started phases.
2. However, the Contractor may with the approval of the Oak Creek Water and Sewer Utility Engineer, start a second crew with a second foreman on other portions of the project.
3. The Contractor shall notify the Oak Creek Water and Sewer Utility Engineer at least three (3) working days before commencing work or adding another crew so that an inspector can be assigned.

##### B. Maintenance of Public Safety and Convenience:

1. The Contractor shall provide for the placing of necessary detour signs, barricades, warning lights, and warning and informational signs to provide for the safety and convenience of the public prior to starting of any of the work in accordance with the State Manual on Uniform Traffic Control Devices.
2. Adjustment to the traffic control devices shall be included and performed by the Contractor as called for by the progression of work. Necessary traffic control adjustments shall be in place prior to proceeding with work that could impact the safety of the general public as determined by the Oak Creek Water and Sewer Utility Engineer.
3. All such devices shall comply with the Federal Manual on Uniform Traffic Control Devices (MUTCD).

##### C. Access to Properties:

1. The Contractor shall provide for access to the properties abutting the work site area. All private properties shall be fully protected by the Contractor during the duration of the construction project.
2. In addition, the operations shall be conducted in such a manner that:
  - a. all streets at all times shall be maintained with at least two (2) lanes of roadway open for vehicular access, and
  - b. all abutting properties shall be provided with vehicular access overnight, on weekends and on holidays.

#### 1.12 HAUL ROADS AND STORAGE AREAS

- A. The Contractor shall be required to submit a plan indicating their intended location of haul roads and storage areas for equipment and materials. Such plan shall be presented at the pre-construction meeting and shall be subject to the approval of the Oak Creek Water and Sewer Utility Engineer.
- B. Any subsequent proposed changes to the approved plan shall be submitted to the Oak Creek Water and Sewer Utility Engineer for approval prior to implementation of the change. Construction traffic shall be permitted on pre-approved areas.

- C. All areas used for haul roads and storage shall be subject to restoration by the Contractor to the condition prior to the start of work under this contract.

#### 1.13 PROSECUTION OF WORK

- A. When the public interest necessitates, the Oak Creek Water and Sewer Utility Engineer may determine the place of commencement and the sequence of operations of the Contractor.
- B. At any time, when in the judgment of the Oak Creek Water and Sewer Utility Engineer, the Contractor has obstructed or closed a street or is carrying on operations of a greater portion of the contract than is necessary for the proper prosecution of the work, the Oak Creek Water and Sewer Utility Engineer may require the Contractor to finish the sections on which work is in progress before work is started on any additional work area.
- C. At any time during the execution of the contract that the Contractor either suspends or returns to work, they must notify the Oak Creek Water and Sewer Utility Engineer of their intentions at least three (3) working days in advance of said suspension or return to work.

#### 1.14 PROPERTY OWNER OCCUPANCY

- A. Schedule and substantially complete designated portions of the Work for occupancy before Substantial Completion of the entire Work.
- B. Property owner will occupy premises during entire period of construction.
- C. Cooperate with property owner to minimize conflict.
- D. Schedule the Work to accommodate property owner occupancy.

### **PART 2 PRODUCTS - Not Used**

### **PART 3 EXECUTION - Not Used**

### **END OF SECTION**



**SECTION 01 22 00**  
**UNIT PRICE PAYMENT**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. The bid price for each bid item shall include providing of all materials, tools, labor, and equipment necessary to provide a completed unit price bid item installation.
- B. Installation shall include saw cutting pavement to full depth, execution disposition of surplus material, pipe laying, backfilling, sheeting, shoring, tunneling, auguring, dewatering, furnishing and installing of fittings, connecting to existing water mains disturbed or damaged by the Contractor's operation and clean-up, all as specified.
- C. Traffic control, surface restoration and any other incidental items necessary shall be incorporated into the various bid items.
- D. The item numbers referred to below correspond to the item number in the proposal. Contractor shall refer to the items below for details of the work included.
- E. Related Documents and Sections:
  - 1. Applicable provisions of Division 00 shall govern all work under this Section.
  - 2. Applicable provisions of Division 01 shall govern all work under this Section.

**Items 1: 8-Inch Diameter, PolyVinyl Chloride (PVC), Water Main Installation (3/4-inch T.B. Backfill)**

The unit bid and contract price for these items shall include all equipment, materials, and labor necessary to install 8-inch Water Main complete in place and ready to use. This item shall include but not be limited to:

- provide clearing and grubbing of approved existing plant life. City Urban Forester is required to approved the removal of trees and shrubs identified by Contractor.
- tree pruning, limb removal and root removal to perform Work as approved by the City Urban Forester
- saw cutting of existing asphalt and concrete pavement to full depth, prior to pavement removal operations.
- removal and replacement of detectable warning devices (truncated domes)
- trench excavation
- removal and legal disposal of trench spoil material
- installing designated fittings at location indicated on Drawings
- placement and compaction of specified bedding aggregate
- installation of PVC piping

- installation of water main insulation
- install mechanical restraints at required locations
- installation of tracer wire
- installation of all bends and fittings at locations indicated on Drawings
- placement and compaction of specified pipe cover aggregate
- placement and compaction of traffic bond gravel backfill
- disinfection of installed 8-inch piping, which will also include all laterals, fittings, connections.
- pressure testing of installed 8-inch piping, which will also include all laterals, hydrants fittings, connections of main being tested.
- flushing of all 8-inch main piping, laterals, hydrants, and related connections of main after laboratory testing of sampled water is approved.
- assisting Utility staff with GPS point collection.
- provide temporary support of power and light poles near excavations
- re-installing and repairing sump pump discharge piping damaged or removed during construction
- restoration and grading ditch lines to obtain positive stormwater flow and maintaining points of ditch elevation change
- ditches shall generally follow the longitudinal slope of the road and the Contractor shall provide line and grade between driveways to maintain positive drainage
- provide vacuum excavation type potholing and associated restoration at existing utility crossings to verify locations prior to excavating
- replacement of removed pavements, driveways, approaches and sidewalks
- provide road and street surface re-striping and warning painting to completed road surface matching removed pavement striping and painting
- lawn surface restoration including topsoil placement with light compaction (80% Modified Proctor), seeding, biodegradable matting, mulch, fertilizer and maintenance watering until lawn has exhibited strong vigorous seed growth and has been cut twice.

The water main shall be placed in the manner indicated in the technical specifications and shall conform to the Detail Drawings included with these specifications. Type of backfill shall be as specified at locations indicated on the Drawings.

This item shall be paid based on the contract unit price for each lineal foot installed as measured and documented by the Inspector.

**Item 2: 12-Inch Diameter, PolyVinyl Chloride (PVC), Water Main Installation (3/4-inch T.B. Backfill)**

The unit bid and contract price for these items shall include all equipment, materials, and labor necessary to install 12-inch Water Main complete in place and ready to use. This item shall include but not be limited to:

- provide clearing and grubbing of approved existing plant life. City Urban Forester is required to approved the removal of trees and shrubs identified by Contractor.
- tree pruning, limb removal and root removal to perform Work as approved by the City Urban Forester

- saw cutting of existing asphalt and concrete pavement to full depth, prior to pavement removal operations.
- removal and replacement of detectable warning devices (truncated domes)
- trench excavation
- removal and legal disposal of trench spoil material
- installing designated fittings at location indicated on Drawings
- placement and compaction of specified bedding aggregate
- installation of PVC piping
- installation of water main insulation
- install mechanical restraints at required locations
- installation of tracer wire
- installation of all bends and fittings at locations indicated on Drawings
- placement and compaction of specified pipe cover aggregate
- placement and compaction of traffic bond gravel backfill
- disinfection of installed 12-inch piping, which will also include all laterals, fittings, connections.
- pressure testing of installed 12-inch piping, which will also include all laterals, hydrants fittings, connections of main being tested.
- flushing of all 12-inch main piping, laterals, hydrants, and related connections of main after laboratory testing of sampled water is approved.
- assisting Utility staff with GPS point collection.
- provide temporary support of power and light poles near excavations
- re-installing and repairing sump pump discharge piping damaged or removed during construction
- restoration and grading ditch lines to obtain positive stormwater flow and maintaining points of ditch elevation change
- ditches shall generally follow the longitudinal slope of the road and the Contractor shall provide line and grade between driveways to maintain positive drainage
- provide vacuum excavation type potholing and associated restoration at existing utility crossings to verify locations prior to excavating
- replacement of removed pavements, driveways, approaches and sidewalks
- provide road and street surface re-striping and warning painting to completed road surface matching removed pavement striping and painting
- lawn surface restoration including topsoil placement with light compaction (80% Modified Proctor), seeding, biodegradable matting, mulch, fertilizer and maintenance watering until lawn has exhibited strong vigorous seed growth and has been cut twice.

The water main shall be placed in the manner indicated in the technical specifications and shall conform to the Detail Drawings included with these specifications. Type of backfill shall be as specified at locations indicated on the Drawings.

This item shall be paid based on the contract unit price for each lineal foot installed as measured and documented by the Inspector.

### **Items 3: 8-Inch Diameter, PolyVinyl Chloride (PVC), Water Main Installation (Spoil Backfill)**

The unit bid and contract price for these items shall include all equipment, materials, and labor necessary to install 8-inch Water Main complete in place and ready to use. This item shall include but not be limited to:

- provide clearing and grubbing of approved existing plant life. City Urban Forester is required to approved the removal of trees and shrubs identified by Contractor.
- tree pruning, limb removal and root removal to perform Work as approved by the City Urban Forester
- saw cutting of existing asphalt and concrete pavement to full depth, prior to pavement removal operations.
- removal and replacement of detectable warning devices (truncated domes)
- trench excavation
- maintenance and protection of stockpiled spoil backfill from erosion
- removal and legal disposal of unused trench spoil material
- installing designated fittings at location indicated on Drawings
- placement and compaction of specified bedding aggregate
- installation of PVC piping
- installation of water main insulation
- install mechanical restraints at required locations
- installation of tracer wire
- installation of all bends and fittings at locations indicated on Drawings
- placement and compaction of specified pipe cover aggregate
- placement and compaction of spoil backfill to 95 percent modified proctor
- disinfection of installed 8-inch piping, which will also include all laterals, fittings, connections.
- pressure testing of installed 8-inch piping, which will also include all laterals, hydrants fittings, connections of main being tested.
- flushing of all 8-inch main piping, laterals, hydrants, and related connections of main after laboratory testing of sampled water is approved.
- provide surface restoration including topsoil placement with light compaction (80% Modified Proctor), seeding, biodegradable matting, mulch, fertilizer and maintenance watering until lawn has exhibited strong vigorous seed growth and has been cut twice.
- assisting Utility staff with GPS point collection
- provide temporary support of power and light poles near excavations
- re-installing and repairing sump pump discharge piping damaged or removed during construction
- restoration and grading ditch lines to obtain positive stormwater flow and maintaining points of ditch elevation change
- ditches shall generally follow the longitudinal slope of the road and the Contractor shall provide line and grade between driveways to maintain positive drainage
- provide vacuum excavation type potholing and associated restoration at existing utility crossings to verify locations prior to excavating
- replacement of removed pavements, driveways, approaches and sidewalks
- provide road and street surface re-striping and warning painting to completed road surface matching removed pavement striping and painting

- lawn surface restoration including topsoil placement with light compaction (80% Modified Proctor), seeding, biodegradable matting, mulch, fertilizer and maintenance watering until lawn has exhibited strong vigorous seed growth and has been cut twice.

The water main shall be placed in the manner indicated in the technical specifications and shall conform to the Detail Drawings included with these specifications. Type of backfill shall be as specified at locations shown on the Drawings.

This item shall be paid based on the contract unit price for each lineal foot installed as measured and documented by the Inspector.

**Items 4: 12-Inch Diameter, PolyVinyl Chloride (PVC), Water Main Installation (Spoil Backfill)**

The unit bid and contract price for these items shall include all equipment, materials, and labor necessary to install 12-inch Water Main complete in place and ready to use. This item shall include but not be limited to:

- provide clearing and grubbing of approved existing plant life. City Urban Forester is required to approved the removal of trees and shrubs identified by Contractor.
- tree pruning, limb removal and root removal required to perform Work as approved by the City Urban Forester
- saw cutting of existing asphalt and concrete pavement to full depth, prior to pavement removal.
- removal and replacement of detectable warning devices (truncated domes)
- trench excavation
- maintenance and protection of stockpiled spoil backfill from erosion
- removal and legal disposal of unused trench spoil material
- installing designated fittings at location indicated on Drawings
- placement and compaction of specified bedding aggregate
- installation of PVC piping
- installation of water main insulation
- install mechanical restraints at required locations
- installation of tracer wire
- installation of all bends and fittings at locations indicated on Drawings
- placement and compaction of specified pipe cover aggregate
- placement and compaction of spoil backfill to 95 percent modified proctor
- disinfection of installed 12-inch piping, which will also include all laterals, fittings, connections.
- pressure testing of installed 12-inch piping, which will also include all laterals, hydrants fittings, connections of main being tested.
- flushing of all 12-inch main piping, laterals, hydrants, and related connections of main after laboratory testing of sampled water is approved.
- Provide surface restoration including topsoil placement with light compaction (80% Modified Proctor), seeding, biodegradable matting, mulch, fertilizer and maintenance watering until lawn has exhibited strong vigorous seed growth and has been cut twice.
- assisting Utility staff with GPS point collection
- provide temporary support of power and light poles near excavations
- re-installing and repairing sump pump discharge piping damaged or removed during

- construction
- restoration and grading ditch lines to obtain positive stormwater flow and maintaining points of ditch elevation change
- ditches shall generally follow the longitudinal slope of the road and the Contractor shall provide line and grade between driveways to maintain positive drainage
- provide vacuum excavation type potholing and associated restoration at existing utility crossings to verify locations prior to excavating
- replacement of removed pavements, driveways, approaches and sidewalks
- provide road and street surface re-striping and warning painting to completed road surface matching removed pavement striping and painting
- lawn surface restoration including topsoil placement with light compaction (80% Modified Proctor), seeding, biodegradable matting, mulch, fertilizer and maintenance watering until lawn has exhibited strong vigorous seed growth and has been cut twice.

The water main shall be placed in the manner indicated in these technical specifications and shall conform to the Detail Drawings included with these Specifications. Type of backfill shall be as specified at locations shown on the Drawings.

This item shall be paid based on the contract unit price for each lineal foot installed as measured and documented by the Inspector.

#### **Item 5: Connect to Existing 6-Inch Water Main**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to connect to existing 6-inch water main complete in place and ready to use. These items shall include but not be limited to:

- saw cutting the pavement full depth
- exposing existing water main to verify location and depth prior to scheduling connections
- install fittings
- Install 6-inch PVC piping
- install mechanical restraints at required locations
- installation of tracer wire
- backfill and compaction
- pavement replacement and lawn surface restoration

This item shall be paid based on the contract unit price for each installed as documented by the Inspector.

#### **Item 6: Connect to Existing 8-Inch Water Main**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to connect to existing 8-inch water main complete in place and ready to use. These items shall include but not be limited to:

- saw cutting the pavement full depth
- exposing existing water main to verify location and depth prior to scheduling connections

- install fittings
- Install 8-inch PVC piping
- install mechanical restraints at required locations
- installation of tracer wire
- backfill and compaction
- pavement replacement and lawn surface restoration

This item shall be paid based on the contract unit price for each installed as documented by the Inspector.

#### **Item 7: Connect to Existing 12-Inch Water Main**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to connect to existing 12-inch water main complete in place and ready to use. These items shall include but not be limited to:

- saw cutting the pavement full depth
- exposing existing water main to verify location and depth prior to scheduling connections
- install fittings
- Install 12-inch PVC piping
- install mechanical restraints at required locations
- installation of tracer wire
- backfill and compaction
- pavement replacement and lawn surface restoration

This item shall be paid based on the contract unit price for each installed as documented by the Inspector.

#### **Item 8: Hydrant, Poly Vinyl Chloride (PVC) Lead Piping, and 6-inch Gate Valve**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to provide the following

- setting of hydrant
- provide and install associated poly vinyl chloride (PVC) 6-inch, Class 200, lead piping
- 6-inch gate valve with double layer of 6-mil plastic wrapping around gate valve
- backfilling and compaction
- pavement replacement and lawn surface restoration
- install in accordance with the Drawings and the Technical Specifications.
- include installation of tracer wire access box test stations.

This item shall include the hydrant, hydrant lead (of various lengths), and gate valve, as shown on the Drawings. The hydrant, hydrant lead, and valve shall be mechanically restrained back the water main.

This item shall be paid based on the contract unit price for each as documented by the Inspector.

**Item 9: 6-inch Gate Valve**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to install a 6-inch resilient wedge type gate valve complete in place and ready to use. This item shall include but not be limited to:

- the station provided on the Drawings is approximate, the contractor shall locate existing 6-inch PVC water main for the designated 6-inch valves as indicated on Drawings.
- installing the 6-inch gate valve
- polywrapping valve, adapter and valve box
- installation of tracer wire
- backfill and compaction
- pavement surface replacement

This item shall be paid based on the contract unit price for each as documented by the Inspector.

**Item 10: 8-inch Gate Valve**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to install a 8-inch resilient wedge type gate valve complete in place and ready to use. This item shall include but not be limited to:

- the station provided on the Drawings is approximate, the contractor shall locate existing 8-inch PVC water main for the designated 8-inch valves as indicated on Drawings.
- installing the 8-inch gate valve
- polywrapping valve, adapter and valve box
- installation of tracer wire
- backfill and compaction
- pavement surface replacement

This item shall be paid based on the contract unit price for each as documented by the Inspector.

**Item 11: 12-inch Gate Valve**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to install a 12-inch resilient wedge type gate valve complete in place and ready to use. This item shall include but not be limited to:

- the station provided on the Drawings is approximate, the contractor shall locate existing 12-inch PVC water main for the designated 12-inch valves as indicated on Drawings.
- installing the 12-inch gate valve
- polywrapping valve, adapter and valve box
- installation of tracer wire
- backfill and compaction
- pavement surface replacement



This item shall be paid based on the contract unit price for each as documented by the Inspector.

**Item 12: 1-1/4-inch Polyethylene (PE) Water Service Lateral – Open Cut Trench**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to install a 1-1/4-inch Polyethylene (PE) Water Service Lateral in place and ready to use by installing water service laterals using open cut trench method. This item shall include but not be limited to:

- saw cutting the pavement full depth
- excavate trench to install 1-1/4-inch water service lateral
- provide saddle connection to water main
- tapping and installation of corporation stops
- installation of new curb stop valve and cast iron service box at right-of-way
- installation of tracer wire
- backfill and compact open-cut trench with Type A2 aggregate under pavement surfaces, compacted to 95% modified proctor density and provide spoil backfill under ditch and lawn trenched areas, to density equal to adjacent undisturbed soil.
- provide temporary 2-inch by 6-inch wood board marker, extending a minimum of 24 inches above finished grade, painted blue, at end of newly installed pipe lateral for future location access
- pavement replacement and lawn surface restoration
- lawn surface restoration including topsoil placement with light compaction (80% Modified Proctor), seeding, matting, mulch, fertilizer and maintenance watering until lawn has exhibited strong vigorous seed growth and has been cut twice.

This item shall be paid based on the contract unit price for each as documented by the Inspector.

**Item 13: 1-1/4-inch Polyethylene (PE) Water Service Lateral – Directional Drill**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to install a 1-1/4-inch Polyethylene (PE) Water Service Lateral in place and ready to use by using the directional drilling installation method. This item shall include but not be limited to:

- provide vacuum excavation type potholing and associated restoration at existing utility crossings to verify locations prior to drilling
- excavate entry trench pit to perform directional drilling of 1-1/4-inch water service lateral
- provide saddle connection at water main
- tapping and installation of corporation stops
- installation of new curb stop valve and cast iron service box at right-of-way
- directional drill and install 1-1/4-inch water service lateral to identified properties. Provide tracer wire on lateral piping.
- backfill and compact entry trench with spoil backfill to density equal to adjacent undisturbed soil.
- provide temporary 2-inch by 6-inch wood board marker, extending a minimum of 24 inches

above finished grade, painted blue, at end of newly installed pipe lateral for future location access

- provide surface restoration including topsoil placement with light compaction (80% Modified Proctor), seeding, matting, mulch, fertilizer and maintenance watering until lawn has exhibited strong vigorous seed growth and has been cut twice.
- Contractor shall utilize trenchless methods for proposed laterals under existing pavements and on all private property.

This item shall be paid based on the contract unit price for each installed as documented by the Inspector.

#### **Item 14: Erosion Control**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to install Erosion Control items complete in place and ready to use. This item shall include but not be limited to:

- compensation for cost of erosion control implementation plan
- furnishing, hauling, and placement of erosion control materials and stormwater management materials including silt fence, hay bales and culvert ditch checks
- all incidental work related to erosion control and stormwater management required by local, state, and federal ordinances, statutes, permits, and regulations
- maintaining and removal of all temporary erosion control devices

This item shall be paid based on the contract unit price for the lump sum as documented by the Inspector.

#### **Item 15: Traffic Control**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to install both Phase I and Phase II Traffic Control. This item shall include but not be limited to:

- compensation for cost of establishing of traffic control plan for Utility review, constructing, assembling, painting, hauling, erecting, re-erecting, maintaining, and removing traffic signs, drums, barricades, and similar control devices, including arrow boards; for furnishing, placing, and maintaining lights and signals, including fuel or power therefore; for supplying and performing all flagging and guidance services and signs associated with such flagging and guidance.
- daily checks and maintenance
- adherence to the Manual on Uniform Traffic Control Devices (MUTCD), Latest Edition

This item shall be paid based on the contract unit price for the lump sum as documented by the Inspector.

**Item 16: 13-inch x 9-inch Driveway Corrugated Metal Pipe (CMP) Culverts**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to install Driveway Corrugated Metal Pipe (CMP) Culverts complete in place and ready to use. This item shall include but not be limited to:

- excavate and remove existing culvert
- provide new culvert pipe of exact length of removed culvert pipe, not including the lengths of the flared end sections
- excavate, fill, fine grade and compact aggregate base under culvert
- install culvert and flared end sections
- backfill with traffic bond aggregate over top of culvert and compact
- cleanup

This item shall be paid based on the contract unit price for each as documented by the Inspector.

**Item 17: 17-inch x 13-inch Driveway Corrugated Metal Pipe (CMP) Culverts**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to install Driveway Corrugated Metal Pipe (CMP) Culverts complete in place and ready to use. This item shall include but not be limited to:

- excavate and remove existing culvert
- provide new culvert pipe of exact length of removed culvert pipe, not including the lengths of the flared end sections
- excavate, fill, fine grade and compact aggregate base under culvert
- install culvert and flared end sections
- backfill with traffic bond aggregate over top of culvert and compact
- cleanup

This item shall be paid based on the contract unit price for each as documented by the Inspector.

**Item 18: 21-inch x 15-inch Driveway Corrugated Metal Pipe (CMP) Culverts**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to install Driveway Corrugated Metal Pipe (CMP) Culverts complete in place and ready to use. This item shall include but not be limited to:

- excavate and remove existing culvert
- provide new culvert pipe of exact length of removed culvert pipe, not including the lengths of the flared end sections
- excavate, fill, fine grade and compact aggregate base under culvert
- install culvert and flared end sections
- backfill with traffic bond aggregate over top of culvert and compact
- cleanup

This item shall be paid based on the contract unit price for each as documented by the Inspector.

**Item 19: 12-inch Diameter, Driveway Corrugated Metal Pipe (CMP) Culverts**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to install Driveway Corrugated Metal Pipe (CMP) Culverts complete in place and ready to use. This item shall include but not be limited to:

- excavate and remove existing culvert
- provide new culvert pipe of exact length of removed culvert pipe, not including the lengths of the flared end sections
- excavate, fill, fine grade and compact aggregate base under culvert
- install culvert and flared end sections
- backfill with traffic bond aggregate over top of culvert and compact
- cleanup

This item shall be paid based on the contract unit price for each as documented by the Inspector.

**Item 20: 15-inch Diameter, Driveway Corrugated Metal Pipe (CMP) Culverts**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to install Driveway Corrugated Metal Pipe (CMP) Culverts complete in place and ready to use. This item shall include but not be limited to:

- excavate and remove existing culvert
- provide new culvert pipe of exact length of removed culvert pipe, not including the lengths of the flared end sections
- excavate, fill, fine grade and compact aggregate base under culvert and achieve positive slope for drainage in the identified direction meeting adjacent ditch line elevations.
- install culvert and flared end sections.
- backfill with traffic bond aggregate over top of culvert and compact
- cleanup

This item shall be paid based on the contract unit price for each as documented by the Inspector.

**Item 21: Salvage and Delivery of Existing Hydrants**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to Salvage and Deliver Existing Hydrants to Owner's storage yard. This item shall include but not be limited to:

- remove and salvage existing hydrants within project limits
- provide surface restoration
- deliver hydrants to Owner's storage yard

This item shall be paid based on the contract unit price for the lump sum as documented by the Inspector.

**Item 22: Abandonment of Existing Valves and Valve Boxes**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to remove top section of existing valve box and fill remainder with specified fill material. This item shall include but not be limited to:

- excavate valve box to bottom of top section
- remove top valve box section and dispose of
- fill remainder of valve box with specified cellular concrete fill material
- provide surface restoration

This item shall be paid based on the contract unit price for the lump sum as documented by the Inspector.

**Item 23: Removal of Asphalt/Concrete Pavement**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to provide complete removal of existing asphalt or concrete pavement. This item shall include but not be limited to:

- providing erosion control measures at storm sewer inlets
- saw cutting of existing asphalt pavement to full depth, prior to pavement removal.
- removal and legal disposal of existing asphalt pavement removed from project site
- providing edge protection and cleaning of surfaces of existing asphalt pavement designated to remain

This item shall be paid based on the contract unit price for each square yard removed as documented by the Inspector.

**Item 24: 5-Inch Asphalt Concrete Pavement (As identified on Drawings for Chicago Road, Madeira Drive and Charmaine Circle)**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to provide new 3-inch asphalt binder pavement course and 2-inch asphalt surface pavement course. This item shall include but not be limited to:

- cleaning and preparation of existing adjacent pavements prior to placement of new asphalt pavement
- establishing grade elevations by placing additional aggregate base course material including grading and compaction of aggregate base course
- providing protection of adjacent surfaces and vegetation during paving operations
- final adjustment of existing utility structure frames and covers to required elevation height
- providing new asphalt pavement binder course
- providing tack coat application to new asphalt binder course including surface preparation, cleaning, removal of debris and mud from new binder surface prior to placing tack coat and new asphalt surface course

- placement and compaction of new asphalt pavement surface course
- replacement, re-installation and adjustment of any damaged utility structures and frames occurring during pavement placement
- clean-up and removal of excess material from project site

This item shall be paid based on the contract unit price in tons as documented by the Inspector.

**Item 25: 3-Inch Asphalt Concrete Binder Pavement (Oak Creek Drive to Carrollton Drive)**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to provide new 3-inch asphalt binder pavement course. This item shall include but not be limited to:

- cleaning and preparation of existing adjacent pavements prior to placement of new asphalt pavement
- establishing grade elevations by placing additional aggregate base course material including grading and compaction of aggregate base course
- providing protection of adjacent surfaces and vegetation during paving operations
- final adjustment of existing utility structure frames and covers to required elevation height
- providing new asphalt pavement binder course
- replacement, re-installation and adjustment of any damaged utility structures and frames occurring during pavement placement
- clean-up and removal of excess material from project site

This item shall be paid based on the contract unit price in tons as documented by the Inspector.

**Item 26: 4-inch Water Service Lateral (PVC), 4-inch Gate Valve, 3/4-inch T.B.B.F. Surface Restoration– Open Cut Trench**

The unit bid and contract price for this item shall include all equipment, materials, and labor necessary to install a 4-inch Poly Vinyl Chloride (PVC) Water Service Lateral and a 4-inch Gate Valve in place and ready to use, by installing this water service lateral using open cut trench method. This item shall include but not be limited to:

- saw cutting the pavement full depth
- excavate trench to install 4-inch water service lateral
- provide fittings and connection to water main
- the Station provided on the Drawings is approximate, the contractor shall locate existing 4-inch PVC water main for the designated 4-inch valves as indicated on Drawings.
- installing the 4-inch gate valve
- polywrapping valve, adapter and valve box
- installation of tracer wire
- backfill and compaction
- backfill and compact open-cut trench with Type A2 aggregate under pavement surfaces, compacted to 95% modified proctor density.
- pavement replacement and lawn surface restoration

- lawn surface restoration including topsoil placement with light compaction (80% Modified Proctor), seeding, matting, mulch, fertilizer and maintenance watering until lawn has exhibited strong vigorous seed growth and has been cut twice.

This item shall be paid based on the contract unit price for each as documented by the Inspector.

**PART 2 PRODUCTS – Not Used**

**PART 3 EXECUTION – Not Used**

**END OF SECTION**





## **SECTION 01 30 00**

### **ADMINISTRATIVE REQUIREMENTS**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Coordination and Project conditions.
  - 2. Preconstruction meeting.
  - 3. Progress meetings.
  - 4. Closeout meeting.
  - 5. Alteration procedures.
- B. Related Documents and Sections:
  - 1. Applicable provisions of Division 00 shall govern all work under this Section.
  - 2. Applicable provisions of Division 01 shall govern all work under this Section.

##### **1.2 COORDINATION AND PROJECT CONDITIONS**

- A. Coordinate scheduling, submittals, and Work of various Sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Verify that utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing operating equipment in service.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit as closely as practical; place runs parallel with lines of building. Use spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
  - 1. Coordination Drawings: Prepare as required to coordinate all portions of Work. Show relationship and integration of different construction elements that require coordination during fabrication or installation to fit in space provided or to function as intended. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are important.
- D. Coordination Meetings: In addition to other meetings specified in this Section, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.
- E. Coordinate completion and clean-up of Work of separate Sections in preparation for Substantial Completion.
- F. Provide a project-specific coordination plan and schedule when utilizing more than one mainline crew.

### 1.3 PRECONSTRUCTION MEETING

- A. Oak Creek Water and Sewer Utility will schedule and preside over meeting after Notice of Award.
- B. Attendance Required: Utility Engineer, designated Utility Inspector, appropriate governmental agency representatives, Contractor, and Subcontractors.
- C. Minimum Agenda:
  - 1. Execution of Owner-Contractor Agreement.
  - 2. Submission of executed bonds and insurance certificates.
  - 3. Distribution of Contract Documents.
  - 4. Communication procedures.
  - 5. Procedures and processing of requests for interpretations, field decisions, submittals, substitutions, Applications for Payments, proposal request, Change Orders, and Contract closeout procedures.
  - 6. Scheduling.
    - a. New Water Main Installation Construction Schedule:
      - 1) Contractor shall submit a schedule at the Pre-construction meeting indicating sequential work plan for the installation of the new water main.
      - 2) The Oak Creek Water and Sewer Utility must approve the installation sequence.
    - b. Existing Water Main Abandonment Schedule:
      - 1) Contractor shall submit a sequence of existing water main abandonment at the pre-construction conference.
      - 2) The Oak Creek Water and Sewer Utility must approve the abandonment sequence.
    - c. Notice to Oak Creek Water and Sewer Utility:
      - 1) Contractor shall give a 48-hour written notice to the Oak Creek Water and Sewer Utility before requesting a shutdown of any existing water mains in order to make the connections.
  - 7. Use of premises by Owner and Contractor.
  - 8. Critical Work sequencing.
  - 9. Construction facilities and controls.
  - 10. Temporary utilities.
  - 11. Survey layout.
  - 12. Security and housekeeping procedures.
  - 13. Schedules.
  - 14. Procedures for testing.
  - 15. Procedures for maintaining record documents.
  - 16. Requirements for startup of equipment.
  - 17. Inspection and acceptance of products put into service during construction period.
- D. Utility Engineer: Record minutes and distribute copies to participants within agreed upon time frame.

#### 1.4 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum bi-monthly intervals.
- B. Contractor shall make arrangements for meetings, prepare agenda with copies for participants, and preside over meetings at project site.
- C. Attendance Required:
  - 1. Utility Engineer.
  - 2. Utility Inspector.
  - 3. Contractor's Project Superintendent and Foreman(s).
  - 4. Major Subcontractors.
  - 5. Manufacturers Representative and Suppliers.
  - 6. Designated Design Consultants.
  - 7. Others as appropriate to agenda topics for each meeting.
- D. Minimum Agenda:
  - 1. Review minutes of previous meetings.
  - 2. Review of Work progress.
  - 3. Field observations, problems, and decisions.
  - 4. Identification of problems impeding planned progress.
  - 5. Review of submittal schedule and status of submittals.
  - 6. Review of off-Site fabrication and delivery schedules.
  - 7. Maintenance of Progress Schedule.
  - 8. Corrective measures to regain projected schedules.
  - 9. Planned progress during succeeding work period.
  - 10. Coordination of projected progress.
  - 11. Maintenance of quality and work standards.
  - 12. Effect of proposed changes on Progress Schedule and coordination.
  - 13. Other business relating to Project.
- E. Contractor: Record minutes and distribute electronic copies to meeting participants and those affected by decisions made with meeting participant's provided email address within two (2) days after each progress meeting.

#### 1.5 PROJECT CLOSEOUT MEETING

- A. Schedule Project closeout meeting with sufficient time to prepare for requesting Substantial Completion. Preside over meeting and be responsible for minutes.
- B. Attendance Required:
  - 1. Utility Engineer.
  - 2. Utility Inspector.
  - 3. Contractor's Project Superintendent and Foreman(s).
  - 4. Major Subcontractors.
  - 5. Manufacturers Representative and Suppliers.
  - 6. Designated Design Consultants.
  - 7. Others as appropriate to agenda topics for each meeting.

- C. Notify all attendees a minimum of four (4) days in advance of Project Closeout Meeting date.
- D. Minimum Agenda:
  - 1. Start-up of facilities and systems.
  - 2. Operations and maintenance manuals.
  - 3. Testing, adjusting, and balancing.
  - 4. System demonstration and observation.
  - 5. Operation and maintenance instructions for Oak Creek Water and Sewer Utility personnel.
  - 6. Contractor's inspection of Work.
  - 7. Contractor's preparation of an initial "punch list."
  - 8. Procedure to request Utility Engineer and Utility Inspector inspection, to determine date of Substantial Completion.
  - 9. Completion time for correcting deficiencies.
  - 10. Inspections by authorities having jurisdiction.
  - 11. Certificate of Occupancy and transfer of insurance responsibilities.
  - 12. Partial release of retainage.
  - 13. Final cleaning.
  - 14. Preparation for final inspection.
  - 15. Closeout Submittals:
    - a. Project Record Documents.
    - b. Operating and Maintenance documents.
    - c. Operating and Maintenance materials.
    - d. Affidavits.
    - e. Lien Releases.
  - 16. Final Application for Payment.
  - 17. Contractor's demobilization of Site.
  - 18. Clean-up.
  - 19. Maintenance.
- E. Contractor shall record minutes and distribute electronic copies to meeting participants and those affected by decisions made with meeting participant's provided email address within two (2) days after Project Closeout meeting.

## **PART 2 PRODUCTS - Not Used**

## **PART 3 EXECUTION**

### **3.1 ALTERATION PROCEDURES**

- A. Materials: As specified in product Sections; match existing products with new products for patching and extending Work.
- B. Employ skilled and experienced installer to perform alteration and renovation Work.
- C. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.

- D. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- E. Remove debris and abandoned items from area and from concealed spaces.
- F. Prepare surface and remove surface finishes to permit installation of new Work and finishes.
- G. Where new Work abuts or aligns with existing Work, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- H. When finished surfaces are cut so that smooth transition with new Work is not possible, terminate existing surface along straight line at natural line of division and submit recommendation to Oak Creek Utility Engineer for review.

**END OF SECTION**



## **SECTION 01 33 00**

### **SUBMITTAL PROCEDURES**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

**A. Section Includes:**

1. Definitions.
2. Submittal procedures.
3. Construction progress schedules.
4. Proposed product list.
5. Product data.
6. Shop Drawings.
7. Samples.
8. Other submittals.
9. Design data.
10. Test reports.
11. Certificates.
12. Manufacturer's instructions.
13. Manufacturer's field reports.
14. Erection Drawings.
15. Construction photographs.
16. Contractor review.
17. Engineer/Architect review.

**B. Related Documents and Sections:**

1. Applicable provisions of Division 00 shall govern all work under this Section.
2. Applicable provisions of Division 01 shall govern all work under this Section.

##### **1.2 SUBMITTAL PROCEDURES**

- A.** Transmit each submittal with Oak Creek Water and Sewer Utility Engineer's accepted form.
- B.** Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.
- C.** Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and Specification Section number appropriate to submittal.
- D.** Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of the Work and Contract Documents.
- E.** Schedule submittals to expedite Project, and submit to Oak Creek Water and Sewer Utility Engineer in the form of electronic submittals via email as PDF electronic files. Coordinate submission of related items.

- F. For each submittal for review, allow three (3) working days.
- G. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.
- H. Allow space on submittals for Contractor and Oak Creek Water and Sewer Utility Engineer review stamps.
- I. When revised for resubmission, identify changes made since previous submission.
- J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- K. Submittals not requested will not be recognized nor processed.
- L. Incomplete Submittals: Oak Creek Water and Sewer Utility Engineer will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of Oak Creek Water and Sewer Utility Engineer.

### 1.3 PROPOSED PRODUCT LIST

- A. Within seven (7) days after date of Owner-Contractor Agreement, submit list of products proposed for use, with name of manufacturer, trade name, and model number of each product to Utility Engineer.
- B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

### 1.4 PRODUCT DATA

- A. Product Data: Submit to Oak Creek Water and Sewer Utility Engineer for review for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Submit electronic submittals via email as PDF electronic files.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

### 1.5 SHOP DRAWINGS

- A. Shop Drawings: Submit to Oak Creek Water and Sewer Utility Engineer for assessing conformance with information given and design concept expressed in Contract Documents.



- B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer responsible for designing components shown on Shop Drawings.
  - 1. Include signed and sealed calculations to support design.
  - 2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
  - 3. Make revisions and provide additional information when required by authorities having jurisdiction.
- D. Submit electronic submittals via email as PDF electronic files.
- E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

#### 1.6 SAMPLES

- A. Samples: Submit to Oak Creek Water and Sewer Utility Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Samples for Selection as Specified in Product Sections:
  - 1. Submit to Oak Creek Water and Sewer Utility Engineer for aesthetic, color, and finish selection.
  - 2. Submit Samples of finishes, textures, and patterns for Oak Creek Water and Sewer Utility Engineer selection.
- C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.
- D. Include identification on each Sample, with full Project information.
- E. Submit number of Samples specified in individual Specification Sections; Oak Creek Water and Sewer Utility Engineer will retain one sample.
- F. Reviewed Samples that may be used in the Work are indicated in individual Specification Sections.
- G. Samples will not be used for testing purposes unless specifically stated in Specification Section.
- H. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

#### 1.7 OTHER SUBMITTALS

- A. Closeout Submittals: Comply with Section 01 70 00 - Execution and Closeout Requirements.

## 1.8 DESIGN DATA

- A. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

## 1.9 TEST REPORTS

- A. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

## 1.10 CERTIFICATES

- A. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- B. Certificates may be recent or previous test results on material or product but must be acceptable to Oak Creek Water and Sewer Utility Engineer.

## 1.11 MANUFACTURER'S INSTRUCTIONS

- A. Submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, to Oak Creek Water and Sewer Utility Engineer in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

## 1.12 MANUFACTURER'S FIELD REPORTS

- A. Submit reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

## 1.13 ERECTION DRAWINGS

- A. Submit Drawings for information assessing conformance with information given and design concept expressed in Contract Documents.
- B. Data indicating inappropriate or unacceptable Work may be subject to action by Oak Creek Water and Sewer Utility Engineer.

## 1.14 CONSTRUCTION PHOTOGRAPHS

- A. Provide photographs of Site and construction showing daily progress of Work produced by an experienced photographer and acceptable to Oak Creek Water and Sewer Utility Engineer.
- B. Submit photographs with each Application for Payment.
- C. Digital Images: Deliver complete set of digital image electronic files on a DVD to Utility Engineer with Project record documents. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as sensor, uncropped.

1. Digital Images: Uncompressed TIFF format, produced by digital camera with minimum sensor size of 4.0 megapixels, and image resolution of not less than 1600 by 1200 pixels.
2. Date and Time: Include date and time in filename for each image.

#### 1.15 CONTRACTOR REVIEW

- A. Review for compliance with Contract Documents and approve submittals before transmitting to Oak Creek Water and Sewer Utility Engineer.
- B. Contractor: Responsible for:
  1. Determination and verification of materials including manufacturer's catalog numbers.
  2. Determination and verification of field measurements and field construction criteria.
  3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
  4. Determination of accuracy and completeness of dimensions and quantities.
  5. Confirmation and coordination of dimensions and field conditions at Site.
  6. Construction means, techniques, sequences, and procedures.
  7. Safety precautions.
  8. Coordination and performance of Work of all trades.
- C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.
- D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Oak Creek Water and Sewer Utility Engineer.

#### 1.16 OAK CREEK WATER AND SEWER UTILITY ENGINEER REVIEW

- A. Do not make "mass submittals" to Oak Creek Water and Sewer Utility Engineer. "Mass submittals" are defined as six (6) or more submittals or items in one day or 15 or more submittals or items in one week.
- B. If "mass submittals" are received, the Oak Creek Water and Sewer Utility Engineer's review time stated above will be extended as necessary to perform proper review. The Oak Creek Water and Sewer Utility Engineer will review "mass submittals" based on priority determined by the Oak Creek Water and Sewer Utility Engineer.
- C. Submittals made by Contractor that are not required by Contract Documents may be returned without action.
- D. Submittal approval does not authorize changes to Contract requirements unless accompanied by Change Order.
- E. Oak Creek Water and Sewer Utility Engineer may withhold monies due to Contractor to cover additional costs beyond the second submittal review.

**PART 2 PRODUCTS - Not Used**

**PART 3 EXECUTION - Not Used**

**END OF SECTION**

**SECTION 01 40 00**  
**QUALITY REQUIREMENTS**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Quality control.
  - 2. Tolerances.
  - 3. References.
  - 4. Labeling.
  - 5. Mockup requirements.
  - 6. Testing and inspection services.
  - 7. Manufacturers' field services.
- B. Related Documents and Sections:
  - 1. Applicable provisions of Division 01 shall govern all work under this Section.

**1.2 QUALITY CONTROL**

- A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with specified standards as the minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- C. Perform Work using persons qualified to produce required and specified quality.
- D. Products, materials, and equipment may be subject to inspection by Oak Creek Water and Sewer Utility at place of manufacture or fabrication. Such inspections shall not relieve Contractor of complying with requirements of Contract Documents.
- E. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

**1.3 TOLERANCES**

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request clarification from Oak Creek Water and Sewer Utility Engineer before proceeding.

- C. Adjust products to appropriate dimensions; position before securing products in place.

#### 1.4 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current as of date of Contract Documents except where specific date is established by code.
- C. Obtain copies of standards and maintain on Site when required by product Specification Sections.
- D. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Oak Creek Water and Sewer Utility Engineer before proceeding.
- E. Neither contractual relationships, duties, or responsibilities of parties in Contract nor those of Oak Creek Water and Sewer Utility Engineer shall be altered from Contract Documents by mention or inference in reference documents.

#### 1.5 LABELING

- A. Attach label from agency approved by authorities having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.
- B. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label:
  - 1. Model number.
  - 2. Serial number.
  - 3. Performance characteristics.

#### 1.6 TESTING AND INSPECTION SERVICES

- A. Employ and pay for services of an independent testing agency or laboratory acceptable to Owner to perform specified testing.
  - 1. Before starting Work, submit testing laboratory name, address, and telephone number, and names of full-time Professional Engineer and responsible officer.
  - 2. Submit copy of report of laboratory facilities' inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of deficiencies reported by inspection.
- B. Independent firm will perform tests, inspections, and other services specified in individual Specification Sections and as required by Utility Engineer and authorities having jurisdiction.
  - 1. Laboratory: Authorized to operate in State of Wisconsin.
  - 2. Laboratory Staff: Maintain full-time Professional Engineer on staff to review services.
  - 3. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.

- C. Testing, inspections, and source quality control may occur on or off Project Site. Perform off-Site testing as required by Engineer/Architect or Owner.
- D. Reports shall be submitted by independent firm to Utility Engineer, Contractor, and authorities having jurisdiction, in electronic PDF format, indicating observations and results of tests and compliance or noncompliance with Contract Documents.
  - 1. Submit final report indicating correction of Work previously reported as noncompliant.
- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
  - 1. Notify Utility Engineer and independent firm 48 hours before expected time for operations requiring services.
  - 2. Make arrangements with independent firm and pay for additional Samples and tests required for Contractor's use.
- F. Employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work according to requirements of Contract Documents.
- G. Retesting or re-inspection required because of nonconformance with specified or indicated requirements shall be performed by same independent firm on instructions from Utility Engineer. Payment for retesting or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.
- H. Testing Agency Responsibilities:
  - 1. Test Samples of mixes submitted by Contractor.
  - 2. Provide qualified personnel at Site. Cooperate with Utility Engineer, Utility Inspector, and Contractor in performance of services.
  - 3. Perform indicated sampling and testing of products according to specified standards.
  - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
  - 5. Promptly notify Utility Engineer and Contractor of observed irregularities or nonconformance of Work or products.
  - 6. Perform additional tests required by Utility Engineer.
  - 7. Attend preconstruction meetings and progress meetings.
- I. Testing Agency Reports: After each test, promptly submit electronic PDF copies of report to Utility Engineer, Contractor, and authorities having jurisdiction. When requested by Utility Engineer, provide interpretation of test results. Include the following:
  - 1. Date issued.
  - 2. Project title and number.
  - 3. Name of inspector.
  - 4. Date and time of sampling or inspection.
  - 5. Identification of product and Specification Section.
  - 6. Location in Project.
  - 7. Type of inspection or test.
  - 8. Date of test.
  - 9. Results of tests.
  - 10. Conformance with Contract Documents.

- J. Limits on Testing Agency Authority:
1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
  2. Agency or laboratory may not approve or accept any portion of the Work.
  3. Agency or laboratory may not assume duties of Contractor.
  4. Agency or laboratory has no authority to stop the Work.

1.7 MANUFACTURER'S FIELD SERVICES

- A. When specified in individual Specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe Site conditions, conditions of surfaces and installation, quality of workmanship, testing, adjusting, and balancing of equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Utility Engineer 10 days in advance of required observations. Observer is subject to approval of Utility Engineer.
- C. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.
- D. Refer to Section 01 33 00 - Submittal Procedures, "Manufacturer's Field Reports" Article.

**PART 2 PRODUCTS - Not Used**

**PART 3 EXECUTION - Not Used**

**END OF SECTION**



## **SECTION 01 50 00**

### **TEMPORARY FACILITIES AND CONTROLS**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

**A. Section Includes:**

1. Temporary Utilities:
  - a. Temporary electricity.
  - b. Temporary lighting for construction purposes.
  - c. Temporary heating.
  - d. Temporary cooling.
  - e. Temporary ventilation.
  - f. Communication services.
  - g. Temporary water service.
  - h. Temporary sanitary facilities.
2. Construction Facilities:
  - a. Field offices and sheds.
  - b. Vehicular access.
  - c. Parking.
  - d. Progress cleaning and waste removal.
  - e. Traffic regulation.
  - f. Fire-prevention facilities.
3. Temporary Controls:
  - a. Barriers.
  - b. Enclosures and fencing.
  - c. Water control.
  - d. Dust control.
  - e. Erosion and sediment control.
  - f. Noise control.
  - g. Pollution control.
4. Removal of utilities, facilities, and controls.

**B. Related Documents and Sections:**

1. Applicable provisions of Division 01 shall govern all work under this Section.

##### **1.2 REFERENCES**

**A. ASTM International (ASTM):**

1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
3. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

### 1.3 TEMPORARY ELECTRICITY

- A. Provide and pay for power service required from utility source as needed for construction operation.

### 1.4 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain lighting for construction operations to achieve minimum lighting level of 2 watts/sq ft.
- B. Provide and maintain 1 watt/sq ft lighting to exterior staging and storage areas after dark for security purposes.
- C. Provide and maintain 0.25 watt/sq ft HID lighting to interior work areas after dark for security purposes.
- D. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, lamps, and the like, for specified lighting levels.
- E. Maintain lighting and provide routine repairs.

### 1.5 TEMPORARY HEATING

- A. Provide and pay for heating devices and heat as needed to maintain specified conditions for construction operations.

### 1.6 TEMPORARY COOLING

- A. Provide and pay for cooling devices and cooling as needed to maintain specified conditions for construction operations.

### 1.7 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

### 1.8 COMMUNICATION SERVICES

- A. Telephone Service: Provide, maintain, and pay for telephone service to field office at time of Project mobilization and until completion of Work.
- B. Internet Service: Provide, maintain, and pay for wireless Internet service to field office at time of Project mobilization. Provide computer with Microsoft operating system and appropriate office function software and printer.

### 1.9 TEMPORARY WATER SERVICE

- A. Owner will pay cost of temporary water. Exercise measures to conserve energy. Use Owner's existing water system, extended and supplemented with temporary devices as needed to maintain

specified conditions for construction operations. Discuss and implement plan with Oak Creek Water and Sewer Utility Engineer at Pre-Construction Meeting.

- B. Extend branch piping with outlets located so that water is available by hoses with threaded connections. Provide temporary pipe insulation and heat tape to prevent freezing when temperatures are expected to be below freezing.

#### 1.10 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide facilities at time of Project mobilization.

#### 1.11 FIELD OFFICES AND SHEDS

- A. Field Office: Weathertight, with lighting, electrical outlets, heating, cooling and ventilating equipment, and equipped with sturdy furniture including conference table, drawing rack, filing cabinets, and drawing display table.
- B. Provide space for Project meetings, with table and chairs to accommodate a minimum of eight (8) persons.
- C. Locate field offices and sheds a minimum distance of 30 feet from existing and new structures. Discuss location of field office with Utility Engineer at Pre-Construction Meeting.
- D. Field Office Construction: Portable or mobile buildings, or buildings constructed with floors raised aboveground, securely fixed to foundations with steps and landings at entrance doors.
  - 1. Construction: Structurally sound, secure, weathertight enclosures for office and storage spaces. Maintain during progress of Work; remove enclosures when no longer needed.
  - 2. Thermal Resistance of Floors, Walls, and Ceilings: Compatible with occupancy and storage requirements.
  - 3. Exterior Materials: Weather-resistant, finished in colors acceptable to Utility Engineer.
  - 4. Interior Materials in Field Offices: Sheet-type materials for walls and ceilings, prefinished or painted; resilient floors and bases.
  - 5. Lighting for Field Offices: 50 ft-C at desktop height; exterior lighting at entrance doors.
  - 6. Interior Materials in Storage Sheds: As required to provide specified conditions for storage of products.
- E. Environmental Control:
  - 1. Heating, Cooling, and Ventilating for Offices: Automatic equipment to maintain comfort conditions.
  - 2. Storage Spaces: Heating and ventilating as needed to maintain products according to Contract Documents; lighting for maintenance and inspection of products.
- F. Storage Areas and Sheds: Size to storage requirements for products of individual Sections, allowing for access and orderly provision for maintenance and inspection of products to suit requirements in Section 01 60 00 - Product Requirements.
- G. Preparation: Fill and grade Sites for temporary structures sloped for drainage away from buildings.

- H. Installation:
  - 1. Install field office spaces ready for occupancy 15 days after date established by Owner-Contractor Agreement.
  - 2. Employee Residential Occupancy: Not allowed on Owner's property.
- I. Maintenance and Cleaning:
  - 1. Daily janitorial services for field offices; periodic cleaning and maintenance for sheds and storage areas.
  - 2. Maintain walks free of mud, water, snow, and the like.
- J. Removal: At completion of Work remove buildings, foundations, utility services, and debris. Restore areas to same or better condition as original condition.

#### 1.12 VEHICULAR ACCESS

- A. Locate as approved by Oak Creek Water and Sewer Utility Engineer at Pre-Construction Meeting.
- B. Provide unimpeded access for emergency vehicles. Maintain 20-foot-wide driveways with turning space between and around combustible materials.
- C. Provide and maintain access to fire hydrants and control valves free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Use designated existing on-Site roads for construction traffic as agreed upon at Pre-Construction Meeting with Oak Creek Water and Sewer Utility Engineer.

#### 1.13 PARKING

- A. Discuss with Oak Creek Water and Sewer Utility Engineer at Pre-Construction Meeting to accommodate construction personnel.
- B. Use of designated areas of existing on-Site streets used for construction traffic is permitted as agreed upon at Pre-Construction Meeting. Tracked vehicles are not allowed on paved areas.
- C. Use of existing parking facilities used by construction personnel is not permitted.
- D. Do not allow heavy vehicles or construction equipment in parking areas.
- E. Do not allow vehicle parking on existing pavement.
- F. Permanent Pavements and Parking Facilities:
  - 1. Bases for permanent roads and parking areas may be used for construction traffic.
  - 2. Avoid traffic loading beyond paving design capacity. Tracked vehicles are not allowed.
- G. Maintenance:
  - 1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, ice, and the like.

2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original condition.

H. Removal, Repair:

1. Remove temporary materials and construction when permanent paving is usable.
2. Repair existing facilities damaged by use, to original condition.

I. Mud from Site vehicles: Provide means of removing mud from vehicle wheels before entering streets.

#### 1.14 PROGRESS CLEANING AND WASTE REMOVAL

- A. Provide professional road sweeping service and water truck for maintaining roads and streets affected by construction to be of free of mud, debris and dust as directed by Utility Inspector.
- B. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.
- C. Collect and remove waste materials, debris, and rubbish from Site weekly.

#### 1.15 TRAFFIC REGULATION

A. Signs, Signals, and Devices:

1. Post-Mounted and Wall-Mounted Traffic Control and Informational Signs: As approved by authorities having jurisdiction.
2. Traffic Control Signals: As approved by local jurisdictions.
3. Traffic Cones, Drums, Flares, and Lights: As approved by authorities having jurisdiction.
4. Flag Person Equipment: As required by authorities having jurisdiction.

B. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

C. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

D. Haul Routes:

1. Consult with authorities having jurisdiction and establish public thoroughfares to be used for haul routes and Site access.
2. Confine construction traffic to designated haul routes as agreed upon at Pre-Construction Meeting.
3. Provide traffic control at critical areas of haul routes to regulate traffic and to minimize interference with public traffic.

E. Traffic Signs and Signals:

1. Provide signs at approaches to Site and on Site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
2. Provide, operate, and maintain traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control and areas affected by Contractor's operations.

3. Relocate signs and signals as Work progresses, to maintain effective traffic control.

F. Removal:

1. Remove equipment and devices when no longer required.
2. Repair damage caused by installation.

#### 1.16 FIRE-PREVENTION FACILITIES

- A. Establish fire watch for cutting, welding, and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.
- B. Portable Fire Extinguishers: NFPA 10; 10-pound capacity, 4A-60B: C UL rating.
  1. Provide minimum of one fire extinguisher in every construction trailer and storage shed.

#### 1.17 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations and site demolition.
- B. Tree and Plant Protection: Preserve and protect existing trees and plants designated to remain.
  1. Protect areas within drip lines from traffic, parking, storage, dumping, chemically injurious materials and liquids, ponding, and continuous running water.
  2. Provide 6-foot-high barriers around drip line, with access for maintenance.
  3. Replace trees and plants damaged by construction operations.
- C. Protect non-owned vehicular traffic, stored materials, Site, and structures from damage.

#### 1.18 ENCLOSURES AND FENCING

- A. Construction: Plastic construction netting with metal posts.

#### 1.19 WATER CONTROL

- A. Grade Site to drain. Maintain excavations free of water. Provide, operate, and maintain necessary pumping equipment.
- B. Protect Site from puddles or running water. Provide water barriers as required to protect Site from soil erosion.

#### 1.20 DUST CONTROL

- A. Contractor shall maintain a clean worksite at all times.
- B. Execute Work by methods that minimize raising dust from construction operations.
- C. Provide positive means to prevent airborne dust from dispersing into atmosphere and into property owner occupied areas.

- D. Contractor shall provide a water truck and sweeper service on a daily basis to control dust.

#### 1.21 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills from borrow and waste disposal areas. Prevent erosion and sedimentation.
- B. Minimize surface area of bare soil exposed at one time.
- C. Provide temporary measures including berms, dikes, drains, and other devices to prevent water flow.
- D. Construct fill and waste areas by selective placement to avoid erosive surface silts and clays.
- E. Periodically inspect earthwork to detect evidence of erosion and sedimentation. Promptly apply corrective measures.

#### 1.22 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise produced by construction operations.
- B. Comply with the requirements of the City of Oak Creek Noise Ordinance – Municipal Code Chapter 11.26.

#### 1.23 POLLUTION CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.
- B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

#### 1.24 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials before Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary Work.

### **PART 2 PRODUCTS - Not Used**

### **PART 3 EXECUTION - Not Used**

**END OF SECTION**





## **SECTION 01 53 00**

### **TEMPORARY CONSTRUCTION**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Temporary Construction:
    - a. Temporary Gravel Driveways and Approaches.
    - b. Temporary Mailboxes for Property Owners.
- B. Related Documents and Sections:
  - 1. Applicable provisions of Division 01 shall govern all work under this Section.

##### **1.2 REFERENCES**

- A. ASTM International (ASTM):
  - 1. ASTM C33 – Standard Specification for Concrete Aggregates.
  - 2. ASTM C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- B. State of Wisconsin Department of Transportation (WISDOT):
  - 1. Standard Specifications for Highway and Structure Construction, Current Edition.

##### **1.3 TEMPORARY GRAVEL DRIVEWAYS AND APPROACHES**

- A. Provide, maintain and pay for temporary gravel driveway and approach for each property owner driveway entrance removed for installation of new water main.
- B. Maintain smooth surface of temporary gravel driveway and approach throughout construction until new driveway and approach pavement is placed.
- C. Ensure property owner egress and ingress is not disturbed.
- D. Provide dust control measures when required by Utility Inspector in accordance with requirements specified in Section 01 50 00 – Temporary Facilities and Controls, Article 1.14 and Article 1.20.
- E. This Work is considered incidental to the new water main construction.

##### **1.4 TEMPORARY MAILBOXES FOR PROPERTY OWNERS**

- A. Provide, maintain and pay for temporary mailboxes for each property owner's mailbox that is removed for the installation of new water main.

- B. Maintain safe and direct access to temporary mailboxes for U.S. Mail delivery and property owner access on a daily basis.

## **PART 2 PRODUCTS – Not Used**

## **PART 3 EXECUTION**

### **3.1 TEMPORARY MAILBOXES FOR PROPERTY OWNERS**

- A. Contractor shall be responsible to provide temporary mailboxes for property owners whose permanent mailbox was removed to facilitate new underground utility work.
- B. Contractor shall coordinate and provide temporary mail boxes at locations determined by the local USPS Service Office during new construction work.
- C. Contractor shall re-install removed mailboxes at locations that they were originally removed from for each effected property owner after utility construction is completed.
- D. Contractor shall be responsible for any damage to existing mailboxes during removal, storage and re-installation.
- E. This Work is considered incidental to the new watermain construction.

## **END OF SECTION**

**SECTION 01 57 10**  
**TEMPORARY EROSION AND SEDIMENT CONTROL**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
1. Equipment and materials for erosion and sediment control to minimize erosion and siltation during construction.
  2. Erosion and sediment control provisions detailed on Drawings and specified herein are minimum requirements for erosion control program.
  3. Contractor to provide additional erosion and sediment control materials and methods required by state or local ordinances, whichever is more stringent.
- B. Related Sections:
1. Applicable provisions of Division 00 shall govern all work under this Section.
  2. Applicable provisions of Division 01 shall govern all work under this Section.
  3. Section 31 05 13 – Soils for Earthwork: Protection of existing and new topsoil and subsoil applications.
  4. Section 31 05 16 – Aggregates for Earthwork: Protection of gravel and stone applications.
  5. Section 31 10 00 - Site Clearing: Stripping of existing site soils.
  6. Section 31 22 13 - Rough Grading: Rough grading and contouring of project site.
  7. Section 31 23 16 - Utility Trench Excavation, Backfill and Compaction.
  8. Section 32 01 00 - Site Restoration: Restoration of existing damaged or disturbed conditions.
  9. Section 32 91 19 - Landscape Grading.
  10. Section 32 92 00 – Turf and Grasses: Lawn planting.

**1.2 REFERENCES**

- A. ASTM International (ASTM):
1. ASTM D3786 - Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method.
  2. ASTM D4491 – Water Permeability of Geotextiles by Permittivity.
  3. ASTM D4533 – Trapezoid Tearing Strength of Geotextiles.
  4. ASTM D4632 - Grab Breaking Load and Elongation of Geotextiles.
  5. ASTM D4833 - Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.

- B. State of Wisconsin Department of Natural Resources (WDNR), Chapter NR 151 – Runoff Management.
- C. State of Wisconsin Department of Natural Resources (WDNR):
  - 1. Storm Water Construction Technical Standards.
  - 2. Storm Water Post-Construction Technical Standards.
- D. State of Wisconsin Department of Transportation (WisDOT):
  - 1. Standard Specifications for Highway and Structure Construction, including latest supplements, Current Edition.
  - 2. Erosion Control Product Acceptability Lists for Multi-Modal Applications.
- E. City of Oak Creek, Wisconsin Municipal Code Chapter 13 - Land Use Regulations.

### 1.3 SUBMITTALS

- A. Submittals to be provided in accordance with Section 01 33 00 – Submittal Procedures.
- B. Provide erosion control plan indicating proposed methods, materials, and schedule for effecting erosion and siltation control to prevent erosion damage to site and adjacent area.
- C. Plan shall include following:
  - 1. Proposed methods for erosion and siltation control.
  - 2. Erosion plan scale of one (1) inch equals 40 feet, indicating location of erosion control materials, siltation basins, etc.
  - 3. Schedule for implementation of plan.
  - 4. Provision for maintenance and upkeep of erosion control and siltation materials, identifying persons responsible for said maintenance.

### 1.4 REGULATORY REQUIREMENTS

- A. Erosion control work shall comply with City of Oak Creek, Wisconsin ordinance for construction site erosion control.
- B. Contractor shall comply with applicable state and federal rules and regulations governing erosion and siltation on construction sites.
- C. Permit:
  - 1. Apply for, pay fee, and obtain State stormwater discharge permit.
  - 2. Prepare construction site erosion control plan, Notice of Intent form, and submit form and current fee to Wisconsin Department of Natural Resources at least 14 working days prior to commencement of land disturbing construction activities. At completion of construction activity, file Notice of Termination.

## 1.5 EROSION CONTROL PRINCIPLES

- A. Keep disturbed area small.
- B. Stabilize disturbed areas with mechanical or structural and vegetative methods.
- C. Keep runoff low through use of short slopes, low gradients, and preservation of natural vegetative cover.
- D. Protect disturbed areas from storm water runoff.
- E. Retain sediment within site boundaries.
- F. Implement thorough maintenance and follow-up program.

## PART 2 PRODUCTS

### 2.1 SAND BAGS

- A. Minimum unfilled size of 14 by 26 inches with attached drawstring; filled with a sandy soil.

### 2.2 EROSION BALES

- A. Tightly compacted bales of grain straw, hay, or other suitable material, with support posts made of wood as shown on detail drawing.

### 2.3 EROSION PRODUCTS AND ACCESSORIES

- A. Geotextile Fabric:
  - 1. The textile shall be polyethylene fabric with properties as follows:

<u>Property</u>	<u>Property Value</u>
Grab Tensile Strength	120 lb. min. (ASTM D4632)
Elongation	15 Percent x 15 Percent max. (ASTM D4632)
Mullen Burst Strength	260 psi min. (ASTM D3786)
Puncture	60 lb min. (ASTM D4833)
Trapezoidal Tear	60 lb min (ASTM D4833)
Apparent Size Opening	U.S. 30 sieve (ASTM D4751)
Water Flow Rate	10 gal/min/sq.ft. max. (ASTM D4491)
Ultraviolet radiation stability	70 percent min. (ASTM D4355)

- 2. Fabric shall be reinforced with an industrial polypropylene netting with 3/4-inch spacing and heavy-duty nylon top support cord or equivalent.

- B. Geotextile Fabric Uses:
1. Silt Fence.
  2. Drainage Inlet Filter Material.
  3. Hay Bale Separation Material. (Temporary Ditch Checks) Reference Drawing Exhibit "D" located at the within these Bidding Documents.
- C. Support Posts:
1. Wood or Steel construction, minimum length five (5) feet, supply cord or other suitable means to attach geotextile to support posts.
- D. Temporary Vegetative Cover:
1. Temporary seed mixture components as follows:
- | Species    | Minimum Percent Purity | Minimum Percent Germination | Pounds per Acre |
|------------|------------------------|-----------------------------|-----------------|
| Oats       | 98 Percent             | 90 Percent                  | 80              |
| Annual Rye | 98 Percent             | 85 Percent                  | 100             |
2. Use rye grass when permanent seeding is to follow within one (1) year.
- E. Erosion Control Matting Fabric: Biodegradable Jute matting, open weave, single and double netted based upon slope requirements.
1. Manufacturers:
    - a. American Excelsior Company.
    - b. Tensar – North American Green.
    - c. RoLanka International.
    - d. Or Approved Equal.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- A. Erosion Bales Fencing:
1. Excavate 4-inch trench to embed bales and line trench with geotextile fabric as indicated on detail drawings.
  2. Place bales end to end across ditches or other location as designated on Drawings.
  3. Place bales at right angles to the direction of water flow with bandings oriented around sides.
  4. Tightly abut ends of bales and fill any gaps between bales with bale material wedged in.
  5. Securely anchor bales with at least two wood or steel stakes driven a minimum 8 inches into ground.

- B. Catch Basin and Inlet Protection on Soil:
1. Install inlet barrier, a combination of filter fabric fencing and bale fencing, around entire perimeter of inlet.
  2. Install filter fabric fence as specified below except posts shall have a maximum spacing of 4 feet.
  3. Install bale fence on exterior of filter fence as specified in paragraph (A).
- C. Catch Basin and Inlet Protection on Paved Area:
1. Remove inlet grate from basin.
  2. Place filter fabric over inlet opening and push down in center to form a basket.
  3. Install fabric such that it extends minimum 12 inches beyond inlet casting edges.
  4. Re-install inlet grate to hold filter fabric in place.
  5. Verify that fabric is retained in place by grate.
  6. Place bales around perimeter of inlet and secure with a minimum of two perimeter rope or cable restraints.
- D. Filter Fabric Fencing:
1. Filter fence shall be installed to maximum height of 24 inches.
  2. Install support posts on downstream side of fencing to depth that is adequate to insure stability of fence with maximum spacing of 8 feet.
  3. Excavate 4-inch by 4-inch trench up-slope along line of support posts to anchor fabric.
  4. Staple filter material to up-slope side of posts and extend fabric into trench.
  5. Backfill and compact filter fabric in trench.
  6. Provide silt fence surrounding existing catch and inlet basins affected by site work.
- E. Erosion Nets and Mats:
1. Erosion nets and mats include excelsior retention blankets, jute matting, and polypropylene netting.
  2. Erosion nets and matting shall be installed in accordance with manufacturer's instructions.
- F. Temporary Ditch Checks in Culvert:
1. Contractor shall provide bagged one (1) inch to three (3) inch washed stone for installation at ends of driveway culverts to control storm water runoff.
  2. Stack bags in an offset fashion in an attempt to interlock each bag with adjacent bags.
  3. Reference Drawing Detail Exhibit "D" – Culvert Pipe Ditch Check.
  4. Remove stone bag culvert ditch checks after Utility Engineer has given such approval.
  5. This Work shall be included under the Erosion Control Unit Bid Price.

- G. Temporary Hay Bale Ditch Checks Installed in Ditches:
  - 1. Contractor shall provide straw hay bales at locations determined by Contractor's submitted and approved Erosion Control Plan. Engineer's provided erosion control drawing is provided for Contractor's reference only.
  - 2. This Work shall be included under the Erosion Control Unit Bid Price.

### 3.2 MAINTENANCE

- A. Erosion control devices shall be inspected within 24 hours after each rainfall or daily during periods of prolonged rainfall.
- B. Repair or replacement of damaged or defective materials or installation shall be made immediately.
- C. Sediment deposits shall be removed within 24 hours after each storm event or when deposits reach one-half height of fence or barrier, whichever occurs first.
- D. Replacement bales, additional mulch, netting or matting shall be applied immediately to maintain suitable cover.
- E. Where vegetative cover has been placed, inspections shall be made until vegetative cover is established and functioning as intended.

### 3.3 REMOVAL OF EROSION CONTROL DEVICES

- A. Erosion control measures shall be maintained until disturbed earth has been paved or vegetated.
- B. Erosion control devices shall be removed prior to final inspection and acceptance of Project site by Oak Creek Water and Sewer Utility.
- C. Areas disturbed or damaged by removal of erosion control devices shall be restored or replaced by Contractor to satisfaction of Oak Creek Water and Sewer Utility Engineer.

**END OF SECTION**



## **SECTION 01 60 00**

### **PRODUCT REQUIREMENTS**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Products.
  - 2. Product delivery requirements.
  - 3. Product storage and handling requirements.
  - 4. Product options.
- B. Related Documents and Sections:
  - 1. Applicable provisions of Division 00 shall govern all work under this Section.
  - 2. Applicable provisions of Division 01 shall govern all work under this Section.

##### **1.2 PRODUCTS**

- A. In accordance with City of Oak Creek Water and Sewer Utility purchasing policy, the Contractor is requested to use American-made (USA) products in the performance of the contract whenever the quality and the price are comparable with other goods.
- B. At minimum, comply with specified requirements and reference standards.
- C. Specified products define standard of quality, type, function, dimension, appearance, and performance required.
- D. Furnish products of qualified manufacturers that are suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.
- E. Domestic Products: Except where specified otherwise, domestic products are required and interpreted to mean products mined, manufactured, fabricated, or produced in the United States.
- F. Do not use materials and equipment removed from existing premises except as specifically permitted by Contract Documents.
- G. Furnish interchangeable components from same manufacturer for components being replaced.

##### **1.3 PRODUCT DELIVERY REQUIREMENTS**

- A. Transport and handle products according to manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

- C. Provide equipment and personnel to handle products; use methods to prevent soiling, disfigurement, or damage.

#### 1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products according to manufacturer's instructions.
- B. Store products with seals and labels intact and legible.
- C. Store sensitive products in weathertight, climate-controlled enclosures in an environment suitable to product.
- D. For exterior storage of fabricated products, place products on sloped supports aboveground.
- E. Provide bonded off-Site storage and protection when Site does not permit on-Site storage or protection.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products; use methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

#### 1.5 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Products complying with specified reference standards or description.
- B. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit Request for Substitution for any manufacturer not named.

### **PART 2 PRODUCTS - Not Used**

### **PART 3 EXECUTION - Not Used**

### **END OF SECTION**

## **SECTION 01 70 00**

### **EXECUTION AND CLOSEOUT REQUIREMENTS**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

**A. Section Includes:**

1. Field engineering.
2. Closeout procedures.
3. Project record documents.
4. Operation and maintenance data.
5. Manual for materials and finishes.
6. Manual for equipment and systems.
7. Spare parts and maintenance products.
8. Product warranties and product bonds.
9. Maintenance service.
10. Examination.
11. Preparation.
12. Execution.
13. Protecting installed construction.
14. Final cleaning.

**B. Related Documents and Sections:**

1. Applicable provisions of Division 00 shall govern all work under this Section.
2. Applicable provisions of Division 01 shall govern all work under this Section.

##### **1.2 FIELD ENGINEERING**

- A. City of Oak Creek Water and Sewer Utility will locate and Contractor shall protect survey control and reference points. Promptly notify Utility Engineer of discrepancies discovered.
- B. Control datum for survey is established by Utility-provided survey.
- C. Verify setbacks and easements; confirm Drawing dimensions and elevations.
- D. Provide field engineering services. Establish elevations, lines, and levels using recognized engineering survey practices.
- E. Maintain complete and accurate log of control and survey Work as Work progresses.
- F. Protect survey control points prior to starting Site Work; preserve permanent reference points during construction.
- G. Promptly report to Utility Engineer loss or destruction of reference point or relocation required because of changes in grades or other reasons.

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**Execution and Closeout  
Requirements**

- H. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Utility Engineer.

### 1.3 CLOSEOUT PROCEDURES

- A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:
  - 1. Submit maintenance manuals, Project record documents, [digital images of construction photographs, and other similar final record data in compliance with this Section.
  - 2. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
  - 3. Obtain and submit releases enabling Owner's full, unrestricted use of Project and access to services and utilities. Include operating certificates, and similar releases from authorities having jurisdiction and utility companies.
  - 4. Deliver tools, spare parts, extra stocks of material, and similar physical items to Owner.
  - 5. Perform final cleaning according to this Section.
- B. Substantial Completion Inspection:
  - 1. When Contractor considers Work to be substantially complete, submit to Utility Engineer:
    - a. Written certificate that Work, or designated portion, is substantially complete.
    - b. List of items to be completed or corrected (initial punch list).
  - 2. Within seven (7) days after receipt of request for Substantial Completion, Utility Engineer will make inspection to determine whether Work or designated portion is substantially complete.
  - 3. Should Utility Engineer determine that Work is not substantially complete:
    - a. Utility Engineer will promptly notify Contractor in writing, stating reasons for its opinion.
    - b. Contractor shall remedy deficiencies in Work and send second written request for Substantial Completion to Utility Engineer. Utility Engineer will reinspect Work.
    - c. Redo and Inspection of Deficient Work: Repeated until Work passes Utility Engineer's inspection.
  - 4. When Utility Engineer finds that Work is substantially complete, Utility Engineer will:
    - a. Prepare Certificate of Substantial Completion on EJCDC C-625 - Certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected as verified and amended by Utility Engineer's (final punch list).
    - b. Submit Certificate to Owner and Contractor for their written acceptance of responsibilities assigned to them in Certificate.
  - 5. After Work is substantially complete, Contractor shall:
    - a. Complete Work listed for completion or correction within time period stipulated.
- C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.
  - 1. When Contractor considers Work to be complete, submit written certification that:
    - a. Contract Documents have been reviewed.
    - b. Work has been examined for compliance with Contract Documents.

- c. Work has been completed according to Contract Documents.
    - d. Work is completed and ready for final inspection.
  - 2. Submittals: Submit following:
    - a. Final punch list indicating all items have been completed or corrected.
    - b. Final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
    - c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
    - d. Accounting statement for final changes to Contract Sum.
    - e. Contractor's affidavit of payment of debts and claims.
    - f. Contractor affidavit of release of liens.
    - g. Consent of surety to final payment.
  - 3. Perform final cleaning for Contractor-soiled areas according to this Section.
- D. Final Completion Inspection:
- 1. Within seven (7) days after receipt of request for final inspection, Utility Engineer will make inspection to determine whether Work or designated portion is complete.
  - 2. Should Utility Engineer consider Work to be incomplete or defective:
    - a. Utility Engineer will promptly notify Contractor in writing, listing incomplete or defective Work.
    - b. Contractor shall remedy stated deficiencies and send second written request to Utility Engineer that Work is complete.
    - c. Utility Engineer will re-inspect Work.
    - d. Redo and Inspection of Deficient Work: Repeated until Work passes Utility Engineer's inspection.

#### 1.4 PROJECT RECORD DOCUMENTS

- A. Maintain on Site one set of the following record documents; record actual revisions to the Work:
  - 1. Drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other modifications to the Contract.
  - 5. Reviewed Shop Drawings, product data, and Samples.
  - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:
  - 1. Manufacturer's name and product model and number.
  - 2. Product substitutions or alternates used.
  - 3. Changes made by Addenda and modifications.

- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction as follows:
1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
  2. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.
  3. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
  4. Identify and locate existing buried or concealed items encountered during Project.
  5. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  6. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
  7. Field changes of dimension and detail.
- G. Submit marked-up paper copy documents to Utility Engineer before Substantial Completion.

#### 1.5 OPERATION AND MAINTENANCE DATA

- A. Submit in PDF composite electronic indexed file.
- B. Submit data bound in 8-1/2 x 11-inch text pages, three D side ring with capacity expansion ability binders with durable plastic covers.
- C. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS," title of Project, and subject matter of binder when multiple binders are required.
- D. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- E. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- F. Contents: Prepare table of contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
1. Part 1: Directory, listing names, addresses, and telephone numbers of Utility Engineer, Contractor, Subcontractors, and major equipment suppliers.
  2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by Specification Section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Include the following:
    - a. Significant design criteria.
    - b. Operating instructions.
    - c. Maintenance instructions for equipment and systems.
    - d. Safety precautions to be taken when operating and maintaining or working near equipment.
  3. Part 3: Project documents and certificates, including the following:
    - a. Shop Drawings and product data.

- b. Certificates.
- c. Originals of warranties and bonds.

#### 1.6 MANUAL FOR MATERIALS AND FINISHES

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Utility Engineer will review draft and return one copy with comments.
- B. For equipment or component parts of equipment put into service during construction and operated by Oak Creek Water and Sewer Utility, submit documents within ten days after acceptance.
- C. Submit one (1) copy of completed volumes approximately 15 days prior to final inspection. Draft copy be reviewed and returned after final inspection, with Utility Engineer comments. Revise content of document sets as required prior to final submission.
- D. Submit two (2) sets of revised final volumes within ten days after final inspection.
- E. Submit in PDF composite electronic indexed file of final manual within ten days after final inspection.
- F. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- G. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.
- H. Additional Requirements: As specified in individual product Specification Sections.
- I. Include listing in table of contents for design data, with tabbed fly sheet and space for insertion of data.

#### 1.7 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Submit two (2) copies of preliminary draft or proposed formats and outlines of contents before start of Work. Utility Engineer will review draft and return one copy with comments.
- B. For equipment, or component parts of equipment put into service during construction and operated by Oak Creek Water and Sewer Utility, submit documents within ten days after acceptance.
- C. Submit one copy of completed volumes approximately 15 days prior to final inspection. Draft copy will be reviewed and returned after final inspection, with Utility Engineer comments. Revise content of document sets as required prior to final submission.
- D. Submit two (2) sets of revised final volumes within ten days after final inspection.

- E. Submit in PDF composite electronic indexed file of final manual within 10 days after final inspection.
- F. Each Item of Equipment and Each System: Include description of unit or system and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
- G. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- H. Include servicing and lubrication schedule and list of lubricants required.
- I. Include manufacturer's printed operation and maintenance instructions.
- J. Include sequence of operation by controls manufacturer.
- K. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- L. Include control diagrams by controls manufacturer as installed.
- M. Include Contractor's coordination drawings with color-coded piping diagrams as installed.
- N. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- O. Additional Requirements: As specified in individual product Specification Sections.
- P. Include listing in table of contents for design data with tabbed dividers and space for insertion of data.

## 1.8 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products in quantities specified in individual Specification Sections.
- B. Deliver to place in location as directed by Utility Engineer; obtain receipt prior to final payment.

## 1.9 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible Subcontractors, suppliers, and manufacturers within 10 days after completion of applicable item of Work.
- B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.



- C. Verify documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Include table of contents and assemble in three D side ring binder with durable plastic cover.
- F. Submit prior to final Application for Payment.
- G. Time of Submittals:
  - 1. For equipment or component parts of equipment put into service during construction with Utility Engineer's permission, submit documents within 10 days after acceptance.
  - 2. Make other submittals within 10 days after date of Substantial Completion, prior to final Application for Payment.
  - 3. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within 10 days after acceptance, listing date of acceptance as beginning of warranty or bond period.

#### 1.10 MAINTENANCE SERVICE

- A. Furnish service and maintenance of components indicated in Specification Sections during warranty period.
- B. Examine system components at frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by manufacturer of original component.
- D. Do not assign or transfer maintenance service to agent or Subcontractor without prior written consent of Utility Engineer.

### **PART 2 PRODUCTS - Not Used**

### **PART 3 EXECUTION**

#### 3.1 EXAMINATION

- A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual Specification Sections.
- D. Verify that utility services are available with correct characteristics and in correct locations.

### 3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance according to manufacturer's instructions.

### 3.3 EXECUTION

- A. Comply with manufacturer's installation instructions, performing each step in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.
- B. Adjust operating products and equipment to ensure smooth and unhindered operation.
- C. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components as recommended by manufacturer.

### 3.4 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual Specification Sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.
- C. Prohibit traffic from landscaped areas.

### 3.5 FINAL CLEANING

- A. Clean Site; sweep paved areas, rake clean landscaped surfaces.
- B. Remove waste and surplus materials, rubbish, and construction facilities from Site.

**END OF SECTION**

**SECTION 02 41 13**  
**SITE DEMOLITION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Identify electric and mechanical utilities within demolition area.
  - 2. Demolish and remove designated road pavements.
  - 3. Demolish and remove designated driveway pavement.
  - 4. Remove and store existing decorative culvert endwalls.
  - 5. Removal and dispose of existing designated corrugated metal pipe culvert.
  - 6. Remove demolition materials from site.
  - 7. Temporary protection between demolition area and existing buildings or structures to remain.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 02 41 14 – Utility Abandonment and Removal: Removal or abandonment of designated site services.
  - 3. Section 31 05 13 – Soils for Earthwork: Subsoil backfill material.
  - 4. Section 31 05 16 – Aggregates for Earthwork: Aggregate backfill material.
  - 5. Section 31 10 00 - Site Clearing: Site clearing outside perimeter of existing structures.
  - 6. Section 31 13 00 – Tree Removal and Grubbing: Removal of woody plants.

**1.2 SUBMITTALS**

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Submit demolition and removal procedures and schedule at the Pre-Construction meeting with Utility Engineer and Utility Inspector.
- C. Submit project record documents under provisions of Section 01 70 00 – Execution and Closeout Requirements.
  - 1. Record drawings should accurately identify location of utilities capped off or abandoned in place, location of foundations or appurtenances abandoned and covered, or items remaining that would affect future work on site.

**1.3 REGULATORY REQUIREMENTS**

- A. Comply with local, state, and federal codes, rules and regulations applicable to demolition work including but not limited to erosion control, air pollution, noise pollution, and waste disposal.
- B. Contractor shall obtain and pay for permits required for demolition work.

#### 1.4 PROJECT SITE CONDITIONS

- A. Conduct demolition to minimize interference with adjacent structures.
- B. Maintain protected egress, ingress and access at all times for all streets, roads, alleyways, private, business and municipal entries.
- C. Provide, erect, and maintain temporary barriers and security devices.
- D. Conduct operations with minimum interference to public or private thoroughfares.
- E. Do not close or obstruct roadways and sidewalks without permits.

#### 1.5 SITE DEMOLITION REQUIREMENTS

- A. Traffic Control Signs:
  - 1. Where pedestrian and driver safety is endangered in area of removal work, use traffic barricades with flashing lights.
  - 2. Anchor barricades in a manner to prevent displacement by wind.
- B. Items to Remain in Place:
  - 1. Take necessary precautions to avoid damage to existing items scheduled to remain in place, to be reused, or to remain property of Owner or Utility.
  - 2. Repair or replace damaged items as approved by Utility Engineer or Utility Inspector.
  - 3. Construct and maintain shoring, bracing, and supports as required.
  - 4. Ensure that structural elements are not overloaded. Increase structural supports or add new supports as may be required as a result of any cutting, removal, or demolition work performed.
  - 5. Do not overload structural elements or pavements designated to remain.
  - 6. Provide new supports and reinforcement for existing construction weakened by demolition or removal work.
  - 7. Repairs, reinforcement, or structural replacement require approval by Utility Engineer prior to performing such work.
- C. Existing Conditions:
  - 1. Before beginning any demolition work, survey project site and examine drawings and specifications to determine extent of site demolition work.
  - 2. Protect trees within project site which might be damaged during demolition, and which are indicated to be left in place.
  - 3. If necessary, provide either approved hand or power-driven saw to trim existing trees, as approved by City Forester, where work is to be performed to prevent damage to tree from construction activities.
  - 4. Replace any tree designated to remain that is damaged during the work under this contract with like and kind or as approved by City of Oak Creek Urban Forester.
  - 5. Maintain existing utilities indicated to stay in service and protect against damage during demolition operations.
  - 6. Prior to start of work, utilities serving each area of alteration or removal will be shut off by Utility Owner and disconnected and sealed by Contractor.

## 1.6 HAZARDOUS MATERIALS

- A. If Contractor encounters a hazardous material during demolition process, it shall cease operations immediately and notify the City of Oak Creek Utility Engineer and Utility Inspector of its findings.
- B. City of Oak Creek Water and Sewer Utility will employ a Contractor, experienced and certified in removal and disposal of hazardous substances to perform removal and disposal work.
- C. Contractor shall not reinstate demolition operations until areas have been cleared for continuation of demolition work by the City of Oak Creek Water and Sewer Utility.

## **PART 2 - PRODUCTS – (Not Used)**

## **PART 3 - EXECUTION**

### 3.1 NOTIFICATION

- A. Contractor, prior to any excavation work, shall notify (1) a designated locating service; (2) all utilities, governmental agencies, entities, known to, or which can reasonably be assumed to have above or below ground pipe, conduit cables, structures, or similar items within limits of project; to locate and mark location of such items.
- B. In accordance with Wisconsin Statute 182.0175, "Damage to Transmission Facilities," Excavator, as defined in 182.0175(1)(bm), shall provide advance notice not less than three (3) working days before the start of nonemergency excavation to the one-call system, as defined in the statute, required to perform work contained in this Project, and further, Excavator shall comply with all other requirements of this Statute relative to Excavation.

### 3.2 PREPARATION

- A. Prevent movement or settlement of adjacent structures scheduled to remain.
- B. Provide bracing and shoring of adjacent structures scheduled to remain.
- C. Protect existing landscaping materials, appurtenances and structures which are not to be demolished.
- D. Disconnect, cap, and remove designated utility lines within demolition areas.
- E. Cooperate and work with local utility company to provide removal or disconnection of designated utility services.
- F. Mark location of disconnected utilities. Identify utilities and indicate capping locations on Project Record Documents.

### 3.3 DEMOLITION AND REMOVAL

- A. Except where specified in other sections, all materials and equipment removed, and not reused or salvaged shall become property of the Contractor.
- B. Demolish designated structures, pavements and related appurtenances in accordance with removal procedure and schedule established at Pre-Construction Meeting.
- C. Cease operations and notify the City of Oak Creek Utility Engineer and Utility Inspector immediately if adjacent utilities, structures or landscape features appear to be endangered.
- D. Do not resume operations until corrective measures have been taken.
- E. Immediately remove demolished material from site unless approved demolition procedure and schedule submitted in accordance with this section provides otherwise.
- F. Relics, antiques, and similar objects remain property of Owner.
- G. Notify City of Oak Creek Utility Engineer and Utility Inspector prior to removal and obtain acceptance regarding method of removal.
- H. Remove materials to be re-installed or retained in manner to prevent damage.
  - 1. Remove, store, and protect for re-installation following materials and equipment:
    - a. Homeowner and Business Mailboxes.
  - 2. Store and protect under provisions of Section 01 60 00 – Product Requirements.
- I. Remove following products and materials to be retained on property owner property for later re-installation.
  - 1. Existing Decorative Culvert Endwalls.
  - 2. Fencing.
- J. Remove following material and dispose off-site.
  - 1. Existing Corrugated Metal Pipe Culverts.
- K. Remove and promptly dispose of contaminated, vermin infested, or dangerous materials encountered.
- L. Do not burn or bury materials on site.
- M. Remove designated structures and foundation completely within area of new construction.
- N. Demolish and remove designated concrete pavement completely including designated:
  - 1. Sidewalks.
  - 2. Curb and Gutter.
  - 3. Driveways.
- O. Demolish and remove designated asphalt pavement completely including designated:
  - 1. Driveways.

2. Street and roads.

- P. Neatly saw cut pavement edges at right angle to surface to complete depth of pavement prior to shattering or mechanical removal.
- Q. Keep work wet to minimize dust. Provide hoses and water main or hydrant connections for this purpose. Obtain permits and pay for water usage as required by the Oak Creek Water and Sewer Utility.
- R. Backfill areas excavated, open pits, and holes caused as a result of demolition in non-paved areas with S1 or S2 subsoil specified in Section 31 05 13 – Soils for Earthwork and Type A2 fill as specified in 31 05 16 – Aggregates for Earthwork in paved areas.
- S. Rough grade and compact areas affected by building demolition to maintain and blend site grades and contours as indicated on Drawings.

**END OF SECTION**





## **SECTION 02 41 14**

### **UTILITY ABANDONMENT AND REMOVAL**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Abandonment in place of existing below grade water main utility services.
  - 2. Removal of below grade water main utility services.
  - 3. Disconnection and abandonment or removal of below grade utility services at property line.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 shall govern Work under this Section.
  - 2. Section 02 41 13 – Site Demolition: Demolition and removal of designated existing products and materials.
  - 3. Section 31 05 13 – Soils for Earthwork: Subsoil fill.
  - 4. Section 31 05 16 – Aggregates for Earthwork: Aggregate fill.
  - 5. Section 31 23 16 – Utility Trench Excavation, Backfill, and Compaction: Backfilling of abandoned or removed utility service excavations.

##### **1.2 REFERENCES**

- A. Standard Specifications for Sewer and Water Construction in Wisconsin (SSSW):
  - 1. Standard Specifications for Sewer and Water Construction in Wisconsin, Current Edition, with Addendum.
- B. State of Wisconsin Department of Transportation (WISDOT):
  - 1. Standard Specifications for Highway and Structure Construction, Current Edition.
- C. City of Oak Creek, Wisconsin:
  - 1. Ordinance for Construction Site Erosion Control.

##### **1.3 SUBMITTALS AT COMPLETION OF WORK**

- A. Section 01 70 00 – Execution and Closeout Requirements: Requirements for submittals.
  - 1. Project Closeout - Project Record Documents:
    - a. Record horizontal and vertical depth locations of pipe runs, connections, and utility structures abandoned.
    - b. Identify, indicate, and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

##### **1.4 REGULATORY REQUIREMENTS**

- A. Private Property Code Requirements:
  - 1. Conform to following codes as applicable to abandonment and removal Work of this Project:
    - a. State of Wisconsin Administrative Code, Department of Safety and Professional Services, Chapter SPS 381 – Definitions and Standards, Chapter SPS 382 – Design,

Construction, Installation, Supervision, and Inspection of Plumbing, and Chapter SPS 384 – Plumbing Products, and local code if more stringent for materials and installation of the Work of this Section.

- B. Contractor shall comply with local, state, and federal regulations applicable to Work of this Section.
- C. Contractor shall comply with and be solely responsible for compliance with U.S. Department of Labor OSHA Part 1926 Safety and Health Regulations for Construction for this Work.
- D. Contractor performing Work of this Section shall be solely responsible for identifying, furnishing, installing and maintaining equipment and materials required by State and Federal regulations to establish safe working conditions during Work of this Section.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS FOR UTILITY ABANDONMENT IN PLACE AND REMOVAL**

- A. Sand Fill: Aggregate Type A9 as specified in Section 31 05 16 – Aggregates for Earthwork.
- B. Cellular Concrete Fill:
  - 1. Blend of preformed foam with cement-sand grout slurry to produce a concrete having fresh weight per cubic foot of not less than 75 pounds.
  - 2. Cement-sand slurry shall be proportioned to contain eight (8) bags of Type 1A - Portland cement per cubic yard.
  - 3. Foam shall be similar or equal to Elastizell manufactured by Elastizell Corporation of America, Ann Arbor, MI.
- C. Concrete Backfill:
  - 1. Proportioned with 2.25 bags Type IA Portland cement.
  - 2. 6-cubic feet sand.
  - 3. 12-cubic feet well graded aggregate with maximum size of 1-inch aggregate.
- D. Aggregate Slurry Backfill: As specified in Section 31 23 17 – Site Excavation, Backfill and Compaction.
- E. Bulkhead Concrete:
  - 1. 3000 psi at 28 days.
  - 2. 3/4-inch maximum aggregate size.
  - 3. 4-inch slump.
  - 4. 423 pounds Portland Cement Type IA per cubic yard.
- F. Crushed Stone or Gravel: Free of friable material and debris; Type A1 or A2; as specified in Section 31 05 16 – Aggregates for Earthwork.
- G. Site Excavated (Spoil) or Imported Material: Type S1 or S2 as specified in Section 31 05 13 – Soils for Earthwork;

1. Consisting of loam, clay, gravel, sands or mixtures, for use as non-structural fill, within non-paved and non-foundation areas of project.
2. Fill requires prior approval by Utility Engineer upon written request from Contractor.
3. Fill shall be free of pavement fragments larger than three (3) inches, bituminous or concrete materials, vegetable or organic matter, all types of refuse and frozen material.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Maintain utility services until abandonment and removal work is authorized by Utility Engineer.
- B. Contact Oak Creek Water and Sewer Utility to identify and locate point of connection of utility lateral to site service line.
- C. Verify Oak Creek Water and Sewer Utility requirements for disconnection and abandonment of utility service at property line. Obtain necessary permits.

### **3.2 NOTIFICATION**

- A. Contractor, prior to any excavation work, shall notify (1) a designated locating service; (2) all utilities, governmental agencies, entities, known to, or which can reasonably be assumed to have above or below ground pipe, conduit cables, structures, or similar items within limits of project; to locate and mark location of such items.
- B. In accordance with Wisconsin Statute 182.0175, "Damage to Transmission Facilities," Excavator, as defined in 182.0175(1)(bm), shall provide advance notice not less than three (3) working days before the start of nonemergency excavation to the one-call system, as defined in the statute, required to perform work contained in this Project, and further, Excavator shall comply with all other requirements of this Statute relative to Excavation.

### **3.3 WATER MAIN ABANDONMENT**

- A. After installation of new water main, locate and identify alignment of old water main on site and valved connections to Utility System.
- B. Verify that valves are tightly closed without any leaks.
- C. Seal existing water main that is no longer in use watertight, place concrete bulkhead, and abandon. Provide permanent plugs prior to placing bulkhead.

### **3.4 WATER SERVICE LINE ABANDONMENT AND REMOVAL**

- A. Locate and identify alignment of water service lines on site and connection to Public Utility at property line.
- B. Excavate and expose existing curb boxes for removal.

- C. Remove existing curb boxes to a depth of three (3) feet below grade.
- D. Crimp and seal end of existing water service lateral.
- E. This Work is considered incidental to the new watermain construction.

3.5 ABANDONMENT OF EXISTING WATER MAIN VALVE BOXES

- A. Remove top section of existing water main valve box top section completely and dispose of.
- B. Fill remaining portions of existing water main valve box with specified cellular concrete fill.
- C. Verify that curb stop is tightly closed without any apparent leaks.

3.6 BACKFILL AND COMPACTION

- A. Place and compact backfill in accordance with Section 31 23 17 – Site Excavation, Backfill, and Compaction.

3.7 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspection.
- B. Request inspection prior to and during placing backfill.

**END OF SECTION**

## **SECTION 31 05 13**

### **SOILS FOR EARTHWORK**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Subsoil materials.
  - 2. Topsoil materials.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 02 41 13 - Site Demolition.
  - 3. Section 02 41 14 - Utility Abandonment and Removal.
  - 4. Section 31 05 16 - Aggregates for Earthwork.
  - 5. Section 31 10 00 - Site Clearing.
  - 6. Section 31 13 00 - Tree Removal and Grubbing.
  - 7. Section 31 22 13 - Rough Grading.
  - 8. Section 31 23 16 - Utility Trench Excavation, Backfill, and Compaction.
  - 9. Section 32 01 00 - Site Restoration.
  - 10. Section 32 91 19 - Landscape Grading.
  - 11. Section 32 92 00 - Turf and Grasses.

##### **1.2 REFERENCES**

- A. State of Wisconsin Department of Transportation (WISDOT):
  - 1. Standard Specifications for Highway and Structure Construction, Current Edition.
- B. ASTM International (ASTM):
  - 1. ASTM D2487 - Classification of Soils for Engineering Purposes (Unified Soil Classification System).
  - 2. ASTM D5268 – Topsoil Used for Landscaping Purposes.

##### **1.3 SUBMITTALS**

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Samples: Submit, in airtight containers, 10 lb. sample of each type of fill to testing laboratory.

- C. Product Data: Submit testing laboratory results for each type of specified soil.
- D. Materials Source: Submit name of source of imported materials.

#### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with Wisconsin Department of Transportation standards.

### **PART 2 PRODUCTS**

#### 2.1 SUBSOIL MATERIALS

- A. Subsoil Type S1:
  - 1. Excavated and re-used spoil material.
  - 2. Graded.
  - 3. Free of lumps larger than three (3) inches, rocks larger than two (2) inches, and debris.
  - 4. Contractor shall provide 10 lb sample of existing site material to laboratory for soil classification analysis conforming to ASTM D2487.
- B. Subsoil Type S2:
  - 1. Approved imported borrow.
  - 2. Graded.
  - 3. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
  - 4. Imported subsoil and borrow shall be similar in composition when compared to existing site subsoil.
  - 5. Contractor shall provide 10 lb sample of proposed imported borrow material to laboratory for soil classification analysis conforming to ASTM D2487.

#### 2.2 TOPSOIL MATERIALS

- A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots.
- B. Topsoil Type T1:
  - 1. Imported borrow.
  - 2. Friable loam.
  - 3. Soil shall be free of roots, twigs, stones, subsoil, debris, weeds, and foreign matter larger than 1/2 inch.
  - 4. Acidity range (pH) of 5.5 to 7.5.
  - 5. Containing minimum of four (4) percent and maximum of 25 percent inorganic matter.
  - 6. Limit decaying matter to five (5) percent of total content by volume.
  - 7. Topsoil shall be evaluated in accordance with ASTM D5268.

8. Contractor shall provide 10 lb. sample of proposed imported borrow material to laboratory for soil classification analysis conforming to ASTM D2487.

## 2.3 SOURCE QUALITY CONTROL.

- A. Section 01 40 00 - Quality Requirements: Testing and analysis of soil material.
- B. Testing and Analysis of Topsoil Material designated for Landscaping Purposes: Perform in accordance with ASTM D5268.
- C. When tests indicate materials do not meet specified requirements, change material and retest.
- D. Provide approved materials of each soil type of from same source throughout the Work.

## **PART 3 EXECUTION - Not Used**

**END OF SECTION**





## **SECTION 31 05 16**

### **AGGREGATES FOR EARTHWORK**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Aggregate materials and designations for utility structure base course.
  - 2. Aggregate materials and designations for pavement aggregate base course.
  - 3. Aggregate materials and designations for trench and pit backfill.
  - 4. Aggregate materials and designations for grading purposes.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 02 41 13 – Site Demolition.
  - 3. Section 02 41 14 – Utility Abandonment and Removal.
  - 4. Section 31 05 13 – Soils for Earthwork.
  - 5. Section 31 22 13 - Rough Grading.
  - 6. Section 31 23 16 - Utility Trench Excavation, Backfill, and Compaction.
  - 7. Section 32 01 00 – Site Restoration.
  - 8. Section 32 11 23 - Aggregate Base Course.
  - 9. Section 32 91 19 - Landscape Grading.

##### **1.2 REFERENCES**

- A. ASTM International (ASTM):
  - 1. ASTM C33 – Standard Specification for Concrete Aggregates.
  - 2. ASTM C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- B. State of Wisconsin Department of Transportation (WISDOT):
  - 1. Standard Specifications for Highway and Structure Construction, Current Edition.

##### **1.3 SUBMITTALS**

- A. Section 01 33 00 – Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit gradation information for each type of aggregate specified. Gradation results shall be taken within the past (3) months from contract date.
- C. Samples: Submit, in airtight containers, 10 lb sample of each type of fill to testing laboratory.

D. Materials Source: Submit name of source of imported materials.

#### 1.4 QUALITY ASSURANCE

A. Perform Work in accordance with Wisconsin Department of Transportation standards.

### PART 2 PRODUCTS

#### 2.1 AGGREGATE MATERIALS

A. Aggregate Type A1 (Gravel): WisDOT Section 305 – Dense Graded Base; Crushed Gravel: free of organic matter and debris; graded in accordance with:

1. WisDOT 3/4-Inch Gradation;

<u>Sieve Size</u>	<u>Percent Passing</u>
1-inch	100
3/4-inch	95-100
3/8-inch	50-90
No. 4	35-70
No. 10	15-55
No. 40	10-35
No. 200	5-15

B. Aggregate Type A2 (Gravel): WisDOT Section 305 – Dense Graded Base;; Crushed Gravel: free of organic matter and debris; graded in accordance with:

1. WISDOT 1-1/4-Inch Gradation;

<u>Sieve Size</u>	<u>Percent Passing</u>
1-1/4 inch	95-100
3/4-inch	70-93
3/8-inch	45-80
No. 4	30-63
No. 10	20-48
No. 40	8-28
No. 200	2-12

C. Aggregate Type A3 (Stone): WisDOT Section 310 – Open Graded Base; Crushed Stone; free of clay, shale, organic matter; graded in accordance with:

1. WISDOT Open Graded Base Gradation;

<u>Sieve Size</u>	<u>Percent Passing</u>
1 inch	90-100
3/8-inch	45-65
No. 4	15-45
No. 10	0-20
No. 40	0-10
No. 200	0-5

- D. Aggregate Type A4 (Water Main Bedding and Cover Material (Road Sand)) in accordance with ASTM C117 and ASTM C136: Unwashed bank-run sand, rejected concrete sand, or torpedo sand; free of clay or loam lumps and graded within following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
3/8-inch	100
No. 4	90-100
No. 16	45-80
No. 50	5-30
No. 100	1-10
No. 200	0-3

## 2.2 SOURCE QUALITY CONTROL.

- A. Section 01 40 00 – Quality Requirements: Testing and analysis of aggregates.
- B. When tests indicate materials do not meet specified requirements, change material or material source and retest.
- C. Furnish materials of each type from same source throughout the Work.

## PART 3 EXECUTION

Not Used

**END OF SECTION**



## **SECTION 31 10 00**

### **SITE CLEARING**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Removal of grass and vegetation.
  - 2. Herbicide application.
  - 3. Removal of site debris.
  - 4. Clearing activities near existing permanent utilities and structures.
  - 5. Protection of project entrances and exits.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 02 41 13 - Site Demolition: Removal of site demolition material.
  - 3. Section 31 13 00 - Tree Removal and Grubbing: Removal of trees and saplings including stumps and root system.
  - 4. Section 31 22 13 - Rough Grading: Removal of topsoil and subsoil.
  - 5. Section 31 23 16 – Utility Trench Excavation, Backfill, and Compaction: Backfill and compaction of cleared areas.
  - 6. Section 32 01 00 – Site Restoration: Restoration of site affected by construction activities.

##### **1.2 REFERENCES**

- A. State of Wisconsin Department of Transportation (WISDOT):
  - 1. Standard Specifications for Highway and Structure Construction, Current Edition.
- B. State of Wisconsin Department of Natural Resources (WDNR):
  - 1. Construction Site Erosion & Sediment Control.  
<http://dnr.wi.gov/topic/stormwater/>

##### **1.3 DEFINITIONS**

- A. Surface Water - Soil water that flows through ditch lines, creeks, and streams by gravity.
- B. Clearing – Removal of project site vegetation including lawns and related surface vegetation.
- C. Clearing Limits - Area designated on Drawings scheduled for clearing operations within project site or right-of-way.

#### 1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Submit product data for herbicide, including manufacturer's instructions, usage, and hazardous materials sheets.

#### 1.5 REGULATORY REQUIREMENTS

- A. Contractor shall comply with local, state, and federal regulations applicable to Work of this Section.
- B. Contractor shall comply with and be solely responsible for compliance with U.S. Department of Labor OSHA Part 1926 Safety and Health Regulations for Construction for this Work.
- C. Contractor performing Work of this Section shall be solely responsible for identifying, furnishing, installing and maintaining equipment and materials required by State and Federal regulations to establish safe working conditions during Work of this Section.
- D. Conform to applicable code for environmental requirements, disposal of debris, burning debris on site and use of herbicides.
- E. Coordinate clearing Work with utility companies.

### **PART 2 PRODUCTS – Not Used**

### **PART 3 EXECUTION**

#### 3.1 NOTIFICATION

- A. Contractor, prior to any excavation work, shall notify (1) a designated locating service; (2) all utilities, governmental agencies, entities, known to, or which can reasonably be assumed to, have above or below ground pipe, conduit cables, structures, or similar items within limits of project; to locate and mark location of such items.
- B. In accordance with Wisconsin Statute 182.0175, "Damage to Transmission Facilities," Excavator, as defined in 182.0175(1)(bm), shall be solely responsible to provide advance notice to "Diggers Hotline, Inc." (800-242-8511) not less than three working days prior to commencement of any Excavation, as defined in the statute, required to perform work contained in this Project, and further, Excavator shall comply with all other requirements of this Statute relative to Excavation.

#### 3.2 PREPARATION

- A. Verify erosion control is in place prior to start of Work.
- B. Verify that existing plant life designated to remain is tagged or identified and protected.

### 3.3 PROTECTION

- A. Maintain and repair damaged erosion control items throughout Work.
- B. Protect utilities that remain, from damage.
- C. Do not divert or relocate surface water without prior written approval from the Oak Creek Water and Sewer Utility Engineer.
- D. Protect trees, plant growth, and features designated to remain as final landscaping.
- E. Removal and grubbing of designated trees shall be as specified in Section 31 13 00 – Tree Removal and Grubbing.
- F. Protect benchmarks, survey control points, and existing structures from damage or displacement.
- G. Keep entrances and exits, and adjacent roadways affected, free of debris from clearing operations.

### 3.4 CLEARING

- A. Clear grass and related vegetation from work area required for removal of existing topsoil and subsoil scheduled for later spoil backfill re-use at project site.
- B. Do not mix grass and other surface vegetation with topsoil or subsoil to be re-used on project.
- C. Remove surface rock larger than two (2) inches within manicured lawn areas.
- D. Clear undergrowth and deadwood, without mixing with topsoil or subsoil scheduled to be re-used at project site.
- E. Apply herbicide to remaining vegetation to inhibit growth at areas identified to be cleared.

### 3.5 REMOVAL

- A. Remove debris, rock, and extracted plant life from site.
- B. Notify Utility Engineer and Utility Inspector if underground storage tanks or unknown piping is uncovered during Work.

- C. Cease work in immediate area of tanks until direction is given to proceed.

**END OF SECTION**



**SECTION 31 13 00**  
**TREE REMOVAL AND GRUBBING**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Removal of designated trees and saplings within project right-of-way, easement or other identified project areas including disposal off site.
  - 2. Grubbing and disposal off site of stumps, tree and sapling root systems.
  - 3. Protection of existing trees, saplings, shrubs and other plant life designated to remain.
  - 4. Pruning and trimming of limbs, branches and root systems that are interfering with construction activities.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 02 41 13 – Site Demolition: Removal of site demolition material.
  - 3. Section 31 10 00 - Site Clearing: Removal of lawns and other related surface vegetation.
  - 4. Section 31 22 13 - Rough Grading: Removal of topsoil and subsoil.
  - 5. Section 32 01 00 – Site Restoration: Restoration of affected areas from tree removal and grubbing.

**1.2 REFERENCES**

- A. State of Wisconsin Department of Transportation (WISDOT):
  - 1. Standard Specifications for Highway and Structure Construction, Current Edition.
- B. State of Wisconsin Department of Natural Resources (WDNR):
  - 1. Construction Site Erosion & Sediment Control.  
<http://dnr.wi.gov/topic/stormwater/>

**1.3 DEFINITIONS**

- A. Tree - Woody perennial plant, single main stem with trunk, diameter of six (6) inches or greater. Multiple-stem trees with forks up to four (4) feet from ground elevation shall be considered a cluster of trees. Trees that fork above four (4) feet shall be considered a single tree.
- B. Sapling - Woody perennial plant with single stem with trunk less than six (6) inches in

diameter.

- C. Root Zone - Area around a tree extending as far from tree base as longest horizontal branches.
- D. Surface Water - Soil water that flows through ditch lines, creeks, and streams by gravity.
- E. Grubbing - Clearing project site of removed tree and sapling roots and stumps.

#### 1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Submit product data for herbicide, including manufacturer's instructions, usage, and hazardous materials sheets.

#### 1.5 PRIOR IDENTIFICATION OF EXISTINGS TREES AND SHRUBS

- A. Contractor shall provide orange-colored ribbon identifying trees that will need to be removed by the Contractor for the installation of new construction.
- B. Contractor shall contact the City of Oak Creek Forester at number identified earlier in this manual, for prior approval for removing and disposal of existing trees as designated by Contractor.
- C. Provide approved hand or power-driven saw equipment to trim existing trees limbs, branches and roots as approved by City Forester, where work is to be performed to prevent damage to tree that is scheduled to remain from construction activities.

#### 1.6 REGULATORY REQUIREMENTS

- A. Contractor shall comply with local, state, and federal regulations applicable to Work of this Section.
- B. Contractor shall comply with and be solely responsible for compliance with U.S. Department of Labor OSHA Part 1926 Safety and Health Regulations for Construction for this Work.
- C. Contractor performing Work of this Section shall be solely responsible for identifying, furnishing, installing and maintaining equipment and materials required by State and Federal regulations to establish safe working conditions during Work of this Section.
- D. Conform to applicable code for environmental requirements, disposal of debris and use of herbicides at project location.
- E. Coordinate grubbing Work with utility companies, verifying underground utilities have

been identified prior to removal and grubbing of designated trees and saplings.

## **PART 2 PRODUCTS**

### **2.1 MATERIALS**

- A. Herbicide(s):
  - 1. Pre-emergence Herbicide: Liquid or wettable powder form; type which controls plants emerging from seed, but has no harmful effect on established plants when applied at recommended rates; resist leaching and remain effective throughout one growing season.
  - 2. Post-Emergence Herbicide: Water soluble and deactivate upon contact with soil, leaving no harmful residue; vegetation control herbicide when applied to leaves and stems of plants, is absorbed and translocated to all parts of plant including roots and underground stem; capable of killing entire plant.

## **PART 3 EXECUTION**

### **3.1 NOTIFICATION**

- A. Contractor, prior to any excavation work, shall notify (1) a designated locating service; (2) utilities, governmental agencies, entities, known to, or which can reasonably be assumed to, have above or below ground pipe, conduit cables, structures, or similar items within limits of project; to locate and mark location of such items.
- B. In accordance with Wisconsin Statute 182.0175, "Damage to Transmission Facilities," Excavator, as defined in 182.0175(1)(bm), shall be solely responsible to provide advance notice to "Diggers Hotline, Inc." (800-242-8511) not less than three working days prior to commencement of any Excavation, as defined in the statute, required to perform work contained in this Project, and further, Excavator shall comply with all other requirements of this Statute relative to Excavation.

### **3.2 PREPARATION**

- A. Verify erosion control is in place prior to start of Work.
- B. Verify that existing plant life designated to remain is tagged or identified and protected.
- C. Identify a temporary waste and salvage area for placing removed materials if permitted by Utility Engineer.

### **3.3 PROTECTION**

- A. Maintain and repair damaged erosion control items throughout Work.

- B. Protect utilities that remain from damage.
- C. Do not divert or relocate surface water without prior written approval from Utility Engineer.
- D. Protect trees, plant growth, and other features designated to remain as final landscaping.
- E. Protect benchmarks, survey control points, pavements, ditchlines, manicured lawn areas and existing structures from damage or displacement during tree removal and grubbing activities.
- F. Keep entrances, exits, and adjacent affected roadways free of dirt, gravel and related debris generated from tree removal and grubbing operations.

#### 3.4 REMOVAL OF CITY APPROVED TREES AND SHRUBS

- A. Remove City-approved trees and shrubs, including complete root system.
- B. Provide fill, similar to existing soils where trees and shrubs were removed. Fill and compact excavation holes.

#### 3.5 CLEARING

- A. Clear area required for access to site and execution of Work.
- B. Remove tree, sapling and shrub root system and dispose of offsite, within identified tree removal and grubbing areas, completely.
- C. Clear undergrowth and deadwood, without mixing with topsoil and subsoil that is scheduled to be re-used as spoil fill or backfill.
- D. Remove surface rock larger than two (2) inches from affected manicured lawn and ditch lines.

#### 3.6 REMOVAL CAUTIONS

- A. Notify Utility Engineer and Utility Inspector if underground storage tanks and piping is uncovered during Work.
- B. Cease work in immediate area of tanks until direction is given to proceed.

**END OF SECTION**

**SECTION 31 22 13**  
**ROUGH GRADING**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Removal of designated topsoil and subsoil.
  - 2. Cutting, grading, filling, rough contouring and compacting site for site structures, and pavements.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 02 41 13 – Site Demolition.
  - 3. Section 31 05 13 – Soils for Earthwork.
  - 4. Section 31 05 16 – Aggregates for Earthwork.
  - 5. Section 31 10 00 - Site Clearing.
  - 6. Section 31 13 00 – Tree Removal and Grubbing.
  - 7. Section 31 23 17 – Site Excavation, Backfill, and Compaction.
  - 8. Section 32 01 00 – Site Restoration: Restoration of areas disturbed or damaged during construction.
  - 9. Section 32 91 19 - Landscape Grading: Finish grading with salvaged topsoil to contours indicated.

**1.2 REFERENCES**

- A. State of Wisconsin Department of Transportation (WISDOT):
  - 1. Standard Specifications for Highway and Structure Construction, Current Edition.
- B. ASTM International (ASTM):
  - 1. ASTM C136 – Test Method For Sieve Analysis of Fine and Coarse Aggregates.
  - 2. ASTM D698 – Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort 12,400 ft.-lbf/ft<sup>3</sup>.
  - 3. ASTM D1557 - Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort 56,000 ft.-lbf/ft<sup>3</sup>.
  - 4. ASTM D6938 – Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

**1.3 CLOSEOUT SUBMITTALS**

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for project closeout submittals.

- B. Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients for identification on Record Drawings.

#### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with Wisconsin Department of Transportation standards.

### **PART 2 PRODUCTS**

#### 2.1 MATERIALS

- A. Topsoil: Type T1 as specified in Section 31 05 13 – Soils for Earthwork.
- B. Subsoil Fill: Type S1 and S2 as specified in Section 31 05 13 – Soils for Earthwork.
- C. Aggregate Backfill: Type A2, as specified in Section 31 05 16 – Aggregates for Earthwork.

### **PART 3 EXECUTION**

#### 3.1 NOTIFICATION

- A. Contractor, prior to any excavation work, shall notify (1) a designated locating service; (2) all utilities, governmental agencies, entities, known to, or which can reasonably be assumed to have above or below ground pipe, conduit cables, structures, or similar items within limits of project; to locate and mark location of such items.
- B. In accordance with Wisconsin Statute 182.0175, "Damage to Transmission Facilities," Excavator, as defined in 182.0175(1)(bm), shall be solely responsible to provide advance notice to "Diggers Hotline, Inc." (800-242-8511) not less than three working days prior to commencement of any Excavation, as defined in the statute, required to perform work contained in this Project, and further, Excavator shall comply with all other requirements of this Statute relative to Excavation.

#### 3.2 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify project survey benchmarks and intended elevations are as indicated on Drawings.

#### 3.3 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect existing underground and overhead utilities, indicated to remain,

from damage.

- D. Notify utility company to remove and relocate utilities as required for project.
- E. Protect trees and related plant life, manicured lawns, and other features remaining as portion of final landscaping.
- F. Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

#### 3.4 TOPSOIL EXCAVATION

- A. Excavate topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.
- B. Do not excavate wet topsoil.
- C. Stockpile in topsoil salvage area designated on site to depth not exceeding eight (8) feet and protect from erosion.
- D. Protect stockpiled topsoil material from erosion. Provide silt fencing or other approved erosion prevention methods.
- E. Remove excess topsoil not designated for spoil re-use from site.
- F. Excess topsoil to be disposed off site shall become property of Contractor. Legally dispose of excess topsoil.

#### 3.5 SUBSOIL EXCAVATION

- A. Excavate subsoil from areas to be further excavated, re-landscaped, or re-graded.
- B. Do not excavate wet subsoil or excavate and process wet material to obtain optimum moisture content.
- C. When excavating through roots, perform Work by hand and cut roots with mechanical saw or sharp ax.
- D. Remove excess subsoil not intended for reuse, from site.
- E. Stockpile in salvaged subsoil area designated on site to depth not exceeding eight (8) feet and protect from erosion.
- F. Protect stockpiled subsoil material from erosion. Provide silt fencing or other approved erosion prevention methods.
- G. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key placed fill

material to slope to provide firm bearing.

- H. Stability: Replace damaged or displaced subsoil as specified for fill in Section 31 05 13 – Soils for Earthwork.
- I. Excess subsoil to be disposed off site shall become property of Contractor. Legally dispose of excess subsoil.

### 3.6 FILLING

- A. Install salvaged topsoil and subsoil Work in accordance with Wisconsin Department of Transportation Standards.
- B. Fill areas to contours and elevations with unfrozen materials.
- C. Place fill material on continuous layers and compact in accordance with schedule at end of this section.
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Slope grade away from existing structures and buildings minimum two (2) inches in 10 feet, unless noted otherwise on Drawings.
- F. Make grade changes gradual. Blend slope into level areas.
- G. Remove surplus fill materials from site.

### 3.7 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Top Surface of Subgrade: Plus or minus 1/10-foot from required elevation.

### 3.8 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Testing and inspection services.
- B. Testing and Analysis of Fill Material: In accordance with ASTM D698 or ASTM D1557 depending upon if soil is re-used spoil or imported from outside source.
- C. Density and Moisture Testing: In accordance with ASTM D6938.
- D. When tests indicate Work does not meet specified requirements, remove Work, replace, and retest.
- E. Frequency of Tests: As determined by Utility Engineer and Utility Inspector.



### 3.9 SCHEDULES

- A. Aggregate Fill:
  - 1. Fill Type A2: Maximum seven (7) inch loose lifts.
  - 2. Compact each lift to minimum 95 percent of modified Proctor density.
- B. Subsoil Fill:
  - 1. Fill Type S1 or S2: Maximum 12-inch loose lifts.
  - 2. Compact each lift to minimum 95 percent of modified Proctor density.
- C. Topsoil Fill:
  - 1. Fill Type T1: Maximum 12-inch loose lifts.
  - 2. Compact each lift to minimum 85 percent of modified Proctor density.

**END OF SECTION**



## **SECTION 31 23 17**

### **SITE EXCAVATION, BACKFILL, AND COMPACTION**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

**A. Section Includes:**

1. Verification of subsurface conditions and utilities prior to excavation.
2. Saw cutting of pavements prior to excavation.
3. Excavation for utility structures.
4. Excavation of trenches for sanitary sewer collection system.
5. Excavation of trenches for water distribution system.
6. Pipe insulation for piping and related appurtenances in shallow trenches.
7. Utility structure backfilling to subgrade elevations.
8. Backfill requirements for utility trenches.
9. Backfill for over-excavation corrections.
10. Consolidation and compaction.

**B. Related Sections:**

1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
2. Section 31 05 13 – Soils for Earthwork: Subsoil and topsoil fill materials.
3. Section 31 05 16 – Aggregates for Earthwork: Aggregate fill materials.
4. Section 31 22 13 - Rough Grading: Topsoil and subsoil removal from site surface.
5. Section 32 01 00 – Site Restoration: Restoration of areas disturbed during construction activities.
6. Section 32 11 23 – Aggregate Base Course: Preparation for aggregate base course for pavements.
7. Section 32 91 19 - Landscape Grading: Topsoil placement.
8. Section 33 10 13 –Water Main Installation: Installation of public water main system.
9. Section 33 12 13 – Water Service Laterals: Installation of water service laterals.

##### **1.2 REFERENCES**

**A. ASTM International (ASTM):**

1. ASTM C518 - Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
2. ASTM C578 – Specification for Rigid, Cellular Polystyrene Thermal Insulation.

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3. ASTM D698 - Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort 12,400 ft.-lbf/ft<sup>3</sup>.
4. ASTM D1557 - Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort 56,000 ft.-lbf/ft<sup>3</sup>.
5. ASTM D1621 - Test Method for Compressive Properties of Rigid Cellular Plastics.
6. ASTM D2842 - Test Method for Water Absorption of Rigid Cellular Plastics.
7. ASTM D2487 - Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
8. ASTM D6938 – Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

B. State of Wisconsin Department of Transportation (WISDOT):

1. Standard Specifications for Highway and Structure Construction, Current Edition.

### 1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Samples: Submit 10 lb. sample of each type of specified fill to testing laboratory, in airtight containers.
- C. Provide certified analysis of material(s) to Utility Engineer and Utility Inspector prior to any use on Work.

### 1.4 REGULATORY REQUIREMENTS

- A. Contractor shall comply with all local, state, and federal regulations applicable to Work of this Section.
- B. Contractor shall comply with and be solely responsible for compliance with U.S. Department of Labor OSHA Part 1926 Safety and Health Regulations for Construction for this Work.
- C. Contractor performing Work of this Section shall be solely responsible for identifying, furnishing, installing and maintaining equipment and materials required by state and federal regulations to establish safe working conditions during Work of this Section.

## PART 2 PRODUCTS

### 2.1 BEDDING AND BACKFILL MATERIALS

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Site Excavation, Backfill and  
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- A. Water Main Bedding and Cover Material: Type A6, as defined in Section 31 05 16 – Aggregates for Earthwork.
- B. Crushed Gravel Backfill: Type A2 as defined in Section 31 05 16 – Aggregates for Earthwork.
- C. Crushed Stone Backfill: Type A3 as defined in Section 31 05 16 – Aggregates for Earthwork.
- D. Site Excavated Material (Spoil) Backfill: Type S1 as defined in Section 31 05 13 – Soils for Earthwork.
- E. Imported Subsoil Material Backfill: Type S2 as defined in Section 31 05 13 – Soils for Earthwork.

## 2.2 AGGREGATE SLURRY BACKFILL

- A. Place materials in a clean cement mixer truck and thoroughly mixed in following quantities:
 

1,350 lbs.	sand
775 lbs.	1-1/4 Inch stone
1,150 lbs.	3/4 Inch stone
25 gals.	(+0 to -0.5) water/cu.yd.
- B. Aggregate slurry backfill shall conform to above with addition of a minimum of one bag of cement per cubic yard.

## 2.3 PIPE INSULATION

- A. Extruded polystyrene board to ASTM C578, Type V, rigid, closed cell type, with integral high density skin.
  - 1. Thermal Resistance: Typical 5 year aged value of R-5 per 1 inch of thickness per ASTM C518.
  - 2. Board Size: 24 x 96 x 2-inch thick. Square edges.
  - 3. Compressive Strength: Minimum 100 psi per ASTM D1621.
  - 4. Water Absorption: 0.7 percent by volume maximum per ASTM D2842.
- B. Insulation shall be Dow Chemical Company STYROFOAM™ Highload 100 or an approved equal.

## PART 3 EXECUTION

### 3.1 NOTIFICATION

- A. Contractor, prior to any excavation work, shall notify (1) a designated locating service; (2) all utilities, governmental agencies, entities, known to, or which can reasonably be assumed to have above or below ground pipe, conduit cables, structures, or similar items within limits of project; to locate and mark location of such items.
- B. In accordance with Wisconsin Statute 182.0175, "Damage to Transmission Facilities," Excavator, as defined in 182.0175(1)(bm), shall be solely responsible to provide advance notice to "Diggers Hotline, Inc." (800-242-8511) not less than three working days prior to commencement of any Excavation, as defined in the statute, required to perform work contained in this Project, and further, Excavator shall comply with all other requirements of this Statute relative to Excavation.

### 3.2 SITE VERIFICATION

- A. Verify that survey benchmark and intended elevations for Work are as indicated.

### 3.3 MATERIAL ENCOUNTERED

- A. No variation from the price named in the proposal will be made or allowed whether the material through which excavations must be made are hard or soft, and wet or dry.
- B. It is the Contractor's responsibility to determine for themselves the character, nature, type and condition of materials likely to be encountered in the proposed work.
- C. The submission of a proposal for the work herein shall in itself be accepted as evidence that the Contractor has examined the site of all work, made borings, investigations and studies of all conditions and provided for all such conditions in their proposal.
- D. Any and all necessary dewatering shall be in accordance with Section 31 23 19 – Site Dewatering.
- E. Contractor will be required to obtain a high capacity dewatering permit prior to start of construction for dewatering rate of 70 gallons per minute (gpm) or higher.
- F. Contractor is responsible to reconnect existing field tiles that may be encountered during excavation. Existing tiles must be repaired and connected to a storm sewer or have positive outfall provided.
- G. This Work is considered incidental to the new watermain construction.

### 3.4 FIELD MEASUREMENTS

- A. Verify that survey benchmark and intended elevations for the Work are as shown on Drawings.
- B. Primary line and grade will be furnished by Oak Creek Water and Sewer Utility and will be established by Contractor.
- C. Contractor shall notify Oak Creek Water and Sewer Utility 48 hours prior to its need for line and grade. Any cost as a result of delay experienced by Contractor due to its failure to adhere to this requirement shall be borne by Contractor.
- D. Line and grade stakes will be set by Oak Creek Water and Sewer Utility, parallel to proposed sanitary sewer, and water main and offset there from in a manner that will best serve Contractor's work operations wherever practical. Stakes will also be set opposite each manhole. Contractor shall provide Oak Creek Water and Sewer Utility with desired offset.
- E. Contractor shall render whatever assistance may be required by Oak Creek Water and Sewer Utility and shall arrange its work operations in such manner as to avoid interference with establishment of primary lines and grades.
- F. Contractor shall check accuracy of line and grade stakes by means of visual and taping checks and shall be responsible for protection and preservation of such stakes.
- G. Initial primary line and grade will be set by Oak Creek Water and Sewer Utility at no cost to Contractor. Cost of re-staking shall be borne by Contractor.
- H. Contractor shall bear sole responsibility for correct transfer of all construction lines and grades from primary line and grade points and for correct alignment and grade of finished structure, based upon primary line and grade established by Oak Creek Water and Sewer Utility.
- I. Except for those lot corners and survey monuments that fall within trench excavation, Contractor shall be solely responsible for protection and replacement of all survey corners that exist throughout work area.
- J. Corners will be located and marked by Oak Creek Water and Sewer Utility, upon request by Contractor, prior to commencing its work.
- K. A Registered Land Surveyor shall replace damaged corners at Contractor's expense if corners are damaged by construction activities.

### 3.5 SAWING AND BREAKING PAVEMENT

- A. Maximum width allowed for saw-cutting and removing of existing pavements shall be

four (4) feet for the installation of new laterals and hydrants.

- B. Saw concrete pavement, slabs or bases to full depth of existing pavement, slab, or base prior to removal.
- C. Saw cut asphalt surface course and asphalt binder course full depth before removal.
- D. Cut pavements evenly along edges of excavation prior to their removal in such a way as to avoid excessive removal or ragged, uneven edges.
- E. A drop weight or other type of machinery for breaking pavement when approved by Oak Creek Water and Sewer Utility may be used when such usage does not become a nuisance or a source of damage to underground or adjacent structures.
- F. Prior to employing a drop weight, Contractor shall verify that there are no nearby underground structures that would be injured by its use.
- G. Contractor shall be solely responsible for any damage caused thereby.
- H. Oak Creek Water and Sewer Utility reserves right to order discontinuance of use of such drop weight at any time.

### 3.6 PREPARATION FOR EXCAVATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Notify utility company to remove and relocate utilities that interfere with Work.
- D. Protect above and below grade utilities indicated to remain.
- E. Protect plant life, manicured lawns and other features remaining as portion of final landscaping.
- F. Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- G. Cut out soft areas of subgrade not capable of in-situ compaction. Backfill with Type A2, as specified in Section 31 05 16 – Aggregates for Earthwork, fill and compact to density equal to or greater than requirements for subsequent backfill material.

### 3.7 FIELD QUALITY CONTROL FOR EXCAVATION

- A. Field inspection will be performed under provisions of Section 01 40 00 – Quality



Requirements.

- B. Provide for visual inspection of bearing surfaces.

### 3.8 UTILITY STRUCTURE EXCAVATION

- A. Underpin adjacent structures that may be damaged by excavation work, including utilities and pipe chases.
- B. Excavate subsoil required to accommodate placement of new site structures and pavements and construction operations.
- C. Machine slope banks to angle of repose or less, until shored.
- D. Excavation cut not to interfere with normal 45 degree bearing splay of foundation.
- E. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- F. Hand trim excavation. Remove loose matter.
- G. Remove lumped subsoil, boulders, and rock.
- H. Notify Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- I. Correct unauthorized excavation at no extra cost to Owner.
- J. Correct areas over-excavated in error.
- K. Stockpile excavated spoil subsoil in area designated on site and remove excess material not being reused, from site.
- L. Protect excavated spoil subsoil from erosion. Provide silt fencing or other approved erosion prevention methods.
- M. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key placed fill material to slope to provide firm bearing.
- N. Stability: Replace damaged or displaced subsoil as specified for fill in Section 31 05 13 – Soils for Earthwork.
- O. Excess excavated spoil subsoil to be disposed off site shall become property of Contractor. Legally dispose of excess subsoil.

### 3.9 EXPOSING EXISTING SANITARY SEWER AND WATER MAIN

- A. Before excavation of trench is begun, Contractor shall uncover stub end of existing utility to which new utility is to be connected. This will permit adjustments in line and grade and verify connection required.
- B. Securely plug existing terminations in manholes to which new utilities are to be connected to prevent entry of construction water and debris into active system.
- C. Contractor shall be responsible to verify that plug(s) are in place at end of each workday.
- D. Contractor shall remove any water or debris from terminal manhole as required but not less than once a week.

### 3.10 TRENCH EXCAVATION

- A. Excavate subsoil required for installation of utility.
- B. Excavate trenches at top of pipe to a maximum width based on dimension of outside diameter of pipe plus 24 inches to enable installation of pipe and to allow inspection.
- C. Width at top of pipe may be increased with prior approval of Utility Engineer and Utility Inspector to allow for stringers and sheathing when required.
- D. Provide pipe laid in open-cut trench with 6-inch minimum clearance between outside face of pipe barrel and face of sheathing or sidewall of trench.
- E. Maximum width of trench at ground surface shall not exceed width of trench at top of pipe by more than two (2) feet without prior request to Utility Engineer and Utility Inspector, unless it is specifically allowed on Drawings.
- F. Place excavated material stored along trench excavation a minimum distance back from edge of trench. Determine distance by angle of repose of trench material to prevent surcharging of trench wall material leading to potential shearing of trench wall and collapse of trench.
- G. Store excavated spoil material to be used for trench backfilling so that it will not interfere with:
  - 1. Public travel.
  - 2. Adjacent property owners or tenants.
  - 3. Other Contractors.
- H. Contractor shall immediately remove and dispose of excavated spoil material which is not to be used as trench backfill, unless directed otherwise by Contract Documents.

- I. Oak Creek Water and Sewer Utility reserves right to order up to 10 percent of surplus excavated material to be delivered to Owner's streets, alleys, public properties, or locations designated by Oak Creek Water and Sewer Utility.
- J. Cost of delivering and leveling such surplus material to any point within a driving distance of five (5) miles from site of work shall be include in unit prices bid for work.
- K. After delivery to designated location, material shall be leveled off at direction of Oak Creek Water and Sewer Utility.
- L. Contractor shall maintain all finished excavations free of water or sewage during Work.
- M. Hand trim excavation. Remove loose matter.
- N. Remove lumped subsoil, boulders, and rock up to 1/3 cubic yard, measured by volume.
- O. Correct unauthorized excavation and over-excavated areas at no cost to Owner.
- P. Excavate no more trench in advance of completed pipe laying operations than can be completed and backfilled by end of workday.
- Q. Do not obstruct more than one (1) street crossing by same trench at any one time.

### 3.11 TRENCH BEDDING

- A. Keep trench bottom free of water prior to placement of bedding and laying of pipe.
- B. Place and shape bedding material to pipe, to a minimum depth of three (3) inches under bell and four (4) inches under spigot and compact to 95 percent modified Proctor density.
- C. Support pipe during placement and compaction of bedding material.
- D. Bring bedding and cover material over top of pipe to a minimum compacted depth of 12 inches, compact to specified density.
- E. Where sand is used for cover material, compact sand with portable plate compactor to a depth of twelve inches in two (2) lifts of six inches each for initial cover over pipe when access of larger compaction equipment is not possible.

### 3.12 PIPE INSULATION

- A. Insulate pipes with less than six (6) foot of cover with a minimum of one (1) two-inch thick sheet of extruded polystyrene insulation.
- B. Laterals with less than six (6) foot of cover shall have a minimum four (4) inch thick

sheet of extruded polystyrene insulation covering lateral piping.

- C. Extend insulation a minimum of two (2) feet each side of pipe centerline.
- D. Sheet insulation shall be minimum two (2) feet each side of pipe centerline and in addition shall have four (4) inches of insulation board placed vertically at end of horizontal board to bottom of excavated trench.

### 3.13 PROTECTION

- A. Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

### 3.14 EXAMINATION PRIOR TO BACKFILLING

- A. Verify fill material to be reused is acceptable related to structural capacity and compactability.

### 3.15 BACKFILLING

- A. Backfill with materials and to contours and elevations shown on Drawings. Generally, compact subgrade to density requirements for subsequent backfill materials.
- B. Place specified backfill in loose lift layers. Use compaction equipment that will achieve desired compaction requirements.
- C. Systematically backfill to allow for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- D. Employ a placement method that does not disturb or damage pipe in trench.
- E. Maintain optimum moisture content of backfill materials to attain required compaction density.
- F. Slope grade away from new and existing structures or buildings a minimum two (2) inches in 10 feet, unless noted otherwise.
- G. Make grade changes gradual. Blend slope into level areas.
- H. Leave fill material stockpile areas completely free of excess fill materials.
- I. Remove surplus backfill materials from site.

### 3.16 MECHANICAL COMPACTION

- A. Mechanically compact backfill by means of a tamping roller, sheepsfoot roller, pneumatic tire roller, vibrating roller, or other mechanical tampers. Impact, free-fall, or "stomping" type compaction equipment shall not be allowed.
- B. Flooding or jetting of backfill for compaction purposes shall not be allowed.
- C. Contractor shall furnish written notification to Oak Creek Water and Sewer Utility prior to start of work as to size and type of mechanical compaction equipment to be used.
- D. Place material for mechanically compacted backfill in lifts, which, prior to compaction, shall not exceed thickness specified below for type of compaction equipment used:
  - 1. Vibratory equipment including vibratory plate, vibratory smooth-wheel rollers, and vibratory pneumatic-tired rollers: maximum lift thickness two (2) feet.
  - 2. Rolling equipment, including sheepsfoot (both vibratory and non-vibratory), grid, smooth-wheel (non-vibratory), pneumatic-tired (non-vibratory), and segmented wheels: maximum lift thickness one (1) foot.
  - 3. Hand-directed mechanical tampers: maximum lift thickness of six (6) inches.

### 3.17 TOLERANCES FOR BACKFILL

- A. Top Surface of Backfill: Plus or minus 1 inch from required elevations.

### 3.18 COMPACTION REQUIREMENTS

- A. Aggregate material shall be compacted to 95 percent of modified Proctor density.
- B. Excavated spoil material to be used for backfill shall be compacted to a density equal to adjacent undisturbed trench wall or as specified.

### 3.19 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01 40 00 – Quality Requirements.
- B. Testing and analysis of fill material will be performed in accordance with ASTM D698 and D1557 dependent upon if fill material is reused spoil or imported material. Testing and analysis will also be performed in accordance with Section 01 40 00 – Quality Requirements.
- C. Compaction and moisture testing will be performed in accordance with ASTM D6938 and Section 01 40 00 – Quality Requirements.

- D. If tests indicate Work does not meet specified requirements, remove Work, replace, and retest at no cost to Owner.

### 3.20 DISTRIBUTION OF EXCESS EXCAVATED MATERIAL

- A. The disposal of all surplus excavated materials shall be the responsibility of the Contractor, shall be at the Contractor's expense and if disposed of within the limits of the City of Oak Creek, shall comply with the following regulations.
  - 1. Contractor prior to the start of construction shall indicate the location at which the surplus excavated material will be disposed of.
  - 2. The placement of fill on private lands located in the City of Oak Creek is under City regulation, in accordance with the Municipal Code.
- B. The disposal of surplus excavated materials, including that derived from public works construction, is subject to compliance with this code. Basically, the code provides for only the following forms of landfilling:
  - 1. When the fill comprises of less than 1,000 cubic yards and is to be placed on a parcel of land of one acre or less in size. An application shall be made to the City Engineer for a permit, on a one-time-only basis. A \$300.00 fee, plus an applicable erosion control permit and fee, is required.
  - 2. Shoreline erosion control, whereby a license must be applied for and granted prior to landfilling activity being undertaken.
  - 3. On a site, where fill may be needed in conjunction with building construction and where a building permit is in effect.
  - 4. On City-owned property, subject to plans approved by the Common Council.
  - 5. On a site where a landfill license is in effect.
  - 6. This work considered incidental to the new Water Main construction.

### 3.21 PROTECTION OF FINISHED WORK

- A. Re-shape and re-compact fills subjected to vehicular traffic.
- B. Contractor shall have available a supply of steel plates with minimum dimensions of four (4) feet by eight (8) feet by one (1) inch.
- C. Use plates to bridge open trenches crossing roadways and secure against possibility of shifting or dropping into excavation.
- D. During winter months, do not leave plates in roadway over night. Trenches shall be backfilled and compacted prior to completion of each workday that are required to remain open during project construction.

### 3.22 SCHEDULE OF BACKFILL

- A. Section 31 05 16 – Aggregates for Earthwork defines “A” designated fill materials and Section 31 05 13 – Soils for Earthwork defines “S” designated fill materials.
- B. Fill to Correct Over-Excavation:
  - 1. Aggregate Type A2 fill, flush to required elevation, compacted to 90 percent modified Proctor density.
- C. Utility Piping - Sand Bedding and Cover:
  - 1. Aggregate Type A4 fill. Place materials in continuous loose lifts layers not exceeding 12-inch depth, compacted to 95 percent modified Proctor density.
- D. Utility Trench – Backfill in Paved Areas:
  - 1. Aggregate Type A2 fill. Place materials in continuous loose lifts layers not exceeding 12-inch depth, compacted to 95 percent modified Proctor density.
- E. Utility Trench – Backfill in Non-paved Areas:
  - 1. Subsoil Type S1 or S2 fill, to six (6) inches below finish grade. Place materials in continuous loose lifts layers not exceeding 12-inch depth, compacted to 95 percent modified Proctor density or to the density of existing adjacent soils. Consult with Utility Engineer and Utility Inspector prior to commencing this Work.
- F. Fill Under Grass Area.
  - 1. Subsoil Type S1 or S2 fill, to six (6) inches below finish grade. Place materials in continuous loose lifts layers not exceeding 12-inch depth, compacted to 85 percent modified Proctor density or to the density of existing adjacent soils. Consult with Utility Engineer and Utility Inspector prior to commencing this Work.
- G. Fill Under Landscaped Areas:
  - 1. Subsoil Type S1 or S2 fill, to 18 inches below finish grade. Place materials in continuous loose lifts layers not exceeding 12-inch depth, compacted to 85 percent modified Proctor density or to the density of existing adjacent soils. Consult with Utility Engineer and Utility Inspector prior to commencing this Work.

### 3.23 FREQUENCY OF COMPACTION TESTS

- A. General Excavation and Fill: One (1) test for every 1000 Cubic Yards.
- B. Excavation and Backfill for Trenches (Gravel): One (1) test for every 300 Cubic Yards.
- C. Excavation and Backfill for Trenches (Spoil): One (1) test for every 750 Cubic Yards.

- D. Undercut Excavation: One (1) test for every 1000 Cubic Yards.

**END OF SECTION**



**SECTION 31 23 19**  
**SITE DEWATERING**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Requirements to keep excavations, trenches and other parts of Work dry during construction.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 31 23 17 – Site Excavation, Backfill, and, Compaction.

**1.2 SUBMITTALS**

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

**1.3 REGULATORY REQUIREMENTS**

- A. Contractor shall comply with applicable rules and regulations for dewatering operations in accordance with:
  - 1. State of Wisconsin Department of Natural Resources, (DNR) -Storm Water Construction and Post-Construction Technical Standards.  
[http://dnr.wi.gov/topic/stormwater/documents/Dewatering\\_1061.pdf](http://dnr.wi.gov/topic/stormwater/documents/Dewatering_1061.pdf)
- B. Contractor shall obtain permits applicable to work of this Section as required by the regulatory agencies. Comply with the City of Oak Creek, Wisconsin Erosion Control Ordinance to control, handle, and dispose of ground and surface water.

**PART 2 PRODUCTS**

**2.1 EQUIPMENT**

- A. Contractor shall provide equipment and related accessories specifically applicable to dewatering work.
- B. Equipment shall be operated and maintained in an manner to produce acceptable results.

**PART 3 EXECUTION**

**3.1 REMOVAL AND DISPOSAL OF WATER**

- A. Provide equipment and methods to remove water entering excavations, trenches, and other parts of Work.
- B. Maintain excavations and trenches relatively dry until construction is completed.
- C. Maintain water level at an elevation to prevent flotation of installed Work until backfilling or other means to prevent flotation are in place.
- D. Use of a well point system shall be submitted to Utility Engineer for review and comment prior to its use.
- E. Contractor shall dispose of water from Work in accordance with applicable agency rules and regulations.
- F. Unless prior approval is obtained, do not discharge ground or surface water to a sanitary or storm sewer.
- G. Under no circumstances shall a water main be used for discharge of ground or surface water.

### 3.2 FLOODING OF STRUCTURES

- A. Contractor shall be responsible for keeping pumps, motors, electrical systems, and equipment dry during construction.
- B. Replace equipment, electrical and communication systems, or similar items submerged or water damaged during construction at no cost to Owner.

### 3.3 DEWATERING WELLS AND PUMPS

- A. Dewatering sumps and wells shall be adequately sheathed and braced.
- B. Drill dewatering wells and maintain in accordance with:
  - 1. State of Wisconsin (DNR) rules and regulations.
  - 2. Contractor shall comply with other local, state or federal agency having jurisdiction related to Work of this Section.
- C. Abandon dewatering wells at completion of Work in accordance with:
  - 1. State of Wisconsin (DNR) regulations for abandonment of wells.
  - 2. Contractor shall comply with other local, state or federal agency having jurisdiction related to Work of this Section.

### 3.4 EXISTING AREA WELLS

- A. Contractor shall be responsible for damage to, or contamination of, existing private or public wells in area of Work as a result of its dewatering.
- B. It is recommended that Contractor, prior to initiating project dewatering, inspect and sample

existing wells that may be affected by dewatering operations to establish a pre-construction record.

- C. Provide a copy of well inspection record to Utility Engineer.
- D. Contractor shall be responsible for any cost of furnishing a potable water supply to residents and businesses whose wells are affected by dewatering work.
- E. Contractor shall restore any well damaged by dewatering work to its original condition and acceptable use.
- F. Contractor shall pay all costs of restoration and testing.

**END OF SECTION**



## **SECTION 32 01 00**

### **SITE RESTORATION**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Work necessary to restore to its original or specified condition following items, either removed to facilitate construction or damaged during Work. Restoration of:
    - a. Asphalt pavement and driveways.
    - b. Concrete pavement, driveways, curb and gutter, and sidewalk.
    - c. Public and private lawn areas.
    - d. Right-of-way landscaping.
    - e. Easement areas.
    - f. Open fields and agricultural areas.
    - g. Existing trees, bushes, and shrubs.
    - h. Grades in ditches, lawns, and fields.
    - i. Miscellaneous landscape and drainage facilities.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 31 05 16 – Aggregates for Earthwork.
  - 3. Section 32 11 23 – Aggregate Base Course.
  - 4. Section 32 12 16 – Asphalt Paving.
  - 5. Section 32 13 13 – Concrete Paving.
  - 6. Section 32 92 00 – Turf and Grasses.

##### **1.2 REFERENCES**

- A. State of Wisconsin, Department of Transportation (WISDOT):
  - 1. Standard Specification for Highway and Structure Construction, Current Edition.

##### **1.3 TESTS**

- A. Testing and analysis of restoration materials will be performed under provisions of Section 01 40 00 – Quality Requirements.

##### **1.4 SUBMITTALS**

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

## **PART 2 PRODUCTS**

### **2.1 AGGREGATE BASE COURSE**

- A. As specified in Section 32 11 23 – Aggregate Base Course.

### **2.2 ASPHALT MIX**

- A. As specified in Section 32 12 16 – Asphalt Paving.

### **2.3 BITUMINOUS TACK COAT**

- A. As specified in Section 32 12 16 – Asphalt Paving.

### **2.4 CONCRETE MATERIALS**

- A. As specified in Section 32 13 13 – Concrete Paving.

### **2.5 TOPSOIL**

- A. Imported, black dirt type friable loam; free of subsoil, stones, roots, grass, excessive amount of weeds, and foreign matter; acidity range (pH) of 5.5 to 7.5; containing an minimum of 25 percent of organic matter.
- B. Mix soil amendments to achieve desired pH as follows: 4 parts topsoil, 1 part humus, and 1 pound of bone meal per cubic yard of topsoil.

### **2.6 GRASS SEED – MANICURED LAWNS**

- A. Seed mixture for manicured lawns shall be in accordance with Section 32 92 00 – Turf and Grasses.

### **2.7 GRASS-SEED - RIGHT OF WAY EXCLUDING LAWNS**

- A. Seed mixture No. 10 or 20 as specified in WISDOT Section 630.

## **PART 3 EXECUTION**

### **3.1 GENERAL**

- A. Replace paved surfaces, curbs and gutters, sidewalks, driveways and driveway approaches, lawns, trees, shrubs, and other surface features disturbed or damaged during Work as specified herein or as called for on Drawings.
- B. Provide protective covers or coatings for any exposed portions of bridges, culverts, curb

and gutter, manholes, valve boxes, fences, signs or other public or private structures that may be splashed, stained or damaged by restoration activities especially during asphalt or concrete work.

- C. Remove any oil, asphalt, concrete, dirt or other undesirable matter that may come in contact with these structures.
- D. Adjust manholes, catch basins, valve boxes and similar items to established finished grade for restored area, and include such work as part of project cost.
- E. Contractor shall contact owner of private manholes, catch basins, valve boxes and similar items requiring adjustment to receive direction as to procedures and materials to use for said adjustment.
- F. Compaction of Subgrade: Prior to restoration work contained in this Section, Contractor shall verify that backfilling and compaction has been completed and excavations and areas disturbed by Work brought up to finished subgrade elevation in accordance with requirements contained in this Project Manual.
- G. Settlement or other failure of restoration work will require its removal, rework of subgrade and application of new restoration materials.
- H. Contractor shall be responsible for maintenance, repair, protection and safety of disturbed areas prior to its restoration.
- I. Contractor shall provide as part of its project cost crushed stone, gravel, asphalt patching material or other temporary materials required to keep disturbed areas in a condition for use they were intended.
- J. Contractor shall maintain disturbed areas on a continuous basis from time work if it initiated until restoration is completed including but not limited to maintenance of grade, elevations, crowns, compaction, dust elimination and drainage.
- K. Contractor shall immediately respond to requests from Utility Engineer or Utility Inspector relative to received complaints of unsatisfactory conditions.

### 3.2 DRAINAGE FACILITIES

- A. Contractor shall maintain ditches and drainage facilities during Work. Upon completion of Work, restore to approved condition.
- B. Replace materials damaged during construction in kind as approved by Utility Engineer.
- C. Contractor shall immediately notify Utility Engineer if it encounters materials that are in

poor condition due to deterioration or failure for direction on replacement.

- D. Contractor shall assume responsibility to replace materials at their cost if notification is not given to Utility Engineer prior to removal.
- E. Replace existing piping damaged or disturbed during construction activities by installing new pipe to existing line and grade. Install pipe on four (4) inches of bedding material.
- F. Install other utility appurtenances in accordance with requirements contained in other Sections of this Project Manual.
- G. Where no information as to installation is contained in this Project Manual, contact Utility Engineer for direction before proceeding.
- H. If Contractor encounters underground piping that appears to be abandoned, Contractor shall notify both owner of property and Utility Engineer to verify that pipe is in fact abandoned and need not be replaced or repaired.

### 3.3 LAWN REPLACEMENT

- A. Replace lawn areas to match existing unless directed otherwise on Drawings or required by easement or right-of-way permit.
- B. Eliminate uneven areas and low spots. Remove debris, roots, branches, and stones in excess of 1/2-inch size. Remove subsoil contaminated with petroleum products.
- C. Rotary till subgrade to a depth of four (4) inches prior to placement of topsoil.
- D. Place four (4) inches of topsoil over areas to be seeded.
- E. Place topsoil during dry weather and on dry, unfrozen subgrade.
- F. Seed Placement:
  - 1. Apply seed at a rate of seven (7) pounds per 1000 square feet evenly in two (2) intersecting directions. Rake in lightly. Do not seed area in excess of that which can be mulched on same day.
  - 2. Do not sow immediately following rain, when ground is too dry, or during windy periods.
  - 3. Roll seeded area with a light roller.
  - 4. Immediately following seeding and rolling. Apply mulch to 1/8-inch thickness. Maintain clear of shrubs and trees.
  - 5. Apply water with a fine spray immediately after each area has been mulched. Saturate into four (4) inches of soil.
  - 6. Identify seeded areas with stakes and string around area periphery. Set string height to 12 inches.



7. Cover seeded slopes where grade is four (4) inches per foot or greater with erosion fabric.
  - a. Roll fabric onto slope without stretching or pulling.
  - b. Secure outside edges and overlaps at 36-inch intervals with stakes.
  - c. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum six (6) inches.
8. Maintain seeded area until growth is assured including watering, control of weed growth, replacement of areas that show bare spots, and protection of area.

#### 3.4 TREES, SHRUBS, BUSHES

- A. Contractor, at its expense, shall maintain any tree, shrub, or bush within construction or easement limits designated to remain.
- B. Contractor shall not store excavated material or backfill materials on root system of trees.
- C. If Contractor finds it necessary to remove or relocate a tree, bush, or shrub designated to remain, remove and replant within 24 hours of removal.
- D. If designated tree, bush, or shrub does not survive transplant Contractor shall replace with in kind plant material at its expense.
- E. Do not remove, cut back, or trim trees, shrubs, or bushes unless specifically allowed in Contract Documents or with prior written approval of owner of easement or right-of-way with a copy of such written approval furnished to Utility Engineer prior to commencing work.
- F. Neatly cut roots one (1) inch or larger in diameter perpendicular to direction of growth.
- G. Neatly cut branches perpendicular to direction of growth at main limb or trunk.
- H. When Contractor replaces trees, shrubs, or bushes, perform planting during normal Spring and Fall planting seasons and as conditions permit planting. Do not install plant material when ground is frozen.
- I. Contractor shall vertically brace plants with protection wrapped guy wires and stakes as follows:
  1. Provide one (1) stake and tie for plant up to one (1) inch diameter.
  2. Provide two (2) stakes and ties for plants up to two (2) inches in diameter.
  3. Provide three (3) guy wires with eyebolts and turnbuckles for plants over two (2) inches in diameter.
- J. Contractor shall maintain plants from time of planting for 30 days. Maintenance includes watering, spraying, cultivating, weeding, fertilizing, and cutting and pruning to maintain plants in a healthy condition.

### 3.5 PROTECTION AND RESTORATION OF PROPERTY

- A. Contractor shall use every reasonable precaution to prevent damage to or destruction of public or private property such as, but not limited to, poles, mailboxes, fences, agricultural crops adjacent to or interfering with the Work; overhead structures such as wires and cables; and underground structures such as water and gas mains, pipes, conduits, and shutoff boxes, within or without construction limits.

### 3.6 RESTORATION OF GRADES AND ELEVATIONS

- A. Contractor shall restore grade and radiuses of ditches and culverts encountered during the Work to original unless directed otherwise by contract documents.
- B. Contractor shall re-establish grade and elevations of property disturbed by the Work to original condition unless directed otherwise by Drawings.
- C. Contractor shall identify, protect, and preserve property and survey marks and monuments and shall notify Utility Inspector of location of these markers as discovered. Do not disturb or destroy these markers.
- D. Contractor shall bear costs of replace or restoration of survey markers or monuments destroyed or disturbed during course of its work.

### 3.7 EXCESS MATERIAL

- A. Contractor shall remove and dispose of excess materials produced as a result of restoration work of this Section.
- B. Perform disposal of excess and removed material in accordance with local, state, or federal regulations.
- C. Burning and on site disposal are not allowed.

### 3.8 GUARANTEE

- A. Contractor shall guarantee restoration work against defective workmanship, materials, or labor for a period of one (1) year from date of substantial completion as established by the General Conditions.

## **END OF SECTION**

## **SECTION 32 11 23**

### **AGGREGATE BASE COURSE**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Aggregate Materials.
  - 2. Sub-grade Preparation.
  - 3. Test Rolling Equipment and Procedures.
  - 4. Aggregate Installation Requirements.
  - 5. Aggregate Shoulder.
  - 6. Base Course Schedule.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 31 05 16 – Aggregates for Earthwork.
  - 3. Section 31 22 13 - Rough Grading: Preparation of site for base course.
  - 4. Section 31 23 17 – Site Excavation, Backfill, and Compaction.
  - 5. Section 32 01 00 – Site Restoration: Restoration of disturbed or damaged work areas caused by construction activities.
  - 6. Section 32 12 16 – Asphalt Paving: Binder and surface asphalt courses.
  - 7. Section 32 13 13 - Concrete Paving: Finished concrete pavement, sidewalk, curb and gutter.

##### **1.2 REFERENCES**

- A. State of Wisconsin Department of Transportation (WISDOT):
  - 1. Standard Specifications for Highway and Structure Construction, Current Edition.
- B. ASTM International (ASTM):
  - 1. ASTM D698 – Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort 12,400 ft.-lbf/ft<sup>3</sup>.
  - 2. ASTM D1557 – Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort 56,000 ft.-lbf/ft<sup>3</sup>.
  - 3. ASTM D6938 – Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

## **PART 2 PRODUCTS**

### **2.1 AGGREGATE MATERIALS**

- A. Aggregate Material: Type A2 as specified in Section 31 05 16 – Aggregates for Earthwork.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify substrate is dry and has been inspected, and gradient and elevation are correct.

### **3.2 SUBGRADE PREPARATION**

- A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and recompact.
- B. Do not place fill on soft, muddy, or frozen surfaces.

### **3.3 TEST ROLLING SUBGRADE**

- A. Test rolling shall be used to verify stability and uniformity of subgrade. Perform this Work in presence of Utility Inspector.
- B. Use test rolling equipment conforming to following description:
  - 1. Tandem axle, dual wheel dump truck.
  - 2. Tire pressure shall be no less than 90 percent of manufacturer's recommended maximum inflation.
  - 3. Minimum gross weight of loaded truck shall be 60,000 pounds.
  - 4. Provide weigh slip for each dump truck used for test rolling to Utility Inspector or Geotechnical Engineer.
- C. Perform test rolling procedure as follows:
  - 1. Operate equipment at a rate not to exceed three (3) to five (5) mph or a comfortable walking pace. Adjust speed to allow Utility Inspector or Geotechnical Engineer to measure any deflections and areas of rutting.
  - 2. Operate test rolling equipment in a pattern so that affected areas are loaded with at least one (1) pass.
  - 3. After test rolling, check subgrade for conformance to drawings, and correct any surface irregularities. Re-shape subgrade within tolerances specified.
- D. Test Rolling Evaluation:
  - 1. Rutting up to one (1) inch is acceptable. Rutting in excess of one (1) inch, but not more than six (6) inches, shall be considered a failure and requires reworking soil

- and compaction to required density.
2. Deflection (pumping) up to one (1) inch is acceptable. Deflection in excess of one (1) inch but not more than two (2) inches shall be acceptable if there is not substantial cracking or lateral movement of soil.
  3. Deflection in excess of two (2) inches but not more than six (6) inches shall be considered a failure, and requires reworking soil and compaction to required density.
  4. Rutting and deflection in excess of six (6) inches will require review and recommendation for corrective action by a Utility approved Geotechnical Engineer.
  5. After remedial work is performed, a final test roll shall be performed upon completion of work.
  6. If remedial work is performed as directed, second test roll may be waived at discretion of Utility Inspector or Geotechnical Engineer.

### 3.4 AGGREGATE INSTALLATION REQUIREMENTS

- A. Spread aggregate over prepared substrate to a total compacted thickness as indicated on Drawings.
- B. Place aggregate in maximum seven (7) inch loose lifts and compact to specified density.
- C. Level and contour surfaces to elevations and gradients indicated.
- D. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.
- E. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- F. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

### 3.5 AGGREGATE SHOULDERS

- A. Construct aggregate shoulders to elevations and typical sections shown on Drawings, except for minor modifications needed to conform to other work.
- B. Use equipment that does not damage or mar pavement surface, curbs, or appurtenances.
- C. Place aggregate directly on shoulder area between pavement edge and outer shoulder limits.
- D. Recover uncontaminated material deposited outside limits and place within limits.

- E. Do not deposit aggregate on pavement during placement, unless Utility Inspector specifically allows. Do not leave aggregate on pavement overnight.
- F. After placing Type A1 shoulder aggregate, keep pavement surface free of loose aggregate.
- G. Spread and compact aggregate in compacted layers of six (6) inches or less.
- H. Compact aggregate until there is no appreciable displacement, either laterally or longitudinally, under compaction equipment.
- I. Route hauling equipment uniformly over previously placed base. Compact each layer before placing a subsequent layer.
- J. If gravel material is too dry to readily attain required compaction, add water as necessary to achieve compaction.
- K. After final compaction, shape shoulders to remove all longitudinal ridges to ensure proper drainage.

### 3.6 TOLERANCES

- A. Section 31 05 16 – Aggregates for Earthwork defines “A” designated base course materials.
- B. Flatness: Maximum variation of 1/2-inch measured with 10-foot straight edge.
- C. Scheduled Compacted Thickness: Within 1/2-inch.
- D. Variation from Design Elevation: Within 1/2-inch.

### 3.7 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspection.
- B. Perform compaction testing in accordance with ASTM D698, ASTM D1557, ASTM D6938, and Section 01 40 00 - Quality Requirements.
- C. Perform moisture content testing in accordance with ASTM D6938 and Section 01 40 00 - Quality Requirements.
- D. If tests indicate Work does not meet specified requirements, remove Work, replace, and retest.
- E. Frequency of Tests: As determined by Utility Inspector or Geotechnical Engineer.

### 3.8 BASE COURSE SCHEDULE

- A. Section 31 05 16 – Aggregates for Earthwork defines “A” designated base course materials.
- B. Under Asphalt Pavement:
  - 1. Aggregate Type A2, compact to 95 percent modified Proctor density.
- C. Under Concrete Pavement, Sidewalk and Curb and Gutter:
  - 1. Aggregate Type A2, compact to 95 percent modified Proctor density.
- D. Aggregate Shoulder:
  - 1. Aggregate Type A1, compact to 95 percent modified Proctor density.

**END OF SECTION**





## **SECTION 32 12 16**

### **ASPHALT PAVING**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Asphalt Paving Mix.
  - 2. Asphalt Materials.
  - 3. Aggregate Base Course.
  - 4. Tack Coat Preparation.
  - 5. Asphalt Pavement - Single Course Installation.
  - 6. Placing Asphalt Pavement - Two Course Installation.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 31 05 16 – Aggregates for Earthwork: Product requirements for aggregate for placement by this section.
  - 3. Section 31 22 13 - Rough Grading: Preparation of site for paving and base.
  - 4. Section 32 01 00 – Site Restoration: Restoration of disturbed or damaged work areas caused by construction activities.
  - 5. Section 32 11 23 - Aggregate Base Course: Compacted granular base for paving.
  - 6. Section 32 13 13 – Concrete Paving: Concrete pavement, curb and gutter, driveways, approaches and sidewalks.

##### **1.2 REFERENCES**

- A. State of Wisconsin Department of Transportation (WISDOT):
  - 1. Standard Specifications for Highway and Structure Construction, Current Edition.

##### **1.3 SUBMITTALS**

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit product information and mix design.
- C. Certification: Provide Manufacturer's Certification Report that indicates Products and Materials meet or exceed all specified requirements.

#### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with Wisconsin Department of Transportation Standards.
- B. Mixing Plant: Conform to
  - 1. WISDOT Section 450.
- C. Obtain materials from same source throughout asphalt work.
- D. Any new water main laterals under existing pavement that is not scheduled to be removed, shall be bored using directional drill methods as specified in Section 33 05 24 – Horizontal Directional Drilling.
- E. Do not remove any pavement without verifying that the pavement is identified to be removed as indicated on Drawings.

#### 1.5 QUALIFICATIONS

- A. Installer: Company specializing in performing Work of this section with minimum five (5) years experience.

#### 1.6 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or if surface is wet or frozen.
- C. Install Work in accordance with
  - 1. WISDOT Section 450.
- D. Place bitumen mixture when mixture temperature is not more than 15 degrees F below bitumen supplier's bill of lading and not more than maximum specified temperature.

### **PART 2 PRODUCTS**

#### 2.1 ASPHALT PAVING MIX

- A. Use dry material to avoid foaming. Mix uniformly.
- B. Provide Asphaltic Concrete Binder Course Mixtures as specified below:
  - 1. Asphaltic Concrete Binder Course: WISDOT Section 460, Type E-3, in accordance with Table 460-1, Aggregate Gradation Master Range, 19.0 mm, and Table 460-2, Mixture Requirements, PG 64-22.

- C. Provide Asphaltic Concrete Surface Course Mixtures as specified below:
  - 1. Asphaltic Concrete Surface Course: WISDOT Section 460, Type E-3, in accordance with Table 460-1, Aggregate Gradation Master Range, 9.5 mm, and Table 460-2, Mixture Requirements, PG 64-22.

- D. Recycled Asphalt Pavement (RAP) shall not be used.

## 2.2 ASPHALT MATERIALS

- A. Tack Coat: SS-1, SS-1h, CSS-1, or CSS-1h in accordance with WISDOT Section 455.

## 2.3 SOURCE QUALITY CONTROL AND TESTS

- A. Section 01 40 00 - Quality Requirements: Testing, inspection and analysis requirements.
- B. Submit proposed mix design for each mixture to Utility Engineer for review and approval prior to beginning of Work.
- C. Provide test samples in accordance with Section 01 40 00 - Quality Requirements.
- D. Perform Asphaltic Concrete Testing when required by Oak Creek Water and Sewer Utility in accordance with:
  - 1. WISDOT Section 460.

# PART 3 EXECUTION

## 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify compacted subgrade and aggregate base is acceptable and ready to support paving and imposed loads.
- C. Verify gradients and elevations of base are correct.

## 3.2 AGGREGATE BASE COURSE

- A. Section 32 11 23 - Aggregate Base Course forms base course construction for Work of this section.

## 3.3 TACK COAT APPLICATION

- A. Apply tack coat in accordance with
  - 1. WISDOT Section 455.

- B. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of 1/2 gal/sq yd.
- C. Apply tack coat to contact surfaces of curbs and other vertical asphalt and concrete surfaces that will be hidden, but in direct contact with new asphalt.
- D. Coat surfaces of manholes, catch basins, inlets, and related utility frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

#### 3.4 ASPHALT PAVEMENT - SINGLE COURSE INSTALLATION

- A. Install asphalt pavement in accordance with
  - 1. WISDOT Section 450.
- B. Place asphalt within 24 hours of applying tack coat.
- C. Place to thickness indicated in the Schedule at the end of this Section.
- D. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- E. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

#### 3.5 PLACING ASPHALT PAVEMENT - TWO COURSE INSTALLATION

- A. Install asphalt pavement in accordance with
  - 1. WISDOT Section 450.
- B. Place asphalt binder course within 24 hours of applying tack coat.
- C. Place surface course within 24 hours of placing and compacting binder course. When binder course is placed more than 24 hours before placing surface course, thoroughly clean binder surface and apply tack coat before placing surface course.
- D. Place surface course to thickness indicated in the Schedule at the end of this Section.
- E. Install utility grilles and frames in correct position and elevation prior to installation of pavement.
- F. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- G. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

### 3.6 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Flatness: Maximum variation of 1/8-inch measured with 10-foot straight edge.
- C. Scheduled Compacted Thickness: Within 1/4-inch.
- D. Variation from Indicated Elevation: Within 1/4-inch.

### 3.7 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

### 3.8 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting finished work.
- B. Immediately after placement, protect pavement from mechanical injury for 12 hours or until surface temperature is less than 140 degrees F, whichever occurs first.

### 3.9 ASPHALT PAVEMENT THICKNESS SCHEDULE

- A. Road Asphalt Pavement – Provide five (5) inch minimum thickness or match existing asphalt pavement thickness. Only full single lane panel pavement replacement is permitted for shaded areas on Drawings at streets identified in unit price description for 5-inch Asphalt Pavement. Provide a minimum three (3) inch binder course with a two (2) inch surface course.
- B. Pathway Asphalt Pavement - Provide three (3) inch minimum thickness of binder course pavement for pathway. Match and replace existing pathway size (width and length) that was removed during site demolition.
- C. Residential Driveway Asphalt Pavement – Provide three (3) inch minimum thickness of surface course pavement or match existing concrete driveway pavement thickness. Match and replace existing driveway size (width and length) that was removed during site demolition.

**END OF SECTION**



## **SECTION 32 13 13**

### **CONCRETE PAVING**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Materials and Installation requirements for exterior concrete components as follows;
    - a. Street and road pavement.
    - b. Driveway pavement.
    - c. Sidewalks.
    - d. Curb and combination curb and gutter.
    - e. Handicap ramps.
    - f. Aggregate base course.
  - 2. Exterior Concrete Design Requirements as follows;
    - a. Concrete mix design.
    - b. Reinforcement.
    - c. Concrete curing and sealing.
    - d. Jointing.
    - e. Quality control and testing.
    - f. Concrete placement and finishing.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern all work under this Section.
  - 2. Section 31 22 13 - Rough Grading: Preparation of site for paving and base.
  - 3. Section 31 23 17 – Site Excavation, Backfill, and Compaction: Compacted sub-base for paving.
  - 4. Section 32 01 00 – Site Restoration: Restoration of existing concrete pavement in accordance with local and state requirements.
  - 5. Section 32 11 23 - Aggregate Base Course: Compacted aggregate base for paving.
  - 6. Section 33 12 16 - Asphalt Paving: Asphalt surface course.
  - 7. Section 32 91 19 - Landscape Grading: Preparation and placement of subsoil and topsoil at pavement perimeter.

##### **1.2 REFERENCES**

- A. State of Wisconsin Department of Transportation (WISDOT):
  - 1. Standard Specifications for Highway and Structure Construction, Current Edition with latest supplements.

- B. American Association of State Highway and Transportation Officials (AASHTO):
  - 1. AASHTO M194 - Chemical Admixtures for Concrete.
- C. ASTM International (ASTM):
  - 1. ASTM C309 - Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
  - 2. ASTM D1751 - Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction Nonextruding and Resilient Bituminous Types.
- D. United States Access Board:
  - 1. ADA Accessibility Guidelines for Buildings and Facilities (ADAAG):

### 1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Submit proposed mix design of each class of concrete to Engineer not later than 10 days after Notice to Proceed or 15 days prior to the first concrete placement, whichever comes first.
- C. Contractor shall submit a jointing plan for expansion, isolation, contraction and construction joints prior to placing any concrete.
- D. Jointing plan shall include details for doweled joints indicating dowel bar size and length, dowel supports, and distance between dowels.
- E. Jointing plan shall include details for tie bar joints indicating tie bar size and length, tie bar supports, and distance between tie bars.
- F. Include sequence of concrete placement indicating location of construction joints.
- G. Jointing plan shall meet the requirements of the referenced ACI Standards.
- H. Failure to submit a jointing plan to the Utility Engineer prior to the placement of any concrete will result in the rejection of concrete placed prior to Utility Engineer review and approval of jointing plan.
- I. Product Data: Submit data on joint filler, reinforcement, admixtures, and curing compounds.

### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with State of Wisconsin Department of Transportation Highways standards.



- B. Obtain cementitious materials from same source throughout.
- C. Any new water main laterals under existing pavement that is not scheduled to be removed, shall be bored using directional drill methods as specified in Section 33 05 24 – Horizontal Directional Drilling.
- D. Do not remove any pavement without verifying that the pavement is identified to be removed as indicated on Drawings.

## 1.5 ENVIRONMENTAL REQUIREMENTS

- A. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

## PART 2 PRODUCTS

### 2.1 FORM MATERIALS

- A. Conform to WISDOT Section 415.

### 2.2 REINFORCEMENT

- A. Reinforcing Steel: Epoxy-coated finish; WISDOT Section 505.
- B. Dowels: WISDOT Section 505.

### 2.3 CONCRETE MATERIALS

- A. Concrete Materials: As specified in WISDOT Section 501.
- B. Provide in accordance with State of Wisconsin Department of Transportation Highways standards.

### 2.4 ACCESSORIES

- A. Curing Compound: ASTM C309, Type 2, Class B, linseed oil based compound, in accordance with WISDOT Section 415.
- B. Joint Filler: ASTM D1751, Bituminous fiber, 1/2-inch wide by depth of concrete less 1/4-inch.
- C. Form Release Agent: Colorless material which will not stain concrete, absorb moisture or impair natural bonding or color characteristics of coating, intended for use on concrete.

### 2.5 DETECTABLE WARNING PANELS

- A. Design shall comply with ADAAG guidelines.

- B. Each handicap ramp shall have nominal 24 x 48-inch truncated dome detectable warning panels. Material shall be ASTM A240 stainless steel, 16 gauge thickness. Panels shall be as manufactured by MetaDome, LLC or an approved equal.
- C. Finish:
  - 1. Powder coat finish, safety yellow, slip resistant.
- D. Tolerances:
  - 1. Squareness: 1/8-inch maximum difference in diagonal measurements.
  - 2. Maximum Deviation From Plane: 1/16-inch in 48 inches.

## 2.6 CONCRETE MIX - BY STANDARD DESIGN MIX

- A. State of Wisconsin Department of Transportation Highways Standard Design Grades and Schedule of Use:
  - 1. Grade A, A-FA, A-S, A-T, A-IS, and A-IP: For concrete pavement, incidental construction, and concrete in structures not designated as using other grades. Also use these grades, as modified in WisDOT 502.3.5.3, for concrete placed underwater.
  - 2. Grade A-FA, A-S, A-T, A-IS, A-IP: For concrete for structures if used in decks, parapets, medians, and sidewalks.
  - 3. Grade A2 and A-S2: For concrete pavement, curb, gutter, curb & gutter, barrier, or sidewalk if placing by a slip-formed process.
  - 4. Grade A3: For concrete pavement and incidental construction on low volume State Trunk Highways and other roads under municipal or local jurisdiction in areas that a proven performance record exists for similar mixes. Use only in locations and applications specifically delineated in the contract.
  - 5. Grade B, B-FA, B-S, B-IS, and B-IP: For concrete base.
  - 6. Grade C, C-FA, C-S, C-IS, and C-IP: For concrete pavement repair and replacement, and other uses if required in the contract.
  - 7. Grade E: For overlays and repairs on decks of structures and approaches.

## 2.7 SOURCE QUALITY CONTROL AND TESTS

- A. Section 01 40 00 - Quality Requirements: Provide mix design for each type of concrete submitted by Contractor to Utility Engineer.
- B. Submit proposed mix design of each grade of concrete to approved testing firm for review prior to commencement of Work.
- C. Tests on cement, aggregates, and mixes will be performed to ensure conformance with specified requirements.
- D. Test samples in accordance with WISDOT Section 501.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify compacted subgrade and granular base is acceptable and ready to support paving and imposed loads.
- C. Verify gradients and elevations of base are correct.

### **3.2 SUBBASE**

- A. Section 32 11 23 - Aggregate Base Course, forms the base construction for Work of this section.

### **3.3 PREPARATION**

- A. Moisten base to minimize absorption of water from fresh concrete.
- B. Coat surfaces of manhole, inlet, catch basin frames and related utility items with oil to prevent bond with concrete pavement.
- C. Notify Utility Inspector at a minimum of 24 hours prior to commencement of concreting operations.

### **3.4 FORMING**

- A. Place and secure forms to correct location, dimension, profile, and gradient.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

### **3.5 REINFORCEMENT**

- A. Place reinforcement as required by WisDOT standards for State of Wisconsin roads and highways that are part of the project.

### **3.6 PLACING CONCRETE**

- A. Place concrete in accordance with State of Wisconsin Department of Transportation Highway standards.
- B. Concrete using the slip form technique shall be approved by Utility Engineer and Utility Inspector prior to concrete placement.

- C. Ensure reinforcement, inserts, embedded parts, formed joints and are not disturbed during concrete placement.
- D. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

### 3.7 JOINTS

- A. Place contraction joints as follows for identified entities:
  - 1. Curb and Gutter: 10 feet.
  - 2. Sidewalks: 5 feet.
  - 3. Area Paving:
    - a. 6-inch non-reinforced slabs: 10 foot to 12 foot spacing in each direction.
    - b. 7-inch non-reinforced slabs: 15 foot to 20 foot spacing in each direction.
- B. Place expansion joints using joint filler as follows for identified entities:
  - 1. Curb and Gutter: 300 feet.
  - 2. Sidewalks: 100 feet.
  - 3. Area Paving: Areas next to building foundation and fixed components with separate foundations.
- C. Jointing shall be performed by hand tools or saw cutting as approved by Utility Engineer. Jointing tools and equipment must provide minimum joint depth as specified by ACI requirements.
- D. If method of jointing is saw cutting, Contractor shall perform saw cutting operations as soon as possible following curing process, without damaging new concrete.

### 3.8 FINISHING

- A. Area Paving: Broom.
- B. Sidewalk Paving: Broom, edges radius to 1/2-inch radius.
- C. Curbs and Gutters: Broom.
- D. Direction of Texturing: Transverse to pavement direction.
- E. Place curing compound on exposed concrete surfaces immediately after finishing.

### 3.9 JOINT FILLER PLACEMENT

- A. Separate pavement from fixed vertical surfaces with foundations with 1/2-inch thick joint filler.
- B. Place joint filler in pavement pattern placement sequence. Set top to required elevations.

Secure to resist movement by wet concrete.

- C. Extend joint filler from bottom of pavement to within 1/4-inch of finished surface.

### 3.10 TOLERANCES

- A. Maximum Variation of Surface Flatness: 1/4-inch in 10 ft.
- B. Maximum Variation From True Position: 1/4-inch.

### 3.11 FIELD QUALITY CONTROL

- A. Provide concrete test cylinders as required by WisDOT Standards.
- B. One (1) additional test cylinder will be taken during cold weather and cured on site under same conditions as concrete it represents.
- C. One (1) slump test will be taken for each set of test cylinders taken.
- D. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

### 3.12 PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit vehicular traffic over pavement for seven (7) days minimum after finishing or until 75 percent design strength of concrete has been achieved.

### 3.13 CONCRETE PAVEMENT THICKNESS SCHEDULE

- A. Road Pavement – Provide seven (7) inch minimum thickness or match existing concrete pavement thickness. Only full single lane panel pavement replacement permitted.
- B. Residential Driveway Pavement – Provide five (5) inch minimum thickness or match existing concrete driveway pavement thickness. Match and replace existing driveway size (width and length) that was removed during site demolition.
- C. Residential Driveway Approaches – Provide six (6) inch minimum thickness. Match and replace existing driveway approach size (width and length) that was removed during site demolition.
- D. Sidewalks – Provide five (5) inch minimum thickness. Match and replace existing sidewalk size (width and length) that was removed during site demolition.
- E. School Driveway Pavement – Provide eight (8) inch minimum thickness. Match and

replace existing school driveway size (width and length) that was removed during site demolition.

- F. School Driveway Approaches – Provide eight (8) inch minimum thickness. Match and replace existing school driveway approach size (width and length) that was removed during site demolition.

**END OF SECTION**

**SECTION 32 17 23**  
**PAVEMENT MARKING**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Marking Materials.
  - 2. Marking Equipment.
  - 3. Marking Preparation.
  - 4. Marking Application.
  - 5. Marking Application Tolerances.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 32 12 16 - Asphalt Paving.
  - 3. Section 32 13 13 - Concrete Paving.

**1.2 REFERENCES**

- A. American Association of State Highway and Transportation Officials (AASHTO)
  - 1. AASHTO M248 - Ready-Mixed White and Yellow Traffic Paints.
- B. Code of Federal Regulations (CFR)
  - 1. 49 CFR 59 – National Volatile Organic Compound Emission Standards for Consumer and Commercial Products.
- C. State of Wisconsin Department of Transportation
  - 1. Standard Specifications for Highway and Structure Construction, Current Edition. (WISDOT)

**1.3 SUBMITTALS**

- A. Section 01 33 00 - Submittal Procedures: Requirements for Submittals.
- B. Submit manufacturer's technical information, application instructions and samples of materials being furnished.
- C. Submit certified report of test or analysis provided by manufacturer indicating that actual results of test made by independent testing laboratory indicating that materials being supplied meet or exceed materials specified.

- D. Provide Hazardous Material Data Sheets for materials furnished under this Section.
- E. Manufacturer's Installation Instructions: Submit instructions for application temperatures, eradication requirements, application rate, line thickness, and any other data on proper installation.
- F. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

#### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with Wisconsin Department of Transportation standards.

#### 1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum five (5) years documented experience.
- B. Applicator: Company specializing in performing work of this section with minimum five (5) years documented experience.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in accordance with Section 01 60 00 - Product Requirements.
- B. Ship components to site in unopened containers, plainly marked with manufacturer's name and address, color of material (colored container lids permitted), date of manufacturer, batch number, and component.

#### 1.7 ENVIRONMENTAL REQUIREMENTS

- A. Marking materials shall not exude fumes, toxic or injurious, to persons or property during application.
- B. Marking paint shall not contain mercury, lead, hexavalent chromium or halogenated solvents. Paint shall comply with 40 CFR 59.
- C. Material not used within one (1) year of date of manufacture indicated on container shall be rejected.
- D. Application surface shall be dry and free from frost, contaminants, and debris that would prevent proper bonding.
- E. Material shall be capable of curing fully under following minimum constant surface temperatures; +40 degrees F. for slow set; +25 degrees F. for regular set; +20 degrees F. for rapid set.



## **PART 2 PRODUCTS**

### **2.1 MARKING MATERIALS**

- A. Cold Paint: Type S or Type N traffic paint in accordance with AASHTO Designation M248. Regular set drying time.
- B. Use only lead free paint.

### **2.2 MARKING EQUIPMENT**

- A. Continuous Longitudinal Line Application Machine: Use application equipment with following capabilities:
  - 1. Dual nozzle paint gun to simultaneously apply parallel lines of indicated width in solid or broken patterns or various combinations of those patterns.
  - 2. Measuring device to automatically and continuously measure length of each line placed, to nearest foot.
- B. Machine Calibration:
  - 1. Paint Line Measuring Device: Calibrate automatic line length gauges to maintain specified tolerances.
  - 2. Cycle Length/Paint Line Length Timer: Calibrate cycle length to maintain tolerance specifications.
  - 3. Paint Guns: Calibrate to simultaneously apply paint binder at uniform rates as specified with an allowable tolerance of plus or minus 1 mil.
- C. Other Equipment:
  - 1. For application of crosswalks, intersections, stop lines, legends and other miscellaneous items by walk behind stripers, hand spray or stencil trucks, apply with equipment meeting requirements of this section. Do not use hand brushes or rollers.

## **PART 3 EXECUTION**

### **3.1 MARKING PREPARATION**

- A. Maintenance and Protection of Traffic:
  - 1. Provide short term traffic control in accordance with Section 01 50 00 – Temporary Facilities and Controls during and after marking operations until material has cured.
  - 2. Prevent interference with marking operations and to prevent traffic on newly applied markings before markings dry.
  - 3. Maintain travel lanes between 6:00 a.m. to 9:00 a.m., and between 3:00 p.m. and 6:00 p.m.
  - 4. Maintain access to existing businesses and other properties requiring access.
- B. Surface Preparation.
  - 1. Clean and dry paved surface prior to painting.

2. Blow or sweep surface free of dirt, debris, oil, grease, or gasoline.
3. Spot location of final pavement markings as specified and as indicated on Drawings applying pavement spots 25 feet on center.
4. Notify Utility Inspector after placing pavement marking spots and minimum three (3) days prior to applying traffic lines.
5. Contractor shall verify that surface upon which materials are to be applied is dry, free from frost, dust, dirt, glaze, oil, grease, debris, or other materials or contaminants which would prevent proper bonding.
6. Contractor shall remove such materials prior to application.

### 3.2 MARKING APPLICATION

- A. Place pavement markings placed at locations and to dimensions shown on Drawings.
- B. Applied lines shall have a uniform cross section.
- C. Lines shall have sharp cut-off defined edges on both side and ends.
- D. Apply pavement markings to new asphaltic pavement surfaces within seven (7) days of placement.
- E. Apply pavement markings to new concrete surfaces prior to allowing any traffic on surface.
- F. Agitate paint for 5-10 minutes prior to application to ensure even distribution of paint pigment.
- G. Apply paint in accordance with manufacturer's recommendations, but not less than 16.5 gallons per mile of 4-inch continuous line at a minimum wet film thickness of 15 mils.
- H. Dispense paint at temperatures recommended by paint manufacturer to wet-film thickness of 15 mils.
- I. Prevent splattering and over spray when applying markings.
- J. Unless material is track free at end of paint application convoy, use traffic cones to protect markings from traffic until track free. If vehicle crosses a marking and tracks it or when splattering or over spray occurs, eradicate affected marking and resultant tracking and apply new markings.
- K. Collect and legally dispose of residues from painting operations.
- L. Painting Markings applied to highway pavement shall be applied in accordance with WISDOT Section 646.

### 3.3 MARKING APPLICATION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Variation from Wet Film Thickness: 1-mil.
- C. Maximum Variation from Wet Paint Line Width: Plus or minus 1/8-inch.
- D. Maintain cycle length for skip lines at tolerance of plus or minus six (6) inches per 40 feet and line length of plus or minus three (3) inches per 10 feet.
- E. Maximum Variation from Specified Application Temperature: Plus or minus five (5) degrees F.

### 3.4 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect for incorrect location, insufficient thickness, line width, coverage, retention, uncured or discolored material, and insufficient bonding.
- C. Repair lines and markings, which after application and curing do not meet following criteria:
  - 1. Incorrect Location: Remove and replace incorrectly placed patterns.
  - 2. Insufficient Thickness, Line Width, Paint Coverage, Glass Bead Coverage or Retention:
    - a. Remove defective material by an paint manufacturer approved method of cleaning.
    - b. Remove loose particles and debris.
    - c. Apply new markings on cleaned surface in accordance with this Section.
  - 3. Uncured or Discolored Material, Insufficient Bonding:
    - a. Remove defective markings in accordance with this Section and clean pavement surface one (1) foot beyond affected area.
    - b. Apply new markings on cleaned surface in accordance with this Section.

**END OF SECTION**



## **SECTION 32 91 19**

### **LANDSCAPE GRADING**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Final grading requirements.
  - 2. Topsoil for surface in lawn or landscaped areas.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 31 05 13 – Soils for Earthwork.
  - 3. Section 31 22 13 - Rough Grading: Site contouring.
  - 4. Section 31 23 17 – Site Excavation, Backfill, and Compaction: Backfilling to subgrade elevations and utility trenches.
  - 5. Section 32 01 00 - Site Restoration: Seeding and sodding.
  - 6. Section 32 92 00 – Turf and Grasses.

##### **1.2 REFERENCES**

- A. ASTM International (ASTM):
  - 1. ASTM D5268 – Topsoil Used for Landscaping Purposes.

##### **1.3 SUBMITTALS**

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Samples: Submit, in airtight containers, 10 lb. sample of topsoil to testing laboratory.
- C. Materials Source: Submit name of source of imported materials.

#### **PART 2 PRODUCTS**

##### **2.1 MATERIALS**

- A. Topsoil: As specified in Section 31 05 13 – Soils for Earthwork.

#### **PART 3 EXECUTION**

##### **3.1 EXAMINATION**

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

- B. Verify subgrade and trench backfilling have been inspected.
- C. Verify subgrade base has been contoured and compacted.

### 3.2 SUBSTRATE PREPARATION

- A. Eliminate uneven areas and low spots.
- B. Remove debris, roots, branches, stones, in excess of one (1) inch in size. Remove contaminated subsoil.
- C. Scarify surface to depth of three (3) inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

### 3.3 PLACING TOPSOIL

- A. Place topsoil in areas where seeding is required to thickness as scheduled. Place topsoil during dry weather.
- B. Break down all clods and lumps using the appropriate equipment to provide a uniformly textured soil.
- C. For all areas of seed or sod ensure that, for the upper two (2) inches, 100 percent of the material passes a one (1) inch sieve and at least 90 percent passes the No. 10 sieve.
- D. Fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.
- E. Remove roots, weeds, rocks, and foreign material while spreading.
- F. Manually spread topsoil close to existing plant material, new pavements and structures to prevent damage.
- G. Lightly compact placed topsoil.
- H. Remove surplus subsoil and topsoil from site.
- I. Leave stockpile area and site clean and raked, ready to receive landscaping.

### 3.4 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Top of Topsoil: Plus or minus 1/2-inch.

### 3.5 PROTECTION OF INSTALLED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed Work.

- B. Protect landscaping and other features remaining as final Work.
- C. Protect existing structures, fences, sidewalks, utilities, paving, and curbs.
- D. Prohibit construction traffic over topsoil.

### 3.6 SCHEDULE

- A. Compacted topsoil thicknesses:
  - 1. Seeded Grass: Four (4) inches.

**END OF SECTION**





## **SECTION 32 92 00**

### **TURF AND GRASSES**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Preparation of subsoil.
  - 2. Placing topsoil.
  - 3. Seeding.
  - 4. Mulching.
  - 5. Soil testing and fertilizer.
  - 6. Maintenance.
- B. Related Sections
  - 1. Applicable provisions of Division 01 - General Requirements shall govern Work under this Section.
  - 2. Section 31 05 13 – Soils for Earthwork: Topsoil material.
  - 3. Section 31 22 13 - Rough Grading: Rough grading of site.
  - 4. Section 31 23 17 – Site Excavation, Backfill, and Compaction.
  - 5. Section 32 91 19 - Landscape Grading: Preparation of subsoil and placement of topsoil in preparation for the Work of this section.

##### **1.2 REFERENCES**

- A. Association of Official Seed Analysts, Inc. (AOSA):
  - 1. Rules for Testing Seeds.
- B. ASTM International (ASTM):
  - 1. ASTM C602 – Specification for Agricultural Liming Materials.

##### **1.3 DEFINITIONS**

- A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, Brome Grass and any other weed vegetative species that are established in given area.

##### **1.4 SUBMITTALS**

- A. Section 01 33 00 – Submittal Procedures: Requirements for submittals

- B. Product Data: Submit data for seed mix, fertilizer, mulch, and other accessories.
- C. Submit minimum 10 ounce sample of topsoil proposed. Forward sample to approved testing laboratory in sealed containers to prevent contamination.
- D. Test Reports: Indicate topsoil nutrient and pH levels with recommended soil supplements and application rates from testing laboratory.
- E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for closeout submittals.
- B. Operation and Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency and recommended coverage of fertilizer.

#### 1.6 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging
- B. Perform Work in accordance with State of Wisconsin Department of Transportation standards.

#### 1.7 QUALIFICATIONS

- A. Seed Supplier: Company specializing in manufacturing Products specified in this section with minimum five (5) years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum five (5) years documented experience.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 – Product Requirements: Product storage and handling requirements.
- B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.
- C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

#### 1.9 COORDINATION

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Turf and Grasses

- A. Section 01 30 00 – Administrative Requirements: Requirements for coordination.
- B. Coordinate seeding preparation and application with location of existing underground sprinkler system piping and watering heads. Do not damage existing sprinkler systems.
- C. Contractor shall repair or replace any damage, caused by construction operations, of existing sprinkler system components at no charge to the Utility or the Owner of the sprinkler system.

#### 1.10 MAINTENANCE SERVICE

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for maintenance service.
- B. Maintain seeded areas immediately after placement until grass is well established and exhibits vigorous growing condition for two cuttings.

### PART 2 PRODUCTS

#### 2.1 SEED MIXTURE

- A. Grass Seed: Provide fresh, clean, new-crop seed complying with tolerance for priority and germination established by AOSA Rules. Provide seed mixture composed of grass species, at proportions and percentages of purity and germination, and shall be composed of following.
  - 1. Forty percent Bluegrass (*Poa pratensis*). Blend equally two of following:
    - a. Baron
    - b. Nassau
    - c. Liberty
  - 2. Forty percent Fescue Grasses (*Festuca rubra*). Blend equally two of following:
    - a. Creeping Red
    - b. Jamestown
    - c. Pennlawn
  - 3. Twenty percent Rye Grasses (*Lolium perenne*). Blend equally two of following:
    - a. Prelude
    - b. Palmer
    - c. Repell
  - 4. Coarse blade grasses, crop, clover, weed seed shall not exceed two (2) percent of seed blend quantitatively.

#### 2.2 SOIL MATERIALS

- A. Topsoil: As specified in Section 31 05 13 –Soils for Earthwork, Type T1.

#### 2.3 ACCESSORIES

- A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.
- B. Fertilizer: Commercial grade; recommended for grass; of proportion necessary to eliminate deficiencies of topsoil, as indicated in analysis, to the following minimum proportions: Nitrogen 10 percent, phosphoric acid 10 percent, soluble potash 5 percent.
- C. Lime: ASTM C602, Class T agricultural limestone containing a minimum 80 percent calcium carbonate equivalent.
- D. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.
- E. Erosion Control Matting Fabric: Biodegradable Jute matting, open weave, single and double netted based upon slope requirements.
  - 1. Manufacturers:
    - a. American Excelsior Company.
    - b. Tensar – North American Green.
    - c. RoLanka International.
    - d. Or Approved Equal.
- F. Herbicide: As submitted by Landscape Contractor. Submit herbicide Safety Data Sheets (SDS) and related specifications to Utility Engineer for review and approval.
- G. Stakes: Softwood lumber, chisel pointed, 24 inches long.
- H. String: Inorganic fiber.

## 2.4 SOURCE QUALITY CONTROL

- A. Section 01 40 00 – Quality Requirements: Testing, inspection and analysis requirements.
- B. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.
- C. Provide recommendation for fertilizer and lime application rates for specified seed mix as result of testing.
- D. Testing is not required when recent tests and certificates are available for imported topsoil. Submit these test results to testing laboratory. Indicate, by test results, information necessary to determine suitability.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 – Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify prepared soil base is ready to receive the Work of this section.

### 3.2 PREPARATION OF SUBSOIL

- A. Prepare sub-soil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated sub-soil.
- C. Scarify subsoil to depth of three (3) inches where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted sub-soil.

### 3.3 PLACING TOPSOIL

- A. Spread topsoil to minimum depth of four (4) inches over area to be seeded. Rake until smooth.
- B. Place topsoil during dry weather and on dry unfrozen subgrade.
- C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.
- D. Grade topsoil to eliminate rough, low, or soft areas, and to ensure positive drainage.
- E. Install edging at periphery of seeded areas in straight lines to consistent depth.

### 3.4 FERTILIZING

- A. Apply lime at application rate recommended by soil analysis. Work lime into top four (4) inches of soil.
- B. Apply fertilizer at application rate recommended by soil analysis.
- C. Apply after smooth raking of topsoil and prior to roller compaction.
- D. Do not apply fertilizer at same time or with same machine used to apply seed.
- E. Mix fertilizer thoroughly into upper two (2) inches of topsoil.
- F. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.

### 3.5 SEEDING

- A. Apply seed at a minimum rate of seven (7) lbs per 1000 square feet, evenly in two (2) intersecting directions.
- B. Roll seeded area with roller not exceeding 100 lbs/linear foot.
- C. Immediately following seeding and compacting, apply erosion control matting fabric in accordance with manufacturers written instructions. Maintain required clearance of shrubs and trees.
- D. Apply water with fine spray immediately after each area has been mulched. Saturate to four (4) inches of soil.

### 3.6 SEED PROTECTION

- A. Identify seeded areas with stakes and string around area periphery. Set string height to 12 inches. Space stakes at five (5) foot centers.
- B. Cover seeded slopes where grade is four (4) inches per foot or greater with double-netted erosion control matting fabric. Roll fabric onto slopes without stretching or pulling.
- C. Lay fabric smoothly on surface, secure ends of fabric as recommended by erosion control matting fabric manufacturer written requirements.
- D. Overlap edges and ends of adjacent rolls of erosion control matting blanket as recommended by erosion control matting fabric manufacturer written requirements.
- E. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- F. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges as recommended by erosion control matting fabric manufacturer written requirements.

### 3.7 MAINTENANCE

- A. Mow grass at regular intervals to maintain at maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at each mowing. Perform first mowing when seedlings are 40 percent higher than desired height.
- B. Neatly trim edges and hand clip where necessary.
- C. Immediately remove clippings after mowing and trimming. Do not let clippings lay in clumps.
- D. Water to prevent grass and soil from drying out.
- E. Roll surface to remove minor depressions or irregularities.
- F. Control growth of weeds. Apply herbicides. Remedy damage resulting from improper

use of herbicides.

- G. Immediately reseed areas showing bare spots.
- H. Repair washouts or gullies.
- I. Protect seeded areas with warning signs during maintenance period.

**END OF SECTION**





**SECTION 33 05 01**  
**DUCTILE IRON PIPE AND FITTINGS**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Ductile iron pipe and fittings, linings, and coatings for water main.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 31 23 17 - Site Excavation, Backfill, and Compaction.
  - 3. Section 33 05 19 – Pressure Pipe Restraints.
  - 4. Section 33 10 13 – Water Main Installation.
  - 5. Section 33 12 16 – Water Valves and Boxes.
  - 6. Section 33 12 19 – Fire Hydrants.
  - 7. Section 33 13 00 – Water Main Disinfection.
  - 8. Section 33 13 16 - Corrosion Control Pipe and Fittings.

**1.2 REFERENCES**

- A. ASTM International (ASTM):
  - 1. ASTM D1248 – Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable.
- B. American Water Works Association (AWWA):
  - 1. AWWA C104 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
  - 2. AWWA C110 - Ductile Iron and Gray-Iron Fittings, 3 In. Through 48 In. for Water.
  - 3. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
  - 4. AWWA C150 - Thickness Design of Ductile Iron Pipe.
  - 5. AWWA C151 - Ductile Iron Pipe, Centrifugally Cast, for Water and Other Liquids.
  - 6. AWWA C153 - Ductile Iron Compact Fittings, 3 In. Through 24 In. and 54 In. through 61 In., for Water Service.
- C. NSF International (NSF):
  - 1. NSF 61 - Drinking Water System Components - Health Effects.

**1.3 SUBMITTALS**

- A. Section 01 33 00 – Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data indicating pipe, joints, fittings, and pipe accessories.

- C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

#### 1.4 QUALITY ASSURANCE

- A. Pipe shall be Thickness Class 52, diameter as shown on Drawings, and shall conform to AWWA C150.
- B. Joints shall meet the requirements of AWWA C111.
- C. Materials Tests on Pipe, Fittings and Valves:
  - 1. Manufacturer shall inspect all pipe and fittings and shall provide certified copies of complete test and inspection reports to the Utility Engineer, covering the following:
    - a. Description, hydrostatic tests, physical properties, chemical analysis and coating analysis.
- D. All pipe and fittings shall meet the requirements of Section 01 40 00 – Quality Requirements of this Project Manual.
- E. Ductile iron pipe and fittings shall be products of a single manufacturer in the United States of America.

#### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Identification: Pipe shall be readily identified and shall contain weight, Class, or nominal thickness, and casting period clearly painted on each piece.
- B. Load and unload pipe, fittings, and accessories by lifting with hoists or skidding to avoid shock or damage.
- C. Under no circumstances shall material be dropped.
- D. Do not roll or skid pipe handled on skidways against other pipes or ground.
- E. Pad hooks or pipe tongs and use to prevent damage to exterior surface of pipe.
- F. Keep stored pipe free of damage.
- G. Keep interiors of all pipe, fittings, and other appurtenances free from dirt or foreign matter.
- H. Use timbers to separate pipe stored on ground from ground and other pipes.
- I. Rubber gaskets shall be bundled in water repellent covering and packaged in a cardboard box or wooden crate.

- J. Bell lubricant shall be supplied by the manufacturer in vacuum sealed cans properly identified by label. Sufficient lubricant shall be supplied to effectively lubricate each joint.
- K. Store gaskets for mechanical and push-on joints in cool location out of direct sunlight and out of contact with petroleum products.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURER**

- A. Ductile iron pipe and fittings shall be manufactured in the United States of America.
- B. Acceptable Manufacturers:
  - 1. American (American Cast Iron Pipe Company).
  - 2. Griffin Pipe Products Company, Inc..
  - 3. McWane, Inc. (Clow Water Systems Company).
  - 4. McWane, Inc. (McWane Pipe).
  - 5. U.S. Pipe.
  - 6. Or Approved Equal.

### **2.2 PIPE**

- A. Pipe shall be centrifugally cast in metal or sand-lined molds.
- B. Design pipe with bell and spigot push-on joints for general installation and mechanical joint assemblies as identified, designed for rubber gasket joints.
- C. Manufacturer's mark, year of production, and "DI" or "DUCTILE" shall be cast or stamped on pipe.
- D. Pipe shall be cement mortar lined and have internal and external bituminous coats.

### **2.3 FITTINGS**

- A. Fittings shall be centrifugally cast in metal or sand-lined molds.
- B. Use of compact fittings conforming to AWWA C153 shall be acceptable.
- C. Wherever mechanical joints are used, joint bolts and nuts shall be corrosion resistant steel.
- D. In no case shall fitting grade rating less than adjoining pipe.
- E. Fittings shall be from same manufacturer as pipe.

### **2.4 JOINTS**

- A. Pipe and fittings for water main shall be joined by means of a compression type rubber gasket

push-on joint with mechanical joints at designated locations, conforming to AWWA C111.

- B. Nuts and bolts shall be corrosion resistant steel.
- C. Wherever it is necessary to deflect joint pipe from a straight line, deflection shall not exceed that shown on table below:

Size of Pipe (Inches)	Deflection (18-foot length) Push-On Joint (Inches)	Deflection (18-foot length) Mechanical Joint (Inches)
3 – 4	19	31
6	19	27
8 – 12	19	29

- D. Supply joint with a heavy-duty gasket designed to form a pressure-tight seal.
- E. Gaskets shall be Styrene Butadiene (SBR) – Plain Rubber.
- F. Joint shall be boltless, freely deflecting, ball and socket of the push-on type. Joint restraint shall be provided by a ductile iron restraining ring. Reference Section 3305 19 – Pressure Pipe Restraints for further information.
- G. Allow a maximum joint deflection of 15 degrees.

## 2.5 CEMENT MORTAR LINING

- A. Pipe and fittings shall be cement lined in conformance with AWWA C104.
- B. Minimum thickness of cement-mortar lining shall be:
  - 1. Pipe sizes 3 through 12 inches: 1/16-inch.

## 2.6 DISINFECTION

- A. Take precautions to protect interiors of pipes, fittings, and valves against contamination. Disinfection of water mains shall conform to requirements of Section 33 13 00 – Water Main Disinfection.

## 2.7 COATINGS

- A. Buried Ductile Iron Pipe:
  - 1. Outside Coating:
    - a. Coat ductile iron pipe and fittings with a bituminous coating, but to a thickness of 2 to 4 mils average and a minimum bituminous coating of 2-mils.

## 2.8 POLYETHYLENE ENCASEMENT

- A. Encase pipe and fittings in polyethylene conforming to requirements of ASTM D1248 and

Section 33 13 16 – Corrosion Control Pipe and Fittings.

**PART 3 EXECUTION – Not Used**

**END OF SECTION**



**SECTION 33 05 06**  
**POLYVINYL CHLORIDE (PVC) PRESSURE PIPE**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Polyvinyl Chloride (PVC) pressure pipe for water main.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 31 23 17 - Site Excavation, Backfill, and Compaction.
  - 3. Section 33 10 13 – Water Main Installation.
  - 4. Section 33 13 00 –Water Main Disinfection.
  - 5. Section 33 17 00 – Water Main Testing.

**1.2 REFERENCES**

- A. ASTM International (ASTM):
  - 1. ASTM D3139 – Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
  - 2. ASTM F477 - Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- B. American Water Works Association (AWWA):
  - 1. AWWA C110 - Ductile-Iron and Gray-Iron Fittings, 3 Inches Through 48 Inches for Water.
  - 2. AWWA C153 - Ductile Iron Compact Fittings, 3 Inches Through 24 Inches and 54 Inches Through 64 Inches for Water Service.
  - 3. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 Inches Through 12 Inches for Water Distribution.
  - 4. AWWA C907 – Injection-Molded Polyvinyl Chloride (PVC) Pressure Fittings, 4 inches Through 12 inches, for Water Distribution.
- C. NSF International (NSF):
  - 1. NSF Standard 61 - Drinking Water System Components - Health Effects.

**1.3 SUBMITTALS**

- A. Section 01 33 00 – Submittal Procedures: Requirements for submittals.

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**Polyvinyl Chloride (PVC)  
Pressure Pipe**

- B. Product Data: Submit data indicating pipe, joints, fittings and pipe accessories.
- C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

#### 1.4 QUALITY ASSURANCE

- A. Pipe, joints, and fittings shall meet requirements of ASTM and AWWA Standards.
- B. Products shall be marked and manufacturer shall affirm that product was manufactured, inspected, sampled, and tested in accordance with ASTM and AWWA Standards and have been found to meet requirements of Standards.

#### 1.5 PRODUCT DELIVERY, HANDLING, AND STORAGE

- A. Load and unload pipe, fittings, and accessories by lifting with hoists or skidding to avoid shock or damage.
- B. Under no circumstances shall material be dropped.
- C. Do not roll or skid pipe handled on skidways against pipe or ground.
- D. Pad hooks or pipe tongs and use to prevent damage to exterior surface of pipe.
- E. Keep stored pipe free of damage.
- F. Keep interiors of pipe, fittings, and other appurtenances free from dirt or foreign matter.
- G. Use timbers to separate pipe stored on ground from ground and other pipe.
- H. Store gaskets for mechanical and push-on joints in cool location out of direct sunlight and out of contact with solvents and petroleum products.
- I. Clearly mark pipe at intervals of not less than five (5) feet with the following information:
  - 1. Manufacturer's name or trademark and code.
  - 2. Nominal pipe size.
  - 3. PVC cell classification.
  - 4. Type of pipe material and ASTM Designation for pipe.
- J. Clearly mark fittings with following information:
  - 1. Manufacturer's name or trademark.
  - 2. Nominal size.



3. Material designation.
4. Type of material and ASTM designation.

## **PART 2 PRODUCTS**

### **2.1 WATER MAIN**

- A. PVC Pipe: AWWA C900 Polyvinyl Chloride (PVC); nominal diameter 8-inches and Larger; DR-18, Pressure Class 150; use DR-14, Pressure Class 200 for all pipe that are 6-inches or Smaller; with integral gasketed joint.

### **2.2 FITTINGS**

- A. Fittings shall be fabricated from polyvinyl chloride and shall conform to AWWA C907 for nominal pipe fitting diameter of 4-inch to 12-inch. Provide AWWA C905 fittings for nominal pipe fitting diameters of 14-inch to 48-inch.
- B. Provide ductile iron fittings at required locations, conform to AWWA C110 or AWWA C153, and have mechanical joints.
- C. Ductile iron fittings shall be connected to PVC pipe with mechanical joint restraints:
  1. Manufacturers:
    - a. EBAA Iron Sales, Inc., Eastland, TX.
    - b. Ford Meter Box Company, Inc., Wabash, IN.
    - c. Or Approved Equal.
- D. Pipe used in fabricated fittings shall meet quality and dimensional requirements listed in standard for that pipe.
- E. Pipe used in fabricated fittings shall have a wall thickness equal to or greater than wall thickness of pipes to which fitting, or that part of fitting, will be joined.
- F. No fitting shall have an inside diameter dimension smaller than base inside diameter for that pipe size and DR.
- G. All fittings shall be NSF 61 listed.

### **2.3 JOINTS**

- A. Flexible elastomeric seals shall comply with requirements of ASTM F477 natural or synthetic rubber for push-on joints that require no internal or external pressure to affect initial seal.
- B. Lubricant shall be of such composition that it will in no way damage gasket or pipe due

to prolonged exposure and shall not affect sealing capability of gasket.

- C. Joints shall be made in accordance with ASTM D3139.

## 2.4 ACCESSORIES

- A. Joint Restraints: Cast iron, circular or pair of semi-circles with wedges that grip ductile iron or PVC pipe.
1. Manufacturers:
    - a. Megalug as manufactured by EBAA Iron, Inc., Eastland, Texas.
    - b. Uni-Flange as manufactured by Ford Meter Box Company, Inc., Wabash, Indiana.
    - c. Or an approved equal.
- B. Pipe Couplings:
1. Manufacturers:
    - a. Dresser, Inc, Addison, TX.
    - b. Fernco, Inc., Davison MI.
    - c. Or Approved Equal.
- C. Identification Warning Tape: Aluminum underground warning tape, 2-inch width. Color-Bright Blue, warning message "Caution Buried WATER MAIN Below," to repeat every 30 inches, installed 36 inches above top of pipe.
- D. Tracer Wire:
1. All watermain shall include a 10 gauge solid, blue coated copper tracer wire to be taped to each pipe.
  2. Tape shall be securely fastened to main, hydrant leads and hydrants.
  3. Additionally, the tracer wire shall be looped from the main through a four (4) foot piece of 2-inch PVC pipe at the hydrants.
  4. Splices shall be soldered and water proofed using shrink wrap or underground splice kit.
  5. Test station shall be an adjustable height tracer wire access box manufactured by VALCO, Inc. Test stations shall be plain-capped valve box top section with hardwood blocking installed as noted on the plans.
  6. Tracer wire ends at existing main shall be bonded to a 8-foot copper ground rod driven next to the pipe.

## PART 3 EXECUTION – Not Used

## END OF SECTION

**SECTION 33 05 07**  
**POLYETHYLENE PRESSURE PIPE**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Polyethylene (HDPE) pipe for water service laterals.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 31 23 17 – Site Excavation, Backfill and Compaction.
  - 3. Section 33 05 24 – Horizontal Directional Drilling.
  - 4. Section 33 12 13 - Water Service Laterals.

**1.2 REFERENCES**

- A. ASTM International (ASTM):
  - 1. ASTM D3261 - Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
  - 2. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
- B. American Water Works Association (AWWA):
  - 1. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. (13 mm) Through 3 In. (76 mm), for Water Service.

**1.3 SUBMITTALS**

- A. Section 01 33 00 – Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data indicating pipe, joints, fittings and pipe accessories.
- C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- D. Manufacturer's Certificate: Certify that product meets or exceeds specified requirements.

**1.4 QUALITY ASSURANCE**

- A. Pipe, joints and fittings shall meet requirements of listed ASTM and AWWA Standards.
- B. Products shall be marked and shall affirm that product was manufactured, inspected,

sampled, and tested in accordance with ASTM and AWWA Specifications and has been found to meet requirements of specification.

## 1.5 REGULATORY REQUIREMENTS

- A. Contractor shall comply with applicable rules and regulations of State of:
  - 1. Wisconsin Department of Natural Resources (WDNR), and other local, state, and federal agencies having jurisdiction related to Work of this Section.
- B. Contractor shall comply with and be solely responsible for compliance with U.S. Department of Labor OSHA Part 1926 Safety and Health Regulations for Construction for this Work.
- C. Contractor performing Work of this Section shall be solely responsible for identifying, furnishing, installing and maintaining equipment and materials required by state and federal regulations to establish safe working conditions during Work of this Section.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Load and unload pipe, fittings, and accessories by lifting with hoists or skidding to avoid shock or damage.
- B. Under no circumstances shall material be dropped.
- C. Do not roll or slide pipe handled on skidways against other pipe or ground.
- D. Pad hooks or pipe tongs and use so as to prevent damage to exterior surface of pipe.
- E. Keep stored pipe stored free of damage.
- F. Keep interiors of pipe, fittings, and other appurtenances free from dirt or foreign matter.
- G. Use timbers to separate pipe stored on ground from other pipe and ground.
- H. Clearly mark pipe at intervals of not less than five (5) feet with the following information:
  - 1. Manufacturer's name or trademark and production code.
  - 2. Nominal pipe outside diameter.
  - 3. HDPE cell classification.
  - 4. Type of pipe material and ASTM Designation for pipe.
  - 5. Dimensional ratio or pressure rating.
- I. Clearly mark fittings with following information:
  - 1. Manufacturer's name or trademark.
  - 2. Nominal size.

3. Material designation.
4. ASTM D3261.

## **PART 2 PRODUCTS**

### **2.1 POLYETHYLENE PRESSURE PIPE - WATER SERVICE LATERAL PIPING**

- A. Polyethylene pipe shall be made from a HDPE material having a minimum material designation code of PE 4710 or PE 3608.
- B. The material shall meet the requirements of ASTM D3350 and shall have a minimum cell classification of PE445474C for PE 4710 and PE345464C for PE 3608. In addition, the pipe shall be listed as meeting NSF-61.
- C. The pipe shall meet the requirements of AWWA C901.
- D. HDPE pipe shall be rated for use at a pressure class of 200.

### **2.2 FITTINGS**

- A. Butt Fusion Fittings:
  1. Fittings shall be made of either PE4710 or PE 3608, with a minimum Cell Classification matching pipe.
  2. Butt Fusion Fittings shall meet the requirements of ASTM D3261.
  3. Molded and fabricated fittings shall have a pressure rating equal to the pipe unless otherwise specified in the plans.
- B. Markings for molded fittings shall comply with the requirements of ASTM D3261.
- C. Fittings shall be pressure rated to provide a working pressure rating no less than that of polyethylene pipe.
- D. Fitting shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, voids, or other injurious defects.
- E. Pipe used in fabricated fittings shall meet all quality and dimensional requirements listed in standard for that pipe.
- F. Pipe used in fabricated fittings shall have a wall thickness equal to or greater than the wall thickness of the pipes to which the fitting (or that part of the fitting) will be joined.
- G. No fitting shall have an inside diameter dimension smaller than base inside diameter for that pipe size.

### **2.3 JOINTS**

- A. Butt Fusion: Sections of polyethylene pipe should be joined into continuous lengths on jobsite above ground. Joining method shall be butt fusion method and shall be performed in strict accordance with pipe manufacturer's recommendations.
  - 1. Butt fusion equipment used in joining procedures should be capable of meeting all conditions recommended by pipe manufacturer.
  - 2. Butt fusion joining will produce joint weld strength equal to or greater than tensile strength of pipe itself.

## 2.4 PIPE LOCATION MATERIALS

- A. Tracer Wire:
  - 1. All water main shall include a 10 gauge solid, blue coated copper tracer wire to be taped to each pipe.
  - 2. Tape shall be securely fastened to main, hydrant leads and hydrants.
  - 3. Additionally, the tracer wire shall be looped from the main through a four (4) foot piece of 2-inch PVC pipe at the hydrants.
  - 4. Splices shall be soldered and water proofed using shrink wrap or underground splice kit.
  - 5. Test station shall be an adjustable height tracer wire access box manufactured by VALCO, Inc. Test stations shall be plain-capped valve box top section with hardwood blocking installed as noted on the plans.
  - 6. Tracer wire ends at existing main shall be bonded to a 8-foot copper ground rod driven next to the pipe.

## PART 3 EXECUTION

### 3.1 TRENCH METHOD

- A. Pipe installation in trenches shall be in accordance with Section 31 23 17 – Site Excavation, Backfill, and Compaction and Section 33 12 13 – Water Service Laterals.

### 3.2 DIRECTIONAL DRILLING

- A. Pipe installation by directional drilling shall be in accordance with Section 33 05 24 – Horizontal Directional Drilling.

### 3.3 FUSION JOINTS

- A. Butt Fusion:
  - 1. Individuals making heat fusion joints shall have received training in manufacturer's recommended procedure.
  - 2. Heat fusion equipment shall meet manufacturer's requirements including 400 degree F temperature and 75 psi interfacial fusion pressure.
  - 3. Equipment shall be capable of logging temperature, fusion pressure and graphic representation of fusion cycle.

4. Clamp pipes to be joined in place in above ground fusion machine. Each pipe shall be faced to assure smooth, flat joining surfaces.
5. Heat pipe ends for time and temperature recommended by pipe manufacturer for pipe diameter.
6. At end of heating time, carefully remove heater so as not to displace melt and bring pipe ends together within required timeframe.
7. Join ends with sufficient pressure to roll melt swell beads over to pipe surface.
8. Maintain pressure for time recommended by manufacturer for pipe diameter.
9. Allow an additional three minutes of cooling before removing from fusion machine and an additional 10 to 60 minutes, depending on pipe diameter, before rough handling or testing.

**END OF SECTION**





## **SECTION 33 05 13**

### **MANHOLE, INLET AND VALVE BOX GRADE ADJUSTMENT**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Adjustment of existing manhole and inlet frames and covers within new pavement construction, lawn and field areas.
  - 2. Adjustment of existing water valve boxes.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 32 01 00 – Site Restoration.
  - 3. Section 32 11 23 – Aggregate Base Course.
  - 4. Section 32 12 16 – Asphalt Paving.
  - 5. Section 32 13 13 – Concrete Paving.
  - 6. Section 32 91 19 – Landscape Grading.
  - 7. Section 32 92 00 – Turf and Grasses.

##### **1.2 REFERENCES**

- A. ASTM International (ASTM):
  - 1. ASTM A48 - Specification for Gray Iron Castings.
  - 2. ASTM C531 - Test Method for Linear Shrinkage and Coefficient Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
  - 3. ASTM C642 - Test Method for Density, Absorption, and Voids in Hardened Concrete.
  - 4. ASTM C672 - Test Method for Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals.
  - 5. ASTM C990 - Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.
  - 6. ASTM D395 - Test Method for Rubber Property - Compression Set.
  - 7. ASTM D412 - Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers -Tension.
  - 8. ASTM D573 - Test Method for Rubber-Deterioration in an Air Oven.
  - 9. ASTM D575 - Test Methods for Rubber Properties in Compression.
  - 10. ASTM D2240 - Test Method for Rubber Property-Durometer Hardness.
  - 11. ASTM F593 - Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

12. ASTM F1554 - Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.

### 1.3 SUBMITTALS

- A. Section 01 33 00 – Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit manhole and inlet covers and precast concrete riser ring configuration and dimensions.
- C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

### 1.4 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 – Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual grade adjustment elevation of manhole.

### 1.5 QUALIFICATIONS

- A. Company specializing in performing work of this section with minimum five (5) years documented experience.

### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 – Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept materials on site in undamaged, unopened container, bearing manufacturer's original labels. Inspect for damage.
- C. Protect materials from damage by storage in secure location.

### 1.7 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

### 1.8 COORDINATION

- A. Section 01 30 00 – Administrative Requirements: Requirements for coordination.
- B. Provide schedule of manhole grade adjustment.

## **PART 2 PRODUCTS**

### **2.1 ADJUSTMENT RINGS**

- A. Precast Concrete: Precast Concrete Grade Adjustment Rings;
  - 1. Shall conform to ASTM C478.
  - 2. Mortar: ASTM C270, Type S.
  - 3. Accessories:
    - a. Joint Sealant: ASTM C990.
- B. Adjustment ring shall be circular, rectangular or square shape to fit opening of structure being adjusted for height. Minimum thickness of ring shall be 1-1/2 inches.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Section 01 30 00 – Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify and locate manholes requiring grade adjustment.
- C. Verify and locate water valve boxes requiring grade adjustment.

### **3.2 EXISTING WORK**

- A. Saw cut existing asphalt and concrete pavement to full depth around existing manhole or water valve box prior to mechanical removal.
- B. Excavate and expose existing manhole frames, concrete or brick masonry riser rings located within area of new pavement installation.
- C. Remove existing manhole frames and covers. Clean and remove all dirt, mortar, sealants and related debris from surfaces of manhole frame and cover prior to re-installation to adjusted elevation.
- D. Repair existing mortar plaster over ringed chimney extensions and waterproofing sealing adjustment ring(s) from top of manhole chimney to the manhole frame. Clean existing surfaces prior to re-plastering and re-waterproofing.

### **3.3 RAISING MANHOLE FRAMES AND COVERS**

- A. Locate and raise manholes to grade as indicated on Drawings.
- B. Use flat concrete manhole rings to achieve final elevation indicated for frame and cover.

- C. Seal joints between manhole top, concrete adjustment rings, and frame with .
- D. Reinstall removed manhole frame and cover and provide the following:
  - 1. Preformed Joint Sealant: ASTM C990, preformed flexible joint rope sealant as follows:
    - a. Kent Seal No. 2 as manufactured by Hamilton-Kent.
    - b. Ram-Nek as manufactured by K.T. Snyder Co.
    - c. Or Approved Equal.

#### 3.4 VALVE BOX ADJUSTMENTS

- A. Twist top section to raise or lower valve box cover to designated grade. Set top of existing and new valve boxes to 1/2-inch below asphalt binder grade and concrete pavement for later adjustment to finished height of 1/2-inch below finished pavement surfaces.
- B. If valve box has insufficient adjustment remaining, remove top section and cover, add extension section, and reinstall top section and cover.
  - 1. Provide top section with as much of future adjustment as possible.

#### 3.5 PAVING RESTORATION

- A. Restore asphalt pavement areas in accordance with Section 32 01 00 – Site Restoration.
- B. Restore concrete pavement in accordance with Section 32 01 00 – Site Restoration.

#### 3.6 LANDSCAPING RESTORATION

- A. Restore grassed areas in accordance with Section 32 91 19 – Landscape Grading and Section 32 92 00 – Turf and Grasses.

**END OF SECTION**

**SECTION 33 05 19**  
**PRESSURE PIPE RESTRAINTS**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Concrete Buttresses.
  - 2. Rod Restraints.
  - 3. Lugged Pipe and Fittings.
  - 4. Anchor Tees.
  - 5. Pipe Joint Restraint.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 33 05 01 – Ductile Iron Pipe and Fittings.
  - 3. Section 33 10 13 - Water Main Installation.
  - 4. Section 33 12 16 – Hydrants.
  - 5. Section 33 13 16 - Corrosion Control Pipe and Fittings.

**1.2 REFERENCES**

- A. ASTM International (ASTM):
  - 1. ASTM A276 – Specification for Stainless Steel Bars and Shapes.
  - 2. ASTM C94 – Specification for Ready-Mixed Concrete.
  - 3. ASTM A563 - Specification for Carbon and Alloy Steel Nuts.
  - 4. ASTM A575 - Specification for Steel Bars, Carbon, Merchant Quality, M-Grades.
  - 5. ASTM C94 – Specification for Ready-Mixed Concrete.
- B. American Water Works Association (AWWA):
  - 1. AWWA C150 - Thickness Design of Ductile-Iron Pipe.
  - 2. AWWA C600 - Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances.
  - 3. AWWA C605 - Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings.

**1.3 SUBMITTALS**

- A. Section 01 33 00 – Submittal Procedures: Requirements for submittals.

- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

#### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Keep stored material free of damage.
- B. Use timbers to separate material stored on ground from ground and surface water.
- C. Protect material from weather.

### PART 2 PRODUCTS

#### 2.1 MATERIAL

A. Concrete Buttress:

1. ASTM C94 ready mixed concrete with minimum 3000 psi, 28 day compressive strength, minimum 4.5 bags cement, maximum 4 to 5-inch slump, and maximum aggregate size 3/4-inch.
2. Minimum buttress bearing area, in square feet, shall be as follows:

Pipe Size	11-1/4° & 22-1/2° 45°		90°	Tee	Plug
6-inch	1.1	2.0	4.0	2.5	2.8
8-inch	2.0	3.8	7.0	3.9	4.7
10 inch	2.0	3.8	7.0	3.9	4.7
12-inch	2.7	4.8	9.6	5.8	6.7
16-inch	4.5	9.0	16.5	10.4	12.3
20-inch	7.2	14.1	25.3	19.2	18.2
24-inch	9.9	19.5	36.1	24.9	25.7

B. Wedge-Action Joint Restraints:

1. Cast iron, circular or pair of semi-circles with wedges that grip ductile iron or PVC pipe.
2. Product Manufacturers:
  - a. EBAA Iron, Inc., Eastland, TX - Megalug®.
  - b. Ford Meter Box Company, Wabash, IN - Uni-Flange®.
  - c. Or Approved Equal.

C. Rod Restraints:

1. ASTM A575 carbon steel threaded rods with bitumastic coating and ASTM A563 nuts.
2. Materials shall be as follows:

Pipe Size	Rods	Strap	Bolt	Washer
6-inch	2 @ 3/4-inch	1/2 x 2	3/4-inch	1/2x3x5

8-inch	2 @ 3/4-inch	1/2 x 2	3/4-inch	1/2x3x5
12-inch	2 @ 3/4-inch	1/2 x 2-1/2	1-inch	1/2x3x5
16-inch	4 @ 3/4-inch	1/2 x 3	1-inch	1/2x3x5

- D. Anchor Tee: Provide and anchoring tee, Clow F-1221 (push-on joints on the run) or approved equal, with a roto-ring retainer gland shall be provided on the water main at all hydrant lead connections where is proposed to have the auxiliary hydrant valve connected directly to the main tee.
- E. Pipe Joint Restraint:
  - 1. Ductile Iron: Stainless steel locking wedges used with gasket or embedded in gasket.

### **PART 3 EXECUTION**

#### **3.1 BUTTRESSES**

- A. Buttresses shall be required to provide thrust or reaction backing for all bends, caps, plugs, and tees.
- B. Buttresses shall be poured with ready mixed concrete. Bagged or packaged premixed concrete shall be thoroughly mixed with water and prepared. Bagged or packaged premixed concrete that is not mixed with water shall not be accepted.
- C. Pour buttresses against firm natural ground with a minimum size as indicated on Drawings or Specifications.
- D. Form buttresses so as not to cover pipe main joints with fresh concrete.

#### **3.2 STRAPPING**

- A. Use rod restraints where vertical grade changes are made in line of main by means of bends.
- B. Use rod restraints to secure top bends. Secure bottom bend with concrete buttress.
- C. Grade changes and direction changes made with standard offset fittings shall be restrained or buttressed unless otherwise indicated on Drawings.

#### **3.3 LUGGED PIPE AND FITTINGS**

- A. Secure lugged pipe and special fittings indicated on Drawings with tie rods, nuts, and washers.
- B. Tie rods, clamps, and other components of dissimilar metal shall be protected against

corrosion with Koppers bitumastic or an approved equal material and encased in polyethylene sheet tubing as specified in Section 33 13 16 – Corrosion Control - Pipe and Fittings.

- C. Circular or semi-circular, wedge action, retainer glands may be used in lieu of tie rods. Use appropriate gland-type for pipe material.

#### 3.4 PIPE JOINT RESTRAINT

- A. Submit calculation of number of restrained joints required.
- B. Provide special pipe, gaskets, and accessories.
- C. Assemble restrained joint in accordance with manufacturer's recommendations.

#### 3.5 POLYETHYLENE ENCASEMENT

- A. Encase ductile iron pipe and fittings in polyethylene conforming to requirements of ASTM D1248 and Section 33 13 16 – Corrosion Control Pipe and Fittings.

**END OF SECTION**



## **SECTION 33 05 24**

### **HORIZONTAL DIRECTIONAL DRILLING**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Excavation for approach trenches and pits.
  - 2. Potholing procedures for locating existing underground utilities.
  - 3. Horizontal directional drilling.
  - 4. Pipe.
  - 5. Backfill and compaction for approach trenches and pits.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 31 05 13 – Soils for Earthwork.
  - 3. Section 31 23 17 – Site Excavation, Backfill, and Compaction.
  - 4. Section 33 05 07 – Polyethylene Pressure Pipe.
  - 5. Section 33 12 13 – Water Service Laterals.
  - 6. Section 33 13 00 – Water Main Disinfection.
  - 7. Section 33 17 00 – Water Main Testing.

##### **1.2 REFERENCES**

- A. ASTM International (ASTM):
  - 1. ASTM D698 - Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft.-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
  - 2. ASTM D1556 - Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
  - 3. ASTM D1557 - Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft.-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>)).
  - 4. ASTM D6938 – Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
  - 5. ASTM F1962 - Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings.
- B. State of Wisconsin Department of Transportation (WISDOT):
  - 1. Standard Specifications for Highway and Structure Construction, Current Edition with latest supplements.
- C. National Utility Contractors Association (NUCA):

1. NUCA - HDD Installation Guidelines.

### 1.3 DESIGN REQUIREMENTS

#### A. Design Criteria:

1. Drilling Steering System: Remote with continuous electronic monitoring of boring depth and location.
2. Directional Change Capability: 90 degree with 35-foot radius curve.
3. Minimum distance for single bores and between boring pits:

<u>Pipe Size</u>	<u>Boring Distance</u>
1 to 1-1/2 inches	400 feet
2 to 2-1/2 inches	350 feet
3 to 6 inches	300 feet

4. Ratio of Reaming Diameter to Pipe Outside Diameter:
  - a. Nominal Pipe Diameter of 6 Inches and Smaller: 1.5 maximum.
  - b. Nominal Pipe Diameter Larger than 6 Inches: Submit recommended ratio and reaming procedures for review.

### 1.4 SUBMITTALS

#### A. Section 01 33 00 – Submittal Procedures: Requirements for submittals.

#### B. Shop Drawings:

1. Submit technical data for equipment, method of installation, and proposed sequence of construction.
2. Include information pertaining to pits, dewatering, method of spoils removal, equipment size and capacity, equipment capabilities including installing pipe on radius, type of drill bit, drilling fluid, method of monitoring line and grade and detection of surface movement, name plate data for drilling equipment and mobile spoils removal unit.

#### C. Product Data:

1. Identify source of water used for drilling.
2. Submit copy of approvals and permits for use of water source.

#### D. Installer Qualifications: Submit history of previous work completed of equivalent nature and scope. Include qualification and experience of key personnel.

#### E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

### 1.5 CLOSEOUT SUBMITTALS

#### A. Section 01 70 00 – Execution and Closeout Requirements: Requirements for submittals.

- B. Project Record Documents: Record actual locations of pipe and invert elevations.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.
- D. Record actual depth of pipe at each end and at every 25-foot intervals.
- E. Record actual horizontal location of installed pipe.
- F. Show depth and location of abandoned bores.
- G. Record depth and location of drill bits and drill stems not removed from bore.

#### 1.6 QUALITY ASSURANCE

- A. Perform work in accordance with the following:
  - 1. NUCA HDD Installation Guidelines.
  - 2. ASTM F1962.

#### 1.7 QUALIFICATIONS

- A. Installer: Company specializing in performing work of this section with minimum five (5) years documented.
  - 1. Work Experience: Include projects of similar scope and conditions.
  - 2. Furnish list of references upon request.

#### 1.8 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 – Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section. Contact Utility Engineer four (4) days in advance of meeting.

#### 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 – Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Provide temporary end caps and closures on piping and fittings until pipe is installed.
- C. Protect pipe from entry of foreign materials and water by temporary covers, completing sections of work, and isolating parts of completed system.
- D. Accept products on site in manufacturer's original containers or configuration. Inspect for damage.

- E. Use shipping braces between layers of stacked pipe. Stack pipe no more than three (3) layers high.
- F. Store field joint materials indoors in dry area in original shipping containers. Maintain storage temperature of 60 to 85 degrees F.
- G. Support pipes with nylon slings during handling.

#### 1.10 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 – Product Requirements: Environmental conditions affecting products on site.
- B. Conduct operations so as not to interfere with, interrupt, damage, destroy, or endanger integrity of surface or subsurface structures or utilities, and landscape in immediate or adjacent areas.

#### 1.11 COORDINATION

- A. Section 01 30 00 – Administrative Requirements: Requirements for coordination.
- B. Coordinate work with State of Wisconsin Department of Transportation and other utilities within construction area.

### **PART 2 PRODUCTS**

#### 2.1 DRILLING FLUID

- A. Drilling Fluid: Liquid bentonite clay slurry; totally inert with no environmental risk.

#### 2.2 PIPE

- A. Water Distribution System Pipe: Polyethylene type as specified in Section 33 05 07 – Polyethylene Pressure Pipe.

#### 2.3 FILL MATERIALS

- A. Subsoil Fill: Type S1 or S2 as specified in Section 33 05 13 – Soils for Earthwork. Reused spoil and imported subsoil with no rocks over four (4) inches in diameter, frozen material, or foreign matter.

#### 2.4 WATER SOURCE

- A. Water: Potable, obtained from approved Oak Creek Water and Sewer Utility source. Contractor shall meter and pay for water.

## 2.5 UNDERGROUND PIPE MARKERS

### A. Tracer Wire:

1. All water main shall include a 10 gauge solid, blue coated copper tracer wire to be taped to each pipe.
2. Tape shall be securely fastened to main, hydrant leads and hydrants.
3. Additionally, the tracer wire shall be looped from the main through a four (4) foot piece of 2-inch PVC pipe at the hydrants.
4. Splices shall be soldered and water proofed using shrink wrap or underground splice kit.
5. Test station shall be an adjustable height tracer wire access box manufactured by VALCO, Inc. Test stations shall be plain-capped valve box top section with hardwood blocking installed as noted on the plans.
6. Tracer wire ends at existing main shall be bonded to a 8-foot copper ground rod driven next to the pipe.

## PART 3 EXECUTION

### 3.1 NOTIFICATION

- A. Contractor, prior to any excavation work, shall notify (1) a designated locating service; (2) all utilities, governmental agencies, entities, known to, or which can reasonably be assumed to have above or below ground pipe, conduit cables, structures, or similar items within limits of project; to locate and mark location of such items.
- B. In accordance with Wisconsin Statute 182.0175, "Damage to Transmission Facilities," Excavator, as defined in 182.0175(1)(bm), shall be solely responsible to provide advance notice to "Diggers Hotline, Inc." (800-242-8511) not less than three working days prior to commencement of any Excavation, as defined in the statute, required to perform work contained in this Project, and further, Excavator shall comply with all other requirements of this Statute relative to Excavation.

### 3.2 EXAMINATION

- A. Section 01 30 00 – Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify connection to new piping system size, location, and invert elevations are in accordance with Drawings.

### 3.3 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.

- B. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- C. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curb and gutters from excavating equipment and vehicular traffic.
- D. Establish pipe elevations with not less than six (6) feet of cover.
- E. Establish minimum separation between water service lateral and other utility services in accordance with applicable code.

### 3.4 POTHOLING PROCEDURES

- A. Provide potholing to expose underground utilities to ascertain the horizontal and vertical location of the underground utilities.
- B. Record the horizontal and vertical position of the exposed underground utility on the project “Record Drawings”. Tie to a project survey benchmark provided by the Utility.
- C. Also record the position by survey coordinates or by measuring the distance, with a tape measure, to permanent features in three horizontal directions. In addition, the vertical distance below grade should be obtained.
- D. Underground utilities exposed during potholing shall be protected until restoration work commences. Contractor shall provide temporary support of utilities that are in a potential risk of damage due to potholing.
- E. After the underground utility has been located, the pothole should be restored within 24 hours or as otherwise directed.
- F. The underground utility shall also be protected from heavy and sharp items falling into the excavation which could damage the underground utility.
- G. Appropriate sediment controls should be utilized during all potholing activities to prevent storm water pollution. The pothole should be clean and dry prior to backfilling.
- H. Backfilling of the excavation and the restoration of pavement or surfacing shall be in accordance with this Project Manual.
- I. Drilling mud or remaining spoil should be cleaned up and the area restored to original condition or better. The Contractor is responsible for disposing of any drilling mud or remaining spoil in an environmentally suitable manner.
- J. This Work is considered incidental to the new watermain construction.

### 3.5 DEWATERING

- A. Intercept and divert surface drainage, precipitation, and groundwater away from excavation through use of dikes, curb walls, ditches, pipes, sumps or other means.
- B. Develop and maintain substantially dry subgrade during drilling and pipe installation.
- C. Comply with State of Wisconsin Department of Natural Resources requirements for discharging water to watercourse, preventing stream degradation, and erosion and sediment control.

### 3.6 EXISTING WORK

- A. Maintain access to existing homeowners, schools, commercial business facilities and any other public or private properties. Modify pipe installation to maintain access to existing facilities.

### 3.7 EXCAVATION

- A. Excavate soil as specified in Section 31 23 17 – Site Excavation, Backfill, and Compaction.
- B. Excavate approach trenches and pits as site conditions require. Minimize number of access pits.
- C. Provide sump areas to contain drilling fluids.
- D. Install excavation supports as required.
- E. Restore areas after completion of drilling and carrier pipe installation.

### 3.8 DRILLING

- A. Drill pilot bore with vertical and horizontal alignment as indicated on Drawings.
- B. Guide drill remotely from ground surface to maintain alignment by monitoring signals transmitted from drill bit.
  - 1. Monitor depth, pitch, and position.
  - 2. Adjust drill head orientation to maintain correct alignment.
- C. Inject drilling fluid into bore to stabilize hole, remove cuttings, and lubricate drill bit and pipe.
- D. Continuously monitor drilling fluid pumping rate, pressure, viscosity, and density while drilling pilot bore, back reaming, and installing pipe to ensure adequate removal of soil cuttings and stabilization of bore.
  - 1. Provide relief holes when required to relieve excess pressure.

2. Minimize heaving during pullback.
- E. Calibrate and verify electronic monitor accuracy during first 50 feet of bore in presence of Utility Inspector before proceeding with other drilling.
- F. Excavate minimum of four (4) test pits spaced along first 50 feet bore to verify required accuracy.
- G. When required accuracy is not met, adjust equipment or provide new equipment capable of meeting required accuracy.
- H. After completing pilot bore, remove drill bit.

### 3.9 DRILLING OBSTRUCTIONS

- A. When obstructions are encountered during drilling, notify Utility Engineer and Utility Inspector immediately. Do not proceed around obstruction without Utility Engineer's approval.
- B. For conditions requiring more than three (3) feet deviation in horizontal alignment, submit shop drawings to Utility Engineer for approval before resuming work.
- C. Maintain adjusted bore alignment within easement or right-of-way.

### 3.10 PIPE INSTALLATION

- A. After completing pilot bore, remove drill bit. Install reamer and pipe pulling head.
  1. Select reamer with minimum bore diameter required for pipe installation.
- B. Attach pipe to pipe pulling head. Pull reamer and pipe to entry pit along pilot bore.
- C. Inject drilling fluid through reamer to stabilize bore and lubricate pipe.
- D. Install piping with horizontal and vertical alignment as shown on Drawings.
- E. Protect and support pipe being pulled into bore so pipe moves freely and is not damaged during installation.
- F. Do not exceed pipe manufacturer's recommended pullback forces.
- G. Install tracer wire continuous with each bore. Splice tracer wire only at intermediate bore pits. Tape or insulate tracer wire to prevent corrosion and maintain integrity of pipe detection.
  1. Terminate tracer wire for each pipe run at structures along pipe system.
  2. Provide extra length of tracer wire at each structure, so trace wire can be pulled three (3) feet out top of excavation for connection to detection equipment.
  3. Test trace wire for continuity for each bore before acceptance.



- H. Provide sufficient length of pipe to extend past termination point to allow connection to other pipe sections being installed under a future separate contract.
- I. Allow minimum of 24 hours for stabilization after installing pipe before making connections to pipe.
- J. Mark location and depth of bore with spray paint on paved surfaces, and wooden stakes on non-paved surfaces at 25-foot intervals.

### 3.11 SLURRY REMOVAL AND DISPOSAL

- A. Contain excess drilling fluids at entry and exit points until recycled or removed from site. Provide recovery system to remove drilling spoils from access pits.
- B. Remove, transport and legally dispose of drilling spoils.
  - 1. Do not discharge drilling spoils in sanitary sewers, storm sewers, or other drainage systems.
  - 2. When drilling in suspected contaminated soil, test drilling fluid for contamination before disposal.
- C. When drilling fluid leaks to surface, immediately contain leak and barricade area from vehicular and pedestrian travel before resuming drilling operations.
- D. Complete cleanup of drilling fluid at end of each work day.

### 3.12 BACKFILL

- A. Install backfill as specified in Section 31 23 17 – Site Excavation, Backfill, and Compaction.
- B. Backfill approach trenches and pits with subsoil fill to contours and elevations of surrounding existing grade.
- C. Compact subsoil fill as specified in Section 31 23 17 – Site Excavation, Backfill, and Compaction.

### 3.13 ERECTION TOLERANCES

- A. Section 01 40 00 – Quality Requirements: Tolerances.
- B. Maximum Variation from Horizontal Position: 12 inches.
- C. Maximum Variation from Vertical Elevation: Two (2) inches.
- D. Minimum Horizontal and Vertical Clearance from Other Utilities: 12 inches.

- E. When pipe installation deviates beyond specified tolerances, abandon bore, remove installed pipe, re-bore, and reinstall pipe in correct alignment.
- F. Fill abandoned bores greater than three (3) inches in diameter with flowable fill material as specified in Section 31 23 17 – Site Excavation, Backfill, and Compaction.

#### 3.14 FIELD QUALITY CONTROL

- A. Section 01 40 00 – Quality Requirements: Inspecting, testing, adjusting, and balancing.
- B. Upon completion of pipe installation, test and disinfect pipe in accordance with the following:
  - 1. Section 33 17 00 - Water Main Testing.
  - 2. Section 33 13 00 – Water Main Disinfection.
- C. Compaction Testing: As specified in Section 31 23 17 – Site Excavation, Backfill, and Compaction.
- D. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- E. Frequency of Compaction Testing: As specified in Section 31 23 17 – Site Excavation, Backfill, and Compaction.

#### 3.15 MANUFACTURER'S FIELD SERVICES

- A. Section 01 40 00 – Quality Requirements: Requirements for manufacturer's field services.
- B. Certify that equipment for drilling has been properly set-up and is ready for drilling.

#### 3.16 CLEANING

- A. Upon completion of drilling and pipe installation, remove drilling spoils, debris, and unacceptable material from approach trenches and pits. Clean up excess slurry from ground.
- B. Restore approach trenches and pits to original condition.
- C. Remove temporary facilities for drilling operations in accordance with Section 01 50 00 - Temporary Facilities and Controls.

**END OF SECTION**

**SECTION 33 10 13**  
**WATER MAIN INSTALLATION**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
1. Installation of AWWA C900 poly vinyl chloride (PVC) water main.
  2. Installation of poly vinyl chloride (PVC) fittings.
  3. Installation of AWWA C600 ductile iron water main.
  4. Installation of ductile iron fittings.
  5. Installation of AWWA C901 high density polyethylene (HDPE) water service laterals.
  6. Installation of system valves, and valve boxes.
  7. Installation of system hydrants.
- B. Related Sections:
1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  2. Section 31 23 17 – Site Excavation, Backfill, and Compaction.
  3. Section 33 05 01 – Ductile Iron Pipe and Fittings.
  4. Section 33 05 06 – Polyvinyl Chloride (PVC) Pressure Pipe.
  5. Section 33 05 19 – Pressure Pipe Restraints.
  6. Section 33 05 24 – Horizontal Directional Drilling.
  7. Section 33 12 13 - Water Service Laterals.
  8. Section 33 12 19 – Hydrants.
  9. Section 33 12 16 – Water Valves and Boxes.
  10. Section 33 13 00 – Water Main Disinfection.
  11. Section 33 17 00 – Water Main Testing.
  12. Section 33 13 13 – Corrosion Control Pipe and Fittings.

**1.2 REFERENCES**

- A. Standard Specifications for Sewer and Water Construction in Wisconsin (SSSW):
1. Standard Specifications for Sewer and Water Construction in Wisconsin, Current Edition, with Addendum.
- B. American Water Works Association (AWWA):
1. AWWA C110 - Standard for Ductile-Iron and Gray-Iron Fittings, 3-In. Through 48-In., for Water.
  2. AWWA C111 - Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

3. AWWA C151 – Standard for Ductile-Iron Pipe, Centrifugally Cast for Water and Other Liquids.
4. AWWA C153 - Standard for Ductile-Iron Compact Fittings, 3-In. Through 24-In., and 54-In. Through 64-In., for Water Service.
5. AWWA C600 – Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances.
6. AWWA C605 - Standard for Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water.
7. AWWA C651 - Standard for Disinfecting Water Mains.
8. AWWA C800 - Standard for Underground Service Line Valves and Fittings.
9. AWWA C900 - Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4-In. Through 12-In., for Water Distribution.
10. AWWA C901 - Standard for Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In., for Water Service.
11. AWWA C907 - Standard for Polyvinyl Chloride (PVC) Pressure Fittings for Water 4-In. Through 8-In., for Water Distribution.

### 1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Manufacturer's Installation Instructions: Submit special procedures required to install Products specified.
- C. Record horizontal location and vertical depth of pipe runs, fittings, connections, hydrants, valves, and valve vaults installed.

### 1.4 REGULATORY REQUIREMENTS

- A. Comply with applicable rules and regulations of:
  1. State of Wisconsin Department of Natural Resources (WDNR) and local code if more stringent for materials and installation of the Work of this section.
- B. Comply with and be solely responsible for compliance with U.S. Department of Labor OSHA Part 1926 Safety and Health Regulations for Construction for this Work.
- C. Contractor performing Work of this Section shall be solely responsible for identifying, furnishing, installing and maintaining equipment and materials required by state and federal regulations to establish safe working conditions during Work of this Section.

### 1.5 QUALITY ASSURANCE

- A. New Water Main Installation Construction Schedule:
  1. The Bidder shall submit a schedule at the Pre-construction Meeting indicating sequential work plan for the installation of the new water main. The Utility must

approve the installation sequence.

- B. Existing Water Main Abandonment Schedule:
  - 1. The Bidder shall submit a sequence of existing water main abandonment at the pre-construction conference. The Utility must approve the abandonment sequence.
- C. Notice To Utility:
  - 1. Contractor shall give a 48 hour written notice to the Utility before requesting a shutdown of any existing water mains in order to make the connections.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Load and unload pipe, fittings, valves, hydrants, and accessories in accordance with manufacturer's published recommendations.
- B. Adherence to pipe manufacturer's unloading requirements are stressed when temperatures are below 32 degrees F.
- C. Under no circumstances shall material be dropped.
- D. Pipe handled on skidways shall not be rolled or skidded against pipe on ground.
- E. Pad slings, hooks, or pipe tongs and use to prevent damage to exterior surface or internal lining of pipe.
- F. Keep stored material stored free of damage.
- G. Keep interior of pipe, fittings, and other appurtenances free from dirt or foreign matter.
- H. Drain valves and hydrants and store to protect them from damage by freezing.
- I. Use timbers to separate pipe stored on ground from ground surface and other pipe.
- J. Store gaskets for mechanical and push-on joints in cool location out of direct sunlight and contact with petroleum products.
- K. Distribute (string) pipe as close to trench as practical and on opposite side of trench from excavated earth stockpile.

#### 1.7 ENVIRONMENTAL REQUIREMENTS

- A. Pipe shall not be laid in water.
- B. Pipe shall not be laid in trenches where, in opinion of Utility Inspector, conditions are unsuitable.

- C. Blocking shall not be used to change pipe grade or to intermittently support pipe across excavated sections.
- D. Remove ledge rock, boulders, cobbles, and large stones to provide 6-inch embedment cushion on each side of and below pipe and appurtenances.
- E. If trench passes over a previously excavation, compact trench bottom to provide support equal to that of adjacent undisturbed native soil or conform to specific regulatory requirements to prevent damage to existing installed facility.
- F. Separation of water main and sanitary and storm sewers shall be in accordance with State of Wisconsin requirements.

## **PART 2 PRODUCTS**

### **2.1 GENERAL REQUIREMENTS**

- A. Pipe and fittings shall each be products of a single manufacturer and shall be fabricated in the United States of America. Intermixing of any material type from multiple manufacturers is prohibited.

### **2.2 WATER MAIN PIPE MATERIALS**

- A. Ductile Iron Pipe: Shall meet requirements of Section 33 05 01 – Ductile Iron Pipe and Fittings.
- B. Polyvinyl Chloride (PVC) Pressure Pipe: Shall meet requirements of Section 33 05 06 – Poly Vinyl Chloride (PVC) Pressure Water Pipe.
- C. Polyethylene Pipe (HDPE): Shall meet requirements of Section 33 05 07 – Polyethylene Pressure Pipe.

### **2.3 FIELD EXAMINATION**

- A. Contractor and Utility Inspector shall inspect and accept materials for construction of water mains prior to beginning construction.
- B. Examine pipe, fittings, valves, hydrants, and other appurtenances carefully for damage and other defects prior to installation.
- C. Mark defective material identified by Contractor and hold for inspection by Utility Inspector, who will prescribe corrective repairs or reject material.

### **2.4 PIPE LOCATION MATERIALS**

- A. Mark all non-conductive lateral pipes with a locating wire system.

- B. Tracer Wire:
  - 1. All water main shall include a 10 gauge solid, blue coated copper tracer wire to be taped to each pipe.
  - 2. Tape shall be securely fastened to main, hydrant leads and hydrants.
  - 3. Additionally, the tracer wire shall be looped from the main through a four (4) foot piece of 2-inch PVC pipe at the hydrants.
  - 4. Splices shall be soldered and water proofed using shrink wrap or underground splice kit.
  - 5. Test station shall be an adjustable height tracer wire access box manufactured by VALCO, Inc. Test stations shall be plain-capped valve box top section with hardwood blocking installed as noted on the plans.
  - 6. Tracer wire ends at existing main shall be bonded to a 8-foot copper ground rod driven next to the pipe.
- C. Identification Warning Tape: Heavy plastic underground warning tape, 2-inch width. Color-Bright Blue, warning message "Caution Buried WATER Below" to repeat every 30 inches.

### **PART 3 EXECUTION**

#### **3.1 NOTIFICATION**

- A. Contractor, prior to any excavation work, shall notify (1) a designated locating service; (2) utilities, governmental agencies, entities, known to, or which can reasonably be assumed to have above or below ground pipe, conduit cables, structures, or similar items within limits of project; to locate and mark location of such items.
- B. In accordance with Wisconsin Statute 182.0175, "Damage to Transmission Facilities," Excavator, as defined in 182.0175(1)(bm), shall be solely responsible to provide advance notice to "Diggers Hotline, Inc." (800-242-8511) not less than three working days prior to commencement of any Excavation, as defined in the statute, required to perform work contained in this Project, and further, Excavator shall comply with all other requirements of this Statute relative to Excavation.

#### **3.2 PROTECTION**

- A. Perform excavation, backfilling and compaction in accordance with Section 31 23 17 – Site Excavation, Backfill, and Compaction for protection of public and private property.
- B. Exercise care during excavation to avoid damage to existing buildings, structures, roadways, sidewalks, utilities, and survey identification markings.

#### **3.3 INSTALLATION OF PIPE**

- A. Lay and maintain water mains to lines and grades established by Drawings with fittings,

valves, tapped or bossed outlets, and hydrants at required locations.

- B. Trench preparation shall proceed in advance of pipe installation only as far as can be backfilled in same day.
- C. Contractor shall not deviate from types of excavation indicated on Drawings or in Project Manual without prior concurrence of Utility Engineer except in case of roadways, driveways, and obstructions requiring short tunnel sections that may be indicated on Drawings as open trench sections.
- D. Support tunnel sections exceeding two (2) feet in length in accordance with applicable codes.
- E. Install water mains without the use of wood blocking. Use of wood blocking is prohibited. Use solid concrete block as specified.
- F. Lower pipe, fittings, valves, and hydrants carefully into trench by means of a derrick, ropes, or other suitable tools or equipment, in a manner to prevent damage to water main materials and protect coatings and linings.
- G. Lay pipe with bell ends facing direction of laying. When grade exceeds 2 feet of rise per 100 feet of trench, bells shall face upgrade.
- H. Provide holes for bells at each joint but no larger than necessary for joint assembly and assurance that pipe barrel will lie flat on trench bottom. Push-on type joints require only minimum depressions for bell holes.
- I. Trench bottom shall be true and even in order to provide support for full length of pipe barrel, except a slight depression may be provided to allow withdrawal of pipe slings or other lifting tackle.
- J. Remove lumped subsoil, boulders, and rock up to 1/3 cubic yard, measured by volume.
- K. When rock is encountered, remove to provide a clearance of at least 6 inches below and on each side of pipe, valves, and fittings for pipe sizes 24 inches or smaller, and 9 inches for pipe sizes 30 inches and larger.
- L. When excavation is complete, place specified bedding material on bottom of trench to depths indicated, level, and compact. Take every precaution to prevent foreign material from entering pipe while it is being placed in line.
- M. If pipe laying crew cannot put pipe into trench and in place without getting earth into it, Utility Inspector may require that before lowering pipe into trench, a heavy, tightly woven, canvas bag of suitable size be placed over each end and left there until connection is made to adjacent pipe.



- N. Do not place debris, tools, clothing, or other materials in pipe during laying operations.
- O. Assemble joint and bring pipe to correct line and grade as each length of pipe is placed in trench.
- P. Take precautions to prevent foreign materials from entering joint space and carefully check joint recess for foreign material before installing gasket.
- Q. Secure pipe in place with bedding material, keeping bell end open.
- R. Upon daily and temporary completion of pipe installation, close open ends of pipe by a water-tight plug or other means approved by Utility Inspector. This provision applies during daytime inactivity as well as overnight and weekends.
- S. If water is in trench, maintain pipe seal in place until water level is lowered four inches below pipe invert.
- T. Whenever it becomes necessary to lay a main over, under, or around a known obstruction, furnish and install required fittings. Laying of such fittings will be paid for at unit price bid for each size of main. No additional compensation will be paid to Contractor for any expenses incurred because of such obstruction.
- U. When an unknown underground structure interferes with Work to such an extent that an alteration of Drawings is required and alteration results in a change in cost to Contractor, Utility Engineer will issue a written order for such altered work, specifying basis of payment or credit for such altered work.
- V. Keep interior and exterior of pipe clean and free from foreign material before installation. Provide necessary means to wipe, brush, swab, or air blast to remove any foreign material from interior of pipe as instructed by pipe manufacturer and as directed by Utility Inspector.
- W. Install colored marker tape continuous 36 inches below finished grade over centerline of pipe line; coordinate with Section 31 23 17 – Site Excavation, Backfill, and Compaction.

#### 3.4 WATER AND SEWER SEPARATION

- A. Install water main at minimum required distances away from adjacent sanitary and storm sewers and laterals as stipulated by:
  - 1. State of Wisconsin Department of Natural Resources (WDNR) and local code if more stringent for materials for the Work of this Section.

#### 3.5 TRACER WIRE INSTALLATION

- A. Install tracer wire continuous over top of pipe. Secure tracer wire to top of pipe with

industrial strength tape at maximum 10 foot intervals; coordinate with Section 31 23 17 – Site Excavation, Backfill, and Compaction.

- B. Lateral tracer wire originates and terminates in tracer wire access box located at right-of-way line. Install conductor tracer wire in one continuous loop.
- C. Tape conductor tracer wire to top of pipe at minimum 10-foot intervals. Wrapping conductor tracer wire around pipe is prohibited.
- D. Field test each locating wire after installation is completed.

### 3.6 RUBBER GASKET JOINTS

- A. Join pipe and fittings by means of a compression type push-on rubber gasket unless another joint type is specified on Drawings or in Specifications.
  - 1. Gasketed bell joint integral with pipe or fitting, AWWA C900 and AWWA C907.
  - 2. Gasketed Coupling-double-gasketed coupling AWWA C900 and AWWA C907.
  - 3. Gasketed bell joint integral with pipe or fitting, AWWA C111 and AWWA C600.
  - 4. Mechanical Joint - Gaskets and bolts manufactured in accordance with AWWA C110 or AWWA C153.
- B. Wipe bell and spigot of each pipe clean and dry. Gaskets and sealing surfaces shall be clean prior to lubrication and assembly.
- C. Apply lubricant, furnished by or approved by pipe manufacturer, in accordance with manufacturer's published instructions.
- D. Assemble joints under conditions that ensure clean mating and sealing surfaces by using equipment, materials, and procedures in accordance with manufacturer's written recommendations.
- E. Assemble integral bell gasketed joints and gasket coupling joints by positioning elastomeric gasket in groove of bell or coupling, if gasket is not preinstalled by manufacturer, and inserting spigot end of pipe into bell or coupling.
- F. Use only gaskets supplied by pipe and fitting manufacturer with their pipe and fittings.
- G. Apply a thin film of manufacturer recommended non-toxic lubricant to inside surface of portion of gasket in contact with entering pipe.
- H. Place entering pipe in approximate alignment with receiving bell and insert until pipe end is lined up with setting line indicated on pipe exterior.

- I. Apply sufficient pressure on entering pipe to socket/spigot end in bell. Use care to protect end of pipe from damage:
  1. Use a leverage bar or other approved method on pipe 12 inches in diameter or smaller.
  2. Use a jack and two choker-slings or other approved method on pipe larger than 12 inches in diameter.
- J. Assemble mechanical joint in accordance with fitting manufacturer's written recommendations. Pipe spigot bevels may require shortening for use with mechanical joints or fitting joints.
- K. Whenever necessary, PVC pressure pipe of 12-inch diameter and less may accommodate longitudinal bending with the following limitations.
  1. Contractor shall block or brace pipe joints to ensure that bending of PVC pressure pipe does not result in axial deflection in gasketed or mechanical joints that exceeds manufacturer's published limits.
  2. Embedment Types 1 and 2 contained in AWWA C605 shall not be permitted for longitudinal bent pipe segments.
  3. Longitudinal bending in PVC pipe barrel shall not result in a bending radius more than maximum limits established in the following table.

#### ALLOWABLE BENDING FOR PVC PRESSURE PIPE

Nominal Size (Inches)	Minimum Curve Radius (Feet)	Offset (Inches)
4	56	17
6	88	12
8	108	9
10	138	7
12	164	6

### 3.7 MECHANICAL JOINTS

- A. Clean foreign matter and paint last 8 inches of outside of spigot and inside of bell with a soap solution.
- B. Slip cast iron gland on spigot end with lip extension toward socket bell end.
- C. Place rubber gasket in spigot end with thick edge toward gland.
- D. Nuts and bolts used in joint assembly shall be corrosion resistant steel.
- E. Push entire section of pipe forward to seat spigot end in bell. Take care to locate gasket evenly around entire joint.

- F. Tighten nuts with a suitable torque-limiting wrench. Torque for various sizes of bolts shall be as follows:

<u>Joint Size</u>	<u>Bolt Size (Inches)</u>	<u>Range of Torque</u>
3-inch	5/8	40-60
4-24 inches	3/4	75-90

- G. Tighten nuts alternately in order to produce an equal pressure on all parts of gland.
- H. After a joint is assembled and securely tightened, completely coat nuts and bolts with an approved bituminous protective coating, Koppers Company, Inc. Bitumastic Super Tank or an approved equal.
- I. Whenever it is necessary to deflect pipe from a straight line, either in vertical or horizontal plane, amount of deflection shall not exceed that shown in the following table.

**MAXIMUM JOINT DEFLECTION  
MECHANICAL JOINT DUCTILE IRON PIPE**

<u>Pipe Size (Inches)</u>	<u>Maximum Permissible Deflection per Length (Inches)</u>		<u>Approximate Radius of Curve (Feet)</u>	
	<u>18'</u>	<u>20'</u>	<u>18'</u>	<u>20'</u>
3	31	35	125	140
4	31	35	125	140
6	27	30	145	160
8	20	22	195	220
10	20	22	195	220
12	20	22	195	220

**3.8 CUTTING OF PLASTIC PIPE**

- A. Cut pipe at right angles to centerline of pipe.
- B. Perform cutting in a manner without damage to pipe and leaving a smooth end.
- C. Pipes may be cut with a circular saw or hand saw.
- D. Pipe spigot ends shall be deburred and beveled and insertion line shall be re-marked.
- E. Length and angle of field bevels shall match factory bevels.

### 3.9 CUTTING OF DUCTILE IRON PIPE

- A. Cut pipe at right angles to centerline of pipe.
- B. Perform cutting in a neat and straight manner without damage to pipe and leaving a smooth end.
- C. Cut pipes with an approved mechanical cutter.
- D. Taper cut end of pipe to be used with rubber gasket joints by grinding or filing about 1/8-inch back at an angle of approximately 30 degrees with centerline of pipe, and remove any sharp or rough edges.

### 3.10 FITTINGS AND VALVES

- A. Provide fittings and valves as specified.
- B. Place valves with operating stems vertical, except place butterfly valves with operating stems horizontal.
- C. Pipes shall not carry full weight of valves or fittings.
- D. Provide fittings, valves, and valve boxes with individual support using minimum 16 x 8 x 4-inch solid concrete block set on a compacted trench bottom.
- E. Anchor tees for thrust and torque restraint. Provide thrust or torque restraint in accordance with Section 33 05 19 – Pressure Pipe Restraints.

### 3.11 HYDRANT SETTING

- A. Provide hydrants, hydrant lead valves, fittings, and branch T-connectors with independent support of minimum 16 x 8 x 4-inch solid concrete block or 3000 psi formed concrete pad.
- B. Place crushed stone, Type A5 as specified in Section 31 05 16 – Aggregates for Earthwork, below base of hydrant to 6 inches above drain holes in hydrant stem.
- C. Set hydrant plumb and centerline of hydrant vertical.
- D. Solidly buttress hydrant against undisturbed trench wall.
- E. Set lowest hose connection to utility standard dimension above proposed finished grade or, in absence of standard, to a minimum of 18 inches.

### 3.12 WATER SERVICE LATERALS

- A. Water Service Laterals, including tapping of main, shall be in accordance with Section 33 12 13 – Water Service Laterals.

### 3.13 THRUST RESTRAINT

- A. Thrust restrain water main in accordance with Section 33 05 19 – Pressure Pipe Restraints.

### 3.14 WATER MAIN DISINFECTION

- A. Disinfect water main in accordance with Section 33 13 00 – Water Main Disinfection.

### 3.15 WATER MAIN TESTING

- A. Test completed water main in accordance with Section 33 17 00 – Water Main Testing.

### 3.16 POLYETHYLENE ENCASEMENT

- A. Encase ductile iron pipe and fittings in polyethylene conforming to requirements of ASTM D1248 and Section 33 13 16 – Corrosion Control Pipe and Fittings.

## **END OF SECTION**

**SECTION 33 12 13**  
**WATER SERVICE LATERALS**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Tapping new water mains for lateral services.
  - 2. New lateral service extension.
  - 3. Existing building lateral service connections.
  - 4. Service piping.
  - 5. Tracer wire.
  - 6. Saddles.
  - 7. Corporation stops.
  - 8. Curb stops.
  - 9. Curb boxes.
  - 10. Insulation.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 31 23 17 – Site Excavation, Backfill, and Compaction.
  - 3. Section 33 05 07 – Polyethylene Pressure Pipe.
  - 4. Section 33 10 13 - Water Main Installation.
  - 5. Section 33 13 00 – Water Main Disinfection.
  - 6. Section 33 13 16 – Corrosion Control - Pipe and Fittings.
  - 7. Section 33 17 00 - Water Main Testing.

**1.2 REFERENCES**

- A. ASTM International (ASTM):
  - 1. ASTM B62 – Specification for Composition Bronze or Ounce Metal Castings.
  - 2. ASTM B88 – Specification for Seamless Copper Water Tube.
  - 3. ASTM C518 - Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
  - 4. ASTM C578 – Specification for Rigid, Cellular Polystyrene Thermal Insulation.
  - 5. ASTM D1621 - Test Method for Compressive Properties of Rigid Cellular Plastics.
  - 6. ASTM D2842 - Test Method for Water Absorption of Rigid Cellular Plastics.
- B. American Water Works Association (AWWA):
  - 1. AWWA C150 – Thickness Design of Ductile Iron Pipe.
  - 2. AWWA C151 – Ductile-Iron Pipe, Centrifugally Cast, For Water.
  - 3. AWWA C800 - Underground Service Line Valves and Fittings.
  - 4. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. Through 3 In.,

for Water Service.

### 1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Section 01 70 00 – Execution and Closeout Requirements: Submit operation and maintenance information

### 1.4 REGULATORY REQUIREMENTS

- A. Contractor shall comply with applicable rules of :
  - 1. State of Wisconsin Department of Commerce (WDOC) and Wisconsin Department of Natural Resources (WDNR) and local code if more stringent for materials and installation of the Work of this section.

### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Load and unload pipe, fittings, valves, and accessories by lifting with hoists to avoid shock or damage.
- B. Under no circumstances shall material be dropped.
- C. Keep stored material free of damage.
- D. Keep interior of pipe, fittings, and other appurtenances free from dirt or foreign matter.
- E. Use timbers to separate pipe stored on ground from ground and other pipe.

### 1.6 ENVIRONMENTAL REQUIREMENTS

- A. Pipe shall not be laid in water.
- B. Pipe shall not be laid in trenches where, in opinion of Utility Engineer, conditions are unsuitable.

### 1.7 QUALITY ASSURANCE

- A. Any new water main under existing pavement that is not scheduled to be removed, shall be bored using directional drill methods as specified in Section 33 05 24 – Horizontal Directional Drilling.
- B. Do not remove any pavement without verifying that the pavement is identified to be removed as indicated on Drawings.

## PART 2 PRODUCTS



## 2.1 WATER SERVICE PIPING – 2 INCH AND UNDER

- A. Piping for water laterals shall be in accordance with Section 33 05 07 – Polyethylene Pressure Pipe.

## 2.2 TRACER WIRE MATERIALS

- A. Provide all non-conductive lateral pipes with a locating wire system.
- B. Tracer Wire:
  - 1. All water main shall include a 10 gauge solid, blue coated copper tracer wire to be taped to each pipe.
  - 2. Tape shall be securely fastened to main, hydrant leads and hydrants.
  - 3. Additionally, the tracer wire shall be looped from the main through a four (4) foot piece of 2-inch PVC pipe at the hydrants.
  - 4. Splices shall be soldered and water proofed using shrink wrap or underground splice kit.
  - 5. Test station shall be an adjustable height tracer wire access box manufactured by VALCO, Inc. Test stations shall be plain-capped valve box top section with hardwood blocking installed as noted on the plans.
  - 6. Tracer wire ends at existing main shall be bonded to a 8-foot copper ground rod driven next to the pipe.

## 2.3 SERVICE FITTINGS

- A. Manufacturers:
  - 1. Mueller Company, Decatur, IL
  - 2. The Ford Meter Box Company, Inc, Wabash, IN
  - 3. A.Y. McDonald Mfg. Co., Dubuque, IA
  - 4. Or Approved Equal.
- B. Tapping Saddles:
  - 1. Power Seal, Stainless Steel No. 3412 – 1-1/4 inch CC through 2-inch CC.
  - 2. Smith-Blair, Stainless Steel No. 372 – 1-1/4 inch CC through 2-inch CC.
  - 3. Or Approved Equal.
- C. Corporation Stops:
  - 1. Mueller Company, H-15000 Series.
  - 2. The Ford Meter Box Company, FB-600 or FB-1102 Series.
  - 3. A.Y. McDonald Mfg., 4701B or 4701BT Series.
  - 4. Or Approved Equal.
- D. Curb Stops:
  - 1. Mueller Company, H-15154 Series.
  - 2. The Ford Meter Box Company, B22M or B44-333-Q Series.
  - 3. A.Y. McDonald Mfg., 6104 or 6104T Series.
  - 4. Or Approved Equal.

- E. Curb Boxes - 1-1/4 inch and 1-1/2 inch Services:
  - 1. Mueller Company; Series H-10304.
  - 2. The Ford Meter Box Company, Series EM2-XX-57.
  - 3. A. Y. McDonald Mfg., Series 5614 or 5615.
  - 4. Or Approved Equal.
- F. Curb boxes shall have a minimum 1-1/2-inch inside diameter.
- G. Service boxes shall have a minimum length of seven (7) feet when extended without use of extension sections.

### **PART 3 EXECUTION**

#### **3.1 WATER AND SEWER SEPARATION**

- A. Water services 2 inches and smaller shall be installed at least 30 inches horizontally from any sanitary sewer.
- B. No water service may be installed within six (6) inches of a storm sewer.
- C. Where water service crosses above a sanitary sewer, bottom of water service pipe must be at least 12 inches above top of sewer within 10 feet of point of crossing.
- D. Where water services crosses below a sanitary sewer, top of water service pipe must be at least 18 inches below bottom of sewer within 10 feet of point of crossing.

#### **3.2 NOTIFICATION**

- A. Contractor, prior to any excavation work, shall notify (1) a designated locating service; (2) utilities, governmental agencies, entities, known to, or which can reasonably be assumed to have above or below ground pipe, conduit cables, structures, or similar items within limits of project; to locate and mark location of such items.
- B. In accordance with Wisconsin Statute 182.0175, "Damage to Transmission Facilities," Excavator, as defined in 182.0175(1)(bm), shall be solely responsible to provide advance notice to "Diggers Hotline, Inc." (800-242-8511) not less than three working days prior to commencement of any Excavation, as defined in the statute, required to perform work contained in this Project, and further, Excavator shall comply with all other requirements of this Statute relative to Excavation.

#### **3.3 PROTECTION**

- A. Perform excavation, backfilling and compaction in accordance with Section 31 23 17 – Site Excavation, Backfill, and Compaction for protection of public and private property.
- B. Exercise care during excavation to avoid damage to existing buildings, structures, roadways, sidewalks, utilities, and survey identification markings.

### 3.4 INSTALLATION OF LATERAL

- A. Lay and maintain water laterals to lines and grades established by Drawings with fittings and valves at required locations.
- B. Trench preparation shall proceed in advance of lateral installation only as far as can be backfilled in same day.
- C. Contractor shall not deviate from types of excavation indicated on Drawings or specified in Project Manual without prior concurrence of Utility Engineer.
- D. Support tunnel sections exceeding two (2) feet in length in accordance with applicable codes.
- E. Install water laterals without use of wood blocking.
- F. Lower tubing or pipe, fittings, and valves carefully into trench by means of a derrick, ropes, or other suitable tools or equipment, in a manner to prevent damage to water main materials and protect coatings and linings.
- G. Trench bottom shall be true and even in order to provide support for full length of lateral, except a slight depression may be provided to allow withdrawal of pipe slings or other lifting tackle.
- H. When rock is encountered, remove to provide a clearance of at least six (6) inches below and on each side of pipe, valves, and fittings for pipe sizes 24 inches or smaller, and nine (9) inches for pipe sizes 30 inches and larger.
- I. When excavation is complete, place a layer of appropriate bedding material on bottom of trench to depths indicated, level, and compact. Take every precaution to prevent foreign material from entering pipe while it is being placed in line.
- J. If pipe laying crew cannot put lateral into trench and in place without getting earth into it, Utility Inspector may require that before lowering pipe into trench, a heavy, tightly woven, canvas bag of suitable size be placed over each end and left there until connection is made to adjacent pipe.
- K. Take precautions to prevent foreign materials from entering joint space and carefully check joint recess for foreign material before installing gasket.
- L. Secure lateral in place with bedding material, placed by hand or equally careful means, keeping bell end open. Remove pipe and fittings that do not allow sufficient and uniform space for joints and replace with pipe and fittings of proper dimensions to insure such uniform space.
- M. For HDPE water laterals, provide snaking of the line for slack in the service to minimize the potential for pulling the service line from the corporation stop.

- N. Provide triple polyethylene wrapping, securely taped, of all corporation stops, curb stops and curb boxes in accordance with Section 33 13 16 – Corrosion Control - Pipe and Fittings.
- O. Upon daily and temporary completion of lateral installation, close open ends of pipe by a water-tight plug or other means approved by Utility Inspector. This provision applies during daytime inactivity as well as overnight.
- P. If water is in trench, maintain seal in place until water level is lowered four (4) inches below lateral invert.
- Q. Whenever it becomes necessary to lay a lateral over, under, or around a known obstruction, furnish and install required fittings. Cost of such fittings will be paid for in lump sum or unit price bid for each size of lateral. No additional compensation will be paid to Contractor for any expenses incurred because of such obstruction.
- R. When an unknown underground structure interferes with Work to such an extent that an alteration of Drawings is required and alteration results in a change in cost to Contractor, Utility Engineer will issue a written order for such altered work, specifying basis of payment or credit for such altered work.
- S. Keep interior and exterior of lateral clean and free from foreign material before installation. Provide necessary means to wipe, brush, swab, or air blast to remove any foreign material from interior of tubing or pipe as instructed by manufacturer and as directed by Utility Inspector.
- T. Disinfect lateral in accordance with Section 33 13 00 – Water Main Disinfection.

### 3.5 TRACER WIRE INSTALLATION

- A. Lateral tracer wire originates and terminates in tracer wire access box located at right-of-way line. Install conductor tracer wire in one continuous loop.
- B. Tape conductor tracer wire to top of pipe at minimum 10-foot intervals. Wrapping conductor tracer wire around pipe is prohibited.
- C. Field test each locating wire after installation is completed.

### 3.6 WATER SERVICE LATERAL MARKER

- A. Provide temporary 2-inch x 6-inch wood post, extending a minimum of 24 inches above finished grade, marked with “blue” paint at the end of each newly installed water service lateral.

**END OF SECTION**

## **SECTION 33 12 16**

### **WATER VALVES AND BOXES**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Gate valves for control of flows in water main distribution system as indicated on Drawings.
  - 2. Valve boxes for access to water main valves.
  - 3. Valve box adaptors.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 33 10 13 - Water Main Installation.
  - 3. Section 33 12 19 - Hydrants.
  - 4. Section 33 12 26 - Water Valve Vaults.
  - 5. Section 33 13 00 - Water Main Disinfection.
  - 6. Section 33 13 16 - Corrosion Control, Pipe and Fittings.
  - 7. Section 33 17 00 - Water Main Testing.

##### **1.2 REFERENCES**

- A. American Water Works Association (AWWA):
  - 1. AWWA C509 - Resilient-Seated Gates Valves for Water Supply Service.
  - 2. AWWA C550 - Protective Epoxy Interior Coatings for Valves and Hydrants.

##### **1.3 SUBMITTALS**

- A. Section 01 33 00 – Submittal Procedures: Requirements for submittals.
- B. Submit manufacturer's instruction for installation, operation, and maintenance.

##### **1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Cast markings on bonnet or body of each valve indicating manufacturer's name or mark, year casting made, size of valve, and designation of working pressure.
- B. Ship valves completely assembled.
- C. Package valves to protect them during shipment and handling prior to placement.
- D. Gate valves shall not be dropped during unloading or handling.

- E. Use hoists and slings with adequate load capacity for handling valves. Do not use hooks or chains to handle valves.
- F. Inspect valves at site for visual damage and compliance with specifications, and operate through one complete open and close cycle.
- G. Store valves to prevent entry of foreign material.
- H. Protect valves stored outside from weather, especially operating mechanisms.

## **PART 2 PRODUCTS**

### **2.1 RESILIENT-SEATED GATE VALVES**

- A. Manufacturers:
  - 1. American Flow Control – Resilient Wedge Gate Valve.
  - 2. McWane, Inc. - Clow Resilient Wedge Gate Valve.
  - 3. McWane, Inc. - Kennedy Resilient Seat Gate Valve.
  - 4. McWane, Inc. – M & H Resilient Seat Gate Valve.
  - 5. Mueller Company - Resilient Wedge Gate Valve.
  - 6. Or Approved Equal.
- B. Materials:
  - 1. Conform to AWWA C509.
  - 2. Non-rising bronze stem; valve opens counter-clockwise.
  - 3. 200 psi working pressure.
  - 4. Internal parts accessible without removing main body from pressure line.
  - 5. Coat internal cast iron surfaces with two (2) coats of corrosion resistant coating.
  - 6. Internal diameter of valve equal to or greater than connection pipe diameter.
  - 7. Mechanical joint ends.
  - 8. Furnish with 2-inch operating nut, open counterclockwise.

### **2.2 PROTECTIVE FINISHES**

- A. Valves 3 through 12 inches: Standard AWWA coating, apply two (2) coats asphalt varnish, in accordance with AWWA C509.
- B. Final interior coat shall be an epoxy coating conforming to AWWA C550 and apply to exposed ferrous elements, except for stainless steel.

### **2.3 CAST IRON VALVE BOXES**

- A. Manufacturers:
  - 1. Bingham & Taylor Corporation.
  - 2. Ford Meter Box Company, Inc.
  - 3. Tyler Pipe Company.

4. Or Approved Equal.

- B. Materials: 5-1/4 inch diameter (minimum) shaft; round base, three (3) piece box; 5-1/4 inch drop lid marked "WATER"; length of assembly sized to span top of main to finished grade with a minimum remaining adjustment of an additional three (3) inches.

## 2.4 VALVE BOX ADAPTORS

- A. Gate Valve Adaptor: Epoxy-coated, 1/4-inch steel with 1/2-inch rubber gasket, size to fit valve. Similar and equal to adaptors manufactured by Adaptor, Inc., West Allis, WI.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Install valve in closed position and in accordance with manufacturer's instructions.
- B. Set valve on solid masonry concrete blocking (16 x 8 x 4 inches) with long dimension of block perpendicular to water main and level.
- C. Assemble valve to water main and complete installation in accordance with Section 33 10 13 – Water Main Installation.
- D. Extend bedding and compact up to elevation required to set valve box over valve.
- E. Set valve box on valve box adaptor mounted on valve and on compacted bedding material.
- F. Place additional clear stone bedding, Type A3 as specified in Section 31 05 16 – Aggregates for Earthwork material to a minimum depth of six (6) inches around valve box and compact to prevent box or base from shifting.
- G. Extend valve box to sub-grade and place a sheet of polyethylene over shaft prior to inserting cover to seal box.
- H. Valve boxes shall be set two (2) inches below finished pavement grade for asphaltic pavements until final surface course of asphalt is completed, and to finished grade for concrete pavements. No temporary ramping of valves shall be permitted. No “slider” type adjustment rings shall be used.
- I. Adjustment of valve box to temporary and finished grades will be responsibility of grading and paving contractor.

### 3.2 POLYETHYLENE ENCASEMENT

- A. Encase all metal-based pipe and fittings in polyethylene conforming to requirements of ASTM D1248 and Section 33 13 16 – Corrosion Control Pipe and Fittings.

**END OF SECTION**



## **SECTION 33 12 19**

### **HYDRANTS**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Hydrants for installation in water main system.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 33 05 19 – Pressure Pipe Restraints.
  - 3. Section 33 10 13 - Water Main Installation.
  - 4. Section 33 12 16 – Water Valves and Boxes.
  - 5. Section 33 13 00 - Water Main Disinfection.
  - 6. Section 33 13 16 - Corrosion Control - Pipe and Fittings.
  - 7. Section 33 17 00 - Water Main Testing.

##### **1.2 REFERENCES**

- A. American Water Works Association (AWWA):
  - 1. AWWA C502 - Dry Barrel Fire Hydrants.
  - 2. AWWA M17 - Installation, Field Testing and Maintenance of Fire Hydrants.
- B. Underwriters Laboratories, Inc. (UL):
  - 1. UL 246 - Hydrants for Fire-Protection Service.

##### **1.3 SUBMITTALS**

- A. Section 01 33 00 – Submittal Requirements: Requirements for submittals.
- B. Submit manufacturer's instruction for installation, operation, and maintenance in accordance with Section 01 33 00 – Submittal Procedures.

##### **1.4 QUALITY ASSURANCE**

- A. Manufacturer shall furnish an affidavit stating that hydrant and material used in its construction conform to requirements of AWWA C502, and UL 246.

##### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Permanently mark hydrants identifying manufacturer by name in common usage and designating size of main valve opening and year of manufacture.

- B. Protect hydrant units from damage in handling or transit.
- C. Drain and close hydrant units before shipment.
- D. Handle hydrant units with hoists and slings with adequate load capacity to prevent damage during handling or installation.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Hydrants:
  - 1. Kennedy Valve – Guardian K-81A.
  - 2. McWane, Inc. – Clow - Model 2500.
  - 3. Mueller Company – Centurion 250 Series A-423.
  - 4. Or Approved Equal.

### **2.2 MATERIALS**

- A. Hydrants shall be rated for 250 psi operating pressure and 500 psi test pressure.
- B. Manufacture iron parts of ductile iron. Only exception is for parts designed to break on traffic impact.
- C. Hydrant shall be 5-1/4-inch valve opening, minimum, and shall be of compression type closing with pressure.
- D. Seat ring shall be made of bronze and threaded into a bronze subseat.
- E. Gaskets sealing seat ring shall seal against a bronze surface.
- F. Entire valve and rod assembly shall be removable through top of hydrant with a small lightweight seat wrench.
- G. Drain valve shall allow complete drainage of all residual water in hydrant. Circumferential drain passage inside hydrant shall be all bronze.
- H. Exterior fasteners below groundline shall be stainless steel.
- I. Hydrant will be of traffic type. Design a frangible barrel and rod coupling to break upon traffic impact to prevent damage to hydrant and connecting piping.
- J. Hydrant shall be capable of being rotated 360 degrees by loosening two (2) bolts on barrel coupling.
- K. Groundline devices utilizing lugs, keeper devices, frangible bolts, or breakaway barrels will not be accepted.

- L. Operating nut shall be ductile iron and serve as a weather shield. Hydrant bonnet shall have an arrow cast on it showing direction to open.
- M. Sealing surfaces shall use O-ring seals. Install a travel stop device in bonnet to limit downward travel of rod. Fill lubrication chamber with all-weather grease. Provide an anti-friction thermoplastic washer to reduce operating torque required to operate hydrant.
- N. Equip hydrant with two 2-1/2-inch hose nozzles and one 4-1/2-inch pumper nozzle. Position hose nozzles 180 degrees apart.
- O. Pumper nozzle shall be on same plane as hose nozzles. Nozzle threads shall be National Standard Fire Hose Screw Thread as described in Appendix A of AWWA C502.
- P. Nozzle caps and operating nut will be pentagon nuts, 1 1/2-inch point to flat as measured at bottom of nut.
- Q. Thread nozzles into upper barrel with reverse (counterclockwise) threads and lock in place with a mechanical device.
- R. Hydrant Extensions:
  - 1. Fabricate in multiples of six (6) inches with rod and coupling to increase barrel length.
  - 2. Maximum of one (1) extension per hydrant may be used.
  - 3. If additional extension is necessary on hydrant with existing extension, remove existing extension and replace with single, adequate extension.

## 2.3 FACTORY FINISH

- A. Thoroughly clean inside and outside all ferrous metal parts of hydrant.
- B. Apply two (2) coats asphalt varnish, FS TT-V-51, to exterior surfaces below ground line and exposed interior surfaces below main valve. Apply two (2) coats asphalt varnish to interior surfaces above main valve except machined surfaces.
- C. Apply one coat primer to top section of hydrant and one coat of finish paint.
  - 1. Color: Yellow top for public hydrants and red for private hydrants.

## 2.4 POLYETHYLENE ENCASEMENT

- A. Encase metal-based pipe and fittings in polyethylene conforming to requirements of ASTM D1248 and Section 33 13 16 – Corrosion Control Pipe and Fittings.

## **PART 3 EXECUTION – Not Used**

## **END OF SECTION**



**SECTION 33 13 00**  
**WATER MAIN DISINFECTION**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Disinfection of Water Mains, Fittings, and Appurtenances.
  - 2. Disinfection Materials.
  - 3. Disinfection Methods.
  - 4. Pipe Filling and Contact.
  - 5. Sampling and Testing.
  - 6. Re-disinfection.
  - 7. Disinfection Procedure for Cutting into Existing Main.
  - 8. Flushing of Main.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 33 10 13 – Water Main Installation.
  - 3. Section 33 12 13 - Water Service Laterals.
  - 4. Section 33 12 16 - Water Valves and Boxes.
  - 5. Section 33 12 19 - Hydrants.
  - 6. Section 33 17 00 – Water Main Testing.

**1.2 REFERENCES**

- A. American Water Works Association (AWWA):
  - 1. AWWA B300 - Standard for Hypochlorites.
  - 2. AWWA C651 - Standard for Disinfecting Water Mains.
  - 3. Standard Methods for the Examination of Water and Wastewater.
- B. NSF International (NSF):
  - 1. NSF 61 - Drinking Water System Components - Health Effects.

**1.3 PERFORMANCE REQUIREMENTS**

- A. Basic disinfection procedure consists of:
  - 1. Preventing contaminating materials from entering water main during storage, construction, or repair.
  - 2. Removing by flushing or other means materials that may have entered water main.

3. Chlorinating any residual contamination that may remain and flushing chlorinated water from main.
4. Determining bacteriological quality by laboratory test after disinfection.

#### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store calcium hypochlorite in cool, dark, dry environment prior to use to minimize its deterioration.
- B. Furnish new, unopened containers for work. Partially filled containers used on previous jobs shall not be allowed.

#### 1.5 QUALITY ASSURANCE

- A. Disinfection of water main, sampling, and testing in accordance with local, state, and federal regulatory rules and regulations. Perform disinfection to meet most stringent regulations.
- B. Contractor shall take samples of water and deliver samples to Oak Creek Water and Sewer Utility for testing and analysis.

### **PART 2 PRODUCTS**

#### 2.1 MATERIALS

- A. Hypochlorite Tablets: 2/3-inch diameter tablets, weighing 5 to 7 grams, containing 73 per cent calcium hypochlorite with a minimum of 70 per cent available chlorine.
- B. Hypochlorite Liquid (Swabbing Only): Bleach with a concentration of 12 per cent sodium hypochlorite.

### **PART 3 EXECUTION**

#### 3.1 PREPARATION

- A. Take precautions to protect interiors of pipes, fittings, and valves against contamination.
- B. Pipe delivered for construction shall be laid out and soundly supported above ground surface to minimize entrance of foreign material.
- C. Complete pipe joints in trenches before work is stopped. If site water accumulates in trench, plug pipe until trench is dry.
- D. Do not use contaminated material or any material capable of supporting prolific growth of microorganisms for sealing joints.

- E. Handle sealing material or gaskets in a manner that avoids contamination.
- F. Lubricant used in installation of sealing gaskets shall be suitable for potable water usage. Deliver lubricant to job in closed containers and keep clean and free of soil and other contaminants.
- G. If soil or debris enters pipe and, in opinion of Utility Inspector and will not be removed by flushing operation, clean interior of pipe by mechanical means and then swab with one (1) percent hypochlorite disinfecting solution.
- H. Undertake cleaning using a pig, swab, or "go-devil" only when Utility Inspector determines that such operation will not force mud or debris into pipe joint spaces.
- I. If difficulties arise that prevent pipe and fittings from remaining dry during installation, make every effort to assure that any water that enters pipe joint spaces contains an available chlorine concentration of approximately 25 mg/L.
- J. If main is flooded during construction, clear main of floodwater by draining and flush with potable water until clean. Fill flooded section with chlorinated potable water which at end of 24 hour holding period will have a free chlorine residual of not less than 25 mg/L.

### 3.2 CHLORINATION METHODS

- A. Place calcium hypochlorite in amounts indicated in this Section. Place calcium hypochlorite at upstream end of first section of pipe, at upstream end of each branch main, in first pipe section past valve, in hydrant leads, and at a minimum 500 foot interval in main.
- B. Hypochlorite tablets installation procedure shall be as follows:
  - 1. Place 5-gram calcium hypochlorite tablets in accordance with the following table in each section of pipe.
  - 2. Place one 5-gram calcium hypochlorite tablet in each hydrant, hydrant branch, and other appurtenance.
  - 3. Number of 5-gram Calcium Hypochlorite Tablets to Be Placed in Each Length of Pipe:

Pipe Diameter (Inches)	Length of Pipe Section (feet)				
	<u>&lt;13</u>	<u>18</u>	<u>20</u>	<u>30</u>	<u>40</u>
4	1	1	1	1	1
6	1	1	1	2	2
8	1	2	2	3	4
10	2	3	3	4	5
12	3	4	4	6	7

Note: Based on 3.25 grams available chlorine per tablet, any portion of tablet rounded to next higher integer.

4. Attach tablets to inside and top at each end of newly installed pipe with an NSF 61 approved adhesive such as No. 1 Permatex, or an approved equal.
5. No adhesive shall be on tablet except on broad side to be attached to surface of pipe.
6. If tablets are attached before pipe section is placed in trench, their position shall be marked on section so it can be readily determined that pipe is installed with tablets at top.

### 3.3 PIPE FILLING AND CONTACT

- A. When installation is completed, fill main with water at a rate such that water within main will flow at a velocity no greater than one (1) foot per second.
- B. Water for filling and initial flushing of main shall be separately metered and paid for by Contractor. Contractor shall provide labor and material necessary to transfer water from source to main to be tested. Only City of Oak Creek Water and Sewer Utility employees shall operate valves.
- C. Water shall enter main and be tested at low point in system to force entrapped air out at high end through an available hydrant.
- D. Close upper end hydrant or valve after air is expelled and chlorinated water discharge is present.
- E. Take precautions to assure that entrapped air is eliminated.
- F. Water shall remain in pipe for at least 24 hours or as defined by regulatory requirements.
- G. If water temperature is less than 40 degrees F, water shall remain in pipe for at least 48 hours.
- H. Position valves so that strong chlorine solution in main being treated will not flow into



water mains in active service.

### 3.4 SAMPLING AND TESTING

- A. Water from new mains must successfully pass bacteriological test in accordance with requirements of State environmental regulatory agency having jurisdiction over public water supply.
- B. Provide access to main for chlorination and sampling as directed by Utility Inspector.
- C. Properly and securely brace and maintain excavation until successful testing, flushing, chlorinating, and sampling of main is completed.
- D. Contractor shall be responsible for protecting any required excavation by means of proper barricades and lanterns during sampling and testing period.
- E. Oak Creek Water and Sewer Utility will obtain laboratory test results of water samples received from Contractor.
- F. Provide minimum of one (1) sample from new main and one (1) from each branch.
- G. Extremely long mains will require intermediate sampling every 1200 feet as well as a sample at its end.
- H. Collect samples for bacteriological analysis in sterile bottles treated with sodium thiosulfate as required by Standard Methods.
- I. Do not use hoses or fire hydrants in collection of samples.
- J. Provide corporation cock installed in main with copper tube gooseneck assembly. After samples have been collected, remove gooseneck assembly and retain for future use.

### 3.5 RE-DISINFECTION

- A. If initial disinfection fails to produce satisfactory bacteriological samples, reflush and resample main.
- B. If check samples show presence of coliform organisms, rechlorinate main by continuous feed or slug method of chlorination until satisfactory results are obtained.
- C. Contractor shall be responsible for costs of re-chlorination and testing including additional cost of water from Oak Creek Water and Sewer Utility for flushing and contact.

### 3.6 DISINFECTION PROCEDURE FOR CUTTING INTO EXISTING MAIN

- A. Disinfect area around existing main at connection or cut-in with hypochlorite powder.
- B. Swab or spray interior of pipe and fittings used in making connection with one percent hypochlorite solution just prior to installation.
- C. Make connection to a section of existing water main by isolating with new section. Both existing and first section of new main shall be isolated, disinfected using slug method in AWWA C651, sampled, and tested immediately after connection and isolation.

### 3.7 FLUSHING OF MAIN

- A. After required retention period has ended, flush chlorinated water from main until chlorine measurements show no residual chlorine remains.
- B. Obtain a minimum flushing velocity of 2.5 feet per second.

#### Minimum Flushing Rate

<u>Pipe Diameter</u> <u>(inches)</u>	<u>Flow Rate for Flushing</u> <u>(gpm)</u>
4	100
6	220
8	390
10	600
12	870

- C. Verify with Oak Creek Water and Sewer Utility for requirements for disposal of heavily chlorinated water to sanitary sewer system.
- D. Neutralize chlorine residual of water being disposed by treating with one (1) of the following chemicals:
  - 1. Chemical Amount Required to Neutralize Chlorine Concentration per 100,000 Gallons:

Residual Chlorine Concentration <u>Mg / L</u>	Sulfur Dioxide (SO <sub>2</sub> ) <u>lb</u>	Sodium Bisulfite (NaHSO <sub>3</sub> ) <u>lb</u>	Sodium Sulfite (Na <sub>2</sub> SO <sub>3</sub> ) <u>lb</u>	Sodium Thiosulfate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> + 5H <sub>2</sub> O) <u>lb</u>
1	0.8	1.2	1.4	1.2
2	1.7	2.5	2.9	2.4
10	8.3	12.5	14.6	12.0
50	41.7	62.6	73.0	60.0

**END OF SECTION**



## **SECTION 33 13 16**

### **CORROSION CONTROL - PIPE AND FITTINGS**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Polyethylene Sheeting.
  - 2. Polyethylene Installation – Tube Method.
  - 3. Polyethylene Installation – Sheet Method.
  - 4. Polyethylene Installation – Fitting and Appurtenances.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 33 05 01 – Ductile Iron Pipe and Fittings.
  - 3. Section 33 05 19 – Pressure Pipe Restraints.
  - 4. Section 33 10 13 – Water Main Installation.
  - 5. Section 33 12 13 - Water Service Laterals.
  - 6. Section 33 12 16 - Water Valves and Boxes.
  - 7. Section 33 12 19 - Hydrants.

##### **1.2 REFERENCES**

- A. American Water Works Association (AWWA):
  - 1. AWWA C105 - Polyethylene Encasement for Ductile Iron Piping for Water and Other Liquids.
- B. ASTM International (ASTM):
  - 1. ASTM D4976 – Specification for Polyethylene Plastics Molding and Extrusion Materials.

##### **1.3 ENVIRONMENTAL REQUIREMENTS**

- A. Due to deterioration from sunlight, minimize exposure of polyvinyl chloride and polyethylene materials prior to backfilling.

#### **PART 2 PRODUCTS**

##### **2.1 MATERIALS**

- A. Polyethylene Sheeting: Polyethylene sheeting conforming to ASTM D4976, Type I, Class B, color black, Grade E-1, 1200 psi tensile strength, minimum thickness of 8 mil. Tube diameter or sheet width shall conform to AWWA C105.
- B. All metal-based fittings, when utilized with PVC or PE piping, shall be triple-wrapped with polyethylene sheeting.
- C. Tape: Two (2) inch wide, black tape with rubber adhesive and minimum nine (9) mil polyethylene backing. Tape shall be 3M™ Preservation Sealing Tape 481 or an approved equal.
- D. Use corrosion resistant steel nuts and bolts for buried joints, fittings, and specials. Nuts and bolts shall be NSS Technologies, Inc. Cor-Blue or an approved equal.

### **PART 3 EXECUTION**

#### **3.1 PREPARATION**

- A. Polyethylene encasement shall seal and prevent contact between pipe and surrounding backfill and bedding material.
- B. Remove all lumps of clay, mud, cinders, and similar materials that may have accumulated on surface of pipe during storage.

#### **3.2 INSTALLATION - TUBE METHOD**

- A. Cut polyethylene tube to a length approximately two feet longer than that of pipe section. Slip tube around pipe, centering it to provide a one (1) foot overlap on each adjacent pipe section, and bunching it accordion fashion lengthwise until it clears pipe ends.
- B. Lower pipe into trench and make up pipe joint with preceding section of pipe. Provide shallow bell hole at joints to facilitate installation of polyethylene tube.
- C. After assembling pipe joint, overlap pipe joint with polyethylene tube.
- D. Pull bunched polyethylene from preceding length of pipe, slip over end of new length of pipe, and secure in place.
- E. Slip end of polyethylene from new pipe section over end of first wrap until it overlaps joint at end of preceding length of pipe.
- F. Secure overlap in place. Overlaps shall be secured by use of adhesive tape capable of holding polyethylene encasement in place until backfilling operations are completed.

- G. Take up slack width to make a snug, but not tight fit along barrel of pipe, securing fold at quarter points.
- H. Repair any rips, punctures, or other damage to polyethylene with adhesive tape or with a short length of polyethylene tube cut open, wrapped around pipe, and secured in place.
- I. Proceed with installation of next section of pipe in same manner.

### 3.3 INSTALLATION - SHEET METHOD

- A. Cut polyethylene sheet to length approximately two feet longer than that of pipe section.
- B. Center cut length to provide one-foot overlap on each adjacent pipe section, bunching it until it clears pipe ends.
- C. Wrap polyethylene around pipe so that it circumferentially overlaps top quadrant of pipe and both portions of adjoining pipe. Tape securely.
- D. Secure cut edge of polyethylene sheet at intervals of approximately three feet.
- E. Lower wrapped pipe into trench and make up pipe joint with preceding section of pipe.
- F. Take up slack width to make snug, but not tight, fit along barrel of pipe, securing fold at quarter points.
- G. Repair any rips, punctures, or other damage to polyethylene with adhesive tape or with a short length of polyethylene tube cut open, wrapped around pipe, and secured in place. Proceed with installation of next section of pipe in same manner.

### 3.4 INSTALLATION - FITTING AND APPURTENANCES

- A. Cover bends, reducers, offsets, and other pipe-shaped appurtenances with polyethylene in same manner as pipe.
- B. When valves, tees, crosses, and other odd-shaped pieces cannot be wrapped practically in a tube, wrap with flat sheet or split length of polyethylene tube by passing sheet under appurtenance. Seal laps with adhesive tape.
- C. Provide triple layer wrapping of all metal-based water main appurtenances.

**END OF SECTION**





**SECTION 33 17 00**  
**WATER MAIN TESTING**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Pressure testing of completed water main.
  - 2. Leakage testing of completed water main.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements govern Work under this Section.
  - 2. Section 33 10 13 – Water Main Installation.
  - 3. Section 33 12 13 - Water Service Laterals.
  - 4. Section 33 12 19 – Hydrants.
  - 5. Section 33 13 00 – Water Main Disinfection.

**1.2 REFERENCES**

- A. American Water Works Association (AWWA):
  - 1. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.
  - 2. AWWA C605 – Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water.
- B. ASTM International (ASTM):
  - 1. ASTM F2164 - Practice for Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Hydrostatic Pressure.

**1.3 SUBMITTALS**

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Contractor shall submit a testing schedule and procedure to Utility Engineer and Utility Inspector for review 10 days prior to initiating testing program.
- C. Submittal shall include type of equipment and location of its connection to new system.

**1.4 QUALITY ASSURANCE**

- A. Testing shall be in accordance with AWWA C600, AWWA C605 and ASTM F2164.
- B. Testing of water main shall comply with local and state regulatory agency rules and regulations where applicable.

## **PART 2 PRODUCTS**

Not Used

## **PART 3 EXECUTION**

### **3.1 TESTS REQUIRED**

- A. Test new installations of water main for pressure and leakage.
- B. Contractor shall notify Utility Engineer and Utility Inspector 48 hours prior to initiation of testing.
- C. Contractor shall not perform any testing without Utility Inspector present.
- D. New water main shall not be connected to an existing main until after safe water samples have been obtained from new water main system addition.
- E. Where a new main is to connect to an existing main, provide the following connection procedure prior to performance of a pressure/leakage test of new main.
  - 1. Contractor shall install a 2-foot bolted flanged spool piece between existing water main valve and new main.
  - 2. Prior to testing, remove spool piece and bolt a temporary plug on end of new main for testing purposes.
  - 3. After specified pressure and leakage tests have been completed on new main, disinfect spool piece, remove plug, and insert spool piece between new main and existing main.
  - 4. Do not connect new main to existing water main with a valved connection.

### **3.2 PRESSURE TESTING**

- A. After pipe has been laid, subject newly laid pipe or any valved section thereof to a hydrostatic pressure of at least 1.5 times working pressure at point of testing.
- B. Tests pressures shall:
  - 1. Not be less than 1.25 times working pressure at highest point along test section.
  - 2. Not exceed pipe or thrust restraint design pressures.
  - 3. Be of at least two (2) hour duration.
  - 4. Not vary by more than plus or minus five (5) psi for duration of test.
  - 5. Not exceed twice rated pressure of valves or hydrants when pressure boundary of test section includes closed gate valves or hydrants.
  - 6. Do not operate valves in either direction at differential pressure exceeding rated pressure.
  - 7. Not exceed rated pressure of valves when pressure boundary of test section included closed, resilient seated gate valves or butterfly valves.

- C. Slowly fill each valved section of pipe and apply specified test pressure, based on elevation of lowest point of line or section under test and corrected to elevation of test gage, by means of a pump connected to pipe acceptable to Utility Engineer and Utility Inspector.
- D. Do not operate valves in either opening or closing direction at differential pressures above rated pressure.
- E. Before applying specified test pressure, completely expel air from section of pipe under test.
- F. If permanent air vents are not located at all high points, Contractor shall install corporation cocks at such points to expel air as line is filled with water.
- G. After all air has been expelled, close corporation cocks and apply test pressure. At conclusion of pressure test, remove corporation cocks and plug or leave in place at discretion of Utility.
- H. Carefully examine exposed pipe, fittings, valves, hydrants, and joints during test.
- I. Repair or replace any damaged or defective pipe, fittings, valves, or hydrants that are discovered following pressure test with sound material, and repeat test until it is satisfactory to Utility Engineer and Utility Inspector.

### 3.3 LEAKAGE TESTS

- A. Leakage test may be conducted concurrently with pressure test.
- B. Leakage shall be defined as quantity of water that must be supplied into newly laid pipe, or any valved section thereof, to maintain pressure within five (5) psi of specified test pressure after air in pipeline has been expelled and pipe has been filled with water.
- C. Leakage shall not be measured by a drop in pressure in a test section over a period of time.
- D. No pipe installation will be accepted if leakage is greater than that determined by following formula:

$$L = SD \text{ times Square Root of } P, \text{ divided by } 133,200$$

Where L is allowable leakage in gallons per hour; S is length of pipe tested in lineal feet; D is nominal diameter of pipe in inches; and P is average test pressure during leakage test in pounds per square inch gage.

- E. When hydrants are in test section, test shall be made against main valve in hydrant.
- F. Acceptance shall be determined on basis of allowable leakage.
- G. If any test of laid pipe discloses leakage greater than that specified, Contractor shall, at its own expense, locate and make repairs or replacement.

**END OF SECTION**

**SECTION 33 42 13**  
**PIPE CULVERTS**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Corrugated Steel Pipe Culvert.
  - 2. Pipe Culvert Joints.
  - 3. Flared End Sections.
  - 4. Accessories.
- B. Related Sections:
  - 1. Applicable provisions of Division 01 – General Requirements shall govern Work under this Section.
  - 2. Section 31 05 16 – Aggregates for Earthwork.
  - 3. Section 31 23 17 - Site Excavation, Backfill, and Compaction: Excavating and backfilling for culvert piping.
  - 4. Section 32 11 23 - Aggregate Base Course.
  - 5. Section 32 12 16 - Asphalt Paving.
  - 6. Section 32 13 13 - Concrete Paving.

**1.2 REFERENCES**

- A. Wisconsin Department of Transportation (WISDOT):
  - 1. Standard Specifications for Highway and Structure Construction, Current Edition.
- B. American Association of State Highway and Transportation Officials (AASHTO):
  - 1. AASHTO M36 - Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains.
- C. ASTM International (ASTM):
  - 1. ASTM A760 – Specification for Corrugated Steel Pipe, Metallic-Coated for Sewers and Drains.
  - 2. ASTM A798 - Practice for Installing Factory-Made Corrugated Steel Pipe for Sewers and Other Applications.
  - 3. ASTM A929 - Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process for Corrugated Steel Pipe.

**1.3 SUBMITTALS**

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

- B. Product Data: Submit data on pipe, fittings and accessories.
- C. Manufacturer's Installation Instructions: Submit procedures required to install Products specified.

#### 1.4 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
- B. Section 01 70 00 - Execution and Closeout Requirements: Project Record Documents:
  - 1. Accurately record actual locations of pipe runs, connections, and invert elevations.
  - 2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

### **PART 2 PRODUCTS**

#### 2.1 STEEL CULVERT PIPE

- A. Corrugated Steel Pipe: ASTM A929, hot-dipped, metallic coated:
  - 1. Pipe Diameter of 6 to 21 inches: 16 gage (0.064-inch)
  - 2. Pipe Diameter of 24 to 30 inches: 14 gage (0.079-inch)
  - 3. Arched Pipe Sizes: Conform to the dimensional requirements of AASHTO M36 Tables 8, 9, 10, or 11 for specified sizes.
  - 4. Helical lock seam.
  - 5. Shape: Circular with nominal diameter as shown on Drawings.
- B. Flared End Sections: Same material as pipe, machine cut, for joining to pipe end. Firmly set and blend into ditch line providing positive drainage from one end of the culvert to the other.
- C. Coupling Bands: Galvanized steel, 0.052 inches thick x 10 inches wide; connected with two (2) neoprene "O" ring gaskets and two (2) galvanized steel bolts.
- D. Provide new culvert pipe length to match the removed culvert pipe length. Do not include length of new attached flared end sections.

#### 2.2 BEDDING AND COVER MATERIALS

- A. Bedding and Cover: Fill Type A6 specified in Section 31 05 16 – Aggregates for Earthwork.
- B. Provide a minimum of three (3) inches of Type A2 aggregate base under new culverts and flared end sections. Compact to 95 percent modified proctor density.

## Special Provisions

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#### 2.3 ACCESSORIES

- A. Re-install property owner endwalls that were removed under Section 02 41 13 – Site Demolition.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify compacted excavated base and bedding is ready to receive work and excavations, dimensions, and elevations are as indicated on Drawings.

#### 3.2 PREPARATION

- A. Remove large stones or other hard matter that could damage piping or impede consistent backfilling or compaction.

#### 3.3 EXCAVATION AND BEDDING.

- A. Excavate culvert trench to six (6) inches below pipe invert, in accordance with Section 31 23 17 – Site Excavation, Backfill, and Compaction for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.
- B. Place bedding material at trench bottom, level fill materials in one continuous 6-inch compacted depth layer, compact to 95 percent Modified Proctor density.
- C. Backfill around sides and to compacted subgrade depth over top of pipe with cover material, tamped in place and compacted to 95 percent Modified Proctor density.
- D. Maintain optimum moisture content of bedding material to attain required compaction density.

#### 3.4 INSTALLATION - PIPE



- A. Install corrugated steel pipe in accordance with WisDOT Standards and ASTM A798.
- B. Lift or roll pipe into position. Do not drop or drag pipe over prepared bedding.
- C. Shore pipe to required position; retain in place until after compaction of adjacent fills. Ensure pipe remains in correct position and to required slope.
- D. Install backfill aggregate at sides and over top of pipe.

### 3.5 PIPE FLARED END SECTIONS

- A. Place and compact Type A2 fill at pipe ends and under flared end sections and at embankment slopes.

### 3.6 ERECTION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Lay pipe to alignment and slope gradients to provide consistent continuous flow of ditchline.
- C. Maximum Offset of Pipe from Indicated Alignment: One (1) inch.

### 3.7 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Testing and inspection services.
- B. Request inspection prior to and immediately after placing aggregate cover over pipe.
- C. Compaction Testing: In accordance with Section 31 23 17 – Site Excavation, Backfill, and Compaction.
- D. When tests indicate Work does not meet specified requirements, remove Work, replace, and retest.
- E. Frequency of Tests: As determined by Utility Engineer and Utility Inspector.

### 3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.
- B. Protect pipe and bedding from damage or displacement until backfilling operation is completed.

**END OF SECTION**

# **Appendix I**

## **Disadvantaged Business Enterprise Compliance**



**XVIII. CONTRACT PACKET FOR DISADVANTAGED BUSINESS ENTERPRISE COMPLIANCE**



Wisconsin Department of Natural Resources  
Clean Water Fund Program (CWFP)  
Safe Drinking Water Loan Program (SDWLP)

## CONTRACT PACKET for DISADVANTAGED BUSINESS ENTERPRISE COMPLIANCE

*This packet contains important information and required forms for compliance with EPA's Disadvantaged Business Enterprise (DBE) regulations.*

**ALL recipients** of CWFP or SDWLP financial assistance must meet the requirements detailed on page 2 of this packet and use the federal form indicated.

**IN ADDITION**, the department must designate some projects as "Federal Equivalency" projects each year. Any recipient whose project is Federal Equivalency must meet ALL of the requirements described in this packet. Read the two paragraphs below and see the chart on page 2 of this packet to determine whether your project will require your municipality to meet the smaller set of requirements or the larger/Federal Equivalency requirements for DBE compliance.

**CWFP Federal Equivalency:** The department will select Federal Equivalency projects and notify the municipality of its selection prior to the bidding of that project.

**SDWLP Federal Equivalency:** All projects in SDWLP municipalities with populations above 3,300 are designated as Federal Equivalency projects and **subject to the full set of DBE requirements**. **SDWLP Municipalities with populations of 3,300 or less** must meet the requirements **detailed on page 2 of this packet**.



## WHICH DBE REQUIREMENTS APPLY TO YOUR MUNICIPALITY OR PROJECT?

Throughout this Packet:

- items in red text apply to ALL municipalities and projects
- items in blue text apply to every project designated as Federal Equivalency

Specific DBE Requirement	SDWLP Munis 3,300 or Less <u>Population;</u> <u>ALSO</u> CWFP Non- Federal Equivalency	SDWLP Munis w/ Population <u>Over 3,300</u> & Proj Cost <u>@ or Below</u> \$250,000	SDWLP Munis w/ Population <u>Over 3,300</u> & Proj Cost <u>Over</u> \$250,000	CWFP Federal Equivalency w/ Proj Cost <u>@ or Below</u> \$250,000	CWFP Federal Equivalency w/ Proj Cost <u>Over</u> \$250,000
<b>Solicit for DBEs</b>	X	X	X	X	X
<b>Submit Good Faith Certification Form</b>	X	X	X	X	X
<b>Use Federal Form 6100-4</b>	X	X	X	X	X
<b>Establish and Keep a Bidders List</b>			X		X
<b>Include Extra Conditions in Contracts</b>		X	X	X	X
<b>Meet Contract Administration Requirements</b>		X	X	X	X
<b>Use Federal Form 6100-2</b>		X	X	X	X
<b>Use Federal Form 6100-3</b>		X	X	X	X





## THE SIX GOOD FAITH EFFORTS

***All CWFP and SDWLP financial assistance recipients must comply with the Six Good Faith Effort requirements.***

### What is the purpose of the Six Good Faith Efforts?

The Six Good Faith Efforts are required by EPA for financial assistance agreement recipients to ensure that all disadvantaged business enterprises (DBEs) have the opportunity to compete for procurements funded by EPA financial assistance dollars.

### What are the Six Good Faith Efforts?

- 1) Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For Tribal, Local and Government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
- 2) Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid proposal closing date.
- 3) Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. For Tribal and local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
- 4) Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
- 5) Use the services and assistance of the Small Business Administration (SBA) and the Minority Business Development Agency of the U.S. Department of Commerce.
- 6) If the prime contractor awards subcontracts, require the prime contractor to take the steps in paragraphs (1) through (5) of this section.

***Note: For additional information regarding the solicitation requirements, please see the attached DBE Solicitation Guidance.***

## FEDERAL EQUIVALENCY VS. NON-FEDERAL EQUIVALENCY PROJECT REQUIREMENTS

As noted above, **all municipalities** must comply with the **Six Good Faith Efforts and other steps** identified in **EIF Form 8700-294** (Revised August 2010). In addition, **all municipalities that utilize one or more DBEs** in their CWFP or SDWLP projects must **submit EPA Form 6100-4** described on page 3. These are the only DBE requirements for projects that are non-federal equivalency.

**Projects designated as Federal Equivalency must comply with the above requirements AND all of the requirements described in the remaining pages of this Contract Packet.**



## What new forms are required?

- 1) EPA Form 6100-2 – DBE Program Subcontractor Participation Form. **For projects designated as federal equivalency only.** This form gives a DBE subcontractor the opportunity to describe the work the DBE subcontractor received from the prime contractor, how much the DBE subcontractor was paid and any other concerns the DBE subcontractor might have.

The **prime contractor must** provide **EPA Form 6100-2 DBE Program Subcontractor Participation Form** to all of its Disadvantaged Business Enterprise subcontractors. Disadvantaged Business Enterprise **subcontractors may** send completed Form 6100-2 directly to the Region 5 DBE Coordinator listed below.

Adrienne M. Callahan, Region 5 MBE/WBE Coordinator  
USEPA, Acquisition and Assistance Branch  
77 West Jackson Boulevard (MC-10J)  
Chicago, IL 60604

- 2) EPA Form 6100-3 – DBE Program Subcontractor Performance Form. **For projects designated as federal equivalency only.** This form, at the time of the bid, captures an intended subcontractor's description of work to be performed for the prime contractor and the price of the work submitted to the prime.
- 3) EPA Form 6100-4 – DBE Program Subcontractor Utilization Form. **ALL CWWP and SDWLP financial assistance recipients that utilize one or more DBEs in their project must submit Form 6100-4.** This form captures the prime's intended use of an identified DBE subcontractor, and the estimated dollar amount of the subcontract.

Form	Requirements	Provided by:	Completed by:	Submitted To:
EPA Form 6100-2	Recipients required to have prime contractors provide form to Subcontractors	Prime Contractors	DBE Subcontractors, if they choose to submit the form	EPA DBE Coordinator
EPA Form 6100-3	Recipients required to have prime contractors provide form to Subcontractors	Prime Contractors	DBE Subcontractors	Recipients as part of a bid or proposal package
EPA Form 6100-4	Recipients required to have prime contractors complete the form	Recipients	Prime Contractors	Recipients as part of a bid or proposal package

Note: All three of the EPA Forms are attached to this Contract Packet and are available individually on our website at <http://dnr.wi.gov/org/caer/cfa/EL/FORMS/forms.html>.



## CONTRACT ADMINISTRATION REQUIREMENTS

### What are the new Contract Administration requirements?

There are a number of new provisions designed to prevent unfair practices that adversely affect DBEs. Those provisions are as follows:

- 1) A loan recipient must require its prime contractor to pay its subcontractor for satisfactory performance no later than 30 days from the prime contractor's receipt of payment from the loan recipient.
- 2) A loan recipient must be notified in writing by its prime contractor prior to any termination of a DBE subcontractor for convenience by the prime contractor.
- 3) If a DBE subcontractor fails to complete work under the subcontract for any reason, the loan recipient must require the prime contractor to employ the six good faith efforts if soliciting a replacement subcontractor.
- 4) A loan recipient must require its prime contractor to employ the six good faith efforts even if the prime contractor has achieved its fair share objectives.

### What is the new Bidders List requirement?

- According to the US EPA: "The purpose of the bidders list is to provide the recipient [DNR] and entities receiving identified loans who conduct competitive bidding [municipalities] with a more accurate database of the universe of MBE/WBE and non-MBE/WBE prime and subcontractors. The bidders list is intended to be a list of all firms that are participating, or attempting to participate, on EPA assisted contracts."
- "The list must include all firms that bid or quote on prime contracts or bid or quote on subcontracts under EPA assisted projects, including both MBE/WBEs and non-MBE/WBEs."
- The bidders list must be kept until construction and the project closeout process are complete.

### What information must be retained on the Bidders List?

- 1) Entity's name with point of contact;
- 2) Entity's mailing address, telephone number, and email address;
- 3) The procurement on which the entity bid or quoted, and when; and
- 4) Entity's status as an MBE/WBE or non-MBE/WBE.

### What is the exemption from the Bidders List requirement?

- A municipality receiving funds in the amount of \$250,000 or less in any single financial assistance agreement, or in more than one financial assistance agreement with a combined total of \$250,000 or less in any one fiscal year, is exempt from the requirement to create and maintain a bidders list.
- This exemption is limited to the bidders list requirements only.



## REQUIRED CONTRACT CONDITIONS

***Include the following language in all construction contracts associated with a Federal Equivalency project.***

This project is being financed in whole or in part by the Wisconsin Department of Natural Resources through the Clean Water Fund Program (CWFP) or the Safe Drinking Water Loan Program (SDWLP). Municipalities constructing projects designated as federal equivalency must comply with the following federal laws and all applicable state and federal laws, rules and regulations and must ensure that their contractor(s) also comply with these laws, rules and regulations.

- 1) Title VI of the Civil Rights Act of 1964 (P.L. 88-352), the Rehabilitation Act of 1973 (P.L. 93-1123, 87 Stat. 355, 29 U.S.C. Sec. 794), the Older Americans Amendments of 1975 (P.L. 94-135 Sec. 303, 89 Stat. 713, 728, 42 U.S.C. Sec. 6102), and subsequent regulations, ensures access to facilities or programs regardless of race, color, national origin, sex, age or handicap.
- 2) Executive Orders 11246, as amended by Executive Orders 11375 and 12086 and subsequent regulations. Prohibits employment discrimination on the basis of race, color, religion, sex or national origin. Inclusion of the seven clauses in Section 202 of E. O. 11246 as amended by E. O. 11375 and 12086 are required in all project related contracts and subcontracts for municipalities over 3,300 population.
- 3) Executive Orders 11625, 12138 and 12432; 40 CFR part 33; Section 129 of P. L. 100-590 Small Businesses Reauthorization & Amendment Act of 1988; Public Law 102-389 (42 U.S.C. 437d); a 1993 appropriations act ("EPA's 8% statute"); Public Law 101-549, Title X of the Clean Air Acts Amendments of 1990 (42 U.S.C. 7601 note) ("EPA's 10% statute"). Encourages recipients to award construction, supply and professional service contracts to minority and women's business enterprises (MBE/WBE) and small businesses and requires recipients to utilize affirmative steps in procurement.
- 4) 40 CFR Part 33 Participation by Disadvantaged Business Enterprises in Procurement under Environmental Protection Agency (EPA) Financial Assistance Agreements
- 5) Executive Order 12549, 3 CFR, 189 and 40 CFR Part 32, Subparts B and C. Prohibits entering into contracts or sub-contracts with individuals or businesses who are debarred or suspended. Borrowers are required to check the status of all contractors (construction and professional services) and must require contractors to check the status of subcontractors for contracts expected to be equal to or over \$25,000 via this Internet address: <http://epls.arnet.gov/>.
- 6) Executive Order 13202, as amended by Executive Order 13208, does not allow bid specifications, project agreements or other controlling agreements to require or prohibit bidders, contractors or subcontractors to enter into or to adhere to project labor agreements.
- 7) Section 513 of the Federal Water Pollution Control Act (33 USC 1372) or Section 1450(e) of the Safe Drinking Water Act (42 USC 300j-9(e)), as applicable, which requires that all laborers and mechanics employed by contractors and subcontractors on projects funded directly by or assisted in whole or in part by and through the Federal Government pursuant to this Act shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of labor in accordance with subchapter IV of chapter 31 of title 40, United States Code. With respect to the labor standards specified in this section, the Secretary of Labor has the authority and functions set forth in Reorganization Plan Numbered 14 of 1950 (64 Stat. 1267; 5 U.S.C. App.) and section 3145 of title 40, United State Code. **Please note this provision ("Davis-Bacon") applies to ALL loan recipients.**







Environmental  
Protection Agency

OMB Control No: 2090-0030  
Approved: 05/01/2008  
Approval Expires: 01/31/2011

**Disadvantaged Business Enterprise Program  
DBE Subcontractor Participation Form**

<b>NAME OF SUBCONTRACTOR*</b>	<b>PROJECT NAME</b>
<b>ADDRESS</b>	<b>CONTRACT NO.</b>
<b>TELEPHONE NO.</b>	<b>EMAIL ADDRESS</b>
<b>PRIME CONTRACTOR NAME</b>	

Please use the space below to report any concerns regarding the above EPA-funded project (e.g., reason for termination by prime contractor, late payment, etc.).

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<b>CONTRACT ITEM NO.</b>	<b>ITEM OF WORK OR DESCRIPTION OF SERVICES RECEIVED FROM THE PRIME CONTRACTOR</b>	<b>AMOUNT SUBCONTRACTOR WAS PAID BY PRIME CONTRACTOR</b>
<hr/> <b>Subcontractor Signature</b>		<hr/> <b>Title/Date</b>

\*Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.





Environmental  
Protection Agency

OMB Control No: 2090-0030  
Approved: 05/01/2008  
Approval Expires: 01/31/2011

**Disadvantaged Business Enterprise Program  
DBE Subcontractor Performance Form**

<b>NAME OF SUBCONTRACTOR:</b>		<b>PROJECT NAME</b>
<b>ADDRESS</b>		<b>BID/PROPOSAL NO.</b>
<b>TELEPHONE NO.</b>		<b>E-MAIL ADDRESS</b>
<b>PRIME CONTRACTOR NAME</b>		
<b>CONTRACT ITEM NO.</b>	<b>ITEM OF WORK OR DESCRIPTION OF SERVICES BID TO PRIME</b>	<b>PRICE OF WORK SUBMITTED TO PRIME CONTRACTOR</b>
<p>Currently certified as an MBE or WBE under EPA's DBE Program? <input type="checkbox"/> Yes <input type="checkbox"/> No Signature of Prime Contractor Date Print Name Title _____ _____ Signature of Subcontractor Date _____ _____ Print Name Title</p>		

\*Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.



Environmental  
Protection Agency

OMB Control No: 2090-0090  
Approved: 05/01/2008  
Approval Expires: 01/31/2011

**Disadvantaged Business Enterprise Program  
DBE Subcontractor Utilization Form**

<b>BID/PROPOSAL NO.</b>	<b>PROJECT NAME</b>
<b>NAME OF PRIME BIDDER/PROPOSER</b>	<b>E-MAIL ADDRESS</b>
<b>ADDRESS</b>	
<b>TELEPHONE NO.</b>	<b>FAX NO.</b>

<b>The following subcontractors<sup>1</sup> will be used on this project:</b>							
<b>COMPANY NAME, ADDRESS, PHONE NUMBER, AND E-MAIL ADDRESS</b>	<b>TYPE OF WORK TO BE PERFORMED</b>	<b>ESTIMATE D DOLLAR AMOUNT</b>	<b>CURRENTLY CERTIFIED AS AN MBE OR WBE?</b>				
<p>I certify under penalty of perjury that the foregoing statements are true and correct. In the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302(c).</p> <table><tr><td>_____ Signature of Prime Contractor</td><td>_____ Date</td></tr><tr><td>_____ Print Name</td><td>_____ Title</td></tr></table>				_____ Signature of Prime Contractor	_____ Date	_____ Print Name	_____ Title
_____ Signature of Prime Contractor	_____ Date						
_____ Print Name	_____ Title						

<sup>1</sup>Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.



# DISADVANTAGED BUSINESS ENTERPRISE (DBE) SOLICITATION GUIDANCE

## ENVIRONMENTAL IMPROVEMENT FUND (EIF)

**All municipalities** applying for funds from the Environmental Improvement Fund (EIF) **must make good faith efforts** to solicit disadvantaged business enterprises (DBEs) in their construction projects. When procuring construction work, equipment, raw materials or supplies for a project, a municipality must comply with the DBE solicitation requirements whenever the procurement must be bid under the state procurement laws. The EIF includes the Clean Water Fund Program (CWFP) and the Safe Drinking Water Loan Program (SDWLP); DBEs include, but are not limited to, minority business enterprises (MBEs) and women business enterprises (WBEs).

**Prime contractors and subcontractors** participating in an EIF-funded project **must also make good faith efforts** whenever they subcontract for construction work, equipment, raw materials or supplies.

**IMPORTANT:** Good faith efforts **include solicitation** of DBEs **and other steps** identified in EIF Form 8700-294 (Revised August 2010), DBE Good Faith Certification Form, which the municipality must complete before receiving an EIF loan. See the Forms section below.

### Effective Date

For any **bids advertised on or after January 1, 2011** for an EIF-funded project, municipalities and contractors must meet the new DBE requirements, including the solicitation requirements below. Prime contractors and subcontractors must continue to use the solicitation methods described below under "Three Options to Meet Solicitation Requirements" when hiring any subcontractors for EIF projects, even if utilization goals have already been met.

### Three Options to Meet Solicitation Requirements

Municipalities, when hiring prime contractors; prime contractors, when hiring subcontractors; and subcontractors when hiring other subcontractors, must do **at least one** of the following in order to comply with DBE solicitation requirements:

1. **Include language in bid advertisements** that encourages DBEs to submit bid proposals. If contracts are advertised separately, each advertisement should include the DBE language.
  - **MUNICIPALITIES:** To make a good faith effort when hiring prime contractors, the municipality can add a simple statement to its advertisements for prime contractors such as "We encourage DBEs, including MBEs and WBEs, to submit bid proposals." The advertisements must appear at least in the official newspaper of public record for the municipality. ***The municipality must then submit a copy of the advertisement to the DNR along with other bid documents.***
  - **PRIME CONTRACTORS AND SUBCONTRACTORS:** To make a good faith effort when subcontracting, a contractor can advertise for subcontractors with an ad that includes a simple statement like "DBEs, including MBEs and WBEs, are encouraged to submit proposals." If just one advertisement is published for all areas of work that may be subcontracted, it should indicate those types of work that could be subcontracted. The advertisement(s) must appear in an industry trade publication and/or the official newspaper of public record for the municipality. ***The prime contractor should supply a copy of the advertisement to the consulting engineer or the municipality so they can submit it to the DNR along with other bid documents.***
2. **Contact DBEs on a Unified Certification Program (UCP) List** to solicit bids from these firms (e.g., firms registered in the WisDOT UCP, <http://www.dot.wisconsin.gov/business/engrserv/dbe-firms.htm>). This good faith effort option is available for municipalities, prime contractors and subcontractors to comply with the DBE requirements. The individual that makes the contacts should document all the contacts.
3. **Utilize DBEs registered with the UCP** (e.g., WisDOT UCP, <http://www.dot.wisconsin.gov/business/engrserv/dbe-firms.htm>). Municipalities must require prime contractors to complete and submit with bids EPA Form 6100-4, DBE Subcontractor Utilization Form, for any DBE subcontractors they intend to use on the contract. ***Municipalities must then submit those forms to DNR along with other bidding documents prior to loan closing.***

## When Solicitation Requirements Are Not Met

- If none of the above options are used by the municipality and the construction contractor(s) to meet DBE solicitation requirements for a project, **8% of the construction costs in the project budget will be ineligible for CWFP or SDWLP funding.**
- **MUNICIPALITIES:** If a contractor follows at least one of the options to meet DBE solicitation requirements for a project contract, but the municipality uses none of the options to meet DBE solicitation requirements for a project contract, **1% of the construction costs in the project budget for that contract will be ineligible for CWFP or SDWLP funding.**
- **PRIME CONTRACTORS:** If a municipality uses at least one of the options to meet DBE solicitation requirements for a project contract, but the prime contractor uses none of the options to meet DBE solicitation requirements, **7% of the costs of that specific construction contract that would have been eligible for subsidy will instead be ineligible for funding.**

## Forms

Use the following forms to document good faith efforts and DBE utilization. You can obtain all EIF forms from our website at <http://www.dnr.wi.gov/org/caer/cfa/EL/FORMS/forms.html>, or by contacting Meja Maka at (608) 266-9193 or [meja.maka@wisconsin.gov](mailto:meja.maka@wisconsin.gov). The EPA forms are further explained in the "Contract Packet for DBE Compliance", which is also available on our website.

1. **EIF Form 8700-294 - DBE Good Faith Certification Form** (Revised August 2010). This mandatory form asks the municipality to certify that required steps were taken to utilize DBEs, including MBEs and WBEs, in its EIF project. The municipality must answer several questions and provide explanations or justification for any "no" answers as to why specific steps were not taken.
2. **EPA Form 6100-2 – DBE Program Subcontractor Participation Form.** This form gives a DBE subcontractor the opportunity to describe the work the DBE subcontractor received from the prime contractor, how much the DBE subcontractor was paid and any other concerns the DBE subcontractor might have. This form is submitted directly to EPA.
3. **EPA Form 6100-3 – DBE Program Subcontractor Performance Form.** This form captures an intended subcontractor's description of work to be performed for the prime contractor and the price of the work submitted to the prime.
4. **EPA Form 6100-4 – DBE Program Subcontractor Utilization Form.** This form captures the prime contractor's intended use of an identified DBE subcontractor, and the estimated dollar amount of the subcontract.

## Contract Packet

When letting a contract for a project that may be financed with CWFP or SDWLP financial assistance, municipalities designated as "federal equivalency" must include specific language and forms in the bidding documents.

**CWFP Federal Equivalency:** Federal Equivalency projects will be selected by the department; selected municipalities will be notified in advance of bidding.

**SDWLP Federal Equivalency:** All projects in municipalities with populations above 3,300 will be designated as Federal Equivalency projects and subject to all DBE requirements.

See the "Contract Packet" on our News, Dates & Events web page at <http://dnr.wi.gov/org/caer/cfa/EL/Section/news.html> or under Forms & Publications at <http://dnr.wi.gov/org/caer/cfa/EL/FORMS/forms.html> for details of what must be included in the bidding documents. If a municipality is requesting refinancing of a previously constructed project and the Contract Packet documents were not included in the bids, a municipality may complete and submit the required forms to meet this requirement.

## Further Information

For further information regarding DBE procurement requirements, contact the EIF project manager assigned to your project or contact Meja Maka at (608) 266-9193 or [meja.maka@wisconsin.gov](mailto:meja.maka@wisconsin.gov). Information is also available on the EIF website at <http://dnr.wi.gov/org/caer/cfa/EL/Guide/MBE.html>. We will be updating these web pages in the near future.

FOR MORE INFORMATION

Contact us at the phone number below or visit our website at:

<http://www.dnr.state.wi.us/org/caer/cfa/EL/elindex.html>

**Disclaimer:** This information is intended solely as guidance, and does not contain any mandatory requirements except where requirements are found in regulations, statute or administrative rule. This guidance does not establish or affect legal rights or obligations, and is not finally determinative of any of the issues addressed. This guidance cannot be relied upon and does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing regulations, statutes and administrative rules to the relevant facts.

**Wisconsin DNR**

**Bureau of Community Financial Assistance**

Environmental Loans Section – CF/2

P O Box 7921

Madison WI 53707-7921

Phone (608) 266-7555

Fax (608) 267-0496



The Wisconsin Department of Natural Resources provides equal opportunity in its employment programs services and functions under an Affirmative Action Plan. If you have any questions, please write to: Equal Opportunity Office, Department of Interior, Washington, D.C. 20240.

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## **Appendix II**

### **Wage Rate Determination – Davis Bacon**



## **PREVAILING WAGE RATE INFORMATION**

The prevailing wage rates on this project shall be in accordance with the Department of Labor and comply with the requirements of Davis-Bacon and related Acts.



## Appendix E

# EMPLOYEE RIGHTS UNDER THE DAVIS-BACON ACT

## FOR LABORERS AND MECHANICS EMPLOYED ON FEDERAL OR FEDERALLY ASSISTED CONSTRUCTION PROJECTS

THE UNITED STATES DEPARTMENT OF LABOR WAGE AND HOUR DIVISION

<b>PREVAILING WAGES</b>	You must be paid not less than the wage rate listed in the Davis-Bacon Wage Decision posted with this Notice for the work you perform.
<b>OVERTIME</b>	You must be paid not less than one and one-half times your basic rate of pay for all hours worked over 40 in a work week. There are few exceptions.
<b>ENFORCEMENT</b>	Contract payments can be withheld to ensure workers receive wages and overtime pay due, and liquidated damages may apply if overtime pay requirements are not met. Davis-Bacon contract clauses allow contract termination and debarment of contractors from future federal contracts for up to three years. A contractor who falsifies certified payroll records or induces wage kickbacks may be subject to civil or criminal prosecution, fines and/or imprisonment.
<b>APPRENTICES</b>	Apprentice rates apply only to apprentices properly registered under approved Federal or State apprenticeship programs.
<b>PROPER PAY</b>	If you do not receive proper pay, or require further information on the applicable wages, contact the Contracting Officer listed below:

or contact the U.S. Department of Labor's Wage and Hour Division.



For additional information:

**1-866-4-USWAGE**  
(1-866-487-9243) TTY: 1-877-889-5627



**WWW.WAGEHOUR.DOL.GOV**

U.S. Department of Labor | Employment Standards Administration | Wage and Hour Division

WH11221 (Revised April 2009)

# DERECHOS DEL EMPLEADO BAJO LA LEY DAVIS-BACON

## PARA OBREROS Y MECÁNICOS EMPLEADOS EN PROYECTOS DE CONSTRUCCIÓN FEDERAL O CON ASISTENCIA FEDERAL

LA SECCIÓN DE HORAS Y SUELDOS DEL DEPARTAMENTO DE TRABAJO DE EEUU

### **SALARIOS PREVALECIENTES**

No se le puede pagar menos de la tasa de pago indicada en la Decisión de Salarios Davis-Bacon fijada con este Aviso para el trabajo que Ud. desempeña.

### **SOBRETIEMPO**

Se le ha de pagar no menos de tiempo y medio de su tasa básica de pago por todas las horas trabajadas en exceso de 40 en una semana laboral. Existen pocas excepciones.

### **CUMPLIMIENTO**

Se pueden retener pagos por contratos para asegurarse que los obreros reciban los salarios y el pago de sobretiempos debidos, y se podría aplicar daños y perjuicios si no se cumple con las exigencias del pago de sobretiempos. Las cláusulas contractuales de Davis-Bacon permiten la terminación y exclusión de contratistas para efectuar futuros contratos federales hasta tres años. El contratista que falsifique los registros certificados de las nóminas de pago o induzca devoluciones de salarios puede ser sujeto a procesamiento civil o criminal, multas y/o encarcelamiento.

### **APRENDICES**

Las tasas de aprendices sólo se aplican a aprendices correctamente inscritos bajo programas federales o estatales aprobados.

### **PAGO APROPIADO**

Si Ud. no recibe el pago apropiado, o precisa de información adicional sobre los salarios aplicables, póngase en contacto con el Contratista Oficial que aparece abajo:



o póngase en contacto con la Sección de Horas y Sueldos del Departamento de Trabajo de EEUU.



Para obtener información adicional:

**1-866-4-USWAGE**  
(1-866-487-9243) TTY: 1-877-889-5627



**WWW.WAGEHOUR.DOL.GOV**

U.S. Department of Labor | Employment Standards Administration | Wage and Hour Division

WH 1321 SFA (Revised April 2009)

## Appendix F

### 3. Contract and Subcontract provisions.

(a) The Recipient shall insure that the **subrecipient** (s) shall insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1, the following clauses:

#### (1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3) ), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

**Subrecipient** s may obtain wage determinations from the U.S. Department of Labor's web site, [www.wdol.gov](http://www.wdol.gov).

(ii)(A) The **subrecipient** (s), on behalf of EPA, shall require that any class of laborers or mechanics,

including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The EPA award official shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the **subrecipient** (s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the **subrecipient** (s) to the State award official. The State award official will transmit the report, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the and the **subrecipient** (s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the questions, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may

consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. The **subrecipient** (s), shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the **subrecipient**, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State

recipient or EPA. As to each payroll copy received, the **subrecipient** shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the **subrecipient** (s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the **subrecipient** (s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United

States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees--

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the

work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the



Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and **Subrecipient** (s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

#### **4. Contract Provision for Contracts in Excess of \$100,000.**

(a) Contract Work Hours and Safety Standards Act. The **subrecipient** shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above or 29 CFF 4.6 . As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation

of the clause set forth in paragraph (a)(1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The **subrecipient**, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.

(b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the **Subrecipient** shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the **Subrecipient** shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

## Appendix H

LABOR STANDARDS INTERVIEW									
CONTRACT NUMBER				EMPLOYEE INFORMATION					
NAME OF PRIME CONTRACTOR				LAST NAME		FIRST NAME		MI	
NAME OF EMPLOYER				STREET ADDRESS					
SUPERVISOR'S NAME				CITY		STATE		ZIP CODE	
LAST NAME		FIRST NAME		MI		WORK CLASSIFICATION		WAGE RATE	
ACTION								CHECK BELOW	
								YES	NO
Do you work over 8 hours per day?									
Do you work over 40 hours per week?									
Are you paid at least time and a half for overtime hours?									
Are you receiving any cash payments for fringe benefits required by the posted wage determination decision?									
WHAT DEDUCTIONS OTHER THAN TAXES AND SOCIAL SECURITY ARE MADE FROM YOUR PAY?									
HOW MANY HOURS DID YOU WORK ON YOUR LAST WORK DAY BEFORE THIS INTERVIEW?				TOOLS YOU USE					
DATE OF LAST WORK DAY BEFORE INTERVIEW (YYMMDD)									
DATE YOU BEGAN WORK ON THIS PROJECT (YYMMDD)									
THE ABOVE IS CORRECT TO THE BEST OF MY KNOWLEDGE									
EMPLOYEE'S SIGNATURE								DATE (YYMMDD)	
INTERVIEWER		SIGNATURE			TYPED OR PRINTED NAME			DATE (YYMMDD)	
INTERVIEWER'S COMMENTS									
WORK EMPLOYEE WAS DOING WHEN INTERVIEWED					ACTION (If explanation is needed, use comments section)			YES	NO
					IS EMPLOYEE PROPERLY CLASSIFIED AND PAID?				
					ARE WAGE RATES AND POSTERS DISPLAYED?				
FOR USE BY PAYROLL CHECKER									
IS ABOVE INFORMATION IN AGREEMENT WITH PAYROLL DATA?									
<input type="checkbox"/> YES <input type="checkbox"/> NO									
COMMENTS									
CHECKER									
LAST NAME		FIRST NAME		MI		JOB TITLE			
SIGNATURE								DATE (YYMMDD)	



## **Appendix III**

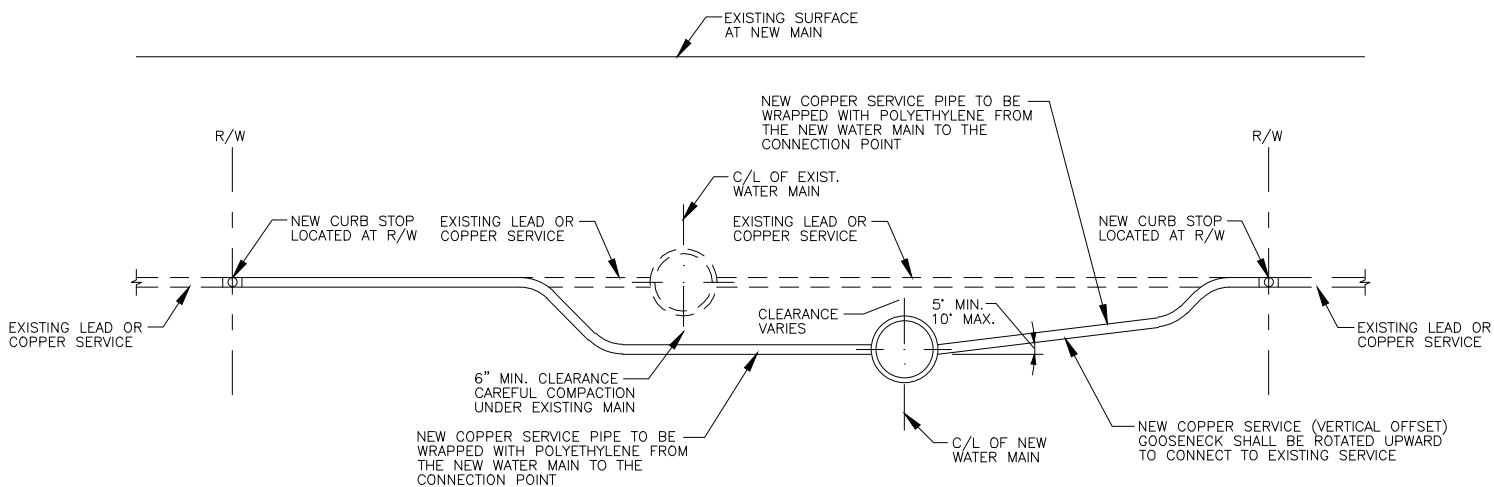
### **Water Main Detail Drawings**



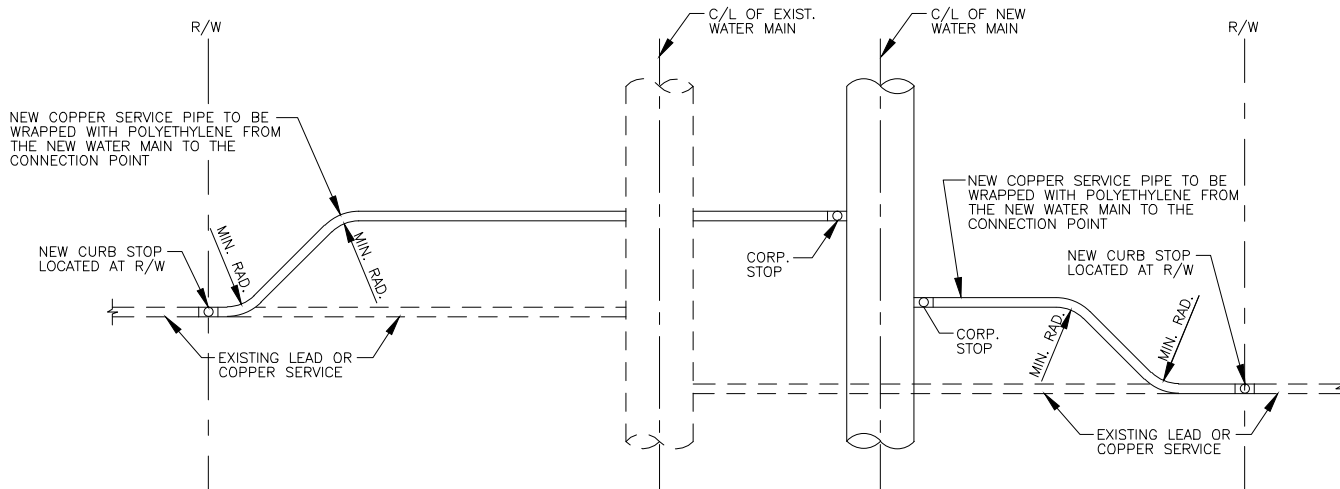








**PROFILE VIEW**



**PLAN VIEW**

**NOTE:**  
 CONNECTIONS SHALL BE TESTED FOR LEAKAGE PRIOR TO BACKFILL AFTER SUPPORT HAS BEEN COMPACTED. MINIMUM RADII ARE AS FOLLOWS - 1"=6", 1-1/4"=8", 1-1/2"=10", 2"=12". TAP AND SERVICE SHALL BE A MINIMUM OF 1-1/4" OR LARGER TO MATCH EXISTING.

**REPLACE ORIGINAL TAP SERVICE (ROS & ROS-A) DETAIL**

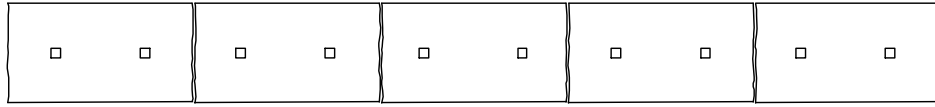
N.T.S.



PROJECT NUMBER: 20130350.00  
 DATE: 5/7/13  
 SCALE: N.T.S.  
 REFERENCE SHEET:

PROJECT TITLE: ROWAN ESTATES AND HOWELL AVE.  
 PROPOSED WATER MAIN RELAY  
 SHEET TITLE: SERVICE LATERAL

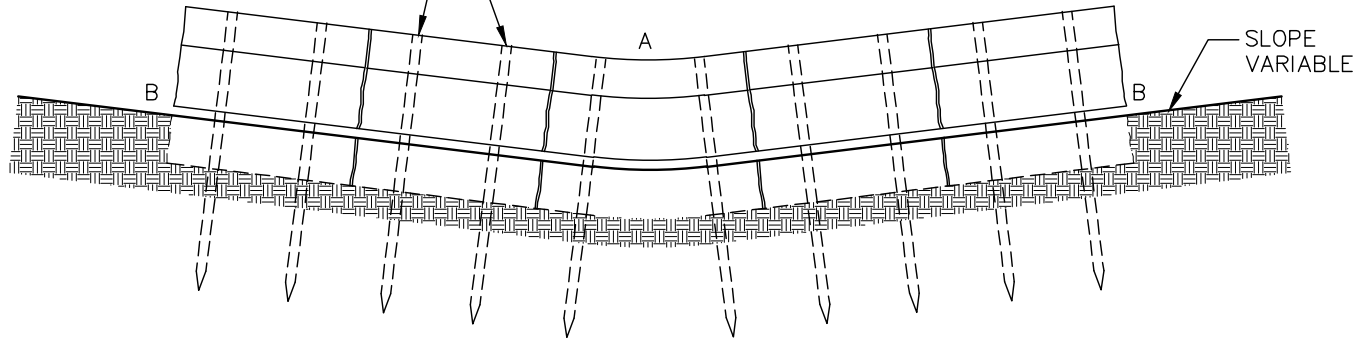
**EXHIBIT A**



**PLAN VIEW**

STAKES DRIVEN FLUSH WHEN  
SOIL CONDITIONS PERMITS

NOTE: POINT "B" SHALL BE HIGHER THAN POINT "A"  
IF REQUIRED TWO ROWS MAY BE  
USED WITH STAGGERED JOINTS.

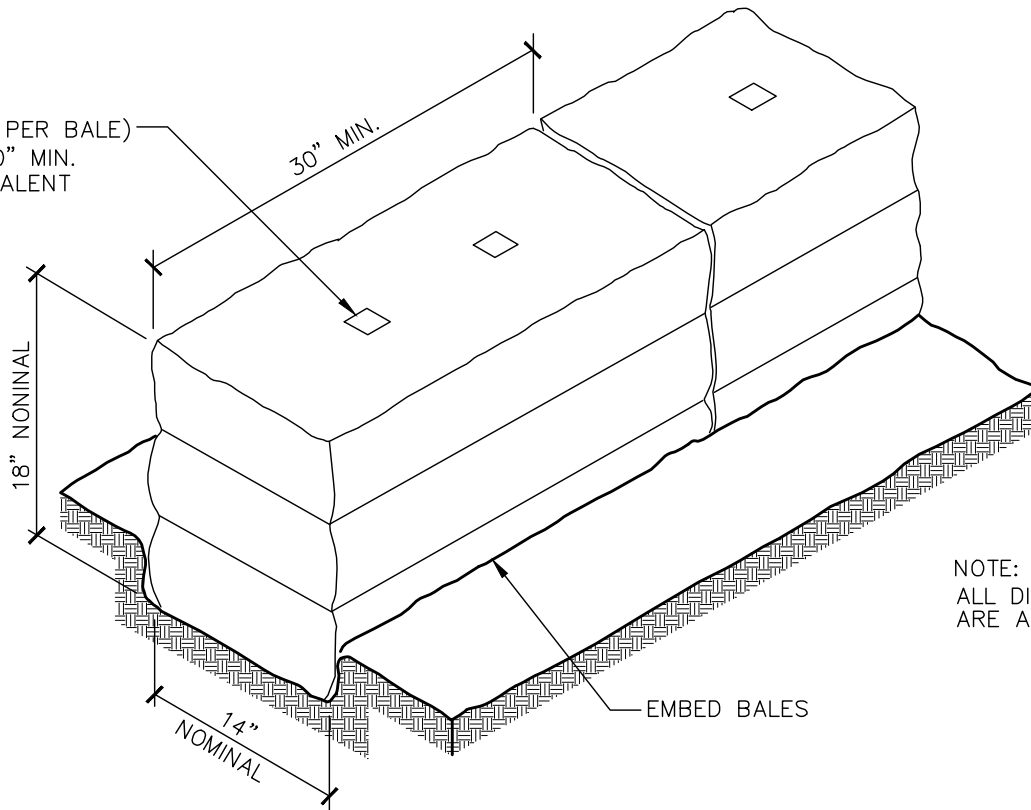


**FRONT ELEVATION**

**EROSION BALES ACROSS DITCH BOTTOM**

N.T.S.

WOOD STAKES (2 PER BALE)  
NOMINAL 2"x2"x30" MIN.  
LENGTH OR EQUIVALENT



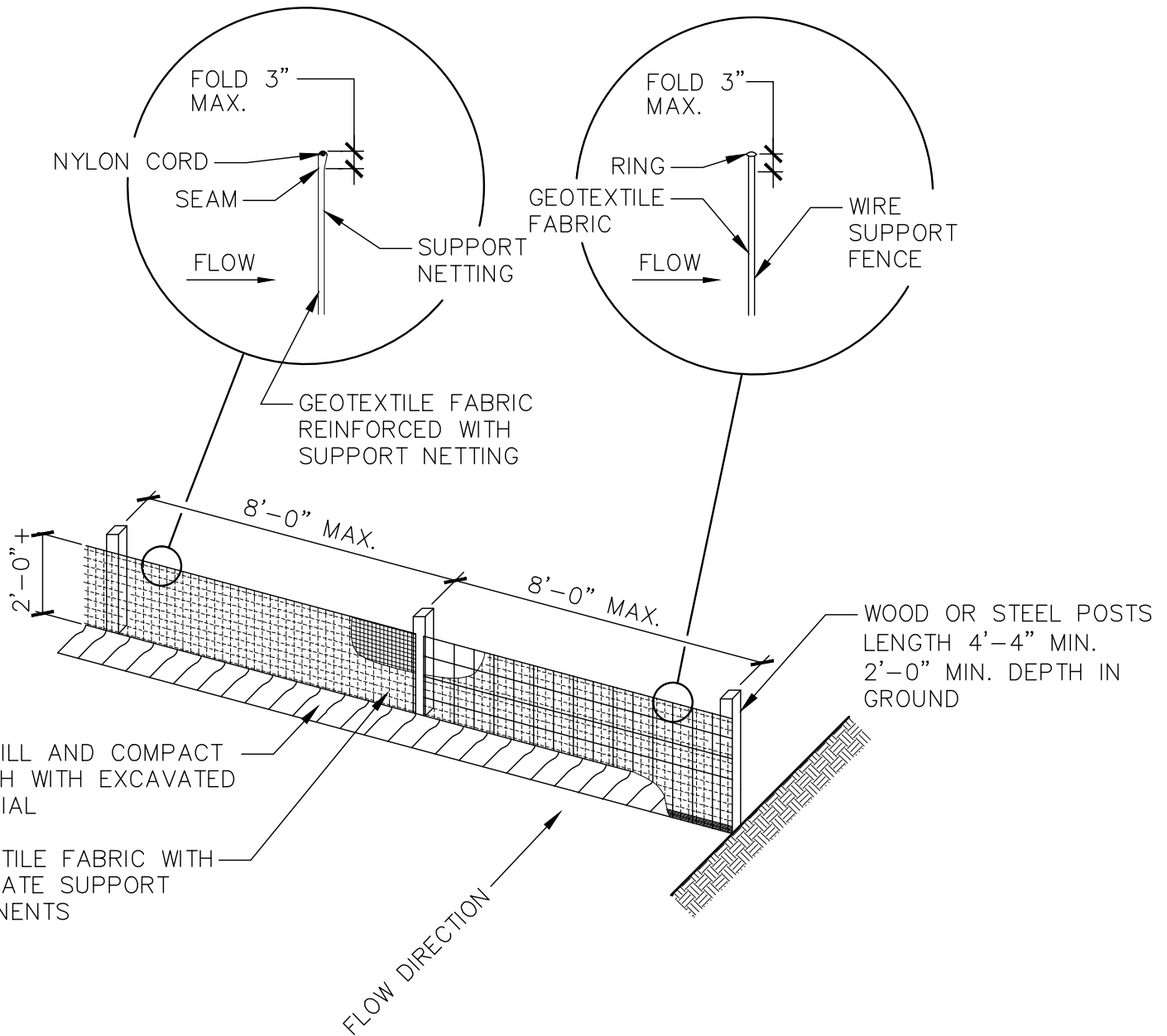
NOTE:  
ALL DIMENSIONS  
ARE APPROXIMATE

EMBED BALES

**DETAIL OF EROSION BALE INSTALLATION**

N.T.S.

L:\Jobs\2013\20130350\CAD\Std\dwg\Exhibits\C\_00\_Silt\_fence\_350.dwg, 5/9/2013 4:37:05 PM, 1766, DWG To PDF.pc3



NOTE:

### ALTERNATE "A"

ADDITIONAL POST DEPTH OR TIE BACKS  
MAY BE REQUIRED IN UNSTABLE SOILS

## SILT FENCE

N.T.S.

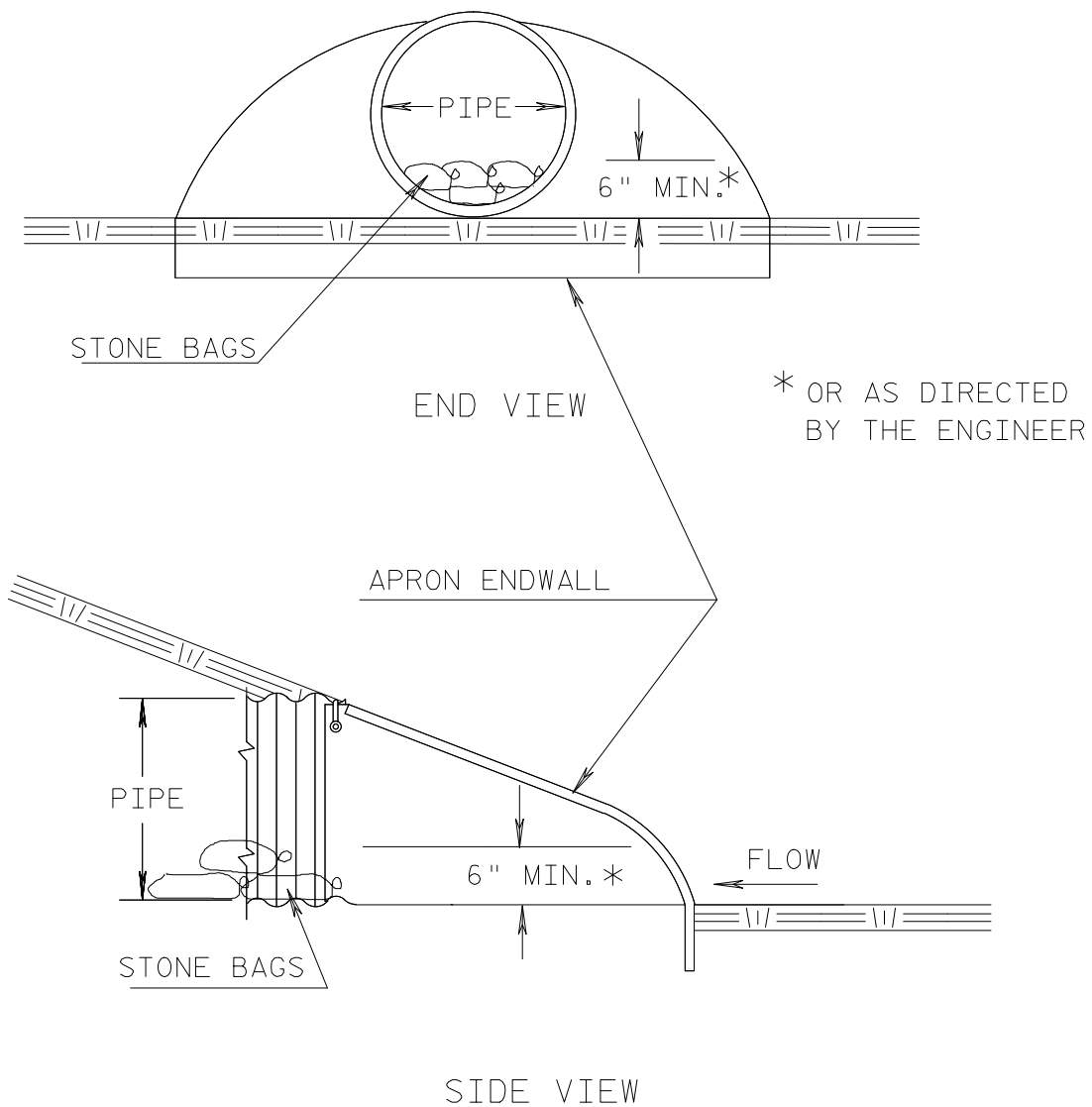


PROJECT NUMBER: 20130350.00  
DATE: 5/7/13  
SCALE: N.T.S.  
REFERENCE SHEET:

PROJECT TITLE: ROWAN ESTATES AND HOWELL AVE.  
PROPOSED WATER MAIN RELAY  
SHEET TITLE: SILT FENCE

**EXHIBIT C**

Page 3



## CULVERT PIPE DITCH CHECK

N.T.S.

## **Appendix IV**

**Wisconsin Department of Transportation (WisDOT) - Permit**



## APPLICATION / PERMIT

## TO CONSTRUCT, OPERATE and MAINTAIN UTILITY FACILITIES ON HIGHWAY RIGHT-OF-WAY

s.66.0831, 84.08, 85.15, 86.07(2), 86.16, 182.017 and such other applicable Wis. Stats.

1. Applicant (Utility facility owner) Name and Address Oak Creek Water and Sewer Utility 170 Drexel Avenue Oak Creek, WI 53154		2. Work Start Date 4/1/2014	3. Work Finish Date* 11/15/2014	6. Location Description (¼ section, section, town, range; provide plat map or location sketch) NW 1/4 Section 23 T5N R22E	
		4. Is the work due to a WisDOT highway project? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
		5. Applicant Work Order (If any)		7. Work Location (Check/list all that apply) <input type="checkbox"/> Town: _____ <input type="checkbox"/> Village: _____ <input checked="" type="checkbox"/> City: <u>Oak Creek</u> <input checked="" type="checkbox"/> County: <u>Milwaukee</u>	
9. Facility Type (Check all that apply): Size (Diameter, kV, pressure, # fibers, etc.) <input type="checkbox"/> Telecom: _____ <input type="checkbox"/> Electric: _____ <input type="checkbox"/> Gas/Oil: _____ <input checked="" type="checkbox"/> Water: 8" <input type="checkbox"/> San Sewer: _____ <input type="checkbox"/> _____: _____ <input type="checkbox"/> Transmission <input checked="" type="checkbox"/> Service: Std <input checked="" type="checkbox"/> Distribution <input type="checkbox"/> Service: Exp		12. Proposed Work Methods (Check all that apply) <input checked="" type="checkbox"/> Trench <input type="checkbox"/> Plow <input type="checkbox"/> Casing <input type="checkbox"/> Rock blasting <input checked="" type="checkbox"/> Open cut pavement  Bore: <input type="checkbox"/> Hydraulic (Auger/Jack) <input type="checkbox"/> Pneumatic (Mole) <input type="checkbox"/> Directional 1 (Manually tracked) <input type="checkbox"/> Directional 2 (Computer tracked) <input type="checkbox"/> Unknown (At this time)  Attach to poles/towers: <input type="checkbox"/> New <input type="checkbox"/> Existing <input type="checkbox"/> Guys** (Diameter) (Name of existing owner) (** Provide details for all guy wires on plan sheets)  Subsurface utility excavation: <input type="checkbox"/> Water jetting <input type="checkbox"/> Vacuum  Tree/vegetation control: <input type="checkbox"/> Cut and/or trim <input type="checkbox"/> Mow <input type="checkbox"/> Chemically treat		8. Highway (Check all that apply) <input checked="" type="checkbox"/> WIS 32 <input type="checkbox"/> US _____ <input type="checkbox"/> Interstate _____ <input type="checkbox"/> _____	
10. Facility Orientation (Check all that apply) <input type="checkbox"/> Crossing R/W <input checked="" type="checkbox"/> Parallel R/W <input checked="" type="checkbox"/> Underground <input type="checkbox"/> Overhead <input type="checkbox"/> Structure attachment		13. Work Zone Description (Check all that apply) <input type="checkbox"/> Full road closure: detour <input type="checkbox"/> Full road closure: temporary <input type="checkbox"/> Lane closure: without flagging <input type="checkbox"/> Lane closure: with flagging <input type="checkbox"/> Lane encroachment (2 feet or less) <input type="checkbox"/> Intersection/roundabout <input checked="" type="checkbox"/> Shoulder/parking lane closure <input type="checkbox"/> Off shoulder: within clear zone <input type="checkbox"/> In R/W: outside clear zone <input checked="" type="checkbox"/> Near R/W line: within clear zone <input type="checkbox"/> Near R/W line: outside clear zone <input type="checkbox"/> Not applicable		15. Will any appurtenances be installed with the facility? (If yes, provide a description and/or specification of each item with this application.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
11. Work Types (Check all that apply) <input checked="" type="checkbox"/> New construction <input type="checkbox"/> Improve/repair existing <input type="checkbox"/> Removal <input type="checkbox"/> Maintenance <input type="checkbox"/> Discontinued, left in place <input type="checkbox"/> Joint installation		14. Is the proposed facility near a survey monument? (See HMM 09-15-35) <input type="checkbox"/> Yes (Call: 1-866-568-2852 or e-mail: <a href="mailto:geodetic@dot.wi.gov">geodetic@dot.wi.gov</a> ) <input checked="" type="checkbox"/> No		16. Trans 401 project designation? (For all Major projects, provide a formal erosion control plan with this application. See HMM 09-15-55) <input checked="" type="checkbox"/> Minor <input checked="" type="checkbox"/> Major	
				17. Are any environmental permits, certifications or approvals required from other regulatory agencies? (If yes, provide a copy of each item or proof of agency coordination with this application.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

\* NOTE: If the work described is not completed by the "Work Finish Date" specified, this permit is null and void, and the work shall not be completed unless authorized through a subsequent permit or an approved time extension. **ANY PERMIT ISSUED IS REVOCABLE.**

18. Utility Person Responsible for Construction Ron Pritzlaff (Area Code) Telephone Number (414) 570-8200	19. Utility or Project 24/7 Emergency Contact (Area Code) Telephone Number
20. Is the utility a member of Diggers Hotline? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No, provide line-locate number _____	It is understood and agreed that approval is subject to applicant's full compliance with the pertinent statutes, as well as any rules and regulations of other jurisdictional agencies, which may be more restrictive, and with the Wisconsin Department of Transportation's <b>Utility Accommodation Policy (UAP)</b> , current edition. <a href="http://www.dot.wisconsin.gov/business/rules/property-uap.htm">http://www.dot.wisconsin.gov/business/rules/property-uap.htm</a>
21. Provide additional project work details, if needed (Continue on back or include separate page) Work within the R/W includes laying a new watermain down the existing frontage road with four separate connections to a 30" watermain which runs just outside of the existing shoulder of STH 32. Hydrants will be installed along the frontage road.	
22. If not employed by applicant, authorized representative's company name and address	(Signature of Authorized Representative – If filled via computer, Brush Script font) (Date) <i>Ron Pritzlaff</i> A-24-2013 Ron Pritzlaff/Utility Engineer (Title and/or print name) (414) 570-8200 rpritzlaff@water.oak-creek.wi.us (Authorized Representative Telephone Number) (Authorized Representative E-mail Address)



This permit does not transfer any land; nor give, grant or convey any land right, right in land, nor easement in WisDOT right-of-way. It is not assignable or transferrable. If ownership in a utility facility changes, WisDOT may void and supersede a permit and reissue it to the new owner upon request and with sufficient proof of ownership.

## ↓ For Wisconsin DOT Use Only ↓

<input checked="" type="checkbox"/> <b>THE UTILITY SHALL NOTIFY WisDOT 3 DAYS BEFORE STARTING WORK AT:</b> Region contact, title, office address, telephone number, and e-mail address Ryan Schnurer, Utility Permit Engineer WisDOT Southeast Region 141 NW Barstow St Waukesha, WI 53187 262-548-5955 dotdtsdseutilitypermits@dot.wi.gov	<input checked="" type="checkbox"/> <b>REVIEW ALL SUPPLEMENTAL PERMIT PROVISIONS</b> <input checked="" type="checkbox"/> <b>REVISIONS MADE to DRAWINGS or OTHER PAGES</b> <input checked="" type="checkbox"/> Lane Closure System notification required: <a href="#">HMM 09-15-60</a> <input type="checkbox"/> Insurance or performance bond required <input type="checkbox"/> Joint installation: See permit(s) # _____ <input type="checkbox"/> Private utility (Non-public ownership and/or use) <input type="checkbox"/> Expedited Service Connection Permit <input type="checkbox"/> This permit voids & supersedes # _____ issued: _____ <input type="checkbox"/>	Date Application Received 4/26/2013 Date Application Completed 5/10/2013 Date Application Denied  Permit Issuance Date 5/21/2013 Permit Extension Date  Permit Number 40U-53-13
	Ryan Schnurer (WisDOT Authorized Representative Signature – If filled via computer, Brush Script font)	

## INDEMNIFICATION

This Applicant shall save and hold the State, its officers, employees, agents, and all private and governmental contractors and subcontractors with the State under Chapter 84 Wisconsin Statutes, harmless from actions of any nature whatsoever (including any by Applicant itself) which arise out of, or are connected with, or are claimed to arise out of or be connected with any of the work done by the Applicant, or the construction or maintenance of facilities by the Applicant, pursuant to this permit or any other permit issued by the State for location of property, lines or facilities on highway right-of-way, (1) while the Applicant is performing its work, or (2) while any of the Applicant's property, equipment, or personnel, are in or about such place or the vicinity thereof, or (3) while any property constructed, placed or operated by or on behalf of Applicant remains on the State's property or right-of-way pursuant to this permit or any other permit issued by the State for location of property, lines or facilities on highway right-of-way; including without limiting the generality of the foregoing, all liability, damages, loss expense, claims, demands and actions on account of personal injury, death or property loss to the State, its officers, employees, agents, contractors, subcontractors or frequenters; to the Applicant, its employees, agents, contractors, subcontractors, or frequenters; or to any other persons, whether based upon, or claimed to be based upon, statutory (including, without limiting the generality of the foregoing, worker's compensation), contractual, tort, or whether or not caused or claimed to have been caused by active or inactive negligence or other breach of duty by the State, its officers, employees, agents, contractors, subcontractors or frequenters; Applicant, its employees, agents, contractors, subcontractors or frequenters; or any other person. Without limiting the generality of the foregoing, the liability, damage, loss, expense, claims, demands and actions indemnified against shall include all liability, damage, loss, expense, claims, demands and actions for damage to any property, lines or facilities placed by or on behalf of the Applicant pursuant to this permit or any other permit issued by the State for location of property, lines or facilities on highway right-of-way in the past or present, or that are located on any highway or State property or right-of-way with or without a permit issued by the State, for any loss of data, information, or material; for trademark, copyright or patent infringement; for unfair competition or infringement of personal or property rights of any kind whatever. The Applicant shall at its own expense investigate all such claims and demands, attend to their settlement or other disposition, defend all actions based thereon and pay all charges of attorneys and all other costs and expenses of any kind arising from any such liability, damage, loss, claims, demands and actions.

Any transfer, whether voluntary or involuntary, of ownership or control of any property constructed, placed or operated by or on behalf of the Applicant that remains on the State's property or right-of-way pursuant to this permit shall not release Applicant from any of the indemnification requirements of this permit, unless the State is notified of such transfer in writing. Any acceptance by any other person or entity, whether voluntary or involuntary, of ownership or control of any property constructed, placed or operated by or on behalf of the Applicant that remains on the State's property or right-of-way pursuant to this permit, shall include acceptance of all of the indemnification requirements of this permit by the other person or entity receiving ownership or control.

Notwithstanding the foregoing, a private contractor or subcontractor with the State under Chapter 84 Wisconsin Statutes, that fails to comply with sections 66.0831 and 182.0175 Wisconsin Statutes (2007-2008), remains subject to the payment to the Applicant of the actual cost of repair of intentional or negligent damage by the contractor or subcontractor to any property, lines or facilities placed by or on behalf of the Applicant pursuant to this permit or any other permit issued by the State for location of property, lines or facilities on highway right-of-way, and remains subject to payment to the Applicant for losses due to personal injury or death resulting from negligence by the contractor or subcontractor.

Notwithstanding the foregoing, if the State, or its officers, employees and agents, fail to comply with sections 66.0831 and 182.0175 Wisconsin Statutes (2007-2008), the State or its officers, employees and agents, remain subject to the payment to the Applicant of the actual cost of repair of willful and intentional damage by the State, or its officers, employees and agents, to any property, lines or facilities placed by or on behalf of the Applicant pursuant to this permit or any other permit issued by the State for location of property, lines or facilities on highway right-of-way, and remain subject to payment to the Applicant for losses due to personal injury or death resulting from negligence by the State, its officers, employees and agents.

No indemnification of private contractors or subcontractors with the State under Chapter 84 Wisconsin Statutes, shall apply in the event of willful and intentional damage by such private contractors or subcontractors to the property, lines and facilities of the Applicant located on the highway right-of-way pursuant to this permit or any other permit issued by the State for the location of property, lines or facilities on highway right-of-way.





## WISDOT SUPPLEMENTAL UTILITY PERMIT PROVISIONS

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### ☒ **Start Work Notice:**

1) Prior to the start of utility construction, the utility operator **MUST** forward a copy of the attached utility start work notice to the Wisconsin Department of Transportation (WisDOT) regional utility permit coordinator. Failure to do so will result in revocation of this permit.

### ☒ **Permit Requirements:**

2) There shall be no deviations from the approved construction plans covered under this permit without additional written authorization from the WisDOT utility permit coordinator.

3) A complete copy of the permit WisDOT issues a utility for its proposed work shall be in the possession of the utility's work force, consultant, contractor or subcontractor at all times when work is being performed within the right-of-way (R/W). This includes a copy of WisDOT's approval for a service connection under an Expedited Service Connection Permit (ESCP). Electronic copies are acceptable.

4) Failure to maintain a permit on the work site shall cause this permit to become null and void. A subsequent permit will be required to complete the previously permitted work.

5) This permit is valid only for utility construction on WisDOT controlled highway right-of-way. Permits from other federal, state, county and local agencies may be required.

6) Utility construction shall not interfere with any WisDOT construction project or maintenance operation.

7) Underground facility locates shall be done prior to construction.

### ☒ **Work Zone Traffic Control:**

8) Work Zone Traffic Control (WZTC) shall be in accordance with the Wisconsin Manual of Uniform Traffic Control Devices (WMUTCD) chapter VI.

9) Traffic control shall be maintained throughout construction and shall be altered at anytime upon the request of WisDOT, the county or local highway department or any law enforcement agency.

10) Flaggers shall be used whenever conditions warrant.

11) At the end of each work day, construction signage shall be knocked down or removed. Turning sign faces away from traffic is no longer allowed.

☒ 12) Signage in place longer than 7 continuous days must be post mounted. Portable supports may be used for signage in place less than 7 continuous days.

### **Wisconsin Lane Closure System (LCS) Notification:**

13) Lane, shoulder, ramp closures or encroachments on WIS 32 require lane closure notification to the southeast region traffic engineer. The LCS request shall be sent to WisDOT for review and approval **14 calendar days** prior to the need for a freeway closure, or **3 business days** prior to the need for a non-freeway closure.

14) The utility or their contractor shall set up an account and request lane closures at the following link:  
<http://transportal.cee.wisc.edu/closures/>

### ☒ **WisDOT Holiday Shutdowns:**

15) No utility work with the exception of emergency work shall be performed during the following holidays. All work shall stop prior to and resume after the holidays on the following dates and times. All unnecessary traffic control shall be knocked down or moved outside the clear zone:

Memorial Day-May 24, 2013-12pm through May 28, 2013-6am



Independence Day-July 3, 2013-12pm through July 5, 2013-6am  
Labor Day-August 30, 2013-12pm through September 3, 2013-6am  
Thanksgiving-November 27, 2013-12pm through December 2, 2013-6am  
Christmas-December 23, 2013-12pm through December 26, 2013-6am  
New Years-December 30, 2013-12pm through January 2, 2014-6am

**Erosion Control:**

- 16) Prior to the start of construction, all applicable erosion control devices including inlet protection shall be placed, inspected, monitored and maintained on a daily basis by the utility operator or their contractor.
- 17) Spoil removed from excavations shall be placed in an upland area. The perimeter of each spoil pile shall be wrapped with silt fence or other devices to prevent soil loss or soil run off.
- 18) Whenever construction operations require dewatering, the displaced water shall be pumped through filter fabric bags or temporary settling basins constructed prior to discharge from the work site.
- 19) Inlet protection shall be removed once construction operations are complete and the work area is stabilized.
- 20) Silt fence or other erosion control devices shall be removed after substantial vegetative growth has occurred.

**Existing Pavements & Right-of-Way:**

- 21) Existing inlets, drainage structures, drain tiles or other drainage facilities damaged during construction shall be repaired or replaced in kind. The contractor shall notify WisDOT of any damaged facilities.
- 22) Equipment and material shall be moved outside the clear zone at the end of each work day.
- 23) Open excavations shall be plated or protected by other means during and at the end of each work day to ensure public safety. Energy absorbing terminals (EATS) or other crash protection devices shall be used with concrete barrier walls.
- 24) Existing highway pavements shall be kept and swept clean of mud and debris from construction and trucking operations during and at the end of each work day.

**Soft Surface Restoration:**

- 25) Temporary soft restoration to stabilize the work site shall be completed in a timely manner during and immediately following utility construction. Excess spoil shall be hauled off the work site.
- 26) Final soft restoration shall consist of placing a minimum 4 " of topsoil, WisDOT spec seed, and fertilizer and erosion mat.
- 27) The contractor shall notify WisDOT as soon as final restoration has been completed and the work site is ready for inspection.
- 28) The utility operator or their contractor shall coordinate temporary and final soft restoration and restoration limits with the WisDOT project manager or the WisDOT project leader on the work site.

**Soft Surface Restoration- Late Season :**

- 29) For late season seeding and restoration after October 1<sup>st</sup>. See the attached document.

**Open Cut Pavement:**

- 30) Existing pavements specifically authorized for removal to accommodate placement of utility facilities shall be **SAW CUT** full depth prior to the use of pavement breaking equipment.



31) Pavement cuts shall not be completed from November 1<sup>st</sup> through April 1<sup>st</sup>. In addition, pavement within WisDOT R/W MUST be restored by November 1<sup>st</sup>.

32) Pavement removed, shall be hauled off the work site during and at the end of each work day.

33) Temporary sheeting and shoring shall be used as necessary to prevent cave-ins.

☒ **Slurry Backfill:**

34) Slurry backfill per the attached detail shall be the required backfill for excavations in zones 1 & 2.

☒ **Granular Backfill:**

35) The use of granular backfill in lieu of slurry backfill for excavations within highway pavement areas and shoulder shall be pre-approved or authorized in advance by the WisDOT regional utility permit coordinator.

36) Granular material, shall be placed in lifts or layers 12" or less each in depth, and mechanically compacted to the density of the adjacent and undisturbed material.

37) Water jetting and use of excess water to facilitate mechanical compaction is strictly prohibited.

☒ **Concrete Pavement Restoration:**

38) Concrete pavement restoration shall consist of replacing in kind the concrete removed with high early strength concrete mix reinforced per the attached details.

39) Concrete pavement without a bituminous asphalt overlay shall have a tined or heavily broomed finish.

40) Curb and gutter damaged or removed during construction operations shall be replaced in kind per the attached detail.

**Bituminous Asphalt Pavement Restoration:**

☒ 41) Bituminous asphalt pavement restoration shall consist of replacing in kind the bituminous asphalt overlay removed to match the existing bituminous asphalt thickness.

**Gravel Shoulders:**

42) Gravel shoulder material removed or disturbed due to construction operations shall be replaced in kind, graded and shaped to match the existing gravel shoulders.

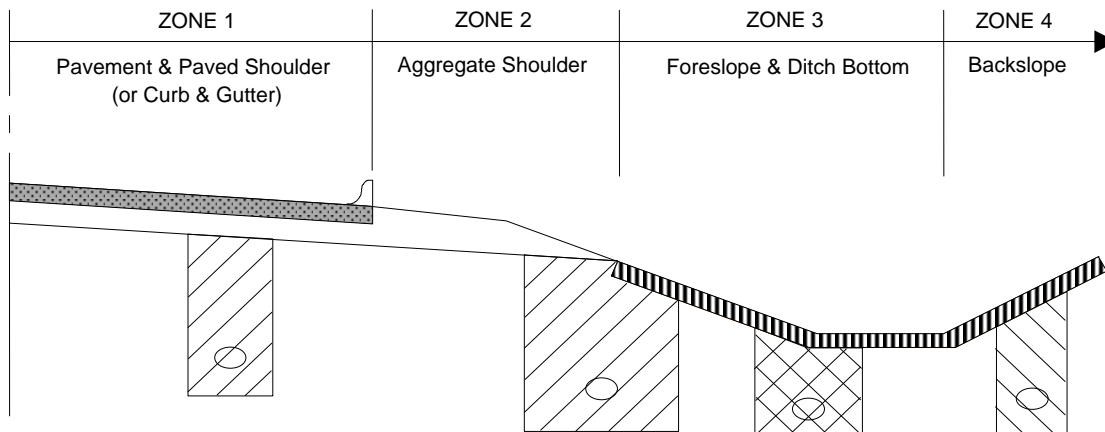
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## Attachment 2: Backfilling Excavation Detail Drawings

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### LONGITUDINAL EXCAVATION

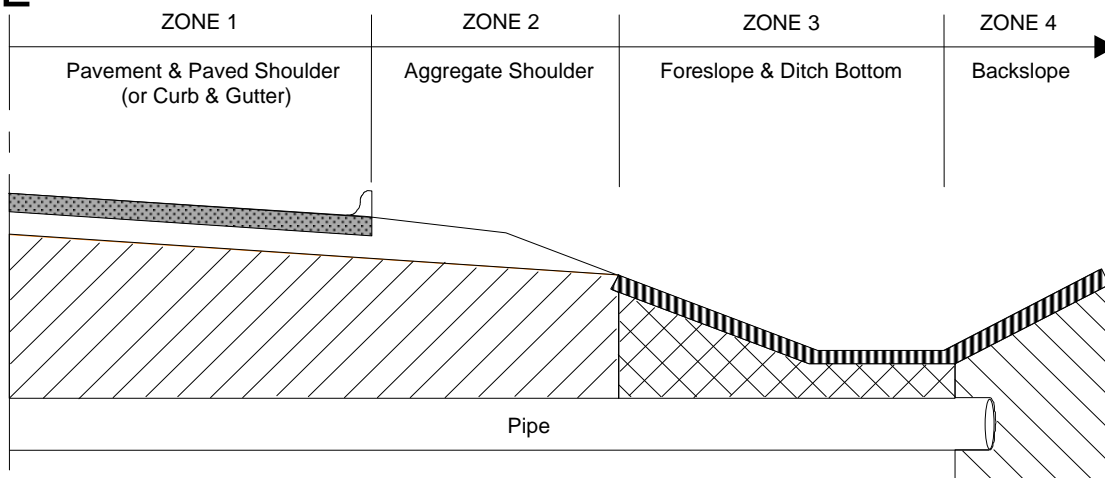


#### KEY

	Slurry Backfill
	Granular Backfill
	4" Topsoil
	Spoil backfill

CL

### TRANSVERSE EXCAVATION



#### NOTES

- 1) Use slurry backfill to replace the excavated material in ZONES 1 and 2.
- 2) If the work area covers BOTH ZONES 2 & 3, use slurry backfill to replace the excavated material.
- 3) Use granular backfill to replace the excavated material in ZONE 3. Granular backfill placement and gradation shall conform to WisDOT's Standard Specifications for Road and Bridge Construction, current edition.
- 4) Place backfill in ZONES 3 & 4 to within 4" of the finished grade to allow for topsoil placement.
- 5) Suitable spoil backfill may be used in ZONE 4 at the discretion of WisDOT.

#### SLURRY BACKFILL

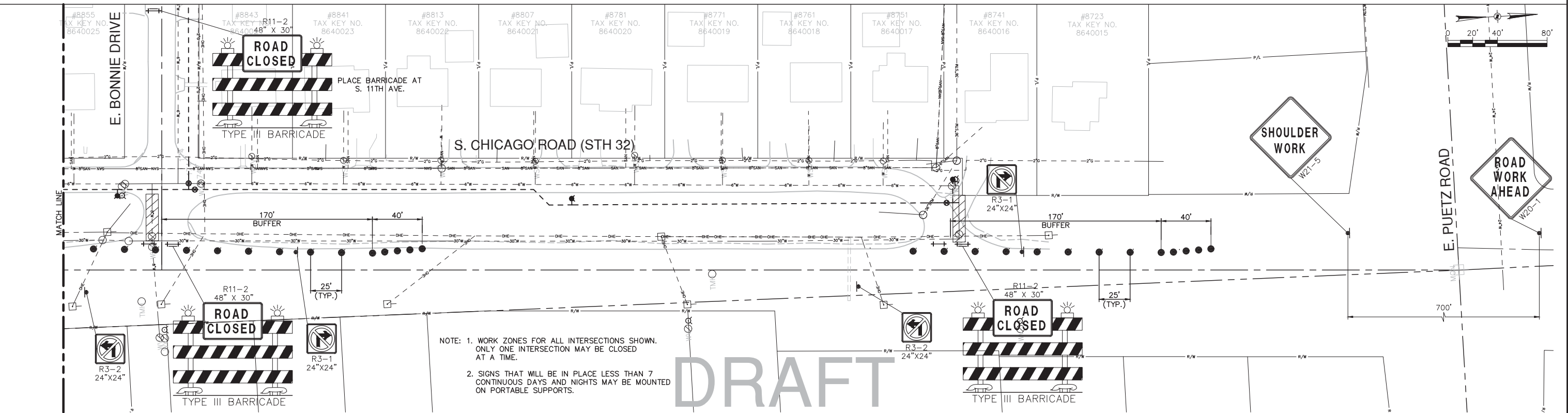
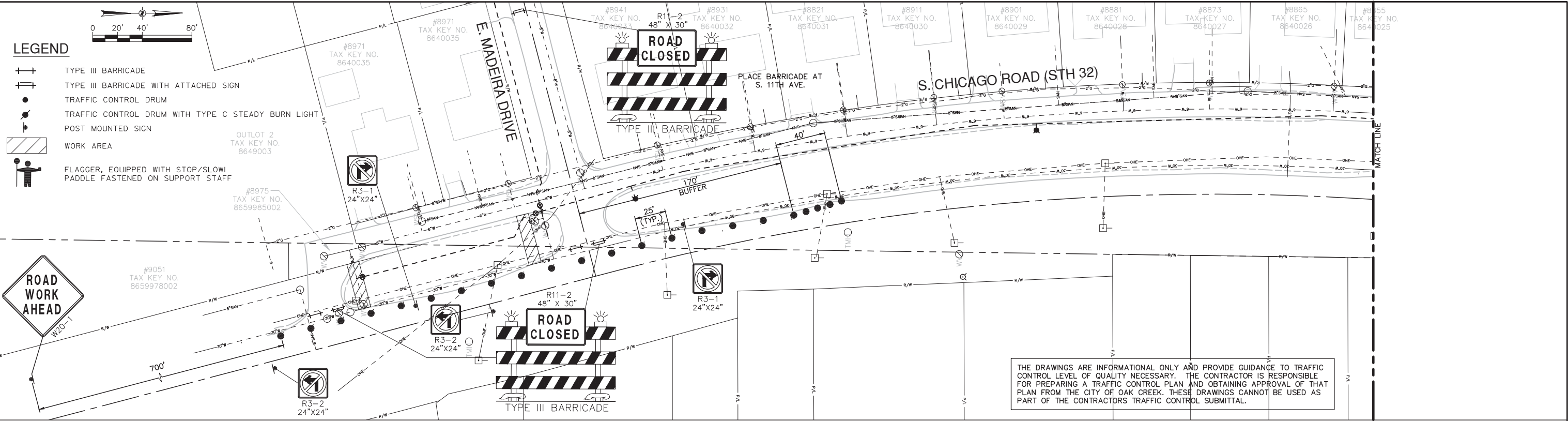
The materials shall be placed in a clean concrete mixer truck and thoroughly mixed in the following quantities FOR EACH CUBIC YARD REQUIRED:

- SAND 1,350 lbs
- #1 STONE 750 lbs
- #2 STONE 1,150 lbs
- WATER 25 gals (0 to -0.5 gal variance)

No additional water will be allowed. The above weights are damp weights. Just prior to placing the slurry backfill, the mixer shall be run at mixing speed for one full minute to assure an even mixture.



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**NOTICE:**  
In accordance with Wisconsin statute 182.0175, damage to transmission facilities, excavator shall be solely responsible to provide advance notice to the designated "ONE CALL SYSTEM" not less than three working days prior to commencement of any excavation required to perform work contained on this drawing, and further, excavator shall comply with all other requirements of this statute relative to excavator's work.

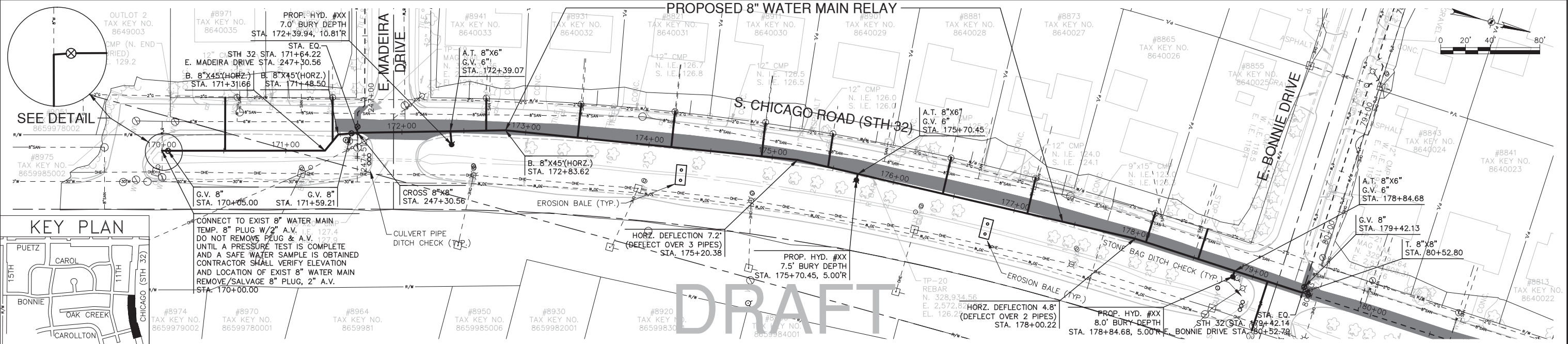
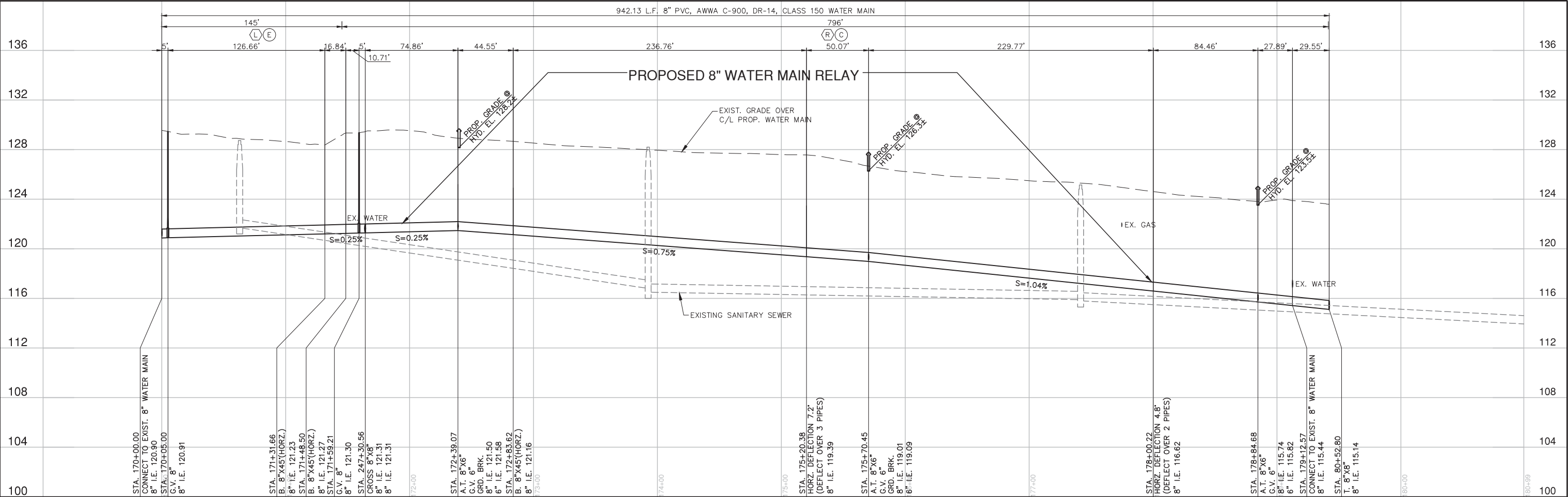
**DISCLAIMER:**  
The underground utilities shown have been located from field survey information and existing drawings. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated although he does certify that they are located as accurately as possible from information available. The surveyor has not physically located the underground utilities.

**Gräef**  
One Honey Creek Corporate Center  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214-1469  
414 / 259 1500  
414 / 259 0037 fax  
www.graef-usa.com

BID ITEM NOS.	ESTIMATE OF QUANTITIES	WATER MAIN	SA.FKO	CITY OF OAK CREEK, WISCONSIN	APPROVED BY					
		CONTRACTOR:	ST.FKO		UTILITY ENGINEER      DATE					
		MAINLINE INSPECTED BY:	W. FKO		APPROVED BY					
		LATERALS INSPECTED BY:	G. FKO		DESIGNED BY	DATE	DRAWN BY	DATE	CHECKED BY	DATE
		DATE COMPLETED:	E. FKO		AS	4-20-13	FKO	4-20-13		
		TYPE OF PIPE, ASTM NO.	T. FKO		ROWAN ESTATES PROPOSED WATER MAIN RELAY					
		TYPE OF PIPE, ASTM NO.	I. FKO		IN:      S. CHICAGO ROAD (STH 32)					
		AS-BUILTS BY:      DATE:	TS.FKO		FR:      E. MADEIRA DR.					
		This is to certify that this plan was approved by the Water Works and Sewer Utility Commission of Oak Creek at a regular meeting.	PP.		TO:      E. PUETZ RD.					
	Utility Engineer      Date	REVISION BY	DATE	FILE NO: xxx						







<div><div>NOTICE:</div><div>In accordance with Wisconsin statute 182.0175, damage to transmission facilities, excavator shall be solely responsible to provide advance notice to the designated "ONE CALL SYSTEM" not less than three working days prior to commencement of any excavation required to perform work contained on this drawing, and further, excavator shall comply with all other requirements of this statute relative to excavator's work.</div><div>DISCLAIMER:</div><div>The underground utilities shown have been located from field survey information and existing drawings. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated although he does certify that they are located as accurately as possible from information available. The surveyor has not physically located the underground utilities.</div></div>		<div><div>GRÄEF</div><div>One Honey Creek Corporate Center 125 South 84th Street, Suite 401 Milwaukee, WI 53214-1469 414 / 259 1500 414 / 259 0037 fax www.graef-usa.com</div></div>		<table><tr><th colspan="2">ESTIMATE OF QUANTITIES</th></tr><tr><td>BID ITEM NOS.</td><td></td></tr><tr><td>X</td><td>8" PVC WATER MAIN, BACKFILL &amp; SURFACE RESTORATION</td></tr><tr><td>X</td><td>8" GATE VALVE</td></tr><tr><td>X</td><td>HYDRANT, LEAD &amp; VALVE</td></tr><tr><td>X</td><td>TRAFFIC CONTROL (PROJECT)</td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td>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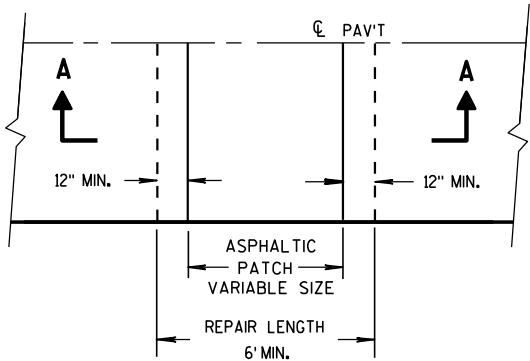
**GENERAL NOTES**

SAW CUT, DRILL, AND LIFT OUT EXISTING CONCRETE PAVEMENT WITHIN THE BOUNDARIES OF CONCRETE REPAIR AREAS. THE CONTRACTOR MAY MAKE ADDITIONAL SAW CUTS INSIDE THE REPAIR LIMITS TO REDUCE WEIGHT AND SIZE OF CONCRETE PIECES. ADDITIONAL SAW CUTS ARE NOT PAID FOR BY THE DEPARTMENT.

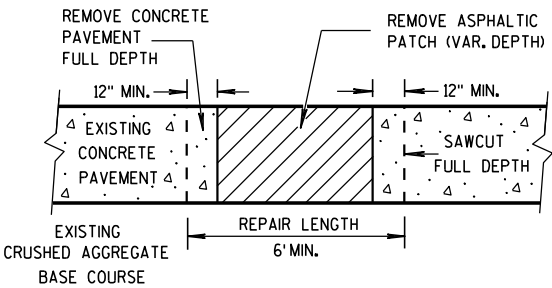
PROVIDE 6-FOOT MINIMUM DISTANCE FROM BOUNDARIES OF CONCRETE REPAIR AREAS TO ADJACENT TRANSVERSE JOINT OR CRACK IN THE SAME LANE.

THE LENGTH OF THE REPAIRS MAY VARY FROM THE DIMENSIONS SHOWN IF THE EXISTING CONCRETE PAVEMENT IS NONDOWELED AND THE PAVEMENT IS TO BE OVERLAID AFTER REPAIRING.

① DOWEL BARS MIGHT NOT EXIST.

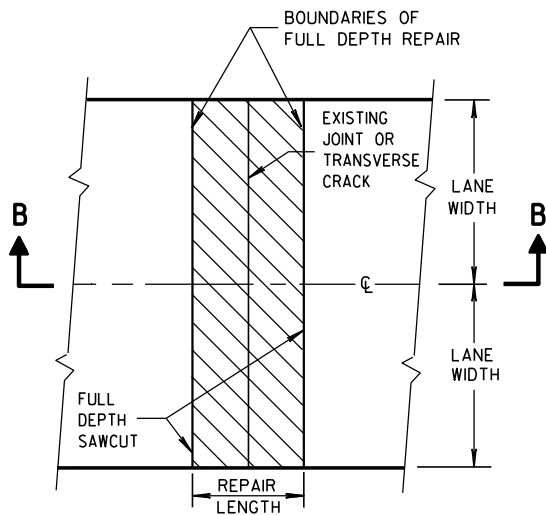


**PLAN VIEW**

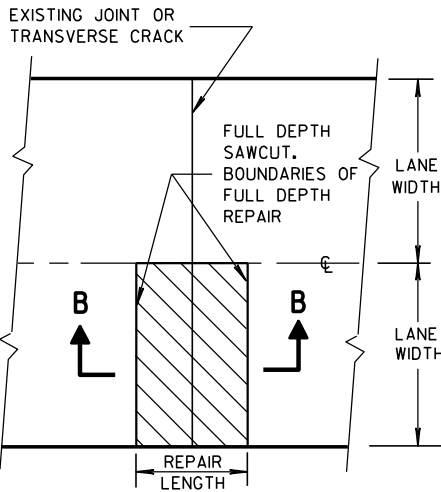


**SECTION A-A**

**HMA PATCH REMOVAL**



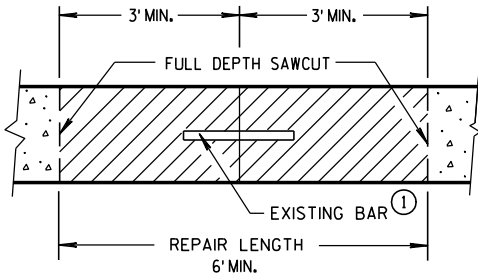
**PLAN VIEW  
(DOUBLE LANE REPAIR)**



**PLAN VIEW  
(SINGLE LANE REPAIR)**

**FULL DEPTH CONCRETE PAVEMENT REMOVAL**

(SEE NOTE)



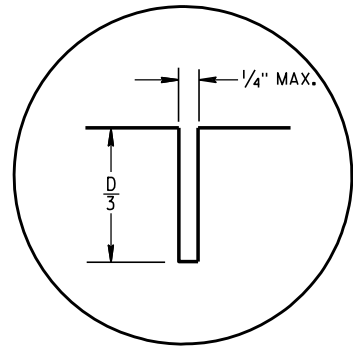
**SECTION B-B  
CONCRETE REMOVAL**

**CONCRETE PAVEMENT REPAIR  
AND REPLACEMENT**

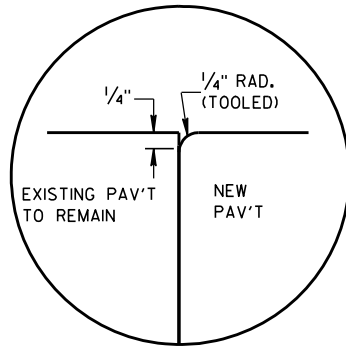
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION





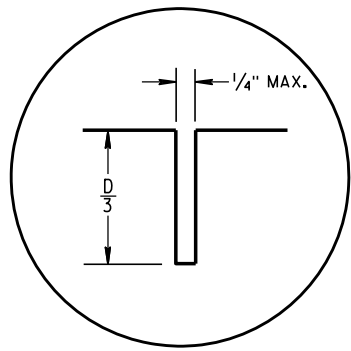


C1

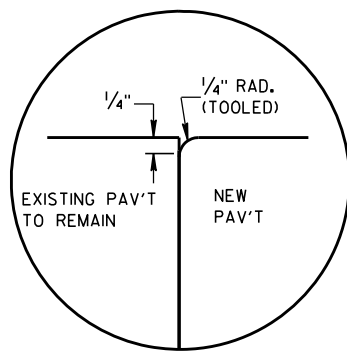


C2

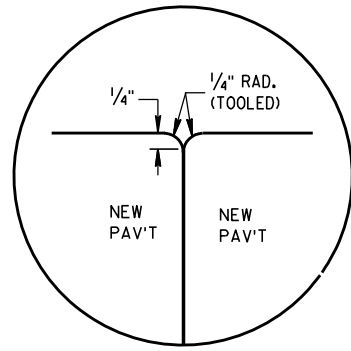
## TRANSVERSE JOINTS



L1

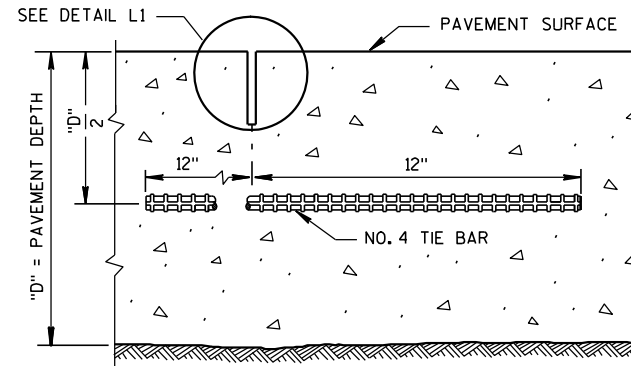


L2

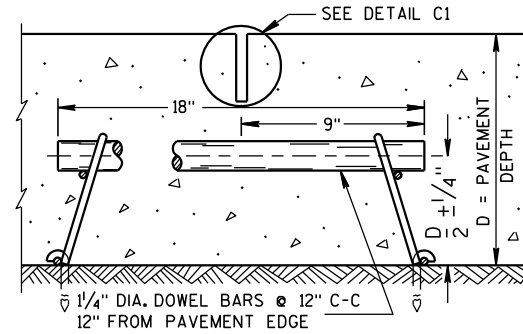


L3

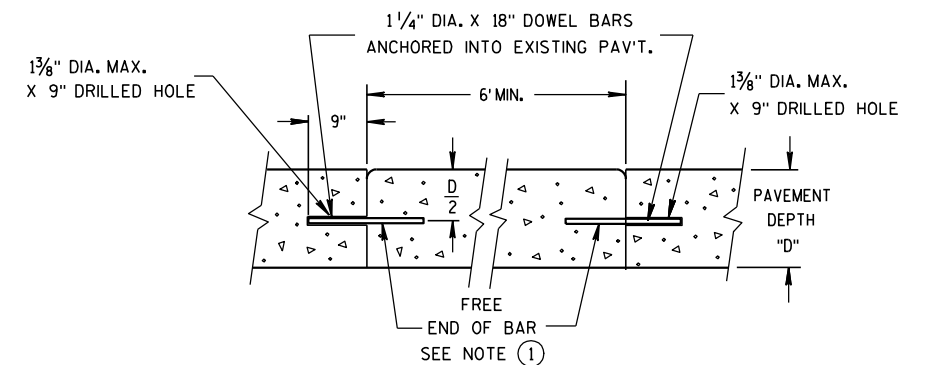
## LONGITUDINAL JOINTS



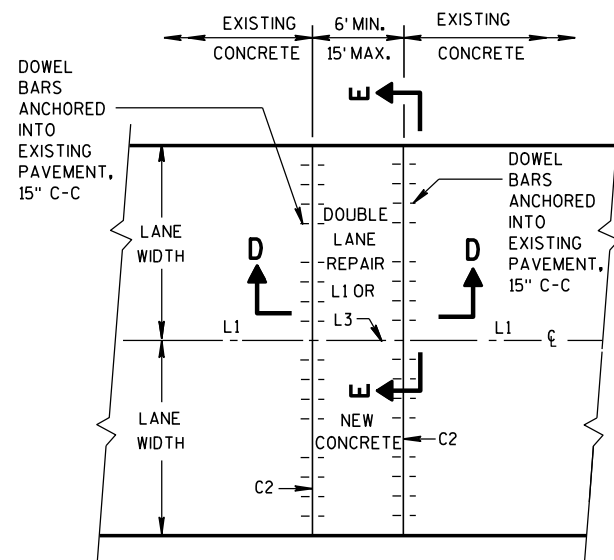
SECTION C-C  
SAWED LONGITUDINAL JOINT



SECTION F-F  
CONTRACTION JOINT

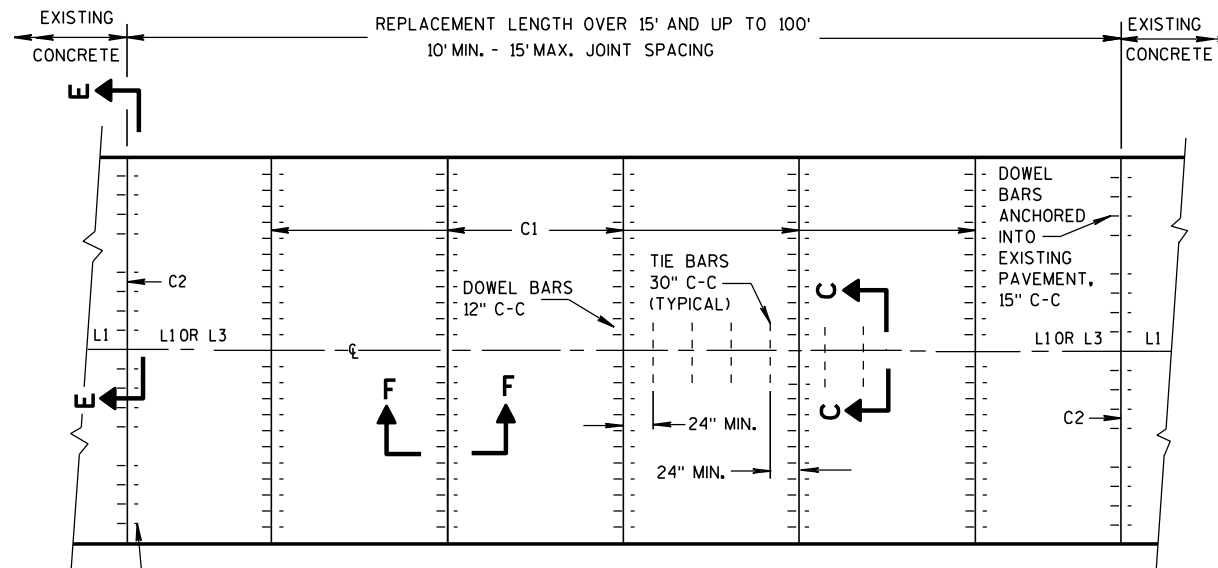


SECTION D-D



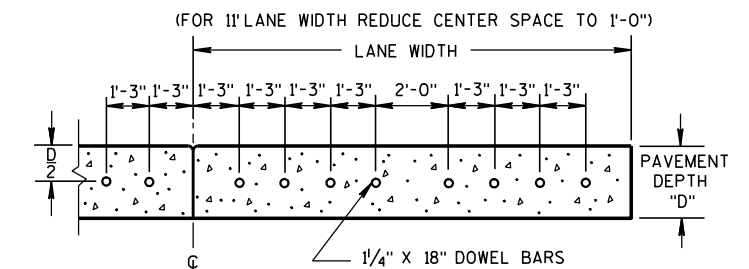
PLAN VIEW

## MULTI-LANE CONCRETE PAVEMENT REPAIR



PLAN VIEW

## MULTI-LANE CONCRETE PAVEMENT REPLACEMENT



SECTION E-E  
SPACING OF DOWEL BARS  
ANCHORED INTO EXISTING PAVEMENT

CONCRETE PAVEMENT  
REPAIR AND REPLACEMENT

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

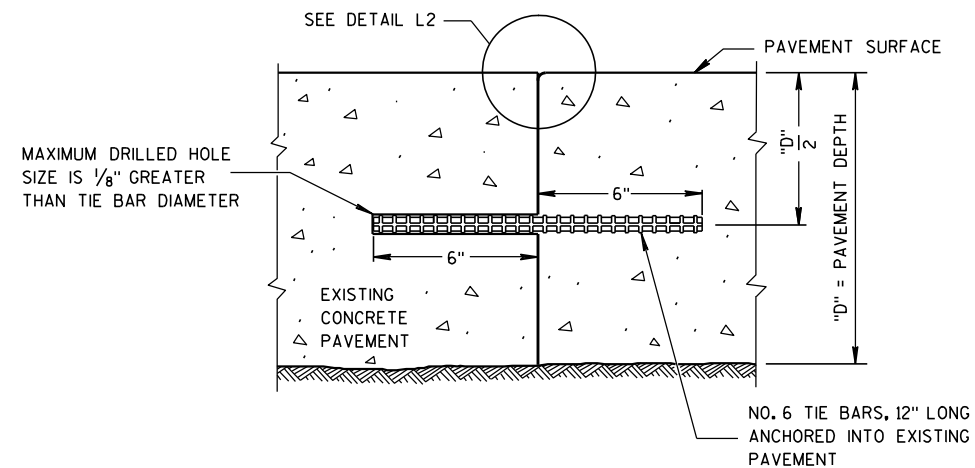




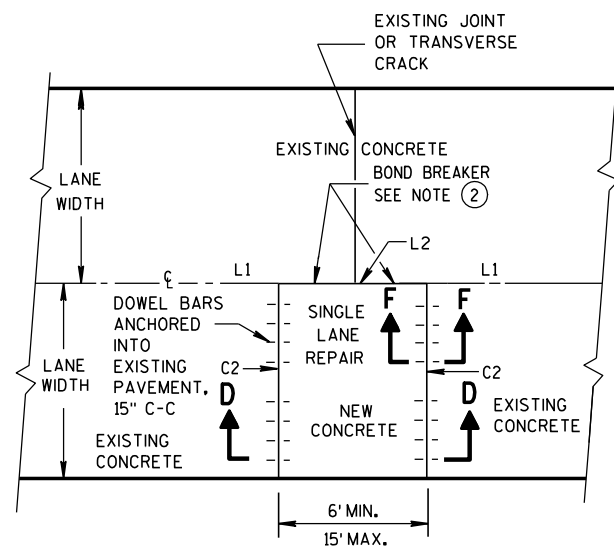


## GENERAL NOTES

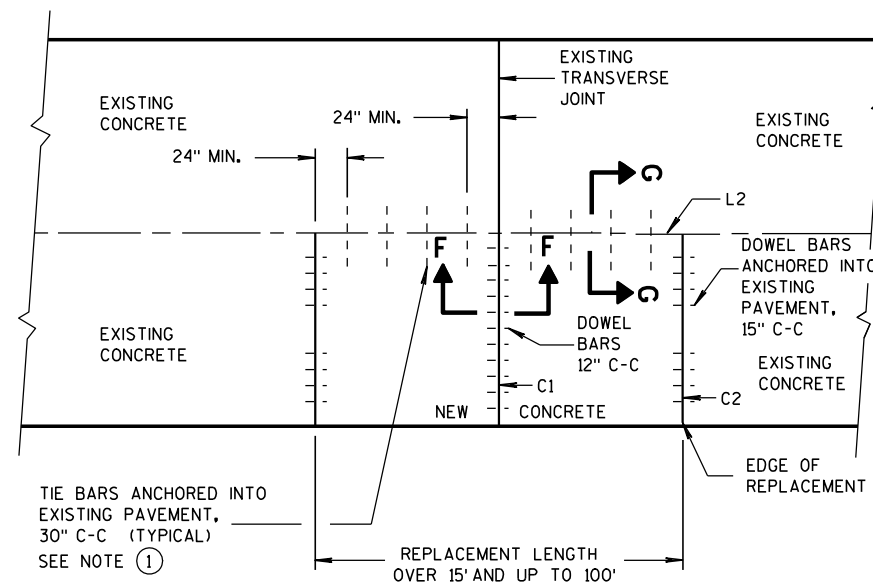
- WITH THE APPROVAL OF THE ENGINEER, FOR SINGLE LANE PAVEMENT REPLACEMENTS LESS THAN 30 FEET IN LENGTH, THE CONTRACTOR MAY INSTALL DRILLED TIE BARS ON 6:1 SKEW HORIZONTALLY, DIRECTION OF SKEW ALTERNATING WITH EACH SUCCESSIVE BAR. DRIVE SKEWED TIE BARS TO A DEPTH OF 6 INCHES AND TO SUCH A DIAMETER AS TO PROVIDE A TIGHT DRIVEN FIT.
- USE AN ENGINEER-APPROVED BOND BREAKER (E.G. RELEASE AGENT, CURING COMPOUND) FOR SINGLE LANE REPAIRS UP TO 15 FEET IN LENGTH.



SECTION G-G  
TIE BARS ANCHORED  
INTO EXISTING PAVEMENT



PLAN VIEW  
SINGLE LANE  
CONCRETE PAVEMENT REPAIR



PLAN VIEW  
SINGLE LANE  
CONCRETE PAVEMENT REPLACEMENT

## CONCRETE PAVEMENT REPAIR AND REPLACEMENT

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

11-1-2011  
DATE

FHWA

/S/ Deb Bischoff  
PAVEMENT POLICY & DESIGN ENGINEER



## Attachment 1: Start and Work Completion Notice



## Utility Permit Start Work Notice

Provide all information and e-mail or fax to the utility permit coordinator or other region contact listed on the approved permit form **a minimum three working** days prior to the start of the work. When restoration is complete and ready for inspection, e-mail or fax to the same contact.

WisDOT Utility Permit Number:

**SOUTHWEST REGION**

Mark Goggin

[mark.goggin@dot.wi.gov](mailto:mark.goggin@dot.wi.gov)Fax: 608-243-3380 Madison office  
608-789-7896 La Crosse office

Utility Company:

Utility Job Number:

**SOUTHEAST REGION**

Ryan Schnurer

[dotdtsdseutilitypermits@dot.wi.gov](mailto:dotdtsdseutilitypermits@dot.wi.gov)

Fax: 262-548-6891

WisDOT Project Number:

Project Location:

**NORTHEAST REGION**

Ray Drake

[ray.drake@dot.wi.gov](mailto:ray.drake@dot.wi.gov)

Fax: 920-492-0144

NE Utility Unit General E-Mail:

[dotdtsdneutilitycoordination@dot.wi.gov](mailto:dotdtsdneutilitycoordination@dot.wi.gov)Utility Contractor Contact  
Name and 24-Hour Number:**NORTH CENTRAL REGION**

Keith Rutkowski – Wis Rapids office

[keith.rutkowski@dot.wi.gov](mailto:keith.rutkowski@dot.wi.gov)

Fax: 715-421-7300

Traffic Control Provider and  
24-Hour Number

Terry Catlin – Rhinelander office

[terry.catlin@dot.wi.gov](mailto:terry.catlin@dot.wi.gov)

Fax: 715-365-5780

Construction Start Date:

**NORTHWEST REGION**

Heather Dresel

[HeatherL.Dresel@dot.wi.gov](mailto:HeatherL.Dresel@dot.wi.gov)

Fax: 715-836-2807 Eau Claire office

Construction Completion Date:

## Completion Notice

Restoration is complete and ready for inspection. File notices within **10 calendar days** of restoration completion. Restore within **two weeks** from completion of utility construction.

Restoration Completion Date:

