

TOWN ROAD IMPROVEMENT PROGRAM

PROJECT MANUAL

For

2022-2023 ELLSWORTH RD

Local Road Improvement Program

A TRID Project

Road Reconditioning

**Town of La Grange
Monroe Co, Wisconsin**

February 2024

Prepared by:

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Owner:

TOWN OF LA GRANGE
Monroe County, WI
22731 Flint Ave
Tomah, WI 54660

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**ADVERTISEMENT FOR BIDS
FOR
Ellsworth Rd – Road Reconditioning
A TRID PROJECT
Town of La Grange
Monroe County, Wisconsin**

BIDS CLOSE: Thu, March 21, 2024 AT 10:00 AM, LOCAL TIME

Town of La Grange will receive sealed Bids for the 2022-2023 Ellsworth Rd – TRID Road Reconditioning Project at the **Town of La Grange Town Hall, 22731 Flint Ave, Tomah 54660** at the time and date stated above, at which time, all submitted Bids shall be publicly opened and read aloud.

The Work for which Bids are asked includes the following:

CONTRACT 1 – Road Reconditioning for approximately 1.4-mile Rural Road Section. Proposed work consists of general grading, pulverizing existing base, new aggregate base, ditching, install new road culverts, install new driveway culverts, improve 6 road intersections, erosion control and restoration. Substantial completion is set for September 15, 2024. Final completion is set for October 1, 2024.

CONTRACT 2 – Finish grading, paving, shouldering & pavement striping for approximately 1.4-mile road length with 2.5" Hot Asphalt Mix. Work shall be substantially completed by October 30th. Final completion is set for November 30, 2024.

A digital file with Bidding Documents can be requested free of charge from the Project Engineer at ssr@centralstateconstructionllc.com or at (608)-344-0001. An 11 x 17 half size plan set & project manual book can be obtained upon payment of a non-refundable fee of \$50.00. Mail bids to **Brendan Smith, Town Chair at 9774 Elan Rd, Tomah, WI 54660 or hand deliver at Bids Close.**

Bids must be accompanied by bid security in the form of a certified check or bid bond equal to five percent (5%) of the maximum bid price, payable to the Owner as a guaranty that if the Bid is accepted, the Bidder will execute the Contract Documents and furnish the required contract security. If the Successful Bidder fails to execute the Contract Documents and provide the required contract security within 15 days after the Notice of Award, the Owner may annul the Notice of Award and the Bid Security will be forfeited.

There will be a mandatory pre-bid conference on March 11st, 2024, Monday at 3:00pm Local Time at the intersection of Ellsworth Rd & STH 21 when Contractors will meet with the Town Board and visit the site to become familiar with the general site conditions that may affect cost, progress and performance of the work.

Bids may not be withdrawn within 60 days after the date of the bid opening. The Owner reserves the right to reject any or all Bids, and to award the Contract to the Bidder, who in the judgment of the Owner, will best serve the interest of the Owner.

Published by the authority of the Town of La Grange Board.

By: Town of La Grange, Monroe County, WI
Brendan Smith, Chair
977 Elan Rd
Tomah, WI 54660
(608) 387-6043

SECTION 00 21 13
INSTRUCTIONS TO BIDDERS

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INSTRUCTIONS TO BIDDERS

Article 1 - Defined Terms

- 1.01 Terms used in these Instructions to Bidders will have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meaning indicated below which are applicable to both singular and plural thereof;
- A. Bidder: The individual or entity who submits a bid directly to Owner.
 - B. Issuing Office: The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.
 - C. Successful Bidder: The lowest responsible Bidder submitting a responsive Bid to whom Owner on the basis of Owner's evaluation (as hereinafter provided) makes an award.

Article 2 - Copies of Bidding Documents

- 2.01 Complete sets of Bidding Documents in the number and for the deposit sum, if any, stated in the Advertisement for Bid may be obtained from the Issuing Office. The deposit is non-refundable.
- 2.02 Complete sets of Bidding Documents must be used in preparing Bids; neither Owner nor Engineer assumes responsibility for errors or misrepresentations 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 the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

Article 3 - Qualifications of Bidder

- 3.01 To demonstrate Bidder's qualifications to perform the Work, within five days of the Owner's request, Bidder shall submit written evidence of financial data, previous experience, present commitments, and other such data as may be desired by the Owner. At a minimum, the following data shall be provided:
- A. The address and description of the Bidder's place of business.
 - B. A list of plant and equipment owned by the Bidder.
 - C. A financial statement of the Bidder showing the Bidder has the financial resources to meet all obligations incident to the Work.
 - D. The technical experience of main personnel to be employed in responsible charge of the work or portions thereof. Provide evidence of performance on previous work of similar nature, magnitude and difficulty.
 - E. Such additional information as will assist the Owner in determining whether the Bidder is adequately prepared to fulfill the terms and conditions of the Contract Documents.

Article 4 - Examination of Bidding Documents, Other Related Data, and Site

- 4.01 Subsurface and Physical Conditions
- A. There are no available reports or tests.
- 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.
 - B. Relocation of existing utilities shall be coordinated by the General Contractor and Owner of such utilities after approval by the Owner and Engineer.
- 4.03 Hazardous Environmental Condition

- A. There are no reports or drawings available.
- 4.04 Provisions concerning responsibilities for the 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 the 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 the 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 investigations, explorations, tests, and studies. 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. For Sites in Wisconsin, any drill hole or other excavation or opening deeper than it is wide that extends more than ten feet below the ground surface shall be abandoned in accordance with Wisconsin Administrative Code Nr 812.26. An abandonment report shall be submitted to the appropriate DNR District Office within 30 days of the abandonment.
- 4.06 Reference is made to the Bidding Documents for the identification of the general nature of other work that is to be performed, if any, 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, the other related data identified in the Bidding Documents, and any Addenda.
 - 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 the 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 reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Bidding Documents.
 - E. Consider the information known to Bidder; information commonly known to contractors doing business in the 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 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 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 the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.
 - G. Become aware of the general nature of the work to be performed by Owner and others at the Site, if any, that relates to the Work indicated in the Bidding Documents.
 - I. Promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder.

- J. 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 The 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 the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

Article 5 - Pre-Bid Conference

- 5.01 There will be no pre-bid conference, unless a conference is indicated within the Bid Advertisement or Invitation to Bid.

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.
- 7.03 Where there is a discrepancy within the Contract Documents, and the Engineer does not correct the discrepancy by Addenda, the larger number, highest cost, best quality and most restrictive shall apply.

Article 8 - Bid Security

- 8.01 Unless specifically stated otherwise in the Bidding Documents, a Bid must be accompanied by Bid security made payable to Owner in the amount of **five percent** of Bidder's maximum Bid price and in the form of a certified or bank check or Bid Bond issued by a surety meeting the requirements of paragraphs 5.01 and 5.02 of the General Conditions.
- 8.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the 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 the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults. The 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.

Article 9 - Contract Time

- 9.01 The time for completion will be set forth as follows:
- A. The number of days within which, or the dates by which, the Work is to be Substantially Completed and 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 the Effective Date of the Agreement.

Article 12 - Subcontractors, Suppliers and Others

12.01 If the Bidding Documents require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity if requested by Owner. 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, in which case apparent Successful Bidder shall submit an acceptable substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award

12.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the 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 the 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 the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to revocation of such acceptance after the 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 the Contractor has a reasonable objection.

Article 13 - Preparation of Bid

13.01 The Bid Form is included with the Bidding Documents.

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 the person signing the Bid Form. **Omissions on the Bid Form shall be considered a sufficient reason for disqualification of a Bidder.** A Bid price shall be indicated for each section, bid item, alternate, adjustment unit price item, and unit price item listed therein. 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 the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown.

13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner, whose title must appear under the signature, accompanied by evidence of authority to sign. The official address of the partnership shall be shown.

13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.

13.06 A Bid by an individual shall show the 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. The official address of the joint venture shall be shown.

- 13.08 All names shall be typed or printed in ink below the 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 the 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 Wisconsin contractor license number shall be shown on the Bid Form.

Article 14 - Basis of Bid

- 14.01 Bids may be lump sum, unit price, or combination thereof as set forth in the Bid Form.
- 14.02 Lump Sum
- A. Bidders shall submit a Bid on a lump sum basis for the base Bid and include a separate price for each alternate described in the Bidding Documents as provided for in the Bid Form. The price for each alternate will be the amount added to or deleted from the base Bid if Owner selects the alternate.
- 14.03 Unit Price
- A. Bidders shall submit a Bid on a unit price basis for each item of work listed in the Bid Form.
- 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.
- 14.04 Allowances
- A. For cash allowances the Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 11.02.B of the General Conditions.

Article 15 - Submittal of Bid

- 15.01 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the 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, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed as indicated within the advertisement or invitation to bid. Bids delivered later than the prescribed time and date shall be disqualified.

Article 16 - Modification and Withdrawal of Bid

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

Article 17 - Opening of Bids

- 17.01 Bids will be opened publically at the time and place indicated in the Advertisement for Bids. 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 Advertisement or Invitation to Bid, 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 the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful 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 the rejection of all Bids in which the Bidder has an interest.
- 19.03 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such 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 the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals, or entities proposed for those portions of the Work for which the 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 the responsibility, qualifications, and financial ability of Bidders, proposed of Subcontractors, Suppliers, and other individuals, or entities to perform the Work in accordance with the Contract Documents.
- 19.06 If the Contract is awarded, Owner will award the Contract to the Bidder whose Bid is in the 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 delivers the executed Agreement to Owner, it must be accompanied by the required Bonds and insurance.

Article 21 - Signing of Agreement

- 21.01 When Owner gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement 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 - Sales Tax

- 22.01 Contractor shall pay all taxes described in paragraph 6.10 of the General Conditions. Additional sales tax information, if any, is found in 6.10 of the Supplementary Conditions.

Article 23 - Retainage

- 23.01 Retainage shall be five percent of the amount of the completed Work. If the Work has been 50 percent completed, and if the character and progress of the Work have been satisfactory to Owner and Engineer, Owner, on recommendation of the Engineer, may determine there will be no additional retainage on the Work subsequently completed as long as the character and progress of the Work remains satisfactory.
- 23.02 Retainage shall be fifteen percent for materials and products on site, but not incorporated into the Work.

END OF SECTION

BID FORM & PROPOSAL

ARTICLE 1 - BID RECIPIENT

This Bid is submitted to: **Brendan Smith, Town Chair
Town of La Grange
977 Elan Rd
Tomah, WI 54660**

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 Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for sixty days after the day of Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of the 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, other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

<u>Number</u>	<u>Date</u>
_____	_____
_____	_____
_____	_____
_____	_____

- B. Bidder 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. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Bidder 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) that have been identified in the Bidding Documents as containing reliable technical data, and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in the Bidding Documents as containing reliable technical data.
- E. Bidder has considered the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding 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 Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs.
- F. Based on the information and observations referred to in Paragraph 3.01.E above, Bidder does not consider that 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 required, 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 given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that

Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.

- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

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 collusive 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 engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 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.
 2. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid 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.
 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.

ARTICLE 5 - BASIS OF BID

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

**CONTRACT 1:
Ellsworth Rd Grading & Road Base Improvements for 1.4 miles**

Item No.	Item	No. of Units	Units	Unit Price	Total Estimated Amount
1	Performance and Payment Bonds	---	Lump Sum	---	\$
2	Mobilization	---	Lump Sum	---	\$
3	Traffic Control	---	Lump Sum	---	\$
4	Silt Fence	4,200	LF	\$	\$
5	Temporary Ditch Checks	35	Each	\$	\$
6	Riprap & Outlets	12	Each	\$	\$
7	Common Excavation	---	Lump Sum	---	\$
8	Pulverize Existing Road Base (8")	18,072	SY	\$	\$
9	6" Base Aggregate Dense 1-1/4"	10,520	Tons	\$	\$
10	6" Breaker Run	11,732	Tons	\$	\$
11	Geogrid	SY	25,000	\$	\$
12	15" RCP Pipe w/ end section	Each	5	\$	\$
13	24" RCP Pipe w/ end section	Each	5	\$	\$
14	2x3 Box Inlet with Grate	Each	1	\$	\$
15	36" Curb & Gutter	LF	2,210	\$	\$
16	15" CMP Driveway Culverts	21	Each	\$	\$
17	Reclaimed Topsoil Placement	3,800	CY	\$	\$
18	Hydro-mulch & Seed ROW	23,333	SY	\$	\$
19	Remaining miscellaneous items including, but not limited by enumeration: removal & replacing of fencing, mail boxes, restore driveways, etc.	---	Lump Sum	---	\$
	Total Contract 1				\$

Indicate \$.....for Subgrade Stabilization on Cubic Yard Basis to furnish all material, labor, tools and equipment necessary to excavate and dispose of subgrade material that cannot be adequately compacted. Placement of breaker run material shall be based on the Unit Price of Item #10 above.

**CONTRACT 2:
Ellsworth Rd Pavement Improvements for 1.4 miles with 2.5" HMA.**

To furnish all materials, labor, tools, and equipment necessary to complete road finish grading, paving, shouldering, road markings, etc. in accordance with the plans & specifications, and not limited by enumeration: traffic control, finish grading, paving, shouldering, road markings for the lump sum of:

..... \$ _____

**ALTERNATE A:
Ellsworth Rd Pavement Improvements for 1.4 miles with 3.5” Hot Mix Asphalt Pavement.**

To furnish all materials, labor, tools, and equipment necessary to complete road finish grading, paving, shouldering, road markings, etc. in accordance with the plans & specifications, and not limited by enumeration: traffic control, finish grading, paving, shouldering, road markings for the lump sum of

..... \$ _____

ARTICLE 6 - TIME OF COMPLETION

6.01 Bidder agrees that the work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 14.07.B of the General Conditions as follows:

<u>CONTRACT</u> 1	<u>SUBSTANTIAL COMPLETION</u> September 15, 2024	<u>FINAL COMPLETION</u> October 1, 2024
<u>CONTRACT</u> 2	<u>SUBSTANTIAL COMPLETION</u> October 30, 2024	<u>FINAL COMPLETION</u> November 30, 2024

6.02 Bidder accepts the provisions for liquidated damages in the amount of \$1,000.00 for each day that expires after the date of interim or substantial completion and until the Work is substantially complete; and liquidated damages in the amount of \$1,000.00 for each day that expires after the date of final completion until the Work is complete.

ARTICLE 7 - ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

- A. Required Bid Security in the form of a bid bond or certified check payable to the Owner.

ARTICLE 8 - DEFINED TERMS

8.01 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.

ARTICLE 9 - COMMUNICATIONS

9.01 Communications concerning this Bid shall be addressed to:

Name

Address

Phone

FAX

E-Mail Address

ARTICLE 10 - BID SUBMITTAL

10.01 This Bid submitted by:

An Individual

Name (typed or printed) _____

By _____ (SEAL)
(Signature of Individual)

Doing business as _____

Business Address _____

A Partnership

Partnership Name: _____ (SEAL)

By _____
(Signature of General Partner, attach evidence of authority to sign)

Name (typed or printed) _____

Business Address _____

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____

By _____
(Signature, attach evidence of authority to sign)

Name (typed or printed) _____

Title _____
(CORPORATE SEAL)

Attest _____
(Signature of Corporate Secretary)

Business Address _____

A Limited Liability Company

Company Name: _____(SEAL)

State of Registration: _____

By: _____
(Signature, attach evidence of authority to sign)

Name (typed or printed) _____

Title _____

By: _____
(attach evidence of authority to sign)

Name (typed or printed) _____

Title _____

Business Address _____

BID BOND

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

BIDDER *(Name and Address)*:

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

OWNER *(Name and Address)*:

BID

Bid Due Date:

Description *(Project Name and Include Location)*:

BOND

Bond Number:

Date *(Not earlier than Bid due date)*:

Penal sum _____ \$ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

SURETY

Bidder's Name and Corporate Seal (Seal)

Surety's Name and Corporate Seal (Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
 - 3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2 All Bids are rejected by Owner, or
 - 3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

SECTION 00 43 36

LIST OF SUBCONTRACTORS

In accordance with Section 66.0901(7) of the Wisconsin Statutes Bidder shall provide a list of subcontractors the Bidder proposes to contract with as part of the bid and the class of work to be performed by each. This list may not be added to or altered without the written consent of the Owner. A proposal of a bidder shall not be invalid if any subcontractor, and the class of work to be performed by such subcontractor, has been omitted. The omission shall be considered inadvertent or the bidder will perform the work personally.

Name of Subcontractor	Class of Work

NOTICE OF AWARD

Date: _____

Project: _____

Owner: _____

Owner's Contract No.: _____

Contract: _____

Engineer's Project No.: _____

Bidder: _____

Bidder's Address: *[send Notice of Award Certified Mail, Return Receipt Requested]*

You are notified that your Bid dated ____ for the above Contract has been considered. You are the Successful Bidder and are awarded a Contract for _____

[Indicate total Work, alternates, or sections of Work awarded.]

The Contract Price of your Contract is _____ Dollars (\$_____).

[Insert appropriate data if unit prices are used. Change language for cost-plus contracts.]

_____ copies of the proposed Contract Documents (except Drawings) accompany this Notice of Award.

_____ sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within [15] days of the date you receive this Notice of Award.

1. Deliver to the Owner [_____] fully executed counterparts of the Contract Documents.
2. Deliver with the executed Contract Documents the Contract security [Bonds] as specified in the Instructions to Bidders (Article 20), General Conditions (Paragraph 5.01), and Supplementary Conditions (Paragraph SC-5.01).
3. Other conditions precedent:

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Contract Documents.

 Owner
 By: _____
 Authorized Signature

 Title

Copy to Engineer

**FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)**

THIS AGREEMENT is by and between Town of La Grange, Monroe County, WI (“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:*

CONTRACT 1 – Road Reconditioning for approximately 1.4-mile Rural Road Section. Proposed work consists of general grading, pulverizing existing base, new aggregate base, ditching, install new road culverts, install new driveway culverts, improve 6 road intersections, erosion control and restoration. Substantial completion is set for September 15, 2024. Final completion is set for October 1, 2024.

CONTRACT 2 – Finish grading, paving, shouldering & pavement striping for approximately 1.4-mile road length with 2.5” Hot Asphalt Mix. Work shall be substantially completed by October 30th. Final completion is set for November 30, 2024.

ARTICLE 2 – THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

Ellsworth Rd reconditioning is a 2022-2023 TRID Project and starts approximately at Ellsworth Rd. & Elgin Ave. Intersection and extends south for 7,500 feet (1.4 miles) to STH 21. Road segment is located in Section 20, T18N-R01W. Town of La Grange, Monroe County, WI.

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by Central States Construction, LLC, which is to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

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 under Contract 1 shall be substantially completed on or before **9/15/24** and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before **10/01/2024**

B. The Work under Contract 2 will be substantially completed on or before **10/30/2024**, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before **11/30/2024**

4.03 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$1,000 for each day that expires after the time specified in Paragraph 4.02 above for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner \$1,000 for each day that expires after the time specified in Paragraph 4.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

- 5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Paragraphs 5.01.A below:

For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit:

The Contract Price of your Contract#1 ...

The Contract Price of your Contract#2 ...

The Bid prices for Unit Price Work set forth as of the 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 Engineer 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 30 day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below. 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.
 - a. 95 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and
 - b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 97.5 percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions and less 100 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the 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 8 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 00-6, inclusive).
 - 2. Notice to Proceed (page 00 55 00-1).
 - 3. Performance Bond (pages 00 61 13-1 to 00 61 13-3, inclusive).
 - 4. Payment Bond (pages 00 61 16-1 to 00 61 16-3, inclusive).
 - 5. Submittal Transmittal Form (page 00 62 11-1).
 - 6. Application for Payment (pages 00 62 76-1 to 00 62 76-2, inclusive).
 - 7. Field Order (00 63 46-1).
 - 8. Work Change Directive (00 63 49-1).
 - 9. Change Order (page 00 63 63).
 - 10. Certificate of Substantial Completion (pages 00 65 16-1).
 - 11. General Conditions (pages 00 72 00-1 to 00 72 00-62, inclusive).
 - 12. Supplementary Conditions (pages 00 73 00-1 to 00 73 00-8, inclusive).
 - 14. Specifications as listed in the table of contents of the Project Manual with the following general title Division 01 – General Requirements, Division 31 – Earthwork, Division 32-Exterior Improvements and dated Feb/2024.
 - 15. Drawings as listed in the table of contents of the Project Manual with the following general title Drawings and dated Feb/2024.
 - 17. Exhibits to this Agreement (enumerated as follows):
 - a. Bid Form and Proposal (pages 00 41 00-1 to 00 41 00- 6, inclusive).
 - 18. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a. Written Amendments.
 - b. Work Change Directives.
- 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 – MISCELLANEOUS

10.01 *Terms*

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

10.02 *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.

10.03 *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.

10.04 *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.

10.05 *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 10.05:
 - 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.

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 8/1/16 (which is the Effective Date of the Agreement).

OWNER:

CONTRACTOR

Town of La Grange, Monroe County, WI _____

By: Brendan Smith _____

By: _____

Title: Town Chair _____

Title: _____

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____

Attest: _____

Title: _____

Title: _____

Address for giving notices:

Address for giving notices:

22731 Flint Ave _____

Tomah, WI 54660 _____

(608) 372-3594 _____

License No.: _____

(Where applicable)

NOTE TO USER: Use in those states or other jurisdictions where applicable or required.

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

Agent for service of process:

NOTICE TO PROCEED

Date: _____

Project: _____

Owner: _____

Owner's Contract No.: _____

Contract: _____

Engineer's Project No.: _____

Contractor: _____

Contractor's Address: *[send Certified Mail, Return Receipt Requested]*

You are notified that the Contract Times under the above Contract will commence to run on _____. On or before that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 4 of the Agreement, the date of Substantial Completion is _____, and the date of readiness for final payment is _____ [(or) the number of days to achieve Substantial Completion is _____, and the number of days to achieve readiness for final payment is _____].

Before you may start any Work at the Site, Paragraph 2.01.B of the General Conditions provides that you and Owner must each deliver to the other (with copies to Engineer and other identified additional insureds and loss payees) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Also, before you may start any Work at the Site, you must:

_____ *[add other requirements]*.

Owner

Given by:

Authorized Signature

Title

Date

Copy to Engineer

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 (*Name and Address*):

CONTRACT

Effective Date of Agreement:
Amount:
Description (*Name and Location*):

BOND

Bond Number:
Date (*Not earlier than Effective Date of Agreement*):
Amount:
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal (Seal)

Surety's Name and Corporate Seal (Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

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.

1. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 2.1.
2. If there is no Owner Default, Surety's obligation under this Bond shall arise after:
 - 2.1 Owner has notified Contractor and Surety, at the addresses described in Paragraph 9 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
 - 2.2 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 2.1; and
 - 2.3 Owner has agreed to pay the Balance of the Contract Price to:
 1. Surety in accordance with the terms of the Contract; or
 2. Another contractor selected pursuant to Paragraph 3.3 to perform the Contract.
3. When Owner has satisfied the conditions of Paragraph 2, Surety shall promptly, and at Surety's expense, take one of the following actions:
 - 3.1 Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
 - 3.2 Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
 - 3.3 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 5 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or
 - 3.4 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.
4. If Surety does not proceed as provided in Paragraph 3 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 3.4, 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.
5. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 3.1, 3.2, or 3.3 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 the 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:

- 5.1 The responsibilities of Contractor for correction of defective Work and completion of the Contract;
- 5.2 Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions of or failure to act of Surety under Paragraph 3; and
- 5.3 Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

6. 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.

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

8. 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.

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

10. 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.

11. Definitions.

- 11.1 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.
- 11.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.
- 11.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.
- 11.4 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 otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – <i>(Name, Address and Telephone)</i> Surety Agency or Broker: Owner's Representative <i>(Engineer or other party)</i> :
--

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 (*Name and Address*):

CONTRACT

Effective Date of Agreement:
Amount:
Description (*Name and Location*):

BOND

Bond Number:
Date (*Not earlier than Effective Date of Agreement*):
Amount:
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal (Seal)

Surety's Name and Corporate Seal (Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

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 address 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 (at the address described in Paragraph 12) 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. Reserved.
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 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 otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – *(Name, Address, and Telephone)*

Surety Agency or Broker:

Owner’s Representative *(Engineer or other)*:

Central State Construction, LLC
 15341 STH 131
 Tomah, WI 54660



608-372-4203 phone
 608-372-4139 fax

SUBMITTAL TRANSMITTAL

Project: _____

Date: _____
 Project Number: _____

TRANSMITTAL To (Contractor):

Date: _____

Submittal No. _____

A

From (Subcontractor):

By: _____

Resubmission

Qty.	Reference/ Number	Title/Description/ Manufacturer	Spec. Section Title and Paragraph/ Drawing Detail Reference

- Submitted for review and approval
- Resubmitted for review and approval
- Complies with contract schedule
- Will be available to meet construction schedule
- A/E review time included in construction schedule

- Substitution involved – Substitution request attached
- If substitution involved, submission includes point-by-point comparative data or preliminary details.
- Items included in submission will be ordered immediately upon receipt of approval

Other remarks on above submission: _____

One copy retained by sender

TRANSMITTAL To (A/E):

Attn: _____

Date Rec'd by Contractor: _____

B

From (Contractor):

By: _____

Date Trnsmt'd by Contractor: _____

- Approved
- Approved as noted

- Revise/Resubmit
- Rejected/Resubmit

Other remarks on above submission _____

One copy retained by sender

TRANSMITTAL To (Contractor):

Attn: _____

Date Rec'd by A/E: _____

C

From (A/E):

Other By: _____

Date Trnsmt'd by A/E: _____

- Reviewed
- Reviewed as noted
- Not subject to review
- No action required
- Revise/Resubmit
- Rejected/Resubmit
- Reviewed as noted/Resubmit
- Other remarks on above submission: _____

- Provide file copy with corrections identified
- Sepia copied only returned
- Point-by-point comparative data required to complete approval process
- Submission Incomplete/Resubmit

Two copies retained by sender

TRANSMITTAL To (Subcontractor):

Attn: _____

Date Rec'd by Contractor: _____

D

From (Contractor):

By: _____

Date Trnsmt'd by Contractor: _____

Copies: Owner Consultants _____ _____ _____ One copy retained by sender

Contractor's Application for Payment No.

	Application Period:	Application Date:
To (Owner):	From (Contractor):	Via (Engineer):
Project:	Contract:	
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.:

Application For Payment Change Order Summary

Approved Change Orders				
Number	Additions	Deductions		
TOTALS				
NET CHANGE BY CHANGE ORDERS				

		1. ORIGINAL CONTRACT PRICE..... \$ _____
		2. Net change by Change Orders..... \$ _____
		3. Current Contract Price (Line 1 ± 2)..... \$ _____
		4. TOTAL COMPLETED AND STORED TO DATE (Column F on Progress Estimate)..... \$ _____
		5. RETAINAGE:
	a. 5% X _____ Work Completed.....	\$ _____
	b. 5% X _____ Stored Material.....	\$ _____
	c. Total Retainage (Line 5a + Line 5b).....	\$ _____
		6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5c)..... \$ _____
		7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application)..... \$ _____
		8. AMOUNT DUE THIS APPLICATION..... \$ _____
		9. BALANCE TO FINISH, PLUS RETAINAGE (Column G on Progress Estimate + Line 5 above)..... \$ _____

Contractor's Certification

The undersigned Contractor certifies that to the best of its knowledge: (1) all previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with Work covered by prior Applications for Payment; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrances); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

By:	Date:
-----	-------

Payment of:	\$ _____	(Line 8 or other - attach explanation of the other amount)
is recommended by:	_____	_____
	(Engineer)	(Date)
Payment of:	\$ _____	(Line 8 or other - attach explanation of the other amount)
is approved by:	_____	_____
	(Owner)	(Date)
Concurrence by:	_____	_____
	Funding Agency (if applicable)	(Date)

Endorsed by the Construction Specifications Institute.

Progress Estimate

Contractor's Application

For (contract):				Application Number:				
Application Period:				Application Date:				
A		B	Work Completed		E	F		G
Item	Description	Scheduled Value	C	D	Materials Presently Stored (not in C or D)	Total Completed and Stored to Date (C + D + E)	% (E) B	Balance to Finish (B - F)
Specification Section No.			From Previous Application (C+D)	This Period				

**Field Order
No. _____**

Date of Issuance: _____ Effective Date: _____

Project:	Owner:	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.:

Attention:

You are hereby directed to promptly execute this Field Order issued in accordance with General Conditions Paragraph 9.04.A, for minor changes in the Work without changes in Contract Price or Contract Times. If you consider that a change in Contract Price or Contract Times is required, please notify the Engineer immediately and before proceeding with this Work.

Reference: _____
(Specification Section(s)) (Drawing(s) / Detail(s))

Description:

Attachments:

Engineer:

Receipt Acknowledged by Contractor: _____ **Date:** _____

Copy to Owner

Date of Issuance: _____ Effective Date: _____

Project:	Owner:	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.:

The Contract Documents are modified as follows upon execution of this Change Order:

Description:

Attachments (list documents supporting change):

CHANGE IN CONTRACT PRICE:

Original Contract Price:

\$ _____

[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____:

\$ _____

Contract Price prior to this Change Order:

\$ _____

[Increase] [Decrease] of this Change Order:

\$ _____

Contract Price incorporating this Change Order:

\$ _____

CHANGE IN CONTRACT TIMES:

Original Contract Times: Working days Calendar days

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____:

Substantial completion (days): _____

Ready for final payment (days): _____

Contract Times prior to this Change Order:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

[Increase] [Decrease] of this Change Order:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

Contract Times with all approved Change Orders:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

RECOMMENDED:

By: _____

Engineer (Authorized Signature)

Date: _____

Approved by Funding Agency (if applicable):

ACCEPTED:

By: _____

Owner (Authorized Signature)

Date: _____

ACCEPTED:

By: _____

Contractor (Authorized

Date: _____

Date: _____

CERTIFICATE OF SUBSTANTIAL COMPLETION

Project:	
Owner:	Owner's Contract No.:
Contract:	Engineer's Project No.:

This [tentative] [definitive] Certificate of Substantial Completion applies to:

- All Work under the Contract Documents: The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A [tentative] [definitive] list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

- Amended Responsibilities Not Amended

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:

The following documents are attached to and made part of this Certificate:

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Executed by Engineer

Date

Accepted by Contractor

Date

Accepted by Owner

Date

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.

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).

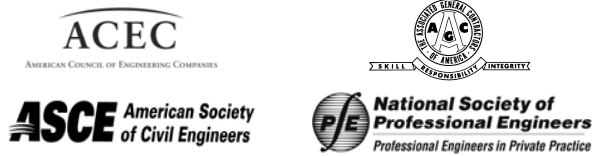
STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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and

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Endorsed by



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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.

SECTION 00 73 00

SUPPLEMENTARY CONDITIONS

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

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

SC 2.02 - Copies of Documents

In 2.02.A. change the number of copies from ten to five.

SC 4.02 - Subsurface and Physical Conditions

Delete Paragraphs 4.02.A and 4.02.B in their entirety and insert 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.
- B. Not used.

SC 4.06 - Hazardous Environmental Conditions

- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.
- B. Not used.

SC-5.01 - Performance, Payment, and Other Bonds

Add the following new paragraph 5.01.D:

- D. In the event that the Contractor does not pay Subcontractors or Suppliers, the Owner shall have the right to pay the Subcontractors and Suppliers directly or to pay the Contractor with checks made out to Contractor and to one or more Subcontractors and Suppliers.

SC 5.03 - Certificates of Insurance

In paragraph A replace "(and other evidence of insurance requested by Owner or any other additional insured)" with the following:

(and additional insured endorsements, and other evidence of insurance requested by Owner or any other additional insured)

SC 5.04 - Contractor's Insurance

Add the new paragraph immediately after paragraph 5.04.B:

- C. The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:
 - 1. Workers' Compensation, and related coverages under paragraphs 5.04.A.1 and A.2 of the General Conditions:

- | | | |
|----|---|-----------|
| a. | State: | Statutory |
| b. | Applicable Federal
(e.g. Longshoreman's) | Statutory |
| c. | Employers Liability | |
| | Each Accident | \$500,000 |
| | Disease Policy Limit | \$500,000 |
| | Disease Each Employee | \$500,000 |
2. Contractor's General Liability under paragraphs 5.04A.3 through A.6 of the General Conditions which shall include completed operations and product liability coverages and eliminate the exclusion with respect to property under care, custody and control of Contractor:
- | | | |
|----|---|--------------|
| a. | General Aggregate | \$2,000,000 |
| b. | Products - On-Going and Completed
Operations Aggregate | \$2,000,000 |
| c. | Personal and Advertising
Injury | \$1,000,000 |
| d. | Each Occurrence
(Bodily Injury and
Property Damage) | \$1,000,000 |
| e. | Property Damage liability
insurance will provide Explosion,
Collapse and Underground coverages
where applicable. | |
| f. | Excess or Umbrella Liability: | |
| | General Aggregate | \$ 1,000,000 |
| | Each Occurrence | \$ 1,000,000 |
3. Automobile Liability under paragraph 5.04A.6 of the General Conditions:
- | | | |
|----|--------------------------|--------------|
| a. | Combined Single Limit of | \$ 1,000,000 |
|----|--------------------------|--------------|
4. The Contractual Liability coverage required by paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:
- | | | |
|----|------------------|-------------|
| a. | Bodily Injury: | |
| | Each Accident | \$1,000,000 |
| | Annual Aggregate | \$2,000,000 |
| b. | Property Damage: | |
| | Each Accident | \$1,000,000 |
| | Annual Aggregate | \$2,000,000 |

SC 5.06 - Property Insurance

The Owner will not provide the insurance coverage indicated in paragraphs 5.06.A and 5.06.B. The Contractor may provide this insurance at his own expense.

SC6.06 - Concerning, Subcontractors, Suppliers, and Others

Add the following paragraph immediately after paragraph 6.06.G:

- H. To the extent practicable, the General or Prime Contractor shall maintain a list of all subcontractors, suppliers, and services providers performing, furnishing, or procuring labor, services, materials, plans, or specifications under the contract.

SC6.08 - Permits

Add the following paragraph immediately after paragraph 6.08.A:

- A. Permits, certificates of inspections, and similar documents shall be delivered to the Engineer upon completion of the work.

SC 7.04 - Claims Between Contractors

Add the following new paragraph immediately after paragraph GC-7.03.C:

- D. 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 the construction coordinator, then Contractor (without involving Owner, Engineer, or construction coordinator) shall either (1) remedy the damage, (2) agree to compensate the other contractor for remedy of the damage, or (3) remedy the damage and attempt to settle with such other contractor by agreement, or otherwise resolve the dispute by arbitration or at law.
- E Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner, Engineer, the construction coordinator and the 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 the 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 the 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 the 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 arbiter which seeks to impose liability on or to recover damages from Owner, Engineer, or the construction coordinator on account of any such damage or Claim.
- F 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 9.03 - Project Representative

Add the following new paragraphs immediately after paragraph GC-9.03.A:

- B. Owner or Engineer may appoint personnel for construction observation to observe materials furnished and the Work performed for compliance with the Drawings and Specifications. Construction observation personnel shall:
1. Serve as Engineer's liaison with Contractor, working principally through Contractor's authorized representative, assist in providing information regarding the intent of the Contract Documents.
 2. Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.
 3. Conduct On-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
 4. Report to Engineer whenever they believe that any part of Contractor's work in progress will not produce a completed Project that conforms generally to the Contract Documents or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that they believe should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
 5. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.
 6. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, damage to property by fire or other causes, or the discovery of any Hazardous Environmental Condition.

- C Construction observation personnel shall not:
1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
 2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.
 3. Undertake any of the responsibilities of Contractor, Subcontractors, Suppliers, or Contractor's superintendent.
 4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work unless such advice or directions are specifically required by the Contract Documents.
 5. Advise on, issue directions regarding, or assume control over safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

SC 11.03. - Unit Price Work

Delete paragraph 11.03.D in its entirety and insert the following in its place:

- C. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:
1. if the Bid price of a particular item of Unit Price Work amounts to 20 percent or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 10 percent from the estimated quantity of such item indicated in the Agreement; and
 2. if there is no corresponding adjustment with respect to any other item of Work; and
 3. if Contractor believes that Contractor has incurred additional expense as a result thereof or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, either Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Article 10 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

SC 12.03 - Delays

Add the following new paragraph immediately after paragraph GC-12.03.E:

- F. Contractor shall be responsible for damages incurred by Owner, Engineer, and any other separate Contractors for delay resulting from Contractor's failure to complete work within Contract Time. All costs associated with any subsequent inspections, in which these items are again noted will be documented by Engineer at Engineer's standard hourly rate, submitted to Owner. An equivalent amount will be deleted from the Contract by Construction Change Directive.

SC 16.01 - Methods and Procedures

Delete paragraph 16.01.A in its entirety and replace with the following:

- A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under paragraph 10.05 before decision becomes final and binding. The Owner shall have the sole right to identify and select mediation organization or company whose rules and procedures shall control the mediation, including the method by which the neutral who will preside over the mediation and render a related decision will be selected. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

Delete paragraph 16.01.C in its entirety and replace with the following:

- 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 the time period;
1. Owner elects to invoke arbitration provided for in the Supplementary Conditions; or
 2. Owner or Contractor each agree to submit the Claim to another dispute resolution process mutually agreed upon; or
 3. if arbitration is not elected under sub. 1 nor another alternative dispute resolution process agreed upon under sub. 2, either Owner or Contractor may give written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

Add the following new paragraph immediately after Paragraph 16.01:

SC 16.02 - Arbitration

- A. If the Owner elects to utilize arbitration to decide any claim or counter claims, disputes, or other matter in question between Owner and Contractor arising out of the Contract Documents or the breach thereof, the Owner shall have the sole right to identify and select the arbitration organization or company whose rules and procedures shall control the arbitration, including the method by which the neutral who will preside over the arbitration and render a related decision will be selected. The rules and procedures of the selected arbitration organization or company shall be subject to the conditions and limitations of applicable law.
- B. The demand for arbitration will be filed in writing with the Contractor and with the selected arbitration organization or company selected by the Owner and a copy will be sent to the Engineer for information. The demand for arbitration will be made within the 30 day period specified in Paragraph SC-16.01.C, and in all other cases within a reasonable time after the Claim or counterclaim, dispute, or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such Claim or dispute or matter in question would be barred by the applicable statute of limitations.
- C. No arbitration arising out of or relating to the Contract Documents shall include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:
 - 1. the inclusion of such other individual or entity as a party is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and
 - 2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings; and
 - 3. all parties and the individual or entity to be joined consent to the joinder.
- D. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include; (i) a concise breakdown of the award; (ii) a written explanation of the award specifically citing the Contract Document provisions deemed applicable and relied on in making the award.
- E. The award will be final. The award may be confirmed and Judgment may be entered upon it in any court having jurisdiction thereof. Any action upon the award, including confirmation, modification, vacation, appeal, and enforcement of any related Judgement, shall be subject to the applicable controlling law.
- F. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

END OF SECTION

SECTION 01 10 00

PROJECT CONDITIONS

PART 1 - GENERAL

1.01 Section Includes

- A. Project Location.
- B. Contract Description.
- C. Permits.
- D. Construction Limits.
- E. Temporary Facilities.
- F. Signage and Barricades.
- G. Erosion Control.
- H. Site Restoration.
- I. Existing Utilities.
- J. Existing Conditions.
- K. Clearing and Topsoil Stripping.
- L. Compaction Testing.
- M. Common Excavation
- N. Sourcing Aggregate Base Material
- O. Site Access

1.02 Project Location

- A. Ellsworth Rd reconditioning is a 2022-2023 TRID Project and starts approximately at Ellsworth Rd. & Elgin Ave. intersection and extends south for approximately 7,500 feet (1.4 miles) to STH 21. Road segment is located in Section 20, T18N-R01W. Town of La Grange, Monroe County, WI.

1.03 Contract Description

- A. CONTRACT 1 – Road Reconditioning for approximately 1.4-mile Rural Road Section. Proposed work consists of general grading, pulverizing existing base, placing new aggregate base, ditching, install new road & driveway culverts, improve 6 road intersections, erosion control and restoration. Substantial completion is set for September 15, 2024. Final completion is set for October 1, 2024.
- B. CONTRACT 2 – Finish grading, paving & shouldering, pavement striping for approximately 1.4-mile road length with 2.5" Hot Asphalt Mix. Work shall be completed by October 30, 2024.

1.04 Permits

- A. It is the responsibility of the Owner and/or Contractor to obtain copies of all permits required for the execution of the Work prior to the start of work. All work shall be completed in compliance with the terms and conditions of the permits.
- B. Assisting the Owner in obtaining certain permits is part of the Engineer's scope of work. The Engineer is assisting the owner in obtaining the following permits:
 - Construction site WPDES (DNR Permit)
 - Road Design per WisDOT, Town of La Grange Specifications
- C. The Contractor is responsible for obtaining verification from the Owner in writing that all Federal, State, County, and local permits have been issued for the project.

1.05 Construction Limits

- A. The construction limits shall be the street right-of-way (4-rod road) or any easements indicated on the Drawings, unless other construction limits are indicated within the Contract Documents. The Contractor shall restore disturbed areas outside of the construction at no cost to the Owner.

1.06 Temporary Facilities

- A. Material Storage: The location for material storage and construction staging shall be arranged with the Owner.

- B. Contractor's Office and Sheds: A Contractor's office is not required; however, the Contractor may provide an office for his convenience. Coordinate the location of all offices and sheds with the owner.
- C. Temporary Power and Telephone: Temporary power and telephone are not required; however, the Contractor may provide them for his convenience at his expense.
- D. Temporary Sanitary Facilities: Provide on-site temporary toilet facilities for use of construction personnel. Provide facilities meeting applicable codes. Maintain the facilities in a sanitary condition.
- E. Upon completion of the project all temporary facilities shall be removed and the area restored to its former condition.

1.07 Signage and Barricades

- A. Provide signs, barricades, and lights as appropriate to protect the public from construction hazards such as excavations; valves, manholes and other structures extending above grade; materials; and equipment.

1.08 Erosion Control

- A. The Contractor shall review and become familiar with the erosion control plans and specifications included with the Contract Documents. Erosion control facilities must be in place PRIOR to the start of construction. Damaged erosion control facilities shall be repaired within 24 hours from the time of the damage. Local erosion control permits, if required, are incidental to the Work.

1.09 Site Restoration

- A. Site restoration is incidental to the work unless specifically provided for within the Contract Documents. Site restoration includes, but is not limited to: driveway restoration with driveway culverts when applicable, seeding disturbed areas, surface improvements, paving, mail boxes, street and traffic signs, fencing, trees, shrubs, survey markers, and other items that may or may not be shown on the Drawings.

1.10 Existing Utilities

- A. All of the existing underground utilities located within the project area may not be shown on the Drawings and underground utilities included on the Drawings may not be accurately located. The Contractor is responsible for contacting Diggers Hotline and local utility owners prior to construction to confirm the presence and location of public and private underground utilities. The Contractor is responsible for protecting underground utilities within the project area. Contractor is responsible to coordinate utility relocation, if necessary, within the project area.

1.11 Existing Conditions

- A. The Contractor shall notify the Engineer in writing prior to beginning the work, or a distinct section of the work, if existing conditions are detrimental to his work or that existing facilities or improvements are damaged. Some of these conditions include substandard compaction, broken concrete sidewalk and driveways, broken or out of plumb valve boxes, and other damaged property. Failure to notify the Engineer shall place responsibility for the existing conditions and damaged items on the Contractor.

1.12 Clearing and Topsoil Stripping

- A. Clearing and grubbing, and topsoil stripping are incidental to excavation unless specific bid items are included on the Bid Form.

1.13 Compaction Testing

- A. Compaction testing required in Sections 31 22 00 - Site Preparation and Earthwork is incidental to the Work unless a specific Bid Item is included.

1.14 Common Excavation

- A. Common Excavation is bid as a lump sum bid item per the perspective Bidder's estimate in accordance with the project plans and specifications. The following estimates for common excavation are provided as a reference only:

Ellsworth Rd Sta 0+00 to STA 7+500
Cut: 4,150 CY (unadjusted)
Fill: 4,430 CY (unadjusted)

1.15 Sourcing Aggregate Base Material

- B. Town of La Grange hereby is requesting that all Prospective Bidders source Aggregate Material necessary for this project from local nonmetallic mines. Please indicate in Section 00 43 36 the source / name of nonmetallic mine, for all aggregate base materials.

1.16 Site Access

- A. The cost of maintaining vehicle access to properties within the construction area is incidental to the Work unless there is a specific Bid Item for maintaining access. The work includes grading as needed, providing crushed aggregate, and other measures necessary to keep the road passable.
- B. During Construction, Contractor shall maintain road passible and provide access to all driveways at all times except when pipe-laying operations require the driveway to be closed. Access to driveway shall be re-established immediately after pipe in driveway area is installed. Access shall be provided during all non-working hours. Contractor shall give 48-hour notice to residents before working on their driveways.

END OF SECTION

SECTION 01 29 76
PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 Section Includes

- A. Schedule of Values.
- B. Application for Payment.

1.02 Schedule of Values

- A. Submit a Schedule of Values prior to or at the pre-construction conference.
- B. The Schedule of Values shall subdivide the Work into identifiable units. Subdivisions of work shall generally coincide with specification sections.
- C. If the Bid Form is based on unit price items, the Bid Form will be the Schedule of Values.

1.03 Application for Payment

- A. Submit three copies of the Application for Payment.
- B. The Engineer's Application for Payment form shall be used. The form will be provided to the Contractor in hard copy and on electronic media.
- C. The Schedule of Values shall be used for listing items on the Application for Payment.
- D. Payment Period: The payment period will be monthly. The time for submittal of the Application will be set at the start of the project.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01 31 10
COORDINATION, CONSTRUCTION LAYOUT AND MEETINGS

PART 1 - GENERAL

1.01 Section Includes

- A. Coordination.
- B. Construction layout.
- C. Preconstruction meeting.
- D. Progress meetings.

1.02 Contractor Coordination Responsibilities

- A. Coordinate scheduling, submittals, and Work of the various sections of the Contract Documents to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify with existing utilities within the right-of-way. Any relocation of underground utilities due to road grade changes, shall be coordinated by the Contractor and the respective Owner of such utilities. Engineer may assist the Contractor in this effort.
- C. Coordinate completion and cleanup of work of separate sections in preparation for Substantial Completion.

1.03 Construction Layout

- A. A digital grading model will be provided to the Contractor to use with their GPS grading equipment. Use of such grading model is entirely up to the General Contractor's discretion. Engineer provides no warranties, express or implied, on model accuracy or completeness.
- B. Contractor shall schedule staking a minimum of 48 hours prior to the time the staking is needed. Associated cost for staking shall be paid by Contractor.
- C. Contractor shall be responsible for the preservation of grade stakes and bench marks, and if disturbed, the Contractor shall pay the actual cost of having the stakes reset.

1.04 Preconstruction Meeting

- A. Engineer will schedule and conduct a preconstruction meeting after the Notice of Award.
- B. Attendance: Owner, Engineer, Contractor, and major subcontractors. Other interested parties such as utility owners may be invited to attend.
- C. Agenda
 - 1. Designation of personnel representing Owner, Contractor, Subcontractors, and Engineer.
 - 2. Compaction Testing.
 - 3. Construction schedule.
 - 4. Procedures and processing of field decisions, submittals, applications for payment, change orders, and contract close-out.
 - 5. TRID Funding
 - Cancelled Checks of all payments/invoices
 - Statement of Compliance
 - 6. Job meetings.
 - 7. Identify in detail all removals and salvage.
 - 8. Safety.
 - 9. Traffic Control.
 - 10. Construction site erosion control.

11. Utilities.
12. Temporary facilities.
13. Construction layout.
14. Permits and easements (DOT, DNR, County, railroad, or local).
15. Sediment and erosion control monitoring requirements (WPDES permit).
16. Testing.
17. Existing conditions.
18. As-Built drawings and information.
19. Other items pertinent to Work.
20. Distribution of contract documents.

D. Minutes: Engineer will prepare meeting minutes and distribute them to all attendees.

1.05 Meetings - General

- A. Schedule and conduct meetings at the Project site.
- B. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Engineer and Owner of scheduled meeting dates and times.
- C. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
- D. Minutes: Record significant discussions and agreements. Distribute the meeting minutes to everyone concerned, including the Engineer and Owner.

1.06 Progress Meetings

- A. Conduct progress meetings at regular intervals, acceptable to the Engineer and Owner.
- B. Attendees: In addition to representatives of the Owner and Engineer, each contractor, subcontractor, supplier, and other entity concerned with the current progress or involved in planning, coordination, or performance of future activities shall be represented at the meetings.
- C. Agenda: Review and correct or approve minutes of previous meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of the Work.
- D. Minutes: Record meeting minutes including, significant discussions, agreements, and disagreements, including corrective measures and actions.
- E. Reporting: Distribute minutes of the meeting to each party present, to parties that should have been present, and to Engineer.
- F. Schedule: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule with the meeting minutes.

1.07 Pre-Installation Conference

- A. Conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.01 Section Includes

- A. Submittal procedures.
- B. Construction progress schedules.
- C. Shop drawings.
- D. Product data.
- E. Samples.
- F. Manufacturer's installation instructions.
- G. Manufacturer's certificates.

1.02 Submittal Procedure

- A. Transmit each submittal with Engineer accepted form.
- B. Identify revisions or resubmittals.
- C. Identify project, Contractor, subcontractor, or supplier; pertinent drawing and detail number, and specification section, as appropriate.
- D. Apply Contractor's stamp, signed or initialed certifying that review, verification of products required, field dimensions, adjacent construction, and coordination of information, is in accordance with the requirements of the Work and the Contract Documents. **Submittal will be returned if the Contractor's stamp is not on the submittal.**
- E. Schedule submittals to expedite the Work. Coordinate submission of related items.
- F. For each submittal review, allow 15 days excluding delivery time from and to the Contractor.
- G. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of the Work.
- H. Provide space for Contractor and Engineer review stamps.
- I. Revise and resubmit, identify all changes made since previous submission.
- J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with provisions.

1.03 Quality Assurance

- A. The Engineer will review submittals only for general conformance with the design concept. Such review shall not relieve the Contractor or any subcontractor of responsibility for full compliance with the Contract Documents; for correctness of dimensions, clearances, and material quantities; for proper fabrication and construction techniques; for proper coordination with other trades; and for providing all devices required for safe and satisfactory construction and operation.
- B. Submittals reviewed by the Engineer and returned to the Contractor will be marked with one of the following designations:
 - 1. Reviewed.
 - 2. Review with Comments.
 - 3. Revise and Resubmit.

4. Rejected.
5. See Letter for Additional Comments.

1.04 Construction Progress Schedule

- A. Submit initial schedule in duplicate within 15 days after the date of Owner-Contractor Agreement, but not later than preconstruction conference.
- B. Revise and resubmit as required.
- C. Submit revised schedule with each Application for Payment, identifying changes since previous version.
- D. Submit a computer generated or horizontal bar chart with separate line for each major section of work or operation, identifying first day of each week.
- E. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates.

1.05 Shop Drawings

- A. Shop Drawings include specially prepared technical data for the Work, including drawings, diagrams, performance curves, data sheets, schedules, templates, patterns, reports, calculations, instructions, measurements and similar information not in standard printed form.
- B. Submit number of opaque reproductions required by the Contractor plus two copies which will be retained by the Engineer.
- C. Drawings shall be to scale and of adequate size to clearly show all pertinent aspects of the item.

1.06 Product Data

- A. Product Data includes standard printed information on materials, products, and systems not specially prepared for the Work, other than designation of selections from among available choices printed thereon.
- B. Submit number of opaque reproductions required by the Contractor plus three copies which will be retained by the Engineer.
- C. Mark each copy to identify applicable products, models, options, and other data. Modify drawings and diagrams to delete information that is not applicable to the Work. Supplement manufacturer's standard data to provide information unique to the Work.

1.07 Samples

- A. Samples include both fabricated and non-fabricated physical examples of materials, products and units of work; both as complete units and as smaller portions of units of work; either for limited visual inspection or for testing and analysis.
- B. Submit one sample unless individual specification sections require additional samples.
- C. Submit samples to illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate samples for interfacing work.
- D. Submit samples of finishes from full range of manufacturer's standard colors, textures, and patterns for Owner selection.
- E. Include identification on each sample, with full Project information.

1.08 Manufacturer Installation Instructions

- A. When specified in individual sections, submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing to 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.

1.09 Manufacturer Certificates

- A. When specified in individual sections, submit certification by manufacturer to Engineer, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certificates as appropriate.
- C. Certificates may be recent or previous test results on material or product, but must be acceptable to Owner.

END OF SECTION

SECTION 01 35 29

ENVIRONMENTAL POLLUTION, SAFETY, AND ACCESS

PART 1 - GENERAL

1.01 Section Includes

- A. Requirements for preventing and/or reducing environmental pollution.
- B. Safety during construction operations.
- C. Public and private access to construction site.

1.02 Environmental Pollution

- A. General: Maintain all work areas on and off the site free from environmental pollution that would be in violation of any Federal, State or local regulation.
- B. Protection of Sewers: Do not impair the operation of existing sanitary sewers. Prevent construction material, pavement, concrete, soil or other debris from entering a sewer or sewer structure. When it is necessary to divert wastewater flow to accomplish the construction work, divert the flow to sewers draining to the treatment facilities. Under no circumstances shall wastewater be allowed to flow onto the ground or into surface waters.
- C. Erosion Control: Sediment from the project site shall not be allowed to be deposited off the site or into surface waters on or off the site. Provide erosion control facilities and measures to prevent erosion.
- D. Air Quality: Minimize air pollution during construction. Wet bare soils during dry weather to minimize dust. Dust prevention is particularly important on unpaved streets and haul roads. Provide dust prevention treatments or watering to reduce dust. Provide and maintain combustion emission control devices on construction equipment and shut down motorized equipment not in use. Trash burning at the construction site will not be permitted.
- E. Noise Control: Conduct the construction operations to cause the least amount of noise. Provide intake silencers on compressors and exhaust silencers or mufflers on internal combustion engines. Do not operate construction vehicles and equipment between the hours of 8:00 P.M. and 7:00 A.M. without written permission from the Engineer.
- F. Spills: Spills of hazardous materials shall be immediately contained and cleanup provided by qualified persons. Report the spill to the applicable authority.

1.03 Safety

- A. Contractor's Responsibility: The Contractor shall be solely and completely responsible for safety as set forth in Sections 6.13, 6.14, and 6.15 of the General Conditions. This requirement shall apply continuously and not be limited to normal working hours. Neither the Owner nor the Engineer nor their representatives are responsible for safety.
- B. Safety Measures and Equipment: Maintain at the job-site safety equipment and apparatus applicable to the work and as prescribed by governing codes.

Provide equipment and supplies necessary to give first aid to injured persons. Establish a procedure for immediate transporting of injured persons to local hospital or medical clinic.

Take necessary precautions to protect the general public from hazards including, but not limited to, surface irregularities or un-ramped grade changes in pedestrian walkways, trenches and excavations. Provide barricades, lights and signs as necessary to ensure safety to the public.

Performance of the work with respect to ladders, platforms, structure openings, temporary railings, scaffolding, shoring, lagging and machinery guards shall be in conformance with applicable

governing codes.

Maintain temporary fencing, railings, barricades or steel plates as applicable at all openings, trenches or excavations. Provide lights or reflectors as necessary or required by governing codes.

- C. Accident Reports: Immediately report all serious injuries and property damage to the Engineer. Promptly provide a written report of the incident to the Engineer giving full details of the accident including a description of the injury or damage, persons injured or involved and statements of witnesses.

If a claim is made by anyone against the Contractor or any subcontractor resulting from an accident, promptly report the facts in writing to the Engineer giving full details of the claim including investigation and restitution.

- D. Traffic Safety: Comply with all laws regarding closing or restricting the use of public streets and comply with any specific requirements indicated in other Sections or in highway permits specific to the work. Provide traffic control devices in accordance with the Manual of Uniform Traffic Control Devices. Provide properly equipped flaggers as necessary or when required by the contract documents.
- E. Fire Prevention: Execute the work in a manner that minimizes the potential for a fire. Provide fire extinguishers in construction vehicles and equipment. Provide personnel with information on reporting a fire.
- F. Use of Explosives: The use of explosives shall be in accordance with Wisconsin Administrative Code COM 7. Contractor is responsible for obtaining any required permits. For work outside of Wisconsin, comply with the applicable codes of the state in which the work is located.

1.04 Site Access

- A. Access to Property: No public or private road shall be closed except by the express permission of the Engineer or Owner. Conduct the work to ensure the least possible obstruction to traffic and normal commercial pursuits. Construct and maintain such facilities as may be required to provide access to properties. Pedestrian access to properties shall be provided at all times. Vehicle access to properties shall be maintained during all non-working hours.
- B. Where traffic will pass over backfilled areas prior to paving, the roadway shall be maintained in a manner that will allow normal vehicular traffic. Temporary driveway access shall be provided.
- C. Emergency and Public Vehicle Access: Notify the local fire and police departments and public and school transportation companies at least 24 hours prior to closing any street or portion thereof. No street closing shall be made without the concurrence of the fire and police departments. Notify the fire and police when the streets are passable for emergency vehicles. Maintain vehicle access to consecutive arterial crossings or dead-end streets in excess of 300 feet unless written permission is obtained from the fire and police departments.

Provide non-working hours telephone number(s) to the fire and police departments to allow contact for emergencies.

Maintain postal service to properties affected by the construction.

END OF SECTION

SECTION 01 45 16
TESTING REQUIREMENTS

PART 1 - GENERAL

1.01 General

- A. Contractor shall employ and pay for the services of an independent testing firm to perform the specified testing.
- B. Testing is required for the following:
 - 1. Cast-in-Place Concrete (Test cylinders, air content, temperature, and slump):
 - a. Section 00 30 01 - Sitework Concrete
 - 2. Soils Compaction:
 - a. Section 31 22 00 - Site Preparation and Earthwork.
 - b. Section 31 23 33 - Utility Excavation, Backfill, and Compaction.
 - 3. Aggregate Gradation:
 - a. Section 32 11 23 - Crushed Aggregate Base Course.
 - 4. Asphaltic Concrete Compaction:
 - a. Section 32 12 16 - Asphaltic Concrete Pavement.

1.02 Testing Firm Qualifications

- A. Firm shall be qualified and certified for the types of testing to be performed.
- B. Meet basic requirements of ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspections.
- C. Authorized to operate in the State of Wisconsin.
- D. Bacteriological test firm to be approved by the Wisconsin DNR.

1.03 Testing Firm Duties

- A. Provide qualified personnel.
- B. Perform specified inspections, sampling, and testing:
 - 1. Comply with specified standard.
 - 2. Ascertain compliance with requirements of Contract Documents.
- C. Promptly notify Engineer and contractor of observed irregularities or deficiencies.
- D. Promptly submit written reports to Contractor. Each report shall include:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Testing firm name, address and telephone number.
 - 4. Date and time of sampling.
 - 5. Record of weather conditions.
 - 6. Date of test.
 - 7. Identification of specification section.
 - 8. Location of sample or test.
 - 9. Type of test.
 - 10. Results of tests and compliance with Contract Documents.

1.04 Limitations of Authority

- A. Testing firm is not authorized to:
 - 1. Release, revoke, alter, or enlarge on requirements of the Contract Documents.
 - 2. Approve or accept any portion of the Work.
 - 3. Perform any duties of the Contractor.

1.05 Contractor's Responsibilities

- A. Cooperate with testing firm personnel and provide access to the site.
- B. Secure and deliver to the testing firm adequate quantities of representative samples of materials proposed to be used and which require testing.
- C. Furnish incidental labor and facilities:
 - 1. To provide access to Work being tested.
 - 2. To obtain and handle samples at the project site.
 - 3. To facilitate inspections and tests.
 - 4. For storage, transporting, and curing of samples.
- D. Furnish copies of test reports.
- E. Notify testing firm sufficiently in advance of operations to allow testing firm to assign personnel and schedule tests.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES

PART 1 - GENERAL

1.01 Section Includes

- A. Temporary utilities and construction facilities.

PART 2 - PRODUCTS

2.01 General

- A. Materials may be new or used, suitable for the intended purpose, and shall not violate requirements of applicable codes and standards.

2.02 Temporary Utilities

- A. Provide and pay for costs of electricity, water, gas, and telephone required for the performance of the work.
- B. Water and Gas: Provide necessary temporary piping, fittings, tanks, metering, and hauling as required.
- C. Electricity:
 - 1. Provide temporary electrical wiring and metering.
 - 2. Provide main service disconnect and over-current protection at a convenient location.
 - 3. Provide area distribution boxes located so that individual trades may use their own power cords for construction operations.
- D. Telephone: Provide telephone or cellular service for direct communication with the Contractor's field project representative.

2.03 Temporary Sanitary Facilities

- A. Temporary Sanitary Facilities: Provide on-site temporary toilet facilities for use of construction personnel. Provide facilities meeting applicable codes. Maintain the facilities in a sanitary condition.

2.04 Field Office and Sheds

- A. Field offices and sheds used to accommodate personnel, supplies, tools, and equipment are the Contractor's option.

2.05 Parking and Staging Areas

- A. Provide adequate space for construction activities.
- B. Staging and material storage areas shall be maintained in an orderly fashion.

2.06 Temporary Heat and Ventilation

- A. Temporary Heat:
 - 1. Provide temporary heat as needed for proper performance of the work, for curing or drying of installed work, and for protection from low temperatures.

2. After the building has been enclosed, maintain the temperature between 50°F and 75°F.
3. Once operational, the permanent heating system may be used for temporary heat. Replace any filters on permanent systems prior to final completion.

B. Temporary Ventilation:

1. Ventilate enclosed areas to assist curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, and gasses.
2. If permanent ventilation system is used for temporary ventilation, replace filters prior to final completion.

2.07 Temporary Lighting

- A. Provide and maintain lighting for construction operations and for security.

2.08 Temporary Enclosures

- A. Provide temporary weathertight enclosure of exterior walls for successive areas of the building as the work progresses to provide acceptable working conditions, to provide weather protection for interior materials, to allow for effective temporary heating, and to prevent unauthorized entry.

2.09 Temporary Fencing

- A. Provide temporary fencing, barricades, and guards to protect existing construction and trees and other vegetation indicated to remain from damage.
- B. Provide site enclosure fence, barricades, warning signs, and lights as required for safety.

2.10 Trash Removal

- A. Provide appropriate containers for storing and containing construction waste material, debris, and rubbish. Remove waste materials from the site at regular intervals.
- B. Recycling of materials is encouraged.

2.11 Water, Snow, and Ice

- A. Maintain site, excavations, and construction free of water, snow, and ice as necessary for protection and execution of the work.

PART 3 - EXECUTION

3.01 Installation

- A. Locate temporary facilities as indicated on the Drawings or as approved by the Owner.
- B. Prepare site for temporary facilities. Provide adequate drainage.

3.02 Removal of Temporary Facilities

- A. Remove temporary utilities and construction facilities prior to Application for Final Payment.
- B. Clean and repair damage caused by temporary facilities.
- C. Restore permanent facilities used during construction to their original condition.

END OF SECTION

Temporary Facilities
01 50 00-2

SECTION 01 57 13

CONSTRUCTION SITE EROSION CONTROL

PART 1 - GENERAL

1.01 Section Includes

- A. Furnishing, installing, maintaining, and removing erosion and sediment control facilities and measures.
- B. The contractor is responsible for providing all erosion control facilities and measures necessary to control erosion and sedimentation at the work site. These facilities and measures may or may not be shown on the Drawings and their absence on the Drawings does not alleviate the contractor from providing them. Any measures and facilities shown on the Drawings are the minimum actions required.

1.02 References

- A. WDNR Technical Standards - See DNR website @ <http://dnr.state.wi.us/org/water/wm/nps/stormwater/techstds.htm>.
- B. Wisconsin Department of Transportation, Erosion Control, Product Acceptability Lists for Multi-Modal Applications PAL, Current Edition.

1.03 General

- A. Requirements of WDNR Technical Standards shall be followed at all times.
- B. Use surface water and erosion control facilities and measures throughout the duration of the construction activity to control the movement of surface water and to reduce the potential for erosion. Maintain the facilities and measures until permanent vegetation is established.
- C. Eroded soil material shall not be allowed to leave the construction site or to enter a waterway, lake, or wetland.
- D. The Contractor shall be responsible for furnishing, installing, and maintaining the erosion control facilities, and in general, shall use construction practices that minimize erosion.
- E. Eroded material that has left the construction site shall be collected and returned to the site by the Contractor.
- F. Prevent construction site tracking with graveled roads, access drives, and parking areas of sufficient width and length to prevent sediment from being tracked onto public and private roadways. Any sediment reaching a public or private road shall be removed by street cleaning (not flushing) before the end of each workday.

1.04 Sequencing and Scheduling

- A. Construct and stabilize erosion control measures for diversions or outlets prior to any grading or disturbance of the construction site.
- B. Install filter fabric and straw bale fences and barriers prior to disturbing the area.
- C. Turf areas that have been completed to finish grade shall be stabilized with permanent seeding within seven days. Turf areas where activity has ceased and that will remain exposed for more than 20 days before activity resumes and soil stockpiles shall be stabilized with temporary seeding or soil stabilizer.
- D. Other erosion control measures shall be in place prior to disturbance of the construction site, as applicable.

PART 2 - PRODUCTS

2.01 Silt Fence

- A. Fabric shall be a woven or nonwoven polyester, polypropylene, stabilized nylon, or polyethylene geotextile with the following minimum properties:

Property	Test Method	Requirement*
Grab tensile strength, lbs min. Machine direction Cross direction	ASTM D4632	120 100
Max. Apparent opening size, US Sieve	ASTM D 4751	No. 30
Permittivity, sec ⁻¹ , min.	ASTM D4491	0.05
Min. UV stability at 500 Hrs, %	ASTM D4355	70%

* Minimum or maximum average roll values.

2.02 Straw Bales

- A. Straw or hay bales in good condition with nominal dimensions of 14"W x 18"H x 30"L.
- B. Stakes: Wood stakes with minimum nominal dimension of 2" x 2" x 30".

2.03 Sediment Logs

- A. Wood excelsior log wrapped in biodegradable fabric or mesh and listed in the Erosion Control Product Acceptability Lists.
- B. Stakes: Wood stakes with minimum nominal dimension of 1" x 1" x 24".

2.04 Temporary Seed

- A. Areas needing protection during periods when permanent seeding is not applied shall be seeded with annual species for temporary protection. Provide species as follows:

Species	% Purity
Oats	98
Cereal Rye	97
Winter Wheat	95
Annual Ryegrass	97

- B. Provide oats for spring and summer. Provide cereal rye, winter wheat, or annual ryegrass for fall seeding.

2.05 Erosion Mat

- A. All erosion mat products shall be of the class and type indicated and shall be chosen from the Erosion Control Product Acceptability Lists.
- B. Class I: A short-term duration (six months or greater), light duty, organic mat. Netting shall be non-organic, photodegradable or biodegradable netting. The weight of the netting shall not exceed 15% of the total blanket weight. The netting shall be sufficiently bonded to the parent material to prevent separation for the life of the product.
 1. Type A: A netted product for use on slopes 2.5 to 1 or flatter with a minimum product permissible shear stress of 50 Pa (1.0 lbs/ft²). Not to be used in channels.
 2. Type B: A double netted product for use on slopes 2 to 1 or flatter or in channels with a minimum product permissible shear stress of 70 PA (1.5 lbs/ft²).
- C. Class II: A long-term duration (3 years or greater), organic mat. The weight of the netting shall not exceed 15% of the total blanket weight. The netting shall be bonded sufficiently to the parent material to prevent separation of the net from the parent material for the life of the product.
 1. Type A: Jute fiber only to be used for reinforcing sod.
 2. Type B: For use on slopes 2:1 or flatter, or in channels with a minimum product permissible shear stress of 95 Pa (2.0 lbs/ft²). Non-organic, photodegradable, or biodegradable netting allowed.

3. Type C: For use on slopes 2:1 or flatter, or in channels with a minimum product permissible shear stress of 95 Pa (2.0 lbs/ft²). Only 100% organic fibers allowed. Woven mats are allowed with a maximum opening of ½ inch. Use in environmentally sensitive areas that have a high probability of entrapping animals in the plastic netting.

- D. Staples: U-shaped No. 11 gauge or greater wire with a span width of one to two inches and a length of not less than 6 inches for firm soil and 12 inches for loose soil.

2.06 Fertilizer

- A. Standard commercial fertilizer with the following available nutrients by weight:
 1. Nitrogen - not less than 10%.
 2. Phosphoric Acid - not less than 10%
 3. Potash - not less than 10%

2.07 Mulch Materials

- A. Hay: Straw or hay in air-dry condition substantially free from noxious weed seeds or objectionable foreign matter.
- B. Paper Fiber: Mulch consisting of recycled newsprint fibers, wetting agent, deforming agent and green dye with a dry moisture content of 9 to 15 percent.
- C. Wood Cellulose: Wood cellulose fibers manufactured from virgin wood fibers that form a blotter-like ground cover that readily absorbs water and allows infiltration to the underlying soil. Moisture content shall not exceed 15 percent at the time of delivery. The mulch shall be dyed green and shall have the property of becoming dispersed and suspended when agitated in water.
- D. Erosion Control Revegetative Mat: A light duty, organic, non-netted mat with a minimum thickness of 3/8 inch and biodegradable yarn or glue on 12 inch maximum centers in the longitudinal direction. The mat shall be capable of withstanding moderate foot traffic without tearing or puncturing. Acceptable products are those listed in the Wisconsin Department of Transportation, Erosion Control Product Acceptability Lists for Class I, Type Urban mats. Anchoring devices shall be biodegradable, non-splintering and shall last for at least two months and shall substantially degrade in four months.

2.08 Tackifiers

- A. Latex-Base: A latex emulsion polymer with a composition by weight of 48 percent styrene, 50 percent butadiene and 2 percent additive; 42 to 46 percent solids; and a pH of 8.5 to 10.
- B. Guar Gum: Guar gum tackifiers consisting of a minimum of 95 percent Guar gum by weight with the remaining consisting of dispersing and cross-linking additives.
- C. Other: Water soluble natural vegetable gums or guar gums blended with gelling and hardening agents or a water soluble blend of hydrophilic polymers, viscosifiers, sticking aids and other gums.

2.09 Soil Stabilizer

- A. Soil stabilizer shall be a polyacrylamide (PAM) and calcium solution intended to reduce the erodibility of bare soils. The product shall achieve an 80% reduction in soil loss induced by a two inch per hour rainfall simulator.
- B. PAM mixtures shall be environmentally benign, harmless to fish, aquatic organisms, wildlife, and plants. Only anionic PAM will be permitted.
- C. Anionic PAM, in pure form shall have no more than 0.05% free acrylic monomer by weight, as established by the Food and Drug Administration and the Environmental Protection Agency. The anionic PAM in pure form shall not exceed 200 pounds per batch.
- D. The product provided shall be listed in the WisDOT PAL for Type B Soil Stabilizer.

2.10 Inlet Protection

- A. Type A: Use around field inlets until permanent stabilization methods have been established. Use on pavement inlets prior to installation of curb and gutter or pavement.
- B. Type B: Use on inlets without curb head after casting and grate are in place.
- C. Type C: Use on street inlets with curb head.
- D. Type D: Use in areas where other typed of inlet protection are incompatible with roadway and traffic conditions causing possible safety hazards when ponding occurs at inlet.
- E. Geotextile: Type FF meeting the requirements of the latest edition of WisDOT PAL.

PART 3 - EXECUTION

3.01 Installation of Diversions

- A. Temporary diversions shall be designed and installed in accordance with WDNR Conservation Practice Standard, Construction Site Diversion (1066).

3.02 Installation of Silt Fence and Straw Bale Barriers

- A. Install straw bale barriers and sediment logs in accordance with the Drawings and WDNR Conservation Practice Standard, Sediment Bale Barrier (1055).
- B. Install silt fence in accordance with the Drawings and WDNR Conservation Practice Standard, Silt Fence (1056).
- C. Silt fence and straw bale barriers shall be placed on the contour to the extent practicable. Place fences parallel to the slope with the ends of the fence turned upslope a distance of one to two feet. The parallel spacing shall not exceed the maximum slope lengths as indicated in the following Table:

Fence and Barrier Spacing			
Slope	Spacing		
<2%	100'		
2 - 5%	75'		
5 - 10%	50'		
10 - 33%	25'		
>33%	20'		

3.03 Temporary Seeding

- A. Provide a seedbed of loose soil to a minimum depth of 2 inches.
- B. Apply seed evenly at the rate shown in the following table. Rake or drag to cover the seed to a depth of 1/4 inch.

Species	Lbs./Acre
Oats	131
Cereal Rye	131
Winter Wheat	131
Annual Ryegrass	80

3.04 Erosion Mat Installation

- A. Remove stones, clods, sticks, or other foreign material that would damage the mat or interfere with the mat bearing completely on the surface.
- B. Install erosion mat in accordance with the manufacturer’s recommendations.
- C. After seeding has been completed, roll blankets out parallel to the direction of water flow, with the netting on top. Spread the blankets without stretching, making sure the fibers are in contact with

the soil. Overlap adjacent strips in accordance with the manufacturer's recommendations. Overlap strip ends a minimum of 10 inches with the upgrade strip on top. Bury the upgrade end of each strip in a vertical trench at least 6 inches deep.

- D. Staple the mat strips in accordance with the manufacturer's recommendations. Staple longitudinal overlaps and outer edges at maximum intervals of 3 feet. Staple strip ends at maximum intervals of 16 inches. Place staples throughout the mat at maximum 3-foot intervals. Insert staples flush with the ground surface.

3.05 Soil Stabilizer

- A. The manufacturer shall provide detailed written instructions on the storage, mixing, and application procedures.
- B. The soil stabilizer may be applied by spraying or by dry spreading.
- C. Application Rates: Apply at the rate recommended by the manufacturer.
- D. Do not apply within 30 feet of body of water (i.e. lake, river, stormwater pond).

3.06 Ditch Erosion Control

- A. The following erosion control measures are minimum requirements for all ditches. The Drawings may include more specific measures.

Ditch Erosion Control		
Slope Range	Method	Bale Checks
0 - 1%	Seed and mulch	None
1% - 4%	Seed and mulch with erosion mat	1% - 2%; Every 200' 2% - 4%; Every 100'
4% - 6%	Staked sod	Every 75'
>6%	Staked sod and/or riprap as specified by Engineer on Drawings	Every 75' for sod

- B. Stone Ditch Checks: Unless otherwise indicated on the Drawings, install stone ditch checks at intervals of one ditch check for every two feet of drop in channel grade.

3.07 Installation of Sod in Ditches

- A. Lay sod so that joints of abutting ends of strips are not continuous. Lay each strip snugly against previously laid strips.
- B. Roll or firmly tamp sod to press the sod into the underlying soil.
- C. Turn the upper edges of the strips into the soil.
- D. Stake strips along the longitudinal axis at 18-inch intervals and near the top edge of the strip. Provide wood lath or similar stakes, 12 inches long. Leave top of stake approximately 1/2 inch above sod surface.

3.08 Installation of Other Facilities

- A. Inlet protection barriers, channel stabilization, grassed waterways, rock lined waterways, sediments traps, sediment basins, and other forms of erosion control measures shall be designed and installed in accordance with *WDNR Technical Standards*.

3.09 Hydroseeding

- A. Hydroseeding Preparation: Do all slurry preparation at the job site: A. Water, mulch, fertilizer, binder and other ingredients shall be added to the tank simultaneously so that the finished load is a homogenous mix of the specified ingredients.

- B. Seed shall be added last and shall be discharged within 2 hours. Loads held over 2 hours will be recharged with ½ the seed rate before application.
- C. Once fully loaded, the complete slurry shall be agitated for 3-5 minutes to allow for uniform mixing.
- D. Hydroseeding Application: One Step Hydroseed

a. Lbs/Ac	Material
b. 2,000 lbs	100% Cellulose or Wood Fiber
c. 500 lbs	Fertilizer
d. ___ lbs	Seed as per section (2.04 Seed)
- E. All hydroseed applications are to be applied in a sweeping motion to form a uniform application and form a mat at the specified rates.
- F. Unused Loads: If mixture remains in tank for more than 8 hours it shall be removed from the job site at contractor's expense.
- G. Reseeding: After "Final Acceptance", reseeding will be done at the request of the owner and shall be considered extra.

3.10 Maintenance

- H. Inspect diversions within 24 hours after each rainfall or daily during periods of prolonged rainfall, until the vegetative cover is stabilized. Make necessary repairs immediately.
- I. Inspect filter fabric fences and barriers within 24 hours after each rainfall or daily during periods of prolonged rainfall. Necessary repairs or replacement shall be made immediately. Remove sediment deposits when deposits reach one-half the height of the fence. Follow manufacturer's recommendations for replacing fabric due to weathering.
- J. Inspect straw bale fences and barriers within 24 hours after each rainfall or daily during periods of prolonged rainfall. Necessary repairs or replacement shall be made immediately. Remove sediment deposits when deposits reach one-third the height of the bales. Replace bales after three months.
- K. Inspect all seeding, sod, mulches, mats and nets within 24 hours after each rainfall or daily during periods of prolonged rainfall. Additional mulch, netting or matting shall be applied immediately when necessary to maintain suitable coverage. Make inspections until vegetative cover is established. Water seeding and sod when necessary to promote establishment.
- L. All other soil erosion control measures should be inspected and repaired immediately, if required, within 24 hours after storm event or daily during periods of prolonged rainfall.

3.11 Removal

- A. After final vegetation is established, remove bales, silt fences, *ditch checks*, *diversions*, and other erosion control facilities. Restore areas disturbed by the removals.

3.12 Monitoring for WPDES Permit

- A. Unless indicated otherwise within the Contract Documents, the Contractor shall be responsible for the monitoring requirements of the WPDES permit for storm water discharges associated with construction activities.
- B. Erosion and sediment controls shall be routinely inspected at least every seven days, and within 24 hours after a precipitation event of 0.5 inches or greater. Weekly written reports of all inspections shall be maintained and submitted to the Engineer. The reports shall contain the following information:
 1. Date, time, and exact place of inspection.
 2. Name(s) of individual(s) performing inspection.
 3. An assessment of the condition of erosion and sediment controls.
 4. A description of any erosion and sediment control implementation and maintenance performed.
 5. A description of the sites present phase of construction.

- C. The Engineer will provide the Contractor with the appropriate DNR form (see section 00 62 30) to use for the inspections.

END OF SECTION

SECTION 01 61 00
MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 Section Includes

- A. Products.
- B. Transportation and handling.
- C. Storage and Protection.
- D. Installation.

1.02 Products

- A. Materials and equipment shall be new and unused. Do not use materials and equipment removed from existing construction, except as specifically required or allowed by the Contract Documents.
- B. Where two or more of the same products or components are required, they shall be of the same manufacturer and interchangeable.
- C. Each major component of equipment shall have a nameplate.

1.03 Transportation and Handling

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Deliver products in undamaged condition in manufacturer's original containers or packaging with identifying labels intact and legible.
- C. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- D. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
- E. Arrange delivery of products in accordance with construction schedules; coordinate to avoid conflict with the Work and conditions at the site.

1.04 Storage and Protection

- A. Store products in accordance with manufacturer's instructions with seals and labels intact and legible.
- B. Store sensitive products in weathertight, climate-controlled enclosures.
- C. For exterior storage of fabricated products, place on supports, above ground.
- D. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of product.
- E. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- F. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in an acceptable condition.
- G. Provide coverings as necessary to protect installed products from damage by traffic and subsequent construction operations. Remove when no longer needed.
- H. In the event of damage, replace the damaged item or make repairs as instructed by the Engineer.

1.05 Installation

- A. When Contract Documents require that installation of the Work shall comply with manufacturer's printed instructions, obtain and distribute copies to parties involved in the installation. Maintain one set of instructions at the site.
- B. Handle, install, connect, clean, condition, and adjust products in accordance with the instructions. Where job conditions or specified requirements conflict with the manufacturer's instructions, notify the Engineer.

END OF SECTION

SECTION 01 71 33

RESTORATION

PART 1 - GENERAL

1.01 Section Includes

- A. Restoration of site following construction.
- B. Items to be restored include, but are not limited to, the following:
 - 1. Asphalt, concrete or gravel roadways
 - 2. Driveways
 - 3. Sidewalks and curb & gutter
 - 4. Fences and retaining walls
 - 5. Lawns, grassed areas, trees and shrubbery
 - 6. Culverts and ditches
 - 7. Property corners and survey monuments
- C. Specific items of restoration may be noted on the drawings or included elsewhere in the specifications.

1.02 Quality

- A. Restoration, when completed, shall equal or surpass the conditions existing before construction.
- B. When specifications are included for specific items of restoration, the work shall be performed in accordance with the applicable specification.

PART 2 - PRODUCTS

2.01 Materials

- A. Materials shall be in accordance with specifications when the restoration item is covered by a specification. This includes such items as paving and concrete work.
- B. When there is no specification to cover a particular restoration item, materials used shall be the same as the existing or similar if existing material is unavailable.

PART 3 - EXECUTION

3.01 Roadways

- A. Roadways shall be restored in kind unless otherwise specified.
- B. Pavement
 - 1. Unless noted on the drawings or otherwise specified, the Contractor is required to restore only the pavement removed or damaged during construction.
 - 2. The edges of all asphalt and concrete pavements shall be saw-cut to produce a straight, vertical edge for abutting new pavement.
 - 3. Unless otherwise specified, depth of pavement shall equal that existing prior to construction.
- C. Shoulders
 - 1. Unless otherwise noted, the following conditions shall govern shoulders:
 - a. In residential areas where turf is maintained to the edge of the pavement, the shoulders shall be topsoiled and seeded.
 - b. In rural areas or in residential areas where turf is not maintained to the edge of the pavement, gravel shoulders shall be constructed. Unless otherwise noted, gravel shoulders shall have a minimum compacted thickness of 4" and width of 4 feet.

3.02 Driveways

- A. Driveways shall be restored in kind to the width of the existing drive. 15" CMP culverts shall be considered incidental to the driveway restoration.
- B. Minimum material thickness shall be as follows:
 - 1. Concrete: 6" with 3" compacted gravel.
 - 2. Gravel: 6" compacted thickness.
 - 3. Asphalt:
 - Residential – 2" with 6" compacted gravel.
 - Commercial – 3" with 8" compacted gravel.

3.03 Sidewalks and Curb & Gutter

- A. Sidewalk
 - 1. Replace to original width.
 - 2. Thickness:
 - a. Standard: 4"
 - b. At drives: 6"
- B. Curb & Gutter
 - 1. Replace to original grade and cross section.

3.04 Fences and Retaining Walls

- A. Repair any damage and replace at original location.

3.05 Lawns, Grassed Areas, Trees and Shrubbery

- A. Lawns and Grassed Areas
 - 1. Restore in accordance with Section 32 92 19.
- B. Trees
 - 1. Replace trees damaged or destroyed which are located outside of easements or rights-of-ways.
- C. Shrubbery
 - 1. Remove and replant whenever possible.
 - 2. Replace damaged or destroyed shrubbery located outside of easements or right-of-ways.

3.06 Culverts and Ditches

- A. All existing culverts shall be reopened and natural drainage restored. Restore culverts broken or damaged during construction to their original condition, size, and location. The Contractor shall notify Engineer of any previously damaged culverts prior to construction activities or as soon as the damaged condition is known.
- B. Restore all drainage ditches destroyed, damaged or otherwise modified during construction. Ditches so reconstructed shall be built in their original locations and cross section or as otherwise shown on the Drawings.

3.07 Property Corners & Survey Monuments

- A. Restore and/or replace all survey monuments and property corners destroyed, damaged, or disturbed during construction. All work under this section must be completed by a Registered Land Surveyor and must be completed in accordance with applicable state and/or local statutes, codes, and guidelines.

END OF SECTION

SECTION 03 31 01
SITWORK CONCRETE

PART 1 - GENERAL

1.01 Section Includes

- A. Cast-in-place concrete for curb and gutter, sidewalk, exterior slabs, and other similar exterior concrete. Does not include concrete pavement.

1.02 Related Sections

- A. Section 01 45 16 – Testing Requirements.

1.03 References

- A. ACI 301 - Specifications for Structural Concrete.
- B. ACI 305R - Hot Weather Concreting.
- C. ACI 306R - Cold Weather Concreting.
- D. ACI 308 - Standard Practice for Curing Concrete.
- E. ASTM A185 - Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
- F. ASTM A615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- G. ASTM C31 - Making and Curing Concrete Test Specimens in the Field.
- H. ASTM C33 - Standard Specification for Concrete Aggregates.
- I. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
- J. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
- K. ASTM C143 - Standard Test Method for Slump of Hydraulic Cement Concrete.
- L. ASTM C150 - Standard Specifications for Portland Cement.
- M. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
- N. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete.
- O. ASTM C260 - Air Entraining Admixtures for Concrete.
- P. ASTM C494 - Chemical Admixtures for Concrete.
- Q. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.
- R. ASTM C618 - Coal Fly Ash and Raw or Calcinated Natural Pozzolan for Use as a Mineral Admixture in Portland Cement.
- S. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds having Special Properties for Curing and Sealing.
- T. ASTM D1751 - Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).
- U. ASTM D1752 - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

1.04 Quality Assurance

- A. Perform concrete work in accordance with ACI 301.
- B. Conform to ACI 305R when concreting in hot weather and ACI 306R when concreting in cold weather.

1.05 Submittals

- A. Concrete Mix Design
 - 1. Provide dry weight of cement, saturated-surface dry weight of aggregate, brand name, type, and quantity of admixtures, and pounds of water per cubic yard of concrete.
 - 2. Test data supporting the portions of the design mixes based on laboratory trial batches in accordance with ACI 318. Test data supporting the proportions of the design mixes based on past field experience in accordance with ACI 318 may be provided in lieu of the laboratory data.
- B. Admixtures: Submit manufacturer's literature and certifications.
- C. Delivery Tickets: Provide for each load of concrete delivered; include the following information: Name of ready-mix batch plant, serial number of ticket, date, truck number, name of contractor, name and location of job, class of concrete, amount of concrete in cubic yards, time loaded or of first mixing of cement and aggregate, water added at jobsite and initials of person authorizing addition, admixtures, if added.
- D. Test Results.

PART 2 - PRODUCTS

2.01 Reinforcement

- A. Reinforcing Steel: ASTM A615; Grade 60, deformed, unfinished.
- B. Welded Steel Wire Fabric: ASTM A185: flat sheets, unfinished.

2.02 Concrete Materials

- A. Portland Cement: ASTM C150, Type 1.
- B. Aggregate: ASTM C33.
- C. Water: Clean and not detrimental to concrete.
- D. Flyash: ASTM C618, Class C.

2.03 Concrete Admixtures

- A. Air Entrainment: ASTM C260.
- B. Water Reducing: ASTM C494; Type A, Water Reducing.
- C. Retarding: ASTM C494. Type D, Water Reducing and Retarding.
- D. Accelerating: ASTM C494 Type C Accelerating (non-chloride); Type E, Water Reducing and Accelerating (non-chloride).

2.04 Accessories

- A. Curing Material: Liquid membrane curing compound; ASTM C309, Type 2, white pigmented.
- B. Curing/Sealing Material:
 - 1. An acrylic resin curing, sealing, and hardening compound for exterior freshly placed concrete that provides a durable, long-lasting moisture impermeable finish that improves resistance to

- chemicals, grease, and de-icing salts.
- 2. Meet requirements of ASTM C1315, Type 1, Class B and ASTM C309, Type 1, Classes A and B.
- 3. Manufacturer: AS-1 Achro Seal 1315 OTC, TK Products; Seal Cure 309-30, W.R. Meadows; or equal.

C. Prefomed Expansion Joint Fillers: ASTM D1751 or ASTM D1752.

2.05 Concrete Mix Design

- A. Mix and deliver concrete in accordance with ASTM C94.
- B. Select proportions in accordance with ACI 301.
- C. Provide concrete in accordance with the following requirements:
 - a. Concrete Mixes

Concrete Mixes		
Class	Compressive Strength at 28 days, psi	Max. Water-Cement Ratio By Weight
Air-Entrained Concrete		
D	4,000	0.48

- 2. Air Content: Total air content (entrained and entrapped) for air-entrained concrete shall be in accordance with the following table:

Air Content	
Nominal Max. Size Aggregate	Air Content
3/4"	6% ± 1
1"	6% ± 1
1 1/2"	5% ± 1

- 3. In any mix, up to 20 percent of the cement (on a pound per pound basis) may be replaced with flyash.

D. Slump: 3 inches plus or minus 1 inch.

PART 3 - EXECUTION

3.01 Preparation for Concrete Placement

- A. Check grades and placement of forms.
- B. Remove debris, water, excess form oil etc. from forms.
- C. Verify that anchors, seats, plates, reinforcement, inlet castings, and other items to be cast into concrete are accurately placed, and anchored securely.
- D. Provide a minimum cover of 1-1/2 inch for reinforcing bars.
- E. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent.
- F. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert dowels and pack solid with non-shrink grout.

3.02 Delivery

- A. Deliver and discharge concrete within 90 minutes or before 300 drum revolutions, whichever comes first, after the addition of water to the cement.
- B. Do not add water to the mix after the initial introduction of water without the approval of the Engineer. If water is added at the jobsite, the concrete shall be mixed a minimum of 30 drum revolutions. Any water added shall not bring the total water in the mix to an amount above the specified water-cement ratio.

- C. The temperature of the concrete as delivered shall not exceed a temperature of 90°F.
- D. When the average of the highest and lowest temperature during the period from midnight to midnight is expected to drop below 40°F for more than three successive days, concrete shall be delivered to meet the following temperature immediately after placement:

Minimum Concrete Temperature	
Section Size	Min. Temperature
<12"	55°F
12"-36"	50°F
36"-72"	45°F
>72"	40°F

3.03 Placing Concrete

- A. Place concrete in accordance with ACI 318.
- B. Notify Engineer a minimum of 24 hours prior to concrete placement.
- C. Ensure reinforcement, inserts, embedded parts, formed expansion joints and contraction joints are not disturbed during concrete placement.
- D. Deposit concrete as close as practical to its final position. Do not drop concrete more than five feet vertically.
- E. Place concrete continuously between predetermined construction joints.
- F. Do not interrupt the placement. Do not permit cold joints.
- G. Thoroughly consolidate concrete by suitable means during placement. Thoroughly work concrete around reinforcement and embedded items and into corners of forms.

3.04 Joints

- A. Construction Joints: Joints that are placed at the end of a days work. In slabs they may be placed to permit movement and/or to transfer load.
- B. Expansion Joints: Joints that separate or isolate slabs from other parts of the structure such as walls, footings, columns, and equipment bases and drives and sidewalks from stairs, walls, light poles and other obstructions. Separate slabs on grade from vertical concrete surface with 1/2- inch preformed joint filler. Filler shall extend the full depth of the concrete with the top slightly lower than the concrete surface.
- C. Control Joints: Joints in slabs to create planes of weakness so that cracks will occur at desired locations.
 1. Provide joints to form panels or patterns as indicated on the Drawings. If joints are not shown, consult Engineer for joint placement.
 2. Inserts: Form 1/4 inch wide joints, one-fourth the depth of the slab thickness (one inch minimum) by inserting pre-molded hardboard or fiberboard strips into the fresh concrete. The top surface of the strip shall be flush with the slab surface. After concrete has cured for a minimum of seven days remove inserts and clean loose debris from the joints.
 3. Sawed Joints (Normal): Saw joints as soon after concrete is set sufficiently to preclude raveling during sawing and before shrinkage cracking takes place. Saw joints no later than 24 hours after concrete placement. Joints shall be 1/8 inch wide and one-fourth the slab thickness (one inch minimum).
 4. Sawed Joints (Early Entry): Saw joints using the "SOFF-CUT System" or equal. Cut as soon as the slab will support the weight of the saw and the operator (normally within two hours). Joints shall be 1/8 inch wide and ten percent of the slab thickness (depth shall be at least equal to the largest aggregate size).

3.05 Concrete Finishing

- A. Provide finish in accordance with ACI 301, Section 5.

- B. Unless indicated otherwise, provide a broom finish for concrete for curb and gutter, sidewalk, and exterior slabs. Immediately after the concrete has been floated, give the surface a course scored texture using a broom.

3.06 Curing and Protection

- A. General:
 - 1. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
 - 2. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
 - 3. Cover concrete with polyethylene if rain is eminent.
 - 4. Cure concrete in accordance with ACI 308.
- B. Liquid Membrane-Forming Curing Compound (Curb and Gutter):
 - 1. Apply after finishing as soon as the free water on the surface has disappeared and no water sheen is visible, but not so late that the curing compound will be absorbed into the concrete.
 - 2. Apply at a uniform rate of 200 sq. ft. per gallon. When feasible, apply in two applications at right angles to each other with the second coat being applied within 30 minutes of the first.
 - 3. Coat edges within 30 minutes of form removal.
- C. Curing/Sealing Compound (Sidewalk):
 - 1. Cure and seal concrete with a uniform coating of membrane curing/sealing compound.
 - 2. Apply with sprayer in accordance with the manufacturer's printed instructions.
 - 3. Apply two coats at right angles to each other.
 - 4. Do not apply if the temperature of the concrete is less than 40°F.
 - 5. Protect concrete from all traffic for three days and from vehicular traffic for seven days.

3.07 Field Quality Control

- A. Sampling and testing shall be the responsibility of the Contractor. See Section 01 45 16 Testing Requirements.
- B. Provide free access to Work and cooperate with testing personnel.
- C. Four concrete test cylinders will be taken for every 75 or less cubic yards of each class of concrete placed in one day. Test cylinders will be lab cured. One test cylinder will be broken at 7 days, two at 28 days and one will be held.
- D. Engineer may require the casting additional test cylinders for field curing when cold or hot weather may affect curing.
- E. One slump test, one air test and concrete temperature will be taken for each set of test cylinders.
- F. Sampling and testing will be performed in accordance with the following:
 - 1. Concrete samples: ASTM C172.
 - 2. Test cylinders: ASTM C31.
 - 3. Slump tests: ASTM C143.
 - 4. Air test: ASTM C231.
- G. In addition to providing test results to the Engineer, provide the test results to the concrete supplier.

3.08 Patching

- A. Allow Engineer to inspect concrete surfaces immediately upon removal of forms.
- B. Honeycomb, embedded debris, and tie holes are not acceptable.
- C. Patch imperfections in accordance with ACI 301, Section 5.

3.09 Defective Concrete

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

- B. Repair or replacement of defective concrete will be determined by the Engineer.
END OF SECTION

SECTION 31 13 00

TREE REMOVAL

PART 1 - GENERAL

1.01 Section Includes

- A. Removal of trees and stumps.

1.02 Related Sections

- A. Section 31 22 00 - Site Preparation and Earthwork.

1.03 Public Utilities

- A. Contact utility companies for location of underground facilities.
- B. Contact utility companies prior to removing trees when overhead lines may be affected by the Work.

PART 2 - PRODUCTS

2.01 Materials

- A. Signs, Barricades, and Fencing: Contractor's option.

PART 3 - EXECUTION

3.01 Tree Removal

- A. Provide signs, barricades, and fencing as necessary to protect pedestrian and vehicular traffic.
- B. Remove trees indicated on the Drawings to be removed or as directed by the Engineer.

3.02 Stump Removal

- A. Remove stumps by excavation or chipping machine.
- B. Remove stumps to a minimum depth of two feet below subgrade when located below proposed improvements and one foot below finish grade within turf areas.
- C. Backfill in accordance with Section 31 22 00.

3.03 Disposal

- A. Remove all logs, branches, stumps, chips and other debris from the site.

3.04 Measurement

- A. When payment is by the inch diameter, the diameter will be measured 4.5 feet above the ground. The diameter will be 1/3 of the tree circumference.

END OF SECTION

SECTION 31 22 00

SITE PREPARATION AND EARTHWORK

PART 1 - GENERAL

1.01 Section Includes

- A. Clearing site of debris, grass, trees and other plant life in preparation for construction.
- B. Protection of existing structures, trees or vegetation to remain.
- C. Stripping of topsoil from areas to be incorporated into the work.
- D. Excavation, filling and compaction for site grading and paved surface subgrade preparation.

1.02 References

- A. ASTM D 1557 - Standard Test Methods Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
- B. ASTM D2487 - Classification of Soils for Engineering Purposes.
- C. ASTM D2922 - Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- D. ASTM D3017 - Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.03 Submittals

- A. Submit compaction test reports.

PART 2 - PRODUCTS

2.01 Materials

- A. Common Fill: On-site or off-site natural soil free from organic matter, debris, vegetation, stones larger than 6" and frozen material and classified in ASTM D2487 as follows:
 - GW - Well-graded gravels, gravel-sand mixtures, little or no fines.
 - GP - Poorly-graded gravels, gravel-sand mixtures, little or no fines.
 - GM - Silty gravels, gravel-sand-silt mixtures.
 - GC - Clayey gravels, gravel-sand-clay mixtures.
 - SW - Well-graded sands, gravelly sands, little or no fines.
 - SP - Poorly-graded sands, gravelly sands, little or no fines.
 - SM - Silty sands, sand-silt mixture.
 - SC - Clayey sands, sand-clay mixtures.
 - ML - Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
 - CL - Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
- B. Breaker Run: Crushed stone meeting the following gradation:

5-Inch Breaker Run	
Sieve Size	% Passing by Weight
5 inch	90 - 100
1-1/2 inch	20 - 50
No. 10	0 - 10

3-Inch Breaker Run	
Sieve Size	% Passing by Weight
3 inch	90 - 100
1-1/2 inch	60 - 85
3/4 inch	40 - 65
No. 4	15 - 40
No. 10	10 - 30
No. 40	5 - 20
No. 200	2 - 12

- C. Geotextile Type-R: A geotextile fabric woven from polyester or polypropylene. The geotextile shall be insect, rodent, mildew, rot, and UV resistant. The geotextile shall have the following minimum requirements:

Geotextile Properties		
Property	Test Method	Requirement*
Grab Tensile Strength, lbs.	ASTM D4632	205
Elongation, %	ASTM D4632	15
Min. Puncture, lbs.	ASTM D6241	400
Max. apparent open size	ASTM D4741	No 30 sieve
Min. permittivity	ASTM D4491	0.12 s-1

Mirafi 180N TenCate, US Fabrics US205NW or equal.

PART 3 - EXECUTION

3.01 Protection

- A. Locate and identify existing utilities that are to remain and protect them from damage.
- B. Protect trees, plants, structures, site improvements and features designated to remain.
- C. Protect bench marks, property corners and other survey monuments from damage or displacement.

3.02 Clearing

- A. Clear area within the clearing limits shown on the Drawings. If no clearing limits are shown, clear five feet outside of the grading limits, but not beyond project property boundaries.
- B. Remove trees, saplings, shrubs, bushes, vines and undergrowth within the clearing limits to the height above ground as follows:
 1. Trees over six inch diameter; six inches.
 2. Trees, shrubs and bushes under six inch diameter; three inches.
 3. Vines and undergrowth; two inches.

3.03 Grubbing

- A. Remove all stumps, main root balls and root systems to the minimum depths indicated:
 1. Beneath footings: 18 inches.
 2. Beneath paved roads, parking areas and walks: 12 inches below sub-grade.
 3. Beneath turf: 8 inches.
 4. In fill areas: 12 inches.

3.04 Topsoil Excavation

- A. Cut heavy growths of grass from areas to be stripped.
- B. Strip topsoil from all areas to be excavated, regraded or landscaped to a depth that prevents the intermingling of the topsoil with the subsoil.
- C. Topsoil is defined as surficial soil containing organic matter that sustains plant life.

- D. Stockpile the stripped topsoil on the site for reuse. If stockpile location is not shown on the Drawings, coordinate the location with the Engineer.
- E. Provide erosion protection for all stockpiled topsoil.

3.05 Pavement Removal

- A. Remove existing pavement and dispose of off-site. Removal of pavement will be considered incidental to the work unless indicated otherwise.
- B. Provide a straight saw cut joint between pavement being removed and pavement to remain. Use power saw for cutting. Steel disk cutters mounted on power shovel bucket are not acceptable.

3.06 Lines and Grade

- A. Streets
 1. Construct the finish subgrade to the line, grade, and cross section as shown on the Drawings.
 2. The Engineer will provide grade stakes at a minimum distance of 50 feet along the centerline. Provide Engineer with a minimum of 48 hours notice of the need for grade stakes.
 3. Contractor may use slope meters or GPS type controls on machines for grade control. However, the contractor is responsible for verifying the finish grade elevations with a level at a minimum of every 50 feet along the centerline.
- B. Site Grading
 1. Construct the finish subgrade to contours shown on the Drawings.
 2. The Engineer will provide grade stakes as appropriate for the Work.
 3. Contractor may use slope meters or GPS type controls on machines for grade control. However, the contractor is responsible for verifying the finish grade elevations.

3.07 Grading and Subgrade Preparation

- A. Cut and fill to the required grades and cross section and contours.
- B. Scarify surface of cut areas and compact to the degree required for subsequent backfill.
- C. Place fill material in continuous layers not exceeding 8" compacted thickness.
- D. For proposed streets and parking lots, roll the surface with a steel drum roller to provide a relatively impervious surface where additional filling or excavation is necessary or placement of base course will be delayed.
- E. Maintain surface drainage during construction.
- F. Remove excess material from site. If borrow is needed, provide material meeting requirements of 2.01 for common fill.
- G. Grading contractor shall grade roads and other surfaces to be paved to rough subgrade elevation prior to installation of utilities. After utility installation, the grading contractor shall grade to finish subgrade elevation.
- H. Prior to placement of topsoil, areas that have been compacted by construction traffic shall be scarified to a minimum depth of 12 inches using a chisel plow or ripper arms on a dozer. Scarifying shall be performed along the contour.

3.08 Compaction

- A. Adjust moisture content of fill material to accomplish the required degree of compaction.
- B. Use a sheepfoot roller for cohesive soils and a smooth drum vibratory roller for granular soils.
- C. Compact to the percent of maximum dry density as listed below in accordance with ASTM D1557.

Compaction Requirements		
Area	Cohesive Soils	Granular Soils
Beneath Turf	85%	85%
Beneath Walks & Curbs	90%	95%
Beneath Paving	90%	95%
Building Pad Area	90%	95%
Storm Water/Treatment Pond Berms	90%	95%

3.09 Proof Rolling

- A. Proof roll the finished pavement subgrade in the presence of the Engineer. Provide 24-hour notice to the Engineer as to when the proof-rolling will be performed.
- B. Prior to proof rolling, the entire roadway subgrade shall have a relatively smooth surface, suitable for observing soil reaction during proof rolling.
- C. Provide a loaded tri-axle dump truck with a minimum gross weight of 30 tons.
- D. Proof rolling shall be accomplished in a series of traverses parallel to the centerline of the street or parking area. The truck shall traverse the length of the street or parking area once for each 12 feet of width. Additional passes may be directed by the Engineer.
- E. Soft areas, yielding areas, cracked areas, or areas where rolling or wave action is observed shall be considered indicative of unsatisfactory subgrade. Such areas shall be undercut, replaced with suitable fill material, and recompacted.
- F. Once the subgrade has been proof rolled and approved, protect the soils from becoming saturated, frozen, or adversely affected.

3.10 Subgrade Stabilization

- A. If ordered by the Engineer or if indicated in the Contract Documents, subgrade material that cannot be adequately compacted shall be removed and replaced with breaker run material and/or geotextile.
- B. The depth of the undercut, breaker run size, and/or geotextile requirement will be at the discretion of the Engineer.
- C. Unless otherwise indicated within the contract documents, subgrade stabilization with breaker run material will be paid for by the in-place cubic yard including excavation, furnishing and placement of breaker run material, and disposal of undercut material.

3.11 Geotextile Placement

- A. Clear area of sharp objects, stumps, and large stones that would puncture geotextile.
- B. Roll geotextile onto the subgrade by hand in the longitudinal direction. Overlap adjacent strips two feet.
- C. Back-dump aggregate onto the geotextile beginning at a point just before the fabric and on firm soil. No vehicular traffic will be allowed directly on the geotextile. Spread the aggregate with a bulldozer. The first lift shall be as thick as possible to prevent over-stressing of the subgrade.
- D. Take care during aggregate placement to prevent damage to the geotextile. Repair damages or tears by placing a piece of geotextile over the damaged area. Overlap the repair piece onto the undamaged area a minimum of three feet.
- E. Compaction: Perform initial compaction with bulldozers while spreading. Perform final compaction with a vibratory compactor, first without vibration for several passes, followed with vibration. Do not grade down ruts; fill with additional aggregate and compact.

3.12 Tolerances

- A. Top Surface of Road Subgrade:
 - 1. Rough Grade: Plus or minus 0.25 ft.
 - 2. Finish Subgrade: Plus or minus 0.05 ft.
- B. Top Surface of General Grading: Plus or minus 0.1 ft.

3.13 Field Quality Control

- A. Field inspection will be performed by an authorized representative of the Owner.
- B. Contractor is responsible for meeting the compaction requirements. The Contractor shall hire and pay for an independent testing firm to perform compaction tests to confirm the in-place density.
- C. For general grading perform one test per 9,000 square yards or part thereof of fill placed per lift. In addition, perform one test per building lot where fill is placed. For streets perform one test per 1,000 square yards or part thereof of fill placed per lift. Engineer or Owner's Representative will direct location of tests.
- D. Additional tests may be required if compaction requirements are not being met. The cost of these additional tests are the responsibility of the Contractor.
- E. Determination of moisture content shall be in accordance with ASTM D3017. Determination of density shall be in accordance with ASTM D2922.

3.14 Disposal

- A. Dispose of all plant material off-site at a location meeting state landfill requirements.
- B. Burning at the site will not be permitted.
- C. Dispose of excess soil materials or unsuitable material off-site unless on-site disposal is indicated, or approved by Owner.

END OF SECTION

SECTION 31 23 33

UTILITY EXCAVATION, BACKFILLING AND COMPACTION

PART 1 – GENERAL

1.01 Section Includes

- A. Excavation of trenches for below grade piping and conduit.
- B. Backfilling and compaction.

1.02 Related Sections

- A. Section 01 45 16 – Testing Requirements.

1.03 References

- A. ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregate.
- B. ASTM D1557 - Standard Test Methods Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
- C. ASTM D2487 - Classification of Soils for Engineering Purposes.

1.04 Submittals

- A. Submit 50 lb. sample of off-site backfill materials.
- B. Submit gradation of select granular backfill.

PART 2 – PRODUCTS

2.01 Materials

- A. Crushed Stone: Hard, durable particles of crushed stone or gravel substantially free from shale or lumps of clay or loam meeting the following gradation:

Crushed Stone Gradation	
Sieve Size	% Passing By Weight
2 Inch	100
1-1/2 Inch	90 - 100
1 Inch	35 - 70
3/4 Inch	0 - 15
1/2 Inch	0 - 5

- B. Trench Backfill: Natural soils, free of organic matter, trash, deleterious materials, stones larger than eight inches and frozen material and classified in ASTM D2487 as follows:

GW - Well-graded gravels, gravel-sand mixtures, little or no fines.
GP - Poorly-graded gravels, gravel-sand mixtures, little or no fines.
GM - Silty gravels, gravel-sand-silt mixtures.
GC - Clayey gravels, gravel-sand-clay mixtures.
SW - Well-graded sands, gravelly sands, little or no fines.
SP - Poorly-graded sands, gravelly sands, little or no fines.
SM - Silty sands, sand-silt mixture.
SC - Clayey sands, sand-clay mixtures.
ML - Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
CL - Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.

Soils classified in ASTM D2487 as follows are not acceptable:

- OL - Organic silts and organic silty clays of low plasticity.
- MH - Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
- CH - Inorganic clays of high plasticity, fat clays.
- OH - Organic clays of medium to high plasticity, organic silts.
- Pt - Peat and other highly organic soils.

- C. Select Granular Backfill: Durable particles ranging from fine to coarse in a substantially uniform combination. Sufficient fine material shall be present to fill all the voids of the coarse material. Some fine clay or loam particles are desirable, but they shall not be present in the form of lumps. Granular backfill shall conform to the following gradation:

Granular Backfill Gradation	
Sieve Size	% Passing By Weight
3 Inch	100
2 Inch	95 - 100
No. 4	35 - 60
Finer than No. 200	5 - 15

- D. Bedding: See individual specification sections.

PART 3 – EXECUTION

3.01 Examination

- A. Verify fill materials to be used are acceptable.

3.02 Preparation

- A. Identify required lines, levels, contours, and datum.
- B. Maintain and protect existing utilities remaining which pass through work area.
- C. Protect plant life, lawns, and other features remaining as a portion of the final landscaping.
- D. Protect benchmarks and existing features from excavation equipment and vehicular traffic.
- E. Protect above and below grade utilities which are to remain.
- F. Strip topsoil and stockpile on-site for reuse.
- G. When excavating across or within existing pavement, saw cut in neat, straight, vertical lines.

3.03 Minor Trench Water

- A. Do not allow water to accumulate in the trench.
- B. Provide all equipment needed to accomplish the Work. Unless indicated otherwise, no additional compensation will be made for removing trench water.
- C. No additional compensation will be made for crushed stone used for trench drainage.
- D. Dispose of water in a suitable manner, and in accordance with regulations of the Wisconsin Department of Natural Resources, without damage to property.

3.04 Excavation

- A. Excavate subsoil to required depth and grade.
- B. Cut trenches sufficiently wide to enable installation of the utilities and allow inspection. Normal trench width below the top of the pipe shall be the nominal pipe diameter plus 24 inches.
- C. Do not undercut trench walls.

- D. Trench walls more than five feet in depth shall be shored, cut back to stable slope or provided with equivalent means of protection in accordance with the applicable rules of the Department of Labor, Occupational Safety and Health Administration (OSHA). Provide a ladder for trench exit in trenches over four feet deep.
- E. Excess excavation below the required level shall be backfilled with crushed stone at the Contractor's expense.
- F. If the trench bottom is unstable due to soil material or groundwater conditions, an additional 3 inches shall be excavated and backfilled with crushed stone as specified in Part 2. There will be no extra payment for the additional excavation and stone. If it is necessary to excavate to a greater depth to provide a stable trench, the Contractor will be paid for the additional excavation and stone, if the extra excavation was ordered by the Engineer or approved by the Engineer prior to the work being performed.
- G. Remove ledge rock, boulders or large stones to provide a minimum clearance of 6 inches between the pipe and the rock. See Section on Rock Excavation, if included.
- H. Not more than 100 feet of trench shall be open ahead or behind the pipe laying. Additional trenching will not be allowed if earlier trenches have not been backfilled or if the trench surfaces are unsatisfactory.
- I. Utility contractor is responsible for the disposition of excess material resulting from the utility construction. Stockpile excess excavated material in areas designated on the Drawings. If stockpile areas are not designated on the Drawings, dispose of the material offsite.

3.05 Backfilling

- A. Backfill trenches with excavated material meeting the requirements for backfill specified in Part 2 above. Use select granular backfill only when indicated on the Drawings or elsewhere in the Project Manual.
- B. Backfill trenches to the rough subgrade elevation, plus or minus 0.25 ft.
- C. Place material in continuous layers not exceeding 8 inches compacted thickness. Compact each layer to the percent of maximum dry density as listed below in accordance with ASTM D1557.
- D. Compaction Requirements: Meet the following compaction requirements:

Compaction Requirements		
Area	Cohesive Soil	Granular Soil
Beneath Turf	85%	85%
Beneath Structures	90%	95%
Beneath Paving	90%	95%

- E. Maintain moisture content of backfill materials to attain required compaction density.

3.06 Restoration

- A. Remove excess excavation immediately after completion of backfilling.
- B. If site restoration is required, commence immediately after backfilling is completed.
- C. Maintain roadways in a driveable condition, acceptable to the Engineer, prior to pavement restoration.

3.07 Field Quality Control

- A. Field inspection will be performed by an authorized representative of the Owner.
- B. Contractor is responsible for meeting the compaction requirements. The Contractor shall hire an independent testing firm to perform compaction tests to confirm the in-place density.

- C. Testing Requirements: Four tests at various depths per 400 feet of trench. Engineer or Owner's Representative will direct the location of the tests.
- D. Additional tests may be required if compaction requirements are not being met. The cost of these additional tests are the responsibility of the Contractor.
- E. Determination of moisture content shall be in accordance with ASTM D3017. Determination of density shall be in accordance with ASTM D2922.

END OF SECTION

SECTION 32 11 23

CRUSHED AGGREGATE BASE COURSE

PART 1 - GENERAL

1.01 Section Includes

- A. Furnishing and placing crushed aggregate base course as a foundation for asphaltic concrete pavement or Portland cement concrete pavement.

1.02 References

- A. ASTM C136 - Sieve Analysis of Fine and Coarse Aggregate.
- B. ASTM D1557 - Standard Test Methods Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
- C. Wisconsin Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition (WisDOT).

1.03 Submittals

- A. Submit aggregate gradation; ASTM C136.
- B. Submit truck weight slips. Include as a minimum, truck number, date, time, gross weight, tare weight and net weight.

PART 2 – PRODUCTS

2.01 Crushed Aggregate

- A. Meet material requirements of WisDOT.
- B. Gradation
 - 1. Except for reclaimed asphaltic pavement, conform to the gradations listed in the following table:

Sieve Size	Percentage Passing By Weight		
	3-Inch Base	1 1/4-Inch Base	3/4-Inch Base
3-Inch	90 - 100	---	---
1 1/2-Inch	60 - 85	---	---
1 1/4-Inch	---	95 - 100	---
1-Inch	---	---	100
3/4-Inch	40 - 65	70 - 93	95 - 100
3/8-Inch	---	42 - 80	50 - 90
No. 4	15 - 40	25 - 63	35 - 70
No. 10	10 - 30	16 - 48	15 - 55
No. 40	5 - 20	8 - 28	10 - 35
No. 200	2 - 12	2 - 12 ^{a, c}	5 - 15 ^b

- a. Limited to a maximum of 8 percent in base course placed between new and old pavement.
- b. 8 - 15 percent passing when base is ≥ 50% crushed gravel.
- c. 4 - 10 percent passing when base is ≥ 50% crushed gravel.
- 2. Use 1 1/4-Inch Base in top 4 or more inches of base. Use 3-Inch Base or 1 1/4-Inch Base in the lower base layers.
- 3. Use 3/4-Inch Base in the top 3 inches of unpaved portion of the shoulder. Also, if using 3-Inch Base in the lower base layers, use 3/4-Inch Base in the top 3 inches of the shoulder foreslopes. Use 3/4-Inch Base or 1 1/4-Inch Base elsewhere in shoulders.

2.02 Reclaimed Asphaltic Pavement

- A. If Contract Documents allow reclaimed asphaltic pavement, the material shall conform to the following:
 - 100 percent passing a 1 1/4-inch sieve.
 - 75 percent or less passing a No. 4 sieve.
 - Asphalt content between 3 and 6.5 percent.

PART 3 - EXECUTION

3.01 Preparation

- A. Check subgrade for conformity with grade and cross section.
- B. Remove depressions and ruts that may have been caused after subgrade completion.
- C. Proof-roll subgrade prior to placing aggregate with a loaded tandem-axle dump truck under the observance of the Engineer. Subgrade shall not rut or displace significantly under the weight of the loaded truck. Soft or unstable areas that cannot be improved by additional compaction shall be undercut, replaced with suitable fill material, and recompacted.

3.02 Lines and Grade

- A. Construct the base course to the line, grade and cross section as shown on the Drawings or as directed by the Engineer.
- B. Grading with GPS machine control is the preferred method to be utilized for this project as it will result in efficiencies and cost savings to the Owner. Engineer will provide necessary grading models to Contractor to be used with GPS grading equipment. In addition, Engineer can provide limited grade stakes along the centerline with a minimum distance of 50' for streets without curb and gutter. For streets with curb and gutter, the Engineer will stake the curb and gutter and will provide centerline cuts and fills from the curb stakes. Provide Engineer with a minimum of 48 hours notice of the need for grade stakes.
- C. Contractor may use slope meters or GPS type controls on machines for grade control. However, the contractor is responsible for verifying the finish grade elevations with a level at a minimum of every 50 feet along the centerline.

3.03 Equipment

- A. The weight, type, capacity and method of operation of all hauling and spreading equipment shall be appropriate for the work and shall not damage the subgrade or previously laid base course. Spreading equipment shall be designed and operated to spread the material in uniform layers without significant segregation.
- B. Motor graders used for mixing and shaping shall have weight, rigidity and design suitable for the work.
- C. Compaction equipment shall be of the rolling type, vibratory type or combination thereof. Tamping rollers shall exert a weight of not less than 150 pounds per square inch of tamping surface on each tamping foot in a transverse row. Pneumatic-tire rollers or other equipment shall have a weight of not less than 150 pounds per linear inch of overall rolling width.

3.04 Placing Base Course

- A. Place material in a manner to minimize segregation and to facilitate spreading in a uniform layer.
- B. Place material in maximum 6-inch thick compacted layers. If material is placed in more than one layer, each layer shall be approximately the same thickness.
- C. Compact each layer to 95 percent of the maximum dry density in accordance with ASTM D1557. If material is deficient in moisture content for readily attaining the required density, moisten the material as necessary.

- D. All material placed on the subgrade or previous layer shall be spread, shaped and compacted on the same day.

3.05 Tolerances

- A. Smoothness: Maximum variation of 3/8 inch when measured with a 10-foot straight edge.
- B. Compacted Thickness: Plus or minus 1/4 inch.

3.06 Proof Rolling

- A. Proof roll the completed base course with a loaded tandem-axle dump truck. The surface shall not rut, displace, or roll under the weight of the loaded truck. Soft or unstable areas that cannot be improved by additional compaction shall be replaced and recompact. Proof rolling shall be done in the presence of the Engineer.

3.07 Field Quality Control

- A. Contractor is responsible for meeting the compaction requirements. The Engineer or authorized representative of the owner has the option to require the Contractor to hire an independent testing firm, at the Contractor's expense, to perform compaction tests to confirm the in-place density.
- B. Field inspection will be performed by the Engineer or an authorized representative of the Owner.
- C. Determination of moisture content shall be in accordance with ASTM D3017. Determination of density shall be in accordance with ASTM D2922.
- D. If tests indicate the work does not meet the specified requirements, remove and replace the work.

END OF SECTION

SECTION 32 12 16

ASPHALTIC CONCRETE PAVEMENT

PART 1 - GENERAL

1.01 Section Includes

- A. Construction of a one or two course asphaltic concrete pavement to the thickness and cross-section indicated on the Drawings or in the written Bid Documents.
- B. Provide the mix indicated on the Drawings or in the written Bid Documents.

1.02 Related Sections

- A. Section 01 45 16 – Testing Requirements.

1.03 References

- A. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition (WisDOT).

1.04 Submittals

- A. Preconstruction Submittals
 - 1. Submit mix design, meeting all necessary criteria for all mixtures to be used on the project. Conduct the mix design in accordance with WisDOT 460.
- B. Construction Submittals:
 - 1. Submit density testing records.
 - 2. Submit truck weight slips.

1.05 Quality Assurance

- A. Qualifications of Asphalt Producer: Use only materials which are furnished by a bulk asphalt concrete producer regularly engaged in the production of hot-mix, hot-laid asphalt concrete.
- B. Qualifications of Testing Agency: Use only recognized commercial-testing laboratory experienced in testing asphalt concrete materials.

1.06 Job Conditions

- A. Weather Limitations
 - 1. Asphalt concrete surface course material shall not be placed during the calendar period between November 1st and April 15th except with written approval of Engineer of a cold weather paving plan provided by the Contractor.
 - 2. Asphalt concrete material shall not be placed when air temperature is less than 36°F as measured 3 feet above the ground in the shade and away from the effects of artificial heat.
 - 3. Asphalt concrete materials shall not be placed on frozen or excessively wet base course or when it is raining.
- B. Traffic Control
 - 1. Maintain vehicular and pedestrian traffic during paving operations as required for other construction activities.
 - 2. Provide flagmen, barricades, warning signs and lights as needed to provide for safety and movement of traffic.

PART 2 - PRODUCTS

2.01 Asphaltic Mixture Design

- A. Conduct the asphaltic mixture design in accordance with WisDOT Table 460-2. Mixture requirements are as follows:

Mixture Type	LT	MT
ESALs x 10 ⁶ (20 yr design life)	< 2	2 to < 8
LA Wear (AASHTO T 96)		
100 revolutions (max % loss)	13	13
500 revolutions (max % loss)	50	45
Soundness (AASHTO T 104) (sodium sulfate, max % loss)	12	12
Freeze/Thaw (AASHTO T 103) (specified counties, max % loss)	18	18
Fractured Faces (ASTM D5821) (one face/2 face, % by count)	65 / ___	75 / 60
Thin or elongated (ASTM D4791) (max % by weight)	5 (5:1 ratio)	5 (5:1 ratio)
Fine Aggregate Angularity (AASHTO T 304, Method A, min)	40	43
Sand Equivalency (AASHTO T 176, min)	40	40
Gyratory Compaction		
Gyrations for N _{ini}	6	7
Gyrations for N _{des}	40	75
Gyrations for N _{max}	60	115
Air Voids, %V _a	4.0 ⁽⁶⁾	4.0 ⁽⁶⁾
% G _{mm} @ N _{des}	96.0	96.0
% G _{mm} @ N _{ini}	≤91.5 ⁽¹⁾	≤89.0 ⁽¹⁾
% G _{mm} @ N _{max}	≤98.0	≤98.0
Dust to Binder Ratio ⁽²⁾ (% passing 0.075/P _{be})	0.6 - 1.2	0.6 - 1.2
Voids filled with Binder (VFB or VFA, %)	60 - 80 (4, 5)	65 - 75 (3, 4)
Tensile Strength Ratio - TSR (ASTM D4867)		
no antistripping agent	0.75	0.75
with antistripping agent	0.80	0.80
Draindown at Production Temperature (%)	-----	-----

- (1) The percent maximum density at initial compaction is only a guideline.
(2) For a gradation that passes below the boundaries of the caution zone (ref. AASHTO MP3), the dust to binder ratio limits are 0.6 - 1.6.
(3) For 9.5 mm and 12.5 mm nominal maximum size mixtures, the specified VFB range is 70 - 76%.
(4) For 25.0 mm nominal maximum size mixtures, the specified VFB lower limit is 67%.
(5) For 37.5 mm nominal maximum size mixtures, the specified VFB lower limit is 67%.
(6) Shall conform to current WisDOT ASP 6, 460.2.1, which includes the regression of air voids from 4.0% to 3.0% with asphalt cement.

2.02 Aggregate

- A. Provide aggregate conforming to WisDOT Table 460-1. Aggregates shall consist of hard durable particles and shall not contain more than a combined total of one percent, by mass, of lumps of clay, loam, shale, soft particles, organic matter, adherent coatings, and other deleterious matter. The composite aggregates shall conform to the requirements of the Mixture Requirements Table and the Aggregate Gradation Table.

Aggregate Gradation Percent Passing By Weight				
Sieve Size	25.0 mm (#2)	19.0 mm (#3)	12.5 mm (#4)	9.5 mm (#5)
37.5 mm	100	---	---	---
25.0 mm	90 - 100	100	---	---
19.0 mm	90 max	90 - 100	100	---
12.5 mm	---	90 max	90 - 100	100
9.5 mm	---	---	90 max	90 - 100
4.75 mm	---	---	---	90 max
2.36 mm	19 - 45	23 - 49	28 - 58	20 - 65
75 um	1 - 7	2 - 8	2 - 10	2 - 10
% Min VMA	12.0	13.0	14.0	15.0

- B. Unless otherwise designated in the contract, the nominal size of aggregate used in the mixture shall conform to the following:

Pavement Thickness	Aggregate Size	
	Binder	Surface
3"	12.5 mm	9.5 mm
3 1/2"	12.5 mm	12.5 mm
4"	19.0 mm	12.5 mm
4 1/2"	19.0 mm	12.5 mm
5"	19.0 mm	12.5 mm

2.03 Asphalt Cement

- A. PG 58-28 S or H.
 B. Tack Coat: Emulsified asphalt - Grade SS-1; WisDOT 455.2.5

2.04 Recycled Asphaltic Materials

- A. Recycled Asphalt Shingles can be used as follows: 5-7% binder, 2% surface. WisDOT 460.2.5

2.05 Recovered Asphaltic Binders

- A. WisDOT 460.2.6

PART 3 - EXECUTION

3.01 Lines and Grade

- A. Lines and grade shall be as shown on the drawings or as given by the Engineer.
 B. When curb & gutter is in place, the Contractor shall use the curb & gutter for line and grade. For streets without curb and gutter, the Engineer will provide grade stakes at a minimum distance of 50 feet along the centerline. Provide the Engineer with a minimum 48 hours' notice of the need for grade stakes.
 C. Parking lots will be staked as required.

3.02 Surface Preparation

- A. Proof Roll
 1. Proof-roll prepared base surface using heavy rubber-tired roller or loaded tandem-axle dump truck under the observance of the Engineer. Aggregate surface shall not rut or displace significantly under the weight of the equipment. Soft or unstable areas that cannot be improved by additional compaction shall be undercut, replace with suitable fill material, and recompacted.
 2. Do not begin paving until necessary corrections are made.

- B. Loose and Foreign Material
 - 1. Remove loose and foreign materials from compacted base or old surface course immediately before paving.
 - 2. Use power brooms or blowers and hand brooming as required.
- C. Tack Coat (WisDOT 455.3.2.1)
 - 1. Dilute material with equal parts of water and apply to contact surfaces of previously constructed asphalt concrete or Portland cement concrete and similar surfaces.
 - 2. Apply at a rate of 0.05-0.07 gallons per square yard of surface with a power distributor.
 - 3. Apply only when air temperature is 36° F or higher.
 - 4. Apply tack coat by brush to contact surfaces of curbs, gutters, manholes and other structures projecting into or abutting asphalt concrete pavement.
 - 5. Apply tack coat between all layers. This work shall be incidental to the asphalt paving.
- D. Existing Pavement Correction
 - 1. Fill potholes, sags and depressions.
 - 2. Material may be placed by hand.

3.03 Frame Adjustments

- A. Prior to paving, set frames of subsurface structures to final grade. Covers shall be one-half inch below surface of adjacent pavement with the tops of manholes the same slope as the surrounding pavement.

3.04 Preparing the Mixture

- A. Comply with applicable sections of WisDOT 450 for material storage, control, mixing and for plant equipment and operation.

3.05 Equipment

- A. Provide size and quantity of equipment to complete the work specified within the project time schedule.
- B. Paving shall be placed with a self-propelled spreading and finishing machine that spreads the hot-asphalt concrete mixture without tearing, shoving or gouging the surface and that controls pavement edges to true lines without use of stationary forms.
- C. Rolling equipment shall be self-propelled steel-wheel rollers of the three-wheel, tandem or three-axle tandem type. Three-wheel and tandem rollers shall be rated at not less than 8 tons. Three-axle tandem rollers shall be rated at not less than 12 tons.

3.06 Placing the Mix

- A. Do not place asphaltic mixture when the air temperature approximately three feet above grade, in shade, and away from artificial heat source is less than 36°F.
- B. Place asphalt concrete mixture on prepared surface, spread and strike off using paving machine.
- C. Spread mixture at a temperature between 250°F and 350°F.
- D. Inaccessible and small areas may be placed by hand.
- E. Place each course at thickness so that when compacted, it will conform to the indicated grade cross section, finish thickness and density specified.

F. Compacted Thickness of Individual Layers:

Pavement Thickness	Layer Thickness	
	Binder	Surface
3"	1 1/2"	1 1/2"
3 1/2"	1 3/4"	1 3/4"
4"	2 1/4"	1 3/4"
4 1/2"	2 3/4"	1 3/4"
5"	3"	2"

G. Paver Placing

1. Unless otherwise directed, begin placing along centerline of areas to be paved on crowned section and at high side of sections on one-way slope and in direction of traffic flow.
2. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips.
3. Complete binder course for a section before placing surface course.

H. Hand Placing

1. Spread, tamp and finish mixture using hand tools in areas where machine spreading is not possible.
2. Place mixture at a rate that will ensure handling and compaction before mixture becomes cooler than acceptable working temperature.

I. Joints

1. Carefully make joints between old and new pavements or successive day's work to ensure a continuous bond between adjoining work.
2. Clean contact surfaces free of sand, dirt or other objectionable material, and apply tack coat.
3. Cut back edge of previously placed course to expose an even, vertical surface for full course thickness.

3.07 Compacting the Mix

A. While the mixture is still hot, compact thoroughly and uniformly by rolling. Provide sufficient number of rollers to obtain the required density and accomplish the rolling.

B. Begin rolling operations as soon after placing as the mixture will bear weight of roller without excessive displacement.

C. Do not permit heavy equipment, including rollers, to stand on finished surface before it has thoroughly cooled or set.

D. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.

E. Start rolling longitudinally at extreme lower side of sections and proceed toward center of pavement. Roll to slightly different lengths on alternate roller runs.

F. Do not roll centers of sections first.

G. Breakdown Rolling

1. Accomplish breakdown or initial rolling immediately following rolling of transverse and longitudinal joints and outside edge.
2. Check crown grade and smoothness after breakdown rolling.
3. Repair displaced areas by loosening at once with lutes or rakes and filling, if required, with hot loose material before continuing rolling.

H. Second Rolling

1. Follow breakdown rolling as soon as possible while mixture is hot and in condition for compaction.
2. Continue second rolling until mixture has been thoroughly compacted.

I. Finish Rolling

1. Perform finish rolling while mixture is still warm enough for removal of roller marks.
2. Continue rolling until roller marks are eliminated and course has attained specified density.

3.08 Pavement Density

- A. Pavements shall be built with the Maximum Density Method, WisDOT 460.3.3, unless otherwise specified.
- B. Ordinary Compaction: Compact leveling, wedging, patching layers, driveways, and other non-traffic areas to the degree that no further appreciable consolidation is evidenced under the action of the compaction equipment. Comply with WIDOT 450.3.2.6.
- C. Maximum Density Method: All courses or layers thereof of plant mixed asphaltic mixtures for which the Maximum Density Method is used shall be compacted to a density not less than the percentage shown in the Table of Maximum Required Density, WisDOT Table 460-3, for the applicable mixture and course.

3.09 Pavement Density Determination

- A. General
 - 1. Density testing shall be performed by an independent testing firm, hired by the contractor or by a trained and qualified employee of the Contractor if approved by the Engineer. Densities may be determined on the basis of cored/sawed holes or nuclear methods.
 - 2. Density determination will be made as soon as practical after placement and compaction and prior to placement of subsequent layers. Do not re-roll compacted mixtures represented by samples or tests having deficient densities. Do not operate below the specified maximum density on a continuing basis. Stop production until the source of the problem is determined and corrected.
 - 3. A lot shall represent 1500 lineal feet of mixture, or the quantity placed in one day if less than 1500 lineal feet, for each density requirement. Densities of binder and surface course mixtures shall be determined on the basis of nuclear methods. Random testing locations will be established by the Engineer.
- B. Tests: Five random tests will be taken on each lot. The lot density shall be the average of all samples taken.
- C. Compact all layers to the percent of the target maximum density as shown in the following table.

Minimum Required Density ⁽¹⁾		
Location	Layer	% of Target Maximum Density
		Mixture Type
		LT and MT
Traffic Lanes ⁽²⁾	Lower	93.0 ⁽³⁾
	Upper	93.0
Shoulders and Appurtenances	Lower	91.0
	Upper	92.0

- (1) The table values are for average lot density. If any individual test result falls more than 3% below the minimum required target maximum density, the engineer may investigate the acceptability of that material.
 - (2) Includes parking lanes as determined by engineer.
 - (3) Minimum reduced by 2% when the first lift of lower layer constructed on crushed aggregate or recycled base courses.
- D. Density Deficiency: When the density of a lot of compacted binder or surface course is less than the specified minimum, payment will be adjusted in accordance with the following table:

Adjusted Payment Schedule	
Percent Lot Density Below Specified Minimum	Percent of Contract Price
From 0.5 to 1.0 inclusive	98
From 1.1 to 1.5 inclusive	95
From 1.6 to 2.0 inclusive	91
From 2.1 to 2.5 inclusive	85
From 2.6 to 3.0 inclusive	70
More than 3.0	*

- * The lot shall be removed and replaced with a mixture at the specified density and, when acceptably replaced, will be paid for at the contract price; or the engineer may permit the unacceptable material to remain in place with a 50 percent reduction in payment.

3.10 Surface and Thickness Requirements

A. Surface Requirements

1. Provide final surface of uniform texture conforming to required grade and cross-section.
2. Test finished surface of each asphalt concrete course for smoothness using a 10-foot straightedge applied parallel to and at right angles to centerline of paved area.
3. Check surface areas at intervals directed by Engineer.
 - a. Binder course: 1/4 inch in 10 feet.
 - b. Surface course: 1/4 inch in 10 feet.

B. Thickness Requirements

1. If the Engineer believes that the thickness of the compacted base or surface course is not at the specified thickness, the Contractor may be required to obtain 4-inch diameter samples to verify the thickness. The samples shall be obtained by sawing or coring and all sample holes shall be repaired with fresh mix and compacted.
2. If the thickness is not as specified it will be the Engineer's option to adjust the contract price, require an overlay, or require some other remedial action.

3.11 Patching

A. Remove and replace defective areas.

1. Cut out and fill with fresh hot-asphalt concrete.
2. Compact by rolling to specified density and surface smoothness.
3. Remove deficient areas for full depth of course.
4. Cut sides perpendicular and parallel to direction of traffic with edges vertical.
5. Apply tack coat to exposed surfaces before placing new asphalt concrete mixture.

3.12 Cleaning and Protection

- A. After final rolling, do not permit vehicular traffic on asphalt concrete pavement until it has cooled and hardened and, in no case, sooner than 6 hours.
- B. Provide barricades and warning devices as required to protect pavement and the general public.

END OF SECTION

SECTION 32 16 13
CONCRETE CURB AND GUTTER

PART 1 - GENERAL

1.01 Section Includes

- A. Subgrade preparation.
- B. Aggregate base course.
- C. Furnishing, placement and finishing of concrete curb, gutter and curb and gutter.

1.02 Related Sections

- A. Section 03 31 01 – Sitework Concrete

1.03 References

- A. ASTM A615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- B. ASTM A616 - Rail-Steel Deformed and Plain Bars for Concrete Reinforcement.
- C. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.
- D. ASTM D1557 - Test Method for Moisture-Density Relations of Soil and Soil-Aggregate Mixtures Using 10-lb. (4.5-kg) Rammer and 18-in. (457 mm) Drop.
- E. ASTM D 1751 - Performed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
- F. ASTM D 1752 - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
- G. ASTM D2487 - Classification of Soils for Engineering Purposes.
- H. Wisconsin Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition, (WisDOT).

1.04 Submittals

- A. Concrete delivery tickets.

1.05 Weather Limitations

- A. Cold Weather Placement
 1. Do not place concrete when air temperature is 40 degrees F and falling. Placement may commence when air temperature is 35 degrees F and rising.
 2. Insulate concrete to maintain a minimum temperature of 50 degrees F for not less than 72 hours and a temperature above freezing for the remainder of the curing period.
 3. The subgrade shall be free of frost.
 4. Water and aggregates may be heated prior to mixing so that the temperature of the in-place concrete is between 50 and 85 degrees F.
- B. Warm Weather: Temperature of in-place concrete shall not exceed 85 degrees F except where an approved retarder is used. In no case shall the in-place temperature exceed 95 degrees F.
- C. Do not place during rain, sleet or snow.

1.06 Equipment

- A. Equipment, machines and tools shall have the capability of producing the required product, meeting grade controls, thickness control and smoothness requirements.
- B. Curb forming machines shall be self-propelled, automatically controlled, crawler mounted, and capable of spreading, consolidating and shaping the plastic concrete to the desired cross section in one pass.

PART 2 - PRODUCTS

2.01 Materials

- A. Concrete: Class D, air entrained concrete. See Section on concrete.
- B. Reinforcing Steel: ASTM A615 or A616, Grade 60, deformed bars.
- C. Curing Material: ASTM C309, Type 2, white pigmented.
- D. Preformed Expansion Joint Fillers: ASTM D1751 or ASTM D1752.
- E. Crushed Aggregate Base: Provide crushed aggregate base meeting gradation requirements of WisDOT 305.

Sieve Size	Percentage Passing By Weight	
	1 1/4-Inch Base	3/4-Inch Base
1 1/4-Inch	95 - 100	- - -
1-Inch	- - -	100
3/4-Inch	70 - 93	95 - 100
3/8-Inch	42 - 80	50 - 90
No. 4	25 - 63	35 - 70
No. 10	16 - 48	15 - 55
No. 40	8 - 28	10 - 35
No. 200	2 - 12	5 - 15

- a. Limited to a maximum of 8 percent in base course placed between new and old pavement.
 - b. 8 - 15 percent passing when base is \geq 50% crushed gravel.
 - c. 3 - 10 percent passing when base is \geq 50% crushed gravel.
- F. Common Fill: Natural soil free from organic matter, debris, vegetation, stones larger than six inches, and frozen material and classified as GW, GP, GM, GC, SW, SP, SC, ML or CL in ASTM D2487.

PART 3 - EXECUTION

3.01 Lines and Grade

- A. Construct curb and gutter to lines and grade shown on the Drawings or as given by the Engineer.
- B. Engineer will provide grade stakes at 50-foot intervals on straight sections, at 25-foot intervals on curves, and at tangent points.
- C. Inform Engineer at least 48 hours in advance of the need for grade stakes.

3.02 Subgrade Preparation

- A. Excavate to required subgrade and compact to 95 percent of the maximum dry density in accordance with ASTM D1557.
- B. Use common fill for areas needing fill. Place in maximum 8-inch compacted layers. Compact to 95 percent of the maximum dry density in accordance with ASTM D1557.

3.03 Base

- A. Place crushed aggregate base material on prepared subgrade to a minimum compacted thickness, as shown on the Drawings. Compact to 95 percent of the maximum dry density.

3.04 Forms

- A. Wood or metal forms, straight, and of sufficient strength to resist placement during pouring. Wood forms shall be surfaced plank, 2-inch nominal thickness. Steel forms shall be channel-formed sections with a flat top surface. On sharply curved sections of curb, use appropriate metal or wood materials.
- B. Outside forms shall have a height equal to the full-depth of the curb and gutter. The inside form of the curb shall be securely fastened to and supported by the outside form.
- C. Clean and oil forms prior to use.

3.05 Placing and Finishing

- A. Place, consolidate and shape the concrete by hand or with a forming machine.
- B. Finish surface with a smooth wood float until the surface is true to grade and section and uniform in texture. Brush floated surface with broom or brush.
- C. Remove face forms for finishing the curb face and fillets as soon as the concrete will retain its shape. Do not remove back forms until the concrete has been in place for at least six hours.
- D. Back edge of curb, edge of gutter adjacent to curb, edges next to expansion joints, and edges next to contraction joints formed with separator plates shall be rounded with a 1/4 inch radius edger.
- E. Surface and edges shall be true and free from tool marks.
- F. After forms are removed, paint honey-combed areas with mortar.

3.06 Contraction Joints

- A. Provide contraction joints at intervals of not less than 6 feet or more than 15 feet. Place joints opposite joints in adjacent concrete pavement.
- B. Form joints by cutting the concrete to a minimum depth of 2 inches with a pointed trowel or other suitable tool. Finish edges with a 1/4-inch radius tool. Joint shall have a minimum thickness of 1/8 inch.

3.07 Expansion Joints

- A. Form expansion joints with 3/4 inch thick preformed fillers cut and shaped to the cross section of the curb and gutter. Filler shall extend to within 1/8 inch of the surface.
- B. Locate joints where tangent and radial curb and gutter meet; on either side of inlets approximately three feet from the inlet, but not closer than six feet from another joint; between curb and abutting sidewalk; and on tangent sections at maximum intervals of 100 feet.

3.08 Curing and Protection

- A. Cure concrete with a uniform coating of white-pigmented membrane-curing compound. Apply the compound as soon after finishing as the free water has disappeared from the surface. Apply to formed surfaces within 30 minutes after the forms are removed. Apply with a hand-operated pressure sprayer at a rate of one gallon per 200 square feet.
- B. Protect concrete from all traffic for three days and from vehicular traffic for seven days.

3.09 Reinforcement

- A. Provide reinforcement when crossing sewer, water, and lateral trenches and as indicated.

3.10 Handicap Ramps and Driveways

- A. Provide handicap ramps at all intersections. Provide handicap ramps at other locations, as indicated on the Drawings or as directed by the Engineer.
- B. Construct driveway sections at existing driveways and as directed by the Engineer.

3.11 Defects

- A. If curb and gutter cracks between contraction joints, settles, or spalls within one year of placement, Engineer may require the defective concrete to be removed and replaced at no expense to the Owner.
- B. A minimum of six feet of curb and gutter shall be removed.
- C. Provide two No. 4 epoxy coated dowel bars 12 inches long on both ends of the repair. Drill existing curb to a depth of 7 inches. Provide a tight driven fit.

END OF SECTION

SECTION 32 17 23.13

PAVEMENT MARKING

PART 1 - GENERAL

1.01 Section Includes

- A. Traffic control markings for pavement.

1.02 References

- A. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition (WisDOT).

PART 2 - PRODUCTS

2.01 Epoxy

- A. An epoxy traffic paint meeting the requirements of WisDOT 646.

2.02 Glass Beads

- A. Glass beads meeting requirements of WisDOT 646.

2.03 Line Types

- A. Line types shall have the width and color as shown on the plans, or as follows:
 1. Centerline: 4-inch, yellow, dashed.
 2. No Passing: 4-inch, yellow, solid.
 3. Lane Line: 4-inch, white, solid.
 4. Edge Line: 4-inch, white, solid.
 5. Stop Line: 12-inch, white, solid.
 6. Crosswalk: 6-inch, white, solid.
 7. Parking Stalls: 4-inch, white, solid.

PART 3 - EXECUTION

3.01 Preparation

- A. Pavement shall be dry and free from frost.
- B. Remove dust, dirt, glaze, oil, grease, loose paint, gravel, debris or other materials that may prevent proper bonding.
- C. Accurately layout the markings.

3.02 Application

- A. Do not apply below the minimum pavement temperature recommended by the manufacturer.
- B. Place markings as indicated on the Drawings or as directed by the Engineer.
- C. Applied lines shall have a uniform width.
- D. Applied lines and symbols shall have a uniform color with uniform bead distribution. Edges of lines and symbols shall have a reasonably sharp cutoff.
- E. Apply paint at a rate of 17.6 gallons per mile of 4-inch wide line. Apply glass beads uniformly across the width of the line at a rate of 7 pounds per gallon of paint.

3.03 Protection

- A. Protect painted markings from traffic until paint is sufficiently dry to preclude pickup under traffic.

END OF SECTION

SECTION 32 92 19

SOIL PREPARATION AND SEEDING

PART 1 - GENERAL

1.01 Section Includes

- A. Preparation of subsoil.
- B. Placing topsoil.
- C. Fertilizer.
- D. Seeding.
- E. Mulching.

1.02 Quality Assurance

- A. Comply with requirements of state regulations regarding grass seed and fertilizer.
- B. Fertilizer
 - 1. Each container shall be plainly marked with the analysis of the contents showing the minimum percentages of total nitrogen, available phosphorous and soluble potash. Containers or packages shall be new and unopened.
 - 2. When furnished in bulk, each shipment shall be accompanied by an invoice indicating minimum percentages of the contents listed above.
- C. Seed
 - 1. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging and location of packaging. Containers or packages shall be new and unopened.
 - 2. Seed shall not be used later than one year later than the test date appearing on the label.
 - 3. Sampling and testing of seed for purity, germination and weed seed content shall be in accordance with "Rules for Testing Seed" published by the Association of Official Seed Analysts.

1.03 Submittals

- A. Submit composition of fertilizer and seed mixture.
- B. Submit, upon request, manufacturer's certification that materials meet specification requirements.
- C. Submit, upon request, results of seed purity and germination tests.
- D. Submit topsoil test results for all topsoil borrow.

PART 2 - PRODUCTS

2.01 Topsoil

- A. Provide reclaimed topsoil from the site unless the contract documents require topsoil borrow.
- B. Reclaimed Topsoil: Topsoil stripped from the site consisting of loam, sandy loam, silt loam, or silty-clay loam, or clay loam, humus-bearing soil, adapted to sustaining plant life. The soil shall be free of subsoil, foreign matter, plant material, objects larger than one inch in any dimension, and toxic or other substances harmful to plant growth.
- C. Topsoil Borrow: Topsoil from offsite consisting of natural loam, sandy loam, silt loam, or silty-clay loam, or clay loam, humus-bearing soil, adapted to sustaining plant life. The soil shall be free of subsoil, foreign matter, plant material, objects larger than one inch in any dimension, and toxic or other substances harmful to plant growth. The soil shall have a pH range of 5.5 to 8.0 and a

maximum soluble salt level of 500 PPM. Topsoil originating from agricultural fields shall be free of residual herbicide and other contaminants.

2.02 Fertilizer

- A. Standard commercial fertilizer with the following available nutrients by weight:
 1. Nitrogen - not less than 10%.
 2. Phosphoric Acid - not less than 10%
 3. Potash - not less than 10%

2.03 Seed

- A. Seed mixtures shall be Olds Seeds or equal of grass species and varieties, proportions by weight, and minimum percentages of purity and germination as indicated in the following schedule.

Species	Purity Min. %	Germination Min. %	Quick-2-Gro	Survivor	Boulevard	Wear-n-Tear
Kentucky Bluegrass	98	85	25	15		50
Creeping Red Fescue	97	85	25	30	25	10
Turf Type Tall Fescue	98	85		40	25	
Fine Fescue	97	85				
Dawson Red Fescue	97	85				
Perennial Ryegrass	97	85	25	15	25	40
Annual Ryegrass	97	90	25			
Alkaligrass	98	85			25	

Unless otherwise provided in the Contract Documents, the selection of seed mixtures shall be as follows:

1. Quick-2-Gro: Use for general seeding within new subdivisions.
2. Survivor: Use for seeding lawns where soils are light and sandy.
3. Wear-n-Tear: Use for seeding lawns where soils are loam or clay.
4. Boulevard: Use for boulevard areas behind curb to sidewalk or ROW, from shoulder to ROW on rural section roads, and street or parking lot islands.

2.04 Mulch Materials

- A. Hay: Straw or hay in air-dry condition substantially free from noxious weed seeds or objectionable foreign matter.
- B. Paper Fiber: Mulch consisting of recycled newsprint fibers, wetting agent, deforming agent and green dye with a dry moisture content of 9 to 15 percent.
- C. Wood Cellulose: Wood cellulose fibers manufactured from virgin wood fibers that form a blotter-like ground cover that readily absorbs water and allows infiltration to the underlying soil. Moisture content shall not exceed 15 percent at the time of delivery. The mulch shall be dyed green and shall have the property of becoming dispersed and suspended when agitated in water.
- D. Erosion Control Revegetative Mat: A light duty, organic, non-netted mat with a minimum thickness of 3/8 inch and biodegradable yarn or glue on 12 inch maximum centers in the longitudinal direction. The mat shall be capable of withstanding moderate foot traffic without tearing or puncturing. Acceptable products are those listed in the Wisconsin Department of Transportation, Erosion Control Product Acceptability Lists for Class I, Type Urban mats. Anchoring devices shall be biodegradable, non-splintering and shall last for at least two months and shall substantially degrade in four months.

2.05 Tackifiers

- A. Latex-Base: A latex emulsion polymer with a composition by weight of 48 percent styrene, 50 percent butadiene and 2 percent additive; 42 to 46 percent solids; and a pH of 8.5 to 10.
- B. Guar Gum: Guar gum tackifiers consisting of a minimum of 95 percent Guar gum by weight with

the remaining consisting of dispersing and cross-linking additives.

- C. Other: Water soluble natural vegetable gums or guar gums blended with gelling and hardening agents or a water soluble blend of hydrophilic polymers, viscosifiers, sticking aids and other gums.

PART 3 - EXECUTION

3.01 Inspection

- A. Examine area to receive soil preparation to ensure subsoil is ready for finish grading.
- B. Do not proceed with soil preparation until unsatisfactory conditions are corrected.

3.02 Preparation of Subsoil

- A. Eliminate uneven areas or low spots. Make changes in gradual and blend slopes into level areas.
- B. Do not prepare or place frozen soils or soils with excessive moisture.
- C. Remove weeds, roots, trash, debris, concrete, asphalt, crushed aggregate, and any stones larger than two inches in any dimension.
- D. Scarify subsoil to a depth of three inches.

3.03 Placing of Topsoil

- A. Spread topsoil evenly to a compacted depth of four inches.
- B. Place during dry weather.
- C. Grade to eliminate rough or low areas and to ensure positive drainage. Grading shall be approved by the Engineer.
- D. Remove stones and other objects larger than one inch in any dimension.

3.04 Fertilizing

- A. Apply fertilizer at a rate of seven pounds per 1000 square feet.
- B. Apply fertilizer uniformly, incorporating it into the soil by light disking or harrowing.
- C. Apply fertilizer prior to seeding.

3.05 Seeding

- A. Do not sow seed on frozen soil or when wind exceeds 5 MPH.
- B. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.
- C. Seeding Dates:
 - 1. Spring/Summer: April 1 to August 14.
 - 2. Fall: August 15 to October 1.

- D. Application Rate:

Application Rate	
Mixture	Lbs/1000 Sq. Ft.
Quick-2-Gro	5 - 6
Survivor	5 - 6
Wear-n-Tear	4 - 5
Boulevard	5 - 6

- E. Broadcasting
 - 1. Sow seed evenly with a spreader or seeding machine.
 - 2. Do not broadcast or drop seed when wind velocity exceeds 5 MPH.

3. Broadcast one half of seed.
 4. Broadcast remaining half of seed at right angles to first seed pattern.
 5. Cover seed to a depth of 1/4" by raking, dragging or cultipacting.
 6. Roll seeded area with roller weighing a maximum of 150 pounds per foot of roller width.
 7. Water seeded area with fine spray, if required, to promote growth.
- F. Drilling
1. Drill seed following elevation contours.
 2. Seed to uniform depth.
 3. Roll seeded area with roller weighing a maximum of 150 pounds per foot of roller width.
 4. Water seeded area with fine spray, if required, to promote growth.

3.06 Mulching

- A. Place mulch on same day that the area is seeded.
- B. Do not place straw or hay mulch or sprayed-on mulches during periods of high wind.
- C. Mulch type and method is the Contractor's option unless a specific type or method is indicated on the Drawings or in the Contract Documents.
- D. Hay/Straw Mulch
1. Method 1 - Spread straw or hay treated with a tackifier over the area using a blowing machine. Spread the material uniformly to a depth of 1/2 to 1 inch using 1 1/2 to 3 tons of material per acre. The amount of tackifier used shall be in accordance with the manufacturer's recommendations.
 2. Method 2 - Spread hay or straw over the area by hand or using a blowing machine. Spread the material uniformly to a depth of 1/2 to 1 1/2 inch using 1 1/2 to 3 tons of material per acre. Immediately after spreading, anchor the mulch into the soil using a mulch tiller.
- E. Paper Fiber: Apply with hydraulic spray equipment in a water slurry at the rate necessary to provide a 1/4 inch layer. Use the color of the material as a metering agent. Take care not to spray material on adjacent surfaces.
- F. Wood Cellulose: Apply with hydraulic spray equipment in a water slurry at the rate of 1500 pounds per acre. Use the color of the material as a metering agent. Take care not to spray material on adjacent surfaces.
- G. Mat: Remove all clods, stones or other materials that could damage the mat. Place mat over seeded area without overlapping. Anchor mat in accordance with the manufacturer's recommendations.

3.07 Establishment

- A. Establishment Period:
1. For areas seeded during the spring or summer planting season the establishment period shall be 90 days.
 2. For areas seeded during the fall planting season the establishment period shall be through June 1 of the following year.
- B. Acceptable Establishment: At the end of the establishment period the grass shall be healthy, uniform in density and color, and substantially free of weeds with uniform coverage of at least 70 percent of a representative one square yard plot and bare spots not exceeding 6 inches by 6 inches.
- C. Re-seed areas that fail to grow an acceptable stand of grass.

3.08 Protection

- A. Protect all seeded areas, as necessary, to prevent trampling and/or damage by erecting temporary fences, barriers, signs, etc.

END OF SECTION

SECTION 33 39 13

SEWER MANHOLES AND INLETS

PART 1 - GENERAL

1.01 Section Includes

- A. Precast concrete manholes for sanitary and storm sewer construction.
- B. Cast-in-place concrete manholes shall be provided only when indicated on the Drawings.

1.02 References

- A. ASTM A48 - Gray Iron Castings.
- B. ASTM C94 – Standard Specification for Ready-Mixed Concrete.
- C. ASTM C270 - Mortar for Unit Masonry.
- D. ASTM C478 - Precast Reinforced Concrete Manhole Sections.
- E. ASTM 877 - Standard Specifications for External Sealing Bands for Concrete Pipe, Manholes and Precast Box Sections.
- F. ASTM C923 - Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals.
- G. ASTM C990 - Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.
- H. AASHTO M198 - Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets.

1.03 Quality Control

- A. Manhole section will be rejected for any of the following reasons:
 - 1. Fractures or cracks passing through the wall, except for a single end crack that does not exceed the depth of the joint.
 - 2. Surface defects indicating honey-combed or open texture that would adversely affect the function of the manhole.
 - 3. The planes of the ends of the manhole sections are not perpendicular to their longitudinal axis, within the limits of the variation given in paragraphs 12.3 and 12.4 of ASTM C478.
 - 4. Damaged or cracked ends, where such damage would prevent making a satisfactory joint.
 - 5. Any continuous crack having a length of 12 inches or more, regardless of position in the section of wall.
 - 6. Lift holes that extend through wall.
 - 7. Drop across flowline not as specified.
- B. HDPE adjusting rings will be rejected if they contain cracks that extend more than one-half the thickness of the ring.

PART 2 - PRODUCTS

2.01 Manholes and Inlets

- A. Provide precast concrete manholes. Cast-in-place manholes may only be used after receiving written approval by the Project Engineer for customized manhole sizes and shapes.
- B. Submit manufacturer's preproduction (shop) drawings for approval prior to the start of manufacturing.
- C. Contractor shall verify existing pipe locations, sizes, orientation and elevation prior to ordering new manholes.

- D. Precast concrete manhole sections, including bottom and top shall meet the requirements of ASTM C478.
1. Standard manhole shall be 48-inch inside diameter.
 2. Provide eccentric cone top sections with a minimum clear opening of 24 inches. Flat top slabs may be used on manholes greater than 6-foot inside diameter. Slab tops shall be of the in-bell design.
 3. Inlets shall be the size and configuration as shown on the Drawings.
 4. Lift holes extending through barrel wall are not allowed.
 5. Manhole wall thickness shall be a minimum of 5 inches for 4-foot inside diameter manholes, 6 inches for 5-foot inside diameter manholes, and 7 inches for 6-foot and 7-foot inside diameter manholes.
 6. Manhole bottom section shall be pre-cast with integral base having a minimum thickness of 8 inches unless otherwise noted.
 7. Provide steps at 16" O.C. and project approximately 6" from wall. Steps shall be in a straight, vertical line from the top of the manhole to the bottom. Steps shall be ½ inch diameter, Grade 60 steel rod covered with polypropylene plastic; PS1, M.A. Industries, Inc. ML-10, American Step Company; or equal
- E. Pipe Connections:
1. Sanitary Sewer: Flexible, watertight, rubber connector; Kor-N-Seal, NPC, Inc.; PSX, Press-Seal Gasket Corp; or equal.
 2. Storm Sewer: Mortared.

2.02 Castings

- A. All manhole castings shall be heavy duty iron conforming to ASTM A48, Class 20 and rated for AASHTO H-20 loading. Provide water-tight, gasketed, self-sealing, non-rocking lids with concealed pickhole.
- B. Manufacturer: Neenah Foundry R-1500, with Type B lid; or approved equal.
- C. Sanitary Sewer Manhole: Non-rocking design, concealed pick holes and neoprene O-ring gasket, unless otherwise indicated in the Contract Documents.
- D. Storm Sewer Manhole/Inlets: Provide frames, solid lids, and grates as indicated in the Contract Documents.

2.03 Manhole Seals

- A. Joint Sealant: Pre-formed, butyl rubber, AASHTO M198 or ASTM C990; Kent Seal, Hamilton Kent; E-Z Stick, Press-Seal Gasket Corp.; ConSeal; or equal.
- B. Exterior Joint Sealant: A rubberized external sealing collar with metal bands meeting ASTM C877, Type II; MacWrap by MarMac Manufacturing Co. or equal.
- C. Interior/Exterior Manhole Chimney Seal:
1. A flexible interior/exterior seal designed to prevent leakage of water throughout a 20-year design life. The seal shall remain flexible throughout the design life, allow repeated vertical movements of the frame of not less than two inches and/or repeated horizontal movement of not less than one-half inch. Includes EPDM rubber sleeve, stainless steel clamp and band, butyl mastic, and recycled rubber ring.
 2. Manufacturer: Adaptor Inc., West Allis, WI; or equal.

2.04 Adjusting Rings – Manholes

- A. Fiber-reinforced pre-cast concrete adjusting rings meeting the requirements of ASTM C-478 or injection molded High Density Polyethylene (HDPE) adjustment rings. Provide rings of 2 inches or 4 inches thickness.
- B. Pre-compressed butyl gasket, 3/8"x3½" shall be used between the top of the manhole and first adjustment ring, and between all subsequent rings. Butyl material shall be E-Z Stick, or equal.

2.05 Adjusting Rings – Curb Inlets

- A. Precast concrete, uniform in dimension, with smooth surfaces.
- B. Rectangular adjusting rings shall be complete rectangles. L-shaped rings are not acceptable.
- C. Cracked or otherwise damaged rings shall not be used.
- D. Concrete: ASTM C94; 3,000 psi at 28 days, 3 to 4-inch slump, maximum aggregate size of 1-1/2 inch.
- E. Mortar: ASTM C270, Type M.

2.06 Bench and Flowline

- A. Provide precast or cast-in-place bench and flowline.
- B. Unless otherwise indicated on the drawings, bench height shall be $\frac{3}{4}$ the diameter of the downstream pipe. Slope bench towards flowlines at a minimum $\frac{1}{2}$ " per foot. Provide light broom finish on bench.
- C. Flowlines shall be formed with gradual, uniform sweeps directed towards the downstream pipe. Provide smooth, troweled finish for flowlines.
- D. When cast-in-place benches and flowline are used, lay the sewer pipe through the manhole.

2.07 Drop Manholes

- A. Provide outside drop sanitary manholes where shown on the drawings or where the elevation difference between the incoming invert and the spring line of the outgoing pipe is greater than 2 feet.
- B. Provide drop manhole bases with integral 1-foot minimum overhanging base.
- C. Pre-cast outside drops will be considered on a case-by-case basis.
- D. Provide outside drop with the same size and type of pipe as the sewer, with a wye or tee into the manhole at the top on the line and grade of the sewer and a one-quarter bend with its invert into the manhole at the elevation of the outlet pipe spring line.

PART 3 - EXECUTION

3.01 General

- A. Manholes having improper location and/or orientation of the pipe connections will be rejected. Field repairs or adjustments of connection points are not permitted.
- B. Do not connect abandoned pipes to new manholes.
- C. Limit the excavation for manholes so as to provide only the necessary amount of space to sufficiently prepare the subgrade, set the base, set the manhole or structure, and lay pipe. Provide adequate clearance for compaction equipment and operator between structure and trench soil retention for adequate backfilling and compaction.
- D. Set manhole base in accordance with elevation and location as indicated on the drawings. Install base plumb and level. Install subsequent pre-cast manhole sections in accordance with shop drawing layout. Provide watertight gaskets between each manhole section.
- E. Pour inverts with smooth surface draining to downstream pipe. Where two or more lines meet at an angle, provide curved channel. Slope manhole bench at 2 inches/foot towards flow channel.
- F. Manholes shall be provided with between 4 inches and 8 inches of adjusting rings, with the top adjusting ring being 2" thick. Provide butyl sealant material between rings. Once rings are in place, tuck point the exterior joint and provide the entire exterior surface of the adjusting ring riser

with a coating of mortar.

- G. When indicated on the drawings, the manhole frame shall be set with a Type I frame/chimney joint as specified in the Standard Specifications for Sewer and Water Construction in Wisconsin, latest edition. The frame and adjusting rings shall be sealed with an internal rubber sleeve as detailed in File 12A of the Standard Specifications.
- H. Drop manholes shall be constructed in accordance with the SSSWC.
- I. Provide 8 inches of crushed stone under the manhole or inlet base.
- J. Install manhole or inlet plumb.

3.02 Joint Sealing

- A. Seal joints with butyl rubber rope.
- B. When the manhole joints are below the groundwater elevation, the manhole joints shall be sealed on both the edges of the joint with butyl rubber rope and an external joint seal.

3.03 Flow Channel and Bench

- A. Provide a U-shaped flow channel, depth equal to two-thirds the diameter of incoming and outgoing pipe but not less than 6". The channel shall be steel troweled to a smooth finish and be a continuation of the pipe.
- B. No horizontal surfaces shall be left on the inside of the manhole floor. The bench shall have a minimum slope of 2" from the side of the manhole to the channel. The surface shall be troweled to a smooth but non-slip finish.
- C. Precast channels and benches for sanitary sewer manholes are preferred.

3.04 Steps

- A. Locate steps over outgoing pipe.
- B. Place steps in vertical alignment, equally spaced at 16" C-C with the top step not more than 24" from the top of the casting.

3.05 Setting Frames and Rings

- A. Set frame and cover at the required elevation.
- B. In paved areas set manhole rim one-quarter inch below finish grade. Set the tops of the manholes to the same slope as the surrounding pavement.
- C. Prior to setting the manhole frame casting, clean surface of manhole chimney section and cast iron frame of all foreign materials and moisture.
- D. Final adjustment of frames shall be done after curb and gutter has been constructed, the base course has been placed, and the finished pavement elevation and slope is known.

3.06 Installation of Interior/Exterior Manhole Chimney Seal

- A. Install seal in accordance with the manufacturer's instructions.
- B. Seal shall extend from casting to manhole section, covering the entire ring section.
- C. Install the interior/exterior manhole seal in the presence of the engineer.

END OF SECTION

SECTION 33 41 13
STORM SEWER CONSTRUCTION

PART 1 - GENERAL

1.01 Section Includes

- A. The work under this section shall consist of providing all work, materials, labor, equipment, and supervision necessary to provide for the storm sewer network required in these specifications and on the drawings.

1.02 Related Sections

- A. Section 31 23 33 - Utility Excavation, Backfill and Compaction.
- B. Section 33 39 13 - Sewer Manholes.

1.03 References

- A. ASTM A48 - Standard Specification for Gray Iron Castings.
- B. ASTM A760 - Standard Specification for Corrugated Steel Pipe, Metallic-Coated for Sewers and Drains.
- C. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
- D. ASTM C425 - Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings.
- E. ASTM C443 - Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.
- F. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections.
- G. ASTM C506 - Reinforced Concrete Arch Culvert, Storm Drain and Sewer Pipe.
- H. ASTM C507 - Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe.
- I. ASTM C700 - Standard Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated.
- J. ASTM C877 - Standard Specification for External Sealing Bands for Concrete Pipe, Manholes, and Precast Box Sections.
- K. ASTM D1784 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
- L. ASTM D2235 - Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings.
- M. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
- N. ASTM D2680 – Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) and Poly(Vinyl

Chloride) (PVC) Composite Sewer Piping.

- O. ASTM 3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
- P. ASTM 3212 - Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
- Q. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
- R. ASTM D4673 - Standard Classification System for Acrylonitrile-Butadiene-Styrene (ABS) Plastics and Alloys Molding and Extrusion Materials.
- S. ASTM A929 - Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process for Corrugated Steel Pipe.
- T. ASTM F477 - Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- U. ASTM F2736 - Standard Specification for 6 to 30 in. (152 to 762 mm) Polypropylene (PP) Corrugated Single Wall Pipe and Double Wall Pipe.
- V. ACI 304 - Recommended Practice for Measuring, Transporting, and Placing Concrete.
- W. ACI 347 - Recommended Practice for Concrete Formwork.

1.04 Submittals

- A. Provide manufacturer's product information (cut sheets), shop drawings and O&M information for storm drainage materials including:
 - 1. Pipe
 - 2. Fittings
 - 3. Pre-Cast and Cast-in-Place Structures
 - 4. Outfalls
 - 5. Castings
- B. Submit as-built measurements.

1.05 Quality Assurance

- A. All pipes and fittings shall be new and unused.
- B. Provide at least one person thoroughly trained and experienced in the skills required, who shall be completely familiar with the work described in this section, who shall be present at all times during progress of the work of this section, and who shall direct all work performed under this section.

PART 2 - PRODUCTS

2.01 Reinforced Concrete Pipe

- A. Pipe and fittings shall conform to ASTM C-76 for circular pipe and ASTM C-507 for elliptical pipe. Unless otherwise specified, provide Class III for circular pipe and Class HE-III for elliptical pipe.
- B. Joints for reinforced concrete pipe shall be bell and spigot or tongue and groove. Joints shall be provided with rubber gaskets conforming to ASTM C433. Joints for elliptical pipe shall be provided with trowelable impervious bituminous joint sealer that is manufactured for sealing reinforced concrete storm drainage pipe joints.

- C. When required, external sealing bands shall meet the requirements of ASTM C877 (Type II), and shall be Mac Wrap, Cretex Wrap, Sealing Systems, Infi-Shield, or approved equal.

2.02 Corrugated Metal Pipe (Use only when indicated on Drawings)

- A. Galvanized pipe meeting the requirements of AASHTO M36:
 - 1. Galvanized Pipe: Material: Galvanized steel coil, ASTM A929. Pipe: Manufactured in accordance with ASTM A760, Type I or II.
 - 2. Aluminized Pipe: Material: Aluminized Type 2 steel coil, ASTM A929. Pipe: Manufactured in accordance with ASTM A760, Type I or II.
- B. Minimum wall thickness shall be per the table below:

Minimum Pipe Gauge			
Pipe Diameter	2-2/3" x 1/2" Corrugations	Pipe Diameter	3" x 1" Corrugations
6"	18	60" - 90"	16
8" - 24"	16	96" - 102"	14
30" - 36"	14	108" - 114"	12
42" - 54"	12	120"	10
60" - 72"	10		
78" - 98"	8		

- C. Provide galvanized corrugated coupling bands with angle connectors having a minimum of 2 bolts. Coupling bands shall provide a joint that is soil tight.

2.03 HDPE Corrugated Wall Pipe

- A. Corrugated pipe with an integrally formed smooth liner. Pipes that are between 4 inch diameter and 36 inch diameter shall meet the requirements of AASHTO M252 and M294, Type S.
- B. Pipe and fittings shall be manufactured from virgin PE compounds conforming to the requirements of ASTM D3350, cell class 324420C.
- C. Joints for fittings and pipe shall be soil-tight bell and spigot, provided with rubber gasket. Rubber gasket shall be installed per the pipe manufacturer.

2.04 HDPE Solid Wall Pipe

- A. High density polyethylene (HDPE) piping, shall meet the requirements of AWWA C906, current version. Pipe dimensions and workmanship shall be in accordance with ASTM F714 and ASTM D2122. Pipe shall be of diameter shown on the drawings, with dimension ratio (DR) of DR11, unless otherwise noted.

2.05 End Sections

- A. Manufacturer's standard product.
- B. Provide concrete for concrete pipe and corrugated metal for steel pipe.
- C. Where new storm drainage pipe connects to an existing dissimilar pipe, the connection shall be made with a no hub type couplings meeting the requirements of CISPI 310.
- D. Couplings shall have neoprene gaskets with stainless steel shield, and multiple stainless-steel clamps with worm gear tightening device. The couplings shall be made specifically for the type and size of pipe materials being connected.
- E. Couplings shall be Fernco, Husky, Charlotte, or approved equal.

2.06 Pipe Bedding and Cover

A. Bedding and Cover:

1. Class IA - Clean angular crushed stone, crushed rock, or crushed gravel conforming to the following gradation:

Sieve Size	% Passing By Weight
1"	100
3/4"	90 - 100
3/8"	20 -55
No. 4	0 - 10
No. 8	0 - 5

2. Class IB - Clean angular crushed stone, crushed rock, or crushed gravel conforming to the following gradation:

Sieve Size	% Passing By Weight
1/2"	100
3/8"	85 - 100
No. 4	10 - 30
No. 200	0 - 5

3. Class II - Coarse-grained soils free from organic matter, trash, debris, and frozen material with 100% passing the 1-1/2" sieve and less than 5% passing the No. 200 sieve. Generally including sands, gravels, and sand-gravel mixtures with little or no fines. ASTM D2487 Soil Types GW, GP, SW and SP are included in this class. Excavated material may be used if it meets the above material requirements.
4. Class III - Coarse-grained soils with fines free from organic matter, trash, debris, and frozen material with 100% passing the 1-1/2" sieve and 12% - 50% passing the No. 200 sieve. Generally includes silty or clayey sands, gravels, or sand-gravel mixtures. ASTM D2487 Soils Types GM, GC, SM and SC, are included in this class. Excavated material may be used if it meets the above material requirements.

2.07 Manholes and Inlets

- A. Provide precast concrete manholes unless otherwise shown or required. Cast-in-place manholes may only be used after receiving written approval by the A/E for customized manhole sizes and shapes.
- B. Submit manufacturer's preproduction (shop) drawings for approval prior to the start of manufacturing.
- C. Contractor shall carefully locate all pipe locations, sizes, orientation and elevation prior to ordering new manholes.
- D. Precast concrete manhole sections, including bottom and top shall meet the requirements of ASTM C478.
- E. Precast concrete manholes and inlets (and castings) shall meet requirements of Section 33 39 13 with the exceptions noted:
 1. Exterior/interior manhole seals are not required.
 2. Pipe connection may be mortar.
 3. Concealed pickhole covers are not required.
- F. Crushed Stone: Hard durable particles of crushed stone or gravel substantially free from shale or lumps of clay or loam.

PART 3 – EXECUTION

3.01 Handling of Material

- A. All materials shall be handled with care to avoid damage. No material shall be dropped. All defective material shall be removed from the job site.

3.02 Lines and Grade

- A. All pipe shall be laid to the lines and grades shown on the drawings or given by the Engineer.
- B. The use of a laser beam for maintaining line and grade is required unless other methods are approved by the Engineer.
- C. A person qualified to operate the equipment shall be present when the laser is in use.

3.03 Laying Pipe

- A. Install pipe in accordance with the SSSWC and ASTM specifications that pertain to the specified type of pipe material and the installation situation.
- B. Clean all pipe of any dirt and/or debris both inside and outside prior to placing in the trench.
- C. Make joints in accordance with manufacturer's directions with due care to avoid damaging pipe and/or disturbing previously laid pipe.
- D. Cut pipe only according to manufacturer's directions.
- E. Lay all drainage pipes to horizontal alignment and grade shown on the drawings with bell ends up hill. Establish and maintain horizontal alignment using total station, transit or theodolite. Discrepancies from the required horizontal alignment or grade at any location shall not be greater than 0.10' or 0.05', respectively.
- F. Noticeable variations from true alignment and grade will be sufficient cause for rejection of the work.
- G. For reinforced concrete pipe provide a minimum of six inches between the pipe wall and the trench wall. For polyethylene and corrugated steel pipe, provide a minimum distance between the pipe wall and the trench wall of 2.5 times the pipe diameter for poor or expansive soils and a minimum of 12 inches for all other soils.
- H. Rest each pipe on the full length of its barrel.
- I. Do not lay the next pipe until the previous pipe is backfilled sufficiently to prevent movement during joining.
- J. For flexible pipe do not disturb the installed pipe and its embedment when using movable trench boxes. If the box extends below the cover material, use methods to assure that the integrity of the embedment is maintained when the box is moved.
- K. Keep water out of the pipe. Do not let water rise into or around the pipe until the trench is filled at least one foot above the pipe.
- L. When work is stopped for any reason, securely plug the end of the pipe.

- M. Jointing: Assemble joints in accordance with the pipe manufacturer’s instructions.
- N. Do not drive over flexible pipe unless there is a minimum of 24 inches of cover material over the pipe.

3.04 Rigid Pipe Bedding - RCP

- A. Provide bedding and utility cover in accordance with the applicable requirements of Section 31 23 32 – Trenching, Backfilling and Compaction.
- B. A minimum of 6” of compacted Crush Stone Bedding shall be placed below the storm drainage pipe and 12” of cover material shall be placed over the storm drainage pipe (both measured at the bell of the pipe).
- C. Place bedding material below and around pipe to the spring line to provide side support and to prevent lateral and vertical movement of the pipe. Place material in 6-inch maximum layers. Work the material in and around the pipe by hand to provide uniform support.

3.05 Pipe Bedding - Polyethylene and Corrugated Steel

- A. Pipe bedding and cover shall be Class IA or Class IB. If pipe is in groundwater, use Class IB.
- B. Place bedding material below and around pipe to the spring line to provide side support and to prevent lateral and vertical movement of the pipe. Place Class IA and Class IB material in 6-inch maximum layers. Work the material in and around the pipe by hand to provide uniform support.
- C. Place cover material to a level 12 inches above the top of the pipe. Place Class IA and Class IB material in maximum 6-inch layers. Class IA material shall be worked by hand. Class IB material shall be compacted using hand tampers or vibratory compactors. Each stage shall be compacted by hand or mechanical tamping to the percent of the maximum dry density in accordance with ASTM D698 indicated below:

Material	Density
Class IA	None
Class IB	85%

- D. Do not use a hydrohammer with less than 4 feet of cover over the pipe.

3.06 Backfilling

- A. Backfill in accordance with the Section 31 23 33.

3.07 Manhole and Inlet Construction

- A. Structures having improper location and/or orientation of the pipe connections will be rejected. Field repairs or adjustments of connection points are not permitted.
- B. Limit the excavation for structures so as to provide only the necessary amount of space to sufficiently prepare the subgrade, set the base, set the structure, and lay pipe. Provide adequate clearance for compaction equipment and operator between structure and trench soil retention for adequate backfilling and compaction.
- C. Set structure base in accordance with elevation and location as indicated on the drawings. Install base plumb and level. Install subsequent pre-cast sections in accordance with shop drawing layout. Provide watertight gaskets between each section.

- D. Inlets and Manholes: Pour inverts with smooth surface draining to downstream pipe. Where two or more lines meet at an angle, provide curved channel. Slope bench or floor at 2 inches/ft towards flow channel.
- E. Catch Basins: Verify sump is clean and watertight after connecting pipes to catch basin.
- F. Structures shall be provided with between 4" and 8" of adjusting rings, with the top adjusting ring being 2" thick. Provide butyl sealant material between rings. Once rings are in place, tuck point the exterior joint and provide the entire exterior surface of the adjusting ring riser with a coating of mortar.
- G. Provide eight inches of crushed stone under the manhole base.
- H. Inverts shall be the same size as the diameter of the largest adjoining pipe. Shape inverts in accordance with the Standard Drawings. Provide a smooth finish.
- I. Frames and Covers: Provide frames and covers in the size and type indicated on the Drawings. Set rims of manholes and inlets at finish grade elevation. In paved areas set the rims one-quarter inch below the pavement surface. Set the rim to match the slope of adjacent paving. Perform final rim adjustment after base course has been placed.
- J. Provide steps for manholes and circular inlets that are 4-feet or more in depth and 4-feet in diameter and larger. Place steps in vertical alignment, equally spaced at 16" on-center with top step not more than 24 inches from top of casting.

3.08 Apron Endwalls

- A. Limit the excavation for apron endwalls so as to provide only the necessary amount of space to sufficiently prepare the subgrade, set the apron endwall, and lay pipe. Provide adequate clearance for compaction equipment and operator between apron endwall and trench soil retention for adequate backfilling and compaction.
- B. Where excavation occurs below the bottom elevation of the apron endwall bottom, bring the excavation to the required elevation by the use of compacted crushed stone bedding.
- C. Set apron endwall in accordance with elevation and location as indicated on the drawings. Install base plumb and level.
- D. Apron endwalls for pipe greater than 18" in diameter shall be restrained using a minimum of two pipe ties per section. Pipe ties shall also be used to restrain the first two pipes located immediately upstream of the apron endwall. Pipe ties shall be bolted through the sidewall of the pipe.
- E. Provide riprap downstream of apron endwalls at all storm drainage outfalls and at other locations as indicated on the drawings.

3.09 Separation from Water Main

- A. Maintain clearances between existing or proposed storm drainage lines and watermains as follows:
 1. 8' horizontal separation (measured center to center) between existing or proposed sanitary or storm drainage lines and watermains.
 2. 6" vertical separation (measured from outsides of pipes) where watermains cross over sanitary or storm drainage lines.
 3. 18" vertical separation (measured from outsides of pipes) where watermains cross

under sanitary or storm drainage lines.

- B. If an existing water main is encountered while laying the storm sewer and it is impossible to obtain the proper vertical separation, immediately inform the Engineer. Reconstruct the water main for a minimum distance of 8 feet on either side of the storm sewer to permit centering one full length of water main over the storm sewer.

3.10 As-Built Measurements

- A. Provide as-built measurements clearly marked on a clean copy of the Contract Drawings. Tie location of bends and all connections not terminating with a manhole or inlet to ground features to clearly locate the buried construction. As-built measurements are incidental to the Work.

END OF SECTION