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**BIDDING DOCUMENTS  
FOR THE**

**Chippewa River Erosion and Canoe Launch Project  
Isabella County**

200 N. Main Street  
Mt. Pleasant, MI 48858

Prepared By:  
SPICER GROUP, INC.  
SAGINAW, MICHIGAN  
AUGUST 2021

Project I.D. Number: 130591SG2021

**Plans Included**

**PERM1-PERM4**

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# **ISABELLA COUNTY REQUEST FOR BIDS**



## **Professional Construction Services for the Chippewa River Erosion & Canoe Launch Project 2022**

**ISSUED BY ISABELLA COUNTY BOARD OF COMMISSIONERS**

**ISSUE DATE: Wednesday, January 19, 2022**

**DUE DATE OF BIDS: Wednesday, February 16, 2022 at 4:00 p.m.**



## ISABELLA COUNTY REQUEST FOR BIDS

Isabella County issues this Request for Bids (the “RFB”) to solicit bids from qualified professional firms for the provision of Professional Construction Services for the Chippewa River Erosion and Canoe Launch Project. The County intends to enter into an agreement with the chosen firm for Professional Construction Services in conjunction with streambank stabilization and the improvement/construction of canoe launches at Deerfield Nature Park and Majeske Landing, both of which are managed by the Isabella County Parks and Recreation Commission. The County desires to have 2 boat launches improved, 1 boat launch constructed and erosion issues improved in 2 designated areas along the Chippewa River embankments in Deerfield Nature Park. The County also desires to improve the boat launch in Majeske Landing, also located on the same river. The launches will have improved access and erosion controls to prevent future sediment issues in high water conditions, as well as increased usage by park visitors.

To be considered, three (3) copies of a bid must be received by the Administrator/Controller’s Office at the Isabella County Building, Room 205, 200 N. Main Street, Mt. Pleasant, MI 48858 by 4:00 p.m. on Wednesday, February 16, 2022. In addition, a PDF copy is to be emailed to Administrator/Controller, Nicole F. Frost at [nfrost@isabellacounty.org](mailto:nfrost@isabellacounty.org). Isabella County reserves the right to reject any or all bids submitted. Bids submitted will be evaluated by County personnel as determined by the County Administrator/Controller, with final approval by the Board of Commissioners.

### I. INTRODUCTION

#### 1.1 Purpose

Isabella County is soliciting bids for Professional Construction Services for the Chippewa River Erosion and Canoe Launch Project. Ideally, the Construction Professional selected will procure and provide all labor, materials and services to improve/rebuild two (2) current canoe launches, add one (1) new canoe launch, correct a high-water issue (noted as Alternate Add #1), and take steps to repair a section of eroded riverbank, all in Deerfield Nature Park, and Majeske Landing to include improvements to the launch area (noted as Alternate Add #2).

The County’s selection process will rely on evaluations of the written responses to this RFB and any subsequent supplemental evaluation processes, such as requests for additional information, as may be undertaken by the County at its sole discretion.

The County reserves the right to accept or reject any or all bids, and also the right to waive any formal defects in bids when deemed in the best interest of the County. Further, the County reserves the right to accept a bid higher in price than the lowest bid, and to negotiate with any respondent concerning matters which the County determines require clarification or changes not in conformity with the specific requirements set forth herein.

#### 1.2 Background

Deerfield Nature Park is a 591-acre park in the Chippewa River watershed managed by Isabella County Parks, situated seven (7) miles west of Mount Pleasant in Isabella County, protecting more than two (2) miles of the Chippewa River, as well as surrounding riparian buffer and associated woodlands. It also serves to connect four (4) other area parks to the main Deerfield property: the

McNeel Preserve (Chippewa Watershed Conservancy), Deerfield Township Park, the Mount Pleasant Public Schools Memorial Forest, and Camp Weidman (Boy Scout property). Deerfield Nature Park is managed to provide a peaceful nature experience to those who venture into its interior. Activities that may be enjoyed include hiking, cross-country skiing, picnicking, swimming, bird watching, fishing, photography, canoeing, kayaking, tubing and mountain biking. Also included on the north side of the park are two (2) disc golf courses (Deerfield and Wildwood), four (4) covered pavilions, fishing platform, beach area, sledding hill, two (2) sand volleyball courts, and two (2) horseshoe pits.

The primary goal of the County is to target environmental and recreational issues facing the spans of riverbanks of the Chippewa River within the Isabella County Park system. It seeks to improve/rebuild two (2) current canoe launches, add one (1) new canoe launch, correct a high-water issue (Alternate Add #1), and take steps to repair a section of eroded riverbank, all in Deerfield Park, with additional work at Majeske Landing to include improvements to the launch area (Alternate Add #2). The new Deerfield canoe launch will prevent further erosion issues in an area by the north swinging bridge, which has seen degradation caused by overuse (“launching at will”), and will dissuade paddlers from entering and exiting farther down-river, where erosion repair efforts will take place. To accomplish this, see **1.3 Objective Scope of Services** for a complete description of the end-product deliverables.

To build upon the primary goal, the County is also concerned with safety, accessibility, quality, efficiency, and sustainability.

### **1.3 Objective**

#### **Scope of Services**

Bids for Professional Construction Services should address the following objectives, which are not necessarily all-inclusive:

1. The specific end-product deliverables of the goods/services solicited follow.
  - A. Project Location #1 (improve current canoe launch):
    1. 59 l.f. of 6’ wide crushed stone path.
    2. 234 s.f. of geoweb canoe launch with crushed limestone cell fill.
  - B. Project Location #2 (new canoe launch):
    1. 26 l.f. of 6’ wide crushed stone path.
    2. 234 s.f. of geoweb canoe launch with crushed limestone cell fill.
    3. 75 l.f. of riverbank erosion control.
  - C. Project Location #3 (Alternate Add #1):
    1. 72 l.f. of 6’ wide lay-down boardwalk.
    2. 75 l.f. of riverbank erosion control.
  - D. Project Location #4 (rebuild current canoe launch):
    1. 22 l.f. of 6’ wide crushed stone path.
    2. 225 s.f. of geoweb canoe launch with crushed limestone cell fill.
    3. 75 l.f. of riverbank erosion control.
  - E. Project Location #5 (Alternate Add #2):
    1. 75 l.f. of riverbank erosion control.
2. The Professional Construction Services must be fully compliant with the Americans with Disabilities Act (ADA) and specifically as it relates to governmental services.
3. The bid shall include the procedure to be used for testing and validation of the Professional Construction Services prior to its final endorsement.

4. The bid shall include a description of any training materials that will be provided to the County for use by end users of the improved riverbank area and newly constructed canoe launches.

## **Scheduling**

The absolute deadline for completion of the Chippewa River Erosion and Canoe Launch Project is December 10, 2022.

Therefore, the successful firm will be required to demonstrate through its bid documents and finalizing discussion, that it has a timeline for a plan of action that will assuredly allocate the necessary resources of the firm to respond with the completion of the Chippewa River Erosion and Canoe Launch Project to the County by that date.

## **Exit Conference**

The successful firm may be required to hold an exit conference with appropriate County officials and may be required to make a presentation to the Isabella County Board of Commissioners.

## **Additional Consultation**

From time-to-time County staff may find it necessary to consult with the successful firm on future issues related to the final Construction Professional responsibilities. The bid will include an outline of how this occasional consultation will be handled in regard to charges.

## **Contract Amount**

It is agreed between the County and the successful firm that in consideration for the firm's full and complete performance hereunder, the County shall pay to the successful firm the fees as detailed in the successful bid, as proposed by the firm and as accepted by the County. The final amount shall be based upon actual goods received or services performed as approved by the County Administrator/Controller.

## **Term**

This Agreement for goods/services shall run for the length of the project(s) undertaken by the successful firm unless otherwise terminated by the firm and/or the County upon 30 days' written notice to the other party, provided, however, that the benefits to either party hereto afforded by the terms and conditions of said Agreement shall inure to each party in perpetuity, including surviving any termination of said Agreement by either party.

## **Performance Requirements**

The successful firm will provide all goods and perform all services under this Agreement in a timely and professional manner, using the customary level of care suitable for the goods provided or services performed and in compliance with all applicable laws, rules, and regulations. All goods provided and services performed under this Agreement are subject to the County's continuing rights of review, inspection, and approval.

### **1.4 Minimum Qualifications**

Bids will be considered from firms who:

1. Are licensed to do business in the State of Michigan.
2. Possess the necessary qualifications and competencies to provide the goods or perform the work proposed.

Firms that do not meet these minimum qualifications shall be deemed non-responsive and will not receive further consideration.

### **1.5 Funding**

Any contract awarded as a result of this procurement is contingent upon the availability of funding, as determined by the Isabella County Board of Commissioners.

### **1.6 Period of Performance**

The period of performance of any contract resulting from this RFB is tentatively scheduled to begin upon award of a contract. Submitted bids should address a tentative time frame, including estimated product delivery or project duration and timeline.

## **II. GENERAL INFORMATION FOR CONTRACTORS**

### **2.1 Project Administrator**

The Isabella County Parks and Recreation Director is the sole point of contact for this procurement. All communication between prospective bidders and the County upon receipt of this RFB shall be with the Project Administrator, as follows:

Sue Ann Kopmeyer, Director  
Isabella County Parks and Recreation Commission  
200 North Main Street, Room 110  
Mount Pleasant, MI 48858

Telephone: (989) 317-4083 (Office)  
(989) 289-6417 (Mobile)  
Facsimile: (989) 779-9916  
E-mail: sakopmeyer@isabellacounty.org

Any other communication will be considered unofficial and non-binding on the County. Communication directed to parties other than the Project Administrator may result in disqualification of the prospective bidder.



## 2.2 Estimated Schedule of Procurement Activities

|   |  |
|---|--|
| Issue Request for Bids  | Wednesday, January 19, 2022                |
| Mandatory site visit and pre-bid meeting at Deerfield Township Hall, 3032 S. Winn Rd., Mt. Pleasant, MI 48858. Interested bidders are asked to meet at 9:00 a.m. at the hall. A tour of the work sites will follow, weather permitting. | Wednesday, January 26, 2022                |
| Bids Due to County Administration Office at 200 N. Main St., Mt. Pleasant, MI 48858   | By 4:00 p.m., Wednesday, February 16, 2022 |

***A mandatory site visit and pre-bid meeting will be held Wednesday, January 26, 2022 at 9:00 a.m. Interested bidders are asked to meet at 9:00 a.m. at Deerfield Township Hall, 3032 S. Winn Rd., Mt. Pleasant, MI 48858. A tour of the work sites will follow, weather permitting. This meeting will be the only opportunity for prospective bidders to ask questions regarding bids.***

Response to this Request for Bid is due at the County Administrator/Controller's Office, Isabella County Building, 200 North Main Street, Suite 205, Mt. Pleasant, MI 48858 no later than 4:00 p.m. Wednesday, February 16, 2022.

## 2.3 Submission of Bids

Responding agencies are required to submit three (3) copies of their bid. Each copy of the bid should be bound or contained in a single volume. All documentation submitted with the bid should be contained in that single volume. The bid, whether mailed or hand delivered, must arrive at the County Administrator/Controller's Office no later than 4:00 p.m., local time, on Wednesday, February 16, 2022. In addition, a PDF copy is to be emailed by the above stated deadline to the Administrator/Controller, Nicole F. Frost at [nfrost@isabellacounty.org](mailto:nfrost@isabellacounty.org).

The three (3) hard copy bids are to be sent to the County Administrator/Controller's Office at the address noted in Section 2.2, above. The envelope submitted should be clearly marked ISABELLA COUNTY PROFESSIONAL CONSTRUCTION SERVICES BID – CHIPPEWA RIVER EROSION AND CANOE LAUNCH PROJECT and addressed to the attention of the County Administrator/Controller.

Bidders who mail bids should allow normal mail delivery time to ensure timely receipt of their bids at the County Administrator/Controller's Office. Respondents assume the risk for the method of delivery chosen. The County assumes no responsibility for delays caused by any delivery service. ***Bids may not be transmitted using electronic media such as facsimile transmission or electronic mail only.***

Late bids will not be accepted and will be automatically disqualified from further consideration. All bids and any accompanying documentation become the property of Isabella County and will not be returned.

Respondents are requested to be brief in response. The inclusion of extraneous information beyond the description of goods to be provided and/or services to be performed is discouraged.

## 2.4 Proprietary Information and Public Disclosure

Materials submitted in response to this competitive procurement shall become the property of Isabella County. All bids received shall remain confidential until the deadline for submission of bids has expired,

as defined by Michigan statute (MCL 15.243(1)(i), the Freedom of Information Act.

## **2.5 Revisions to the RFB**

In the event it becomes necessary to revise any part of this RFB, addenda will be reduced to writing and submitted to all prospective bidders known to the County. For this purpose, the published questions and answers and any other pertinent information will be considered an addendum to the RFB and will be provided to prospective bidders.

The County reserves the right to cancel or to reissue the RFB in whole or in part, prior to execution of a contract.

## **2.6 Acceptance Period**

Bids must provide one hundred twenty (120) days for acceptance by the County from the due date for receipt of bids.

## **2.7 Responsiveness**

All bids will be reviewed by the Administrator/Controller's Office and the Project Administrator to determine compliance with administrative requirements and instructions specified in this RFB. Failure to comply with any part of the RFB may result in rejection of the bid as non-responsive. The County also reserves the right, at its sole discretion, to waive minor administrative irregularities.

## **2.8 Most Favorable Terms**

The County reserves the right to make an award without further discussion of the bid submitted. Therefore, the bid should be submitted initially on the most favorable terms which the respondent can propose. The County does reserve the right to contact a respondent for clarification of its bid.

The Respondent should be prepared to accept this RFB for incorporation into a contract resulting from this RFB. Contract negotiations may incorporate some of, or the entire, Respondent Bid. It is understood that the bid will become a part of the official procurement file on this matter without obligation to the County.

## **2.9 Costs of Bid**

The County will not be liable for any costs incurred by the Respondent in preparation of a bid submitted in response to this RFB, in conducting of a presentation, or any other activities related to responding to this RFB.

## **2.10 No Obligation Contract**

This RFB does not obligate the Isabella County Board of Commissioners to award a contract for goods or services specified herein.

## **2.11 Rejection of Bids**

The County reserves the right at its sole discretion to reject any and all bids received without penalty and to not issue a contract as a result of this RFB.

## **2.12 Failure to Comply**

The Respondent is specifically notified that failure to comply with any part of the RFB may result in rejection of the bid as non-responsive.

### **2.13 Commitment of Funds**

The Board of Commissioners or its delegate(s) are the only individuals who may legally commit the County to the expenditures of funds for a contract resulting from this RFB. No cost chargeable to the proposed contract may be incurred before receipt of a fully executed contract.

### **2.14 Signatures**

The Letter of Submittal and the Certifications and Assurances form must be signed and dated by a person authorized to legally bind the Respondent to a contractual relationship, e.g., the President or Executive Director of a corporation, the managing partner of a partnership, or the proprietor of a sole proprietorship.

### **2.15 Iran Linked Business**

The Respondent must certify to the County that neither it nor any of its successors, parent companies, subsidiaries, or companies under common ownership or control of the Contractor, are an “Iran linked business” engaged in investment activities of \$20,000,000.00 or more with the energy sector of Iran, within the meaning of the Iran Economic Sanctions Act, Michigan Public Act 517 of 2012 (MCL 129.311 et seq.). The Respondent shall not become an “Iran linked business” during the term of the contract.

NOTE: IF A PERSON OR ENTITY FALSELY CERTIFIES THAT IT IS NOT AN IRAN LINKED BUSINESS AS DEFINED BY PUBLIC ACT 517 OF 2012, IT WILL BE RESPONSIBLE FOR CIVIL PENALTIES OF NOT MORE THAN \$250,000.00 OR TWO TIMES THE AMOUNT OF THE CONTRACT FOR WHICH THE FALSE CERTIFICATION WAS MADE, WHICHEVER IS GREATER, PLUS COSTS OF INVESTIGATION AND REASONABLE ATTORNEY FEES INCURRED, AS MORE FULLY SET FORTH IN SECTION 5 OF ACT NO. 517, PUBLIC ACTS OF 2012.

### **2.16 Fair Employment Practices**

In accordance with the United States Constitution and all federal legislation and regulations governing fair employment practices and equal employment opportunity, including but not limited to Title VI of the Civil Rights Act of 1964 (P.L. 88-352, 78 STAT. 252), and United States Department of Justice Regulations (28 C.F.R. Part 42) issued pursuant to the Title, and in accordance with the Michigan Constitution and all state laws and regulations governing fair employment opportunity, including but not limited to the Michigan Civil Rights Act (P.A. 1976 No. 453) and the Michigan Handicappers Civil Rights Act (P.A. 1976 No. 220) the Contractor agrees that he will not discriminate against any person, employee, consultant or applicant for employment with respect to his or her hire, tenure, terms, conditions or privileges of employment or hire because of his or her religion, race, color, national origin, age, sex, height, weight, marital status, or handicap that is unrelated to the individual’s ability to perform the duties of a particular job or position. The Contractor recognizes the right of the United States and the State of Michigan to seek judicial enforcement of the foregoing covenants against discrimination against itself or its subcontractors.

### **III. BID CONTENT**

Bids must be submitted on eight and one-half by eleven (8½ x 11) inch paper, typed in Times New Roman twelve (12) point font, and separated into seven (7) major sections. The seven (7) major sections shall include:

1. Letter of Submittal, including signed Certifications and Assurances (Exhibit A of this RFB)
2. Checklist for Responsiveness (Exhibit B of this RFB)
3. Detailed Professional Construction Services Bid, including Detailed Cost Proposal
4. Certificate of Compliance with Public Act 517 of 2012 (Exhibit C of this RFB)
5. Request for Taxpayer Identification Number and Certification (IRS Form W-9)
6. References (at least three (3) of similar size and complexity)
7. Performance Bond and Payment Bond, if required

Bids must provide information in the same order as presented in this document with the same headings. This will not only be helpful to the evaluators of the bid, but should assist the Respondent in preparing a thorough response.

#### **3.1 Letter of Submittal**

The Letter of Submittal, the attached Certifications and Assurances form (See Exhibit A), and all RFB amendments must be signed and dated by a person authorized to legally bind the Respondent to a contractual relationship, e.g., the President or Executive Director of a corporation, the managing partner of a partnership, or the proprietor of a sole proprietorship or their designee. Along with introductory remarks, the Letter of Submittal is to include by attachment the following information about the Respondent and any proposed subcontractors:

1. Names, addresses, telephone numbers, e-mail addresses, and fax numbers of legal entity or individual with whom contract would be written.
2. Name, address, and telephone number of each principal officer(s) (President, Vice President, and Treasurer, etc.).
3. Legal status of the Respondent (sole proprietorship, partnership, corporation, etc.) and the year the entity was organized to do business as the entity now substantially exists.
4. Federal Employer Tax Identification number.
5. Location of the firm/office from which the Respondent would operate.
6. Identify any Isabella County employees or former County employees employed or on the firm's governing board as of the date of the bid submittal. Include their position and responsibilities within the Respondent's organization. If following a review of this information, it is determined by the County that a conflict of interest exists, the Respondent may be disqualified from further consideration for the award of a contract.
7. An expression of the firm's capabilities and experience for providing the goods and/or services solicited including a brief statement of the proposer's understanding of the work to be done and no less than three (3) municipal references that demonstrate the firm's pertinent competencies.
8. A work plan to include time estimates for product or service delivery.

#### **3.2 Specifications**

**Firms submitting proposals shall:**

1. Be authorized to do business in the State of Michigan.
2. Have a favorable business reputation.
3. Have a sound financial condition.

4. Possess and demonstrate the ability and capacity to fully provide the goods or execute the services herein solicited.

The firm selected will be an independent contractor and not an agent of the County. The contractor will be the sole employer of all persons used in the provision of goods and/or services solicited and will accept full responsibility for all lost or damaged property and injury to persons resulting from the execution of the contract, as well as for any claims made by or on behalf of the contractor's agents, servants, and employees arising out of their employment or work pertaining to the operation of the contract.

The County reserves the right to reject any or all bids or to waive any irregularities in bids.

### **3.3 References**

List names, addresses, telephone numbers, e-mail addresses, fax numbers, and website addresses of at least three references for whom similar work for a municipality has been accomplished and briefly describe the type of goods or services provided. The Respondent must grant permission to the County to contact the references. Do not include current Isabella County staff as references.

### **3.4 Related Information**

1. If the Respondent or any subcontractor contracted with Isabella County during the past twenty-four (24) months, provide a project description and/or other information available to identify the contract.
2. If the Respondent's staff or subcontractor's staff was an employee of Isabella County during the past twenty-four (24) months, or is currently an Isabella County employee, identify the individual by name, the department previously or currently employed by, job title or position held and separation date.
3. If the Respondent has had a contract terminated for default in the last five (5) years, describe such incident. Termination for default is defined as notice to stop performance due to the Respondent's non-performance or poor performance and the issue of performance was either (a) not litigated due to inaction on the part of the Bidder, or (b) litigated and such litigation determined that the Bidder was in default.
4. Submit full details of the terms for default including the other party's name, address, and phone number. Present the Respondent's position on the matter. The County will evaluate the facts and may, at its sole discretion, reject the bid on the grounds of the past experience. If no such termination for default has been experienced by the Respondent in the past five years, so indicate.

### **3.5 Cost Proposal**

The evaluation process is designed to award this procurement not necessarily to the Respondent of least cost, but rather to the Respondent whose bid best meets the requirements of this RFB.

Identify all costs including expenses to be charged for performing the services necessary to accomplish the objectives of the contract. The Respondent is to submit a fully detailed budget including staff costs and any expenses necessary to accomplish the tasks and to produce the deliverables under the contract.

Costs for subcontractors are to be broken out separately.

### **3.6 Bonding Requirements**

According to Michigan Public Act 213 of 1963, any contract exceeding \$50,000 for the construction, alteration, or repair of any public building or public work or improvement, a contractor shall furnish Performance and Payment Bonds to the contracting entity. In addition to these requirements, Isabella County also requires submittal of a Bid Bond when construction or other project bids exceed \$50,000.

**Bid Bond** – Each bid must be accompanied by a bid guarantee in an amount equal to five percent (5%) of the total bid amount. Guarantee shall be in the form of a bid bond executed by an approved surety company, made payable to the County of Isabella. Bid guarantee shall run for a period of not less than ninety (90) days and shall be maintained during the period of time under contract for this procurement. If the successful proposer fails to furnish satisfactory Performance and Payment Bonds and insurance certificates within ten (10) business days after receipt of notice of award, such guarantee shall be forfeited to the County as liquidated damages.

**Performance Bond** – The successful bidder shall procure and maintain during the period of time under contract for this procurement, a Performance Bond to secure the faithful and complete performance of the contract. The Performance Bond shall be in an amount equal to 100% of the contract amount. The successful bidder shall furnish a satisfactory Performance Bond to Isabella County within ten (10) business days after receipt of notice of award.

**Labor and Material Bond/Payment Bond** – If not part of the Performance Bond, the successful bidder shall procure and maintain during the period of time under contract for this procurement, a Labor and Material Bond/Payment Bond, to secure payment by the contractor of all sums due subcontractors, suppliers, laborers, workers and material providers. The bond shall be in an amount equal to 100% of the contract amount. The successful bidder shall furnish a satisfactory Labor and Material Bond/Payment Bond to Isabella County within ten (10) business days after receipt of notice of award.

## **IV. EVALUATION AND CONTRACT AWARD**

### **4.1 Evaluation Procedure**

This document is a Request for Bid, however the lowest bid will not guarantee an award. Bids will also be evaluated based on qualifications, experience, timeliness, competence, demonstrated responsiveness to client needs and what is determined by the Isabella County Board of Commissioners to be the best solution for the County.

The County may select a limited number of respondents with whom to schedule interviews. Recommendation for a selection will be made to the Isabella County Board of Commissioners and final approval lies with the Commission.

Responsive bids will be evaluated strictly in accordance with the requirements stated in this solicitation and any addenda issued. All bids received by the stated deadline will be reviewed by the Administrator/Controller's Office and the Project Administrator to ensure that Respondents meet all minimum requirements. Respondents that fail to meet stated qualifications or any bid that does not contain all of the required information will be rejected as non-responsive.

**EXHIBIT A**  
**CERTIFICATIONS AND ASSURANCES**

THIS FORM MUST BE COMPLETED AND RETURNED WITH YOUR BID  
FAILURE TO SUBMIT THIS COMPLETED FORM MAY  
RESULT IN DISQUALIFICATION

Firm Name: \_\_\_\_\_

I/we make the following statement of assurances as a required element of the bid to which it is attached, understanding that the truthfulness of the facts affirmed here and the continuing compliance with these requirements are conditions precedent to the award or continuation of the related contract(s):

1. The prices and/or data have been determined independently, without consultation, communication, or agreement with other proposers for the purpose of restricting competition. However, I/we may freely join with other persons or organizations for the purpose of presenting a single bid.
2. The attached bid is a firm offer for a period of one hundred twenty (120) days following receipt, and it may be accepted by Isabella County without further negotiation (except where obviously required by lack of certainty in key terms) at any time within the one hundred twenty (120) day period.
3. In preparing this bid, I/we have not been assisted by any current or former employee of Isabella County whose duties relate (or did relate) to this bid or prospective contract, and who was assisting in other than his or her official, public capacity. Neither does such a person nor any member of his or her immediate family have any financial interest in the outcome of this bid. (Any exceptions to these assurances are described in full detail on a separate page and attached to this document.)
4. I/we understand that Isabella County will not reimburse me/us for any costs incurred in the preparation of this bid. All bids become the property of Isabella County, and I/we claim no proprietary right to the ideas, writings, items, or samples, unless so stated in this proposal.
5. Unless otherwise required by law, the prices and/or cost data which have been submitted have not been knowingly disclosed by the bidder and will not knowingly be disclosed by him/her prior to opening, in the case of a bid directly or indirectly to any other bidder or to any competitor.
6. No attempt has been made or will be made by the bidder to induce any other person or firm to submit or not to submit a bid for the purpose of restricting competition.
7. I/we agree that submission of the attached bid constitutes acceptance of the solicitation contents.
8. I/we acknowledge communication of any kind regarding my/our bid directed to parties other than the County Administrator/Controller may result in my/our disqualification.
9. I/we warrant that no conflict of interest knowingly exists for any member of the project team that contributed to this bid or prospective contract.
10. I/we acknowledge that I/we shall not commence work until I/we have obtained the insurance required in items 11-18. All coverage shall be with insurance companies licensed and admitted to do business in the State of Michigan and is placed with insurance companies acceptable to Isabella County.
11. I/we certify that I/we shall procure and maintain Workers' Compensation Insurance, including Employer's Liability Coverage, in accordance with all applicable statutes of the State of Michigan during the duration of this prospective contract.

12. I/we certify that I/we shall procure and maintain Professional Liability Insurance (errors and omissions) with limits of liability of not less than \$1,000,000 per claim and aggregate during the duration of, and a minimum of three (3) years beyond the completion of, this proposed contract.
13. I/we certify that I/we shall procure and maintain Comprehensive General Liability Insurance on an "Occurrence Basis" with limits of liability not less than \$1,000,000 per occurrence and/or aggregate combined single limit, covering Personal Injury, Bodily Injury and Property Damage during the duration of this prospective contract.
14. I/we certify that I/we shall procure and maintain Motor Vehicle Liability Insurance, including applicable Michigan No-Fault coverages, with limits of liability not less than \$1,000,000 per occurrence combined single limit for Personal Injury, Bodily Injury and Property Damage during the duration of this prospective contract.
15. I/we certify that the General Liability Insurance and the Motor Vehicle Liability Insurance, as described above, shall include an endorsement stating the following shall be "Additional Insureds": Isabella County, including all elected and appointed officials, all employees and volunteers, all boards, commissions and/or authorities and their board members, including employees and volunteers thereof during the duration of this prospective contract. It is understood and agreed by naming Isabella County as additional insured, coverage afforded is considered to be primary and any other insurance Isabella County may have in effect shall be considered secondary and/or excess.
16. I/we certify that all policies, as described above, shall include an endorsement stating that it is understood and agreed that thirty (30) days Advance Written Notice of Cancellation, ten (10) days for non-payment of premium, shall be sent to: Isabella County Administrator/Controller's Office, 200 N. Main Street, Suite 205, Mt. Pleasant, MI 48858.
17. I/we certify that if any of the above coverages expire during the term of the contract, I/we shall deliver renewal certificates and/or policies to Isabella County at least ten (10) days prior to the expiration date.
18. I/we certify that I/we shall provide Isabella County at the time of execution of the contracts, a copy of Certificates of Insurance as well as required endorsements for all coverage listed above.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title



**EXHIBIT B**  
**CHECKLIST FOR RESPONSIVENESS**

\_\_\_\_\_ Bid was submitted on or before \_\_\_\_\_.

\_\_\_\_\_ PDF of bid was submitted to [nfrost@isabellacounty.org](mailto:nfrost@isabellacounty.org).

\_\_\_\_\_ Required number of bid copies were submitted.

\_\_\_\_\_ Bid was formatted into seven major sections: Letter of Submittal, including signed Certifications and Assurances; Checklist for Responsiveness; Detailed Bid; Certificate of Compliance with Public Act 517 of 2012; Request for Taxpayer Identification Number and Certification; References; and Performance Bond and Payment Bond, if required.

\_\_\_\_\_ Respondent meets the following qualifications:

1. Licensed to do business in the State of Michigan.
2. Will comply with the Certifications and Assurances set forth in Exhibit A.
3. Submit bid as specified in this RFB.

\_\_\_\_\_ Letter of Submittal and Certifications and Assurances were signed by an individual authorized to bind the Bidder to a contractual relationship, e.g., the President or Executive Director of a corporation, the managing partner of a partnership, or the sole proprietor of a sole proprietorship.

\_\_\_\_\_ At least three (3) references from three (3) clients have been provided.

**\*\* PLEASE NOTE:** Respondent is required to complete this checklist and include it with their proposal. "Yes" answers must be given to each element above for the proposal to be considered responsive.

**EXHIBIT C**  
**CERTIFICATE OF COMPLIANCE WITH PUBLIC ACT 517 OF 2012**

I certify that neither \_\_\_\_\_ (Company), nor any of its successors, parent companies, subsidiaries, or companies under common control, are an “Iran linked business” engaged in investment activities of \$20,000,000.00 or more with the energy sector of Iran, within the meaning of Michigan Public Act 517 of 2012. In the event it is awarded a Contract as a result of this Request for Proposals, Company will not become an “Iran linked business” during the course of performing the work under the Contract.

NOTE: IF A PERSON OR ENTITY FALSELY CERTIFIES THAT IT IS NOT AN IRAN LINKED BUSINESS AS DEFINED BY PUBLIC ACT 517 OF 2012, IT WILL BE RESPONSIBLE FOR CIVIL PENALTIES OF NOT MORE THAN \$250,000.00 OR TWO TIMES THE AMOUNT OF THE CONTRACT FOR WHICH THE FALSE CERTIFICATION WAS MADE, WHICHEVER IS GREATER, PLUS COSTS AND REASONABLE ATTORNEY FEES INCURRED, AS MORE FULLY SET FORTH IN SECTION 5 OF ACT NO. 517, PUBLIC ACTS OF 2012.

\_\_\_\_\_  
(Name of Company)

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

Date: \_\_\_\_\_

Title: \_\_\_\_\_

Subscribed to and sworn before me,  
a Notary Public, on this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
\_\_\_\_\_, Notary Public  
\_\_\_\_\_, County, State of Michigan  
Acting in \_\_\_\_\_ County, Michigan  
My Commission Expires: \_\_\_\_\_



**BID FORM  
FOR CONSTRUCTION CONTRACTS**

**ARTICLE 1 – BID RECIPIENT**

1.01 This Bid is submitted to:

***ISABELLA COUNTY***

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

**ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS**

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

**ARTICLE 3 – BIDDER’S REPRESENTATIONS**

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

| <u>Addendum No.</u> | <u>Addendum, Date</u> |
|---------------------|-----------------------|
| _____               | _____                 |
| _____               | _____                 |
| _____               | _____                 |
| _____               | _____                 |

If no addenda have been issued, insert “N/A”. Bidder shall submit signed copies of the Addendum Acknowledgment receipt form issued with each addendum with the complete bid form.

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

1. Bidder is notified that State or Federal funds are being used to assist in construction of this project. All relevant State or Federal requirements will apply.

- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
- E. Bidder has considered the information known to Bidder itself; 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; and (3) Bidder's safety precautions and programs.
- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price 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 confirms that 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 and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

#### **ARTICLE 4 – BIDDER'S CERTIFICATION**

4.01 Bidder certifies 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; 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.

#### **ARTICLE 5 – BASIS OF BID**

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

All specified cash allowances are included in the price(s) set forth above and have been computed in accordance with Paragraph 13.02 of the General Conditions.

#### **UNIT PRICE BID – SEE ATTACHED BID FORM**

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor’s overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

#### **ARTICLE 6 – 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 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

#### **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;
- B. Affidavit of Compliance – Iran Economic Sanctions Act;

#### **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 – BID SUBMITTAL**

BIDDER: *[Indicate correct name of bidding entity]*

By:

*[Signature]* \_\_\_\_\_

*[Printed name]* \_\_\_\_\_

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

Attest:

*[Signature]* \_\_\_\_\_

*[Printed name]* \_\_\_\_\_

Title: \_\_\_\_\_

Submittal Date: \_\_\_\_\_

Address for giving notices:

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

Telephone Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

Contact Name and e-mail address: \_\_\_\_\_

\_\_\_\_\_

Bidder's License No.: \_\_\_\_\_

*(where applicable)*

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

| <b>Item No.</b>                         | <b>Estimated Quantity</b> | <b>Unit</b> | <b>Description</b>              | <b>Unit Price</b> | <b>Amount</b> |
|---|---------------------------|-------------|---------------------------------|-------------------|---------------|
| <b>Area #1</b>                          |                           |             |                                 |                   |               |
| 1.                                      | 1                         | Lump Sum    | Demolition                      | \$ Lump Sum       | \$ _____      |
| 2.                                      | 1                         | Lump Sum    | Excavation and Rough Grading    | \$ Lump Sum       | \$ _____      |
| 3.                                      | 1                         | Lump Sum    | Geoweb Mat Canoe Launch         | \$ Lump Sum       | \$ _____      |
| 4.                                      | 1                         | Lump Sum    | Crushed Stone Path              | \$ Lump Sum       | \$ _____      |
| 5.                                      | 1                         | Lump Sum    | Heavy Riprap Bank Stabilization | \$ Lump Sum       | \$ _____      |
| 6.                                      | 1                         | Lump Sum    | SESC Measures                   | \$ Lump Sum       | \$ _____      |
| 7.                                      | 1                         | Lump Sum    | Site Restoration and Cleanup    | \$ Lump Sum       | \$ _____      |
| <b>Area #1 Total</b>                    |                           |             |                                 |                   | \$ _____      |
| <b>Area #2</b>                          |                           |             |                                 |                   |               |
| 8.                                      | 1                         | Lump Sum    | Excavation and Rough Grading    | \$ Lump Sum       | \$ _____      |
| 9.                                      | 1                         | Lump Sum    | Geoweb Mat Canoe Launch         | \$ Lump Sum       | \$ _____      |
| 10.                                     | 1                         | Lump Sum    | Crushed Stone Path              | \$ Lump Sum       | \$ _____      |
| 11.                                     | 1                         | Lump Sum    | Heavy Riprap Bank Stabilization | \$ Lump Sum       | \$ _____      |
| 12.                                     | 1                         | Lump Sum    | SESC Measures                   | \$ Lump Sum       | \$ _____      |
| 13.                                     | 1                         | Lump Sum    | Site Restoration and Cleanup    | \$ Lump Sum       | \$ _____      |
| <b>Area #2 Total</b>                    |                           |             |                                 |                   | \$ _____      |
| <b>Area #3 - Alternate Add #1</b>       |                           |             |                                 |                   |               |
| 14.                                     | 1                         | Lump Sum    | Lay-Down Boardwalk              | \$ Lump Sum       | \$ _____      |
| 15.                                     | 1                         | Lump Sum    | Coir Rolls Bank Stabilization   | \$ Lump Sum       | \$ _____      |
| 16.                                     | 1                         | Lump Sum    | SESC Measures                   | \$ Lump Sum       | \$ _____      |
| 17.                                     | 1                         | Lump Sum    | Site Restoration and Cleanup    | \$ Lump Sum       | \$ _____      |
| <b>Area #3 - Alternate Add #1 Total</b> |                           |             |                                 |                   | \$ _____      |



| <b>Item No.</b>   | <b>Estimated Quantity</b> | <b>Unit</b> | <b>Description</b>              | <b>Unit Price</b> | <b>Amount</b> |
|---|---------------------------|-------------|---------------------------------|-------------------|---------------|
| <u>Area #4</u>  |                           |             |                                 |                   |               |
| 18.   | 1                         | Lump Sum    | Demolition                      | \$ Lump Sum       | \$ _____      |
| 19.   | 1                         | Lump Sum    | Excavation and Rough Grading    | \$ Lump Sum       | \$ _____      |
| 20.   | 1                         | Lump Sum    | Geoweb Mat Canoe Launch         | \$ Lump Sum       | \$ _____      |
| 21.   | 1                         | Lump Sum    | Crushed Stone Path              | \$ Lump Sum       | \$ _____      |
| 22.   | 1                         | Lump Sum    | Heavy Riprap Bank Stabilization | \$ Lump Sum       | \$ _____      |
| 23.   | 1                         | Lump Sum    | SESC Measures                   | \$ Lump Sum       | \$ _____      |
| 24.   | 1                         | Lump Sum    | Site Restoration and Cleanup    | \$ Lump Sum       | \$ _____      |
| <b>Area #4 Total</b>                                    |                           |             |                                 |                   | \$ _____      |
| <u>Area #5 - Alternate Add #2</u>                       |                           |             |                                 |                   |               |
| 25.   | 1                         | Lump Sum    | Heavy Riprap Bank Stabilization | \$ Lump Sum       | \$ _____      |
| 26.   | 1                         | Lump Sum    | SESC Measures                   | \$ Lump Sum       | \$ _____      |
| 27.   | 1                         | Lump Sum    | Site Restoration and Cleanup    | \$ Lump Sum       | \$ _____      |
| <b>Area #5 - Alternate Add #2 Total</b>                 |                           |             |                                 |                   | \$ _____      |
| <b>TOTAL AMOUNT OF BID WITHOUT ALTERNATES 1 &amp; 2</b> |                           |             |                                 |                   | \$ _____      |
| <b>TOTAL AMOUNT OF BID WITH ALTERNATES 1 &amp; 2</b>    |                           |             |                                 |                   | \$ _____      |

## AGREEMENT

THIS AGREEMENT is by and between \_\_\_\_\_ (“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:

### ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Chippewa River Erosion and Canoe Launch Project.

### ARTICLE 3 – ENGINEER

3.01 The Project has been designed by Spicer Group, Inc.

3.02 The Owner has retained Spicer Group, Inc. (“Engineer”) 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 *Contract Times/Dates*

A. The Work will be substantially completed on or before \_\_\_\_\_ and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before \_\_\_\_\_.

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 and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. 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):

1. Substantial Completion: Contractor shall pay Owner \$1,000 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.

2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$1,000 for each day that expires after such time until the Work is completed and ready for final payment.
3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

#### 4.04 *Special Damages*

- A. In addition to the amount provided for liquidated damages, Contractor shall reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.
- B. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), 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 the amounts that follow, subject to adjustment under the Contract:
- A. For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item).
  - B. The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.
  - C. For all Work, actual prices stated in Contractor's Bid, attached hereto as an exhibit.

### **ARTICLE 6 – PAYMENT PROCEDURES**

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

- A. Contractor shall submit Applications for Payment in accordance with Article 15 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 25th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in 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 elsewhere in the Contract.

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 Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract
  - a. 95 percent of Work completed (with the balance being retainage);
  - b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
- B. Upon Substantial Completion of the entire construction to be provided under the Contract Documents, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

#### **ARTICLE 7 – INTEREST**

7.01 All amounts not paid when due shall bear interest at the rate as allowed by law at the place of the project.

#### **ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS**

- 8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:
- A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.
  - B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, 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 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 adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
  - E. Contractor has considered the information known to Contractor itself; 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; and (3) Contractor's safety precautions and programs.
  - F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no 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.

- 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.
- J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

## ARTICLE 9 – CONTRACT DOCUMENTS

### 9.01 *Contents*

- A. The Contract Documents consist of the following:
  - 1. This Agreement.
  - 2. Performance bond.
  - 3. Payment bond.
  - 4. General Conditions.
  - 5. Supplementary Conditions.
  - 6. Specifications as listed in the table of contents of the Project Manual.
  - 7. The Drawings are listed on the document title page.
  - 8. Addenda.
  - 9. Exhibits to this Agreement (enumerated as follows):
    - a. Contractor's Bill.
  - 10. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    - a. Notice to Proceed.
    - b. Work Change Directives.
    - c. Change Orders.
    - d. Field Orders.
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in 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. Unless expressly agreed to elsewhere in the Contract, 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, money that may become due and money that is 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 successors, assigns, and legal representatives to the other party hereto, its 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 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 to or by any person 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.

### 10.06 *Other Provisions*

- A. Owner stipulates that if the General Conditions that are made a part of this Contract are based on EJCDC® C-700, Standard General Conditions for the Construction Contract, published by the Engineers Joint Contract Documents Committee®, and if Owner is the

party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or “track changes” (redline/strikeout), or in the Supplementary Conditions.

- B. Equal Opportunity - Contractor shall not discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex, height, weight, marital status, or because of a handicap that is unrelated to the person’s ability to perform the duties of a particular job or position.

**SAMPLE**

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on \_\_\_\_\_ (which is the Effective Date of the Contract).

OWNER: **ISABELLA COUNTY**

CONTRACTOR:

\_\_\_\_\_

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

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

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Attest: \_\_\_\_\_

Attest: \_\_\_\_\_

Title: \_\_\_\_\_

Address for giving notices:

Address for giving notices:

**ISABELLA COUNTY**

**200 N. MAIN STREET**

**MOUNT PLEASANT, MI 48858**

**SAMPLE**





**PERFORMANCE BOND**

CONTRACTOR (name and address):

SURETY (name and address of principal place of business):

OWNER (name and address):

Isabella County  
200 N. Main Street  
Mt. Pleasant, Michigan 48858

**CONSTRUCTION CONTRACT**

Effective Date of the Agreement:

Amount:

Description (name and location):

**BOND**

Bond Number:

Date (not earlier than the Effective Date of the Agreement of the Construction Contract):

Amount:

Modifications to this Bond Form:  None  See Paragraph 16

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

**Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.**

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

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

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

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

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

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

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

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

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

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

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

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction 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 the Owner or its heirs, executors, administrators, successors, and assigns.

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

11. 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 a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the 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 periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed

incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

#### 14. Definitions

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

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:



**PAYMENT BOND**

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

Isabella County  
200 N. Main Street  
Mt. Pleasant, Michigan 48858

**CONSTRUCTION CONTRACT**

Effective Date of the Agreement:  
Amount:  
Description *(name and location)*:

**BOND**

Bond Number:  
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:  
Amount:  
Modifications to this Bond Form:  None  See Paragraph 18

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

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

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

By: \_\_\_\_\_  
Signature *(attach power of attorney)*

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

Attest: \_\_\_\_\_  
Signature

Attest: \_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

**Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.**

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond shall arise after the following:
  - 5.1 Claimants who do not have a direct contract with the Contractor,
    - 5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
    - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
  - 5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
  - 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
  - 7.2 Pay or arrange for payment of any undisputed amounts.
  - 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any

costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

## 16. Definitions

16.1 **Claim:** A written statement by the Claimant including at a minimum:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;

3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
4. A brief description of the labor, materials, or equipment furnished;
5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the 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.

16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4 **Owner Default:** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.



17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:

**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, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. 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, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
  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. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
  5. *Bidder*—An individual or entity that submits a Bid to Owner.
  6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
  7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
  8. *Change Order*—A document 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, or other revision to the Contract, issued on or after the Effective Date of the Contract.
  9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
  10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision

regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Engineer*—The individual or entity named as such in the Agreement.
21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.
27. *Notice to Proceed*—A written notice 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.
28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
29. *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.
30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or “RPR” includes any assistants or field staff of Resident Project Representative.
33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals and the performance of related construction activities.
35. *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.
36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
37. *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, and such other lands furnished by Owner which are designated for the use of Contractor.



38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
39. *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.
40. *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.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *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 a Subcontractor.
44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *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 but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.
47. *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; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

- A. The words and terms discussed in the following paragraphs 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 Article 10 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 15.03 or 15.04).
- 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. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

- 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. *Bonds*: 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 Contractor's Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.
- C. *Evidence of Owner's Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

### *2.02 Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

### *2.03 Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), 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;
  - 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.

### *2.04 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 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, 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 and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

#### 2.05 *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 2.03.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 the component parts of the Work.

#### 2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.
- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

### **ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, 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.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

### 3.02 *Reference Standards*

#### A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, 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, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract 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, reference standard, 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 part of the Contract Documents prepared by or for Engineer. 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 part of the Contract Documents prepared by or for Engineer.

### 3.03 *Reporting and Resolving Discrepancies*

#### A. *Reporting Discrepancies:*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or 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) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) 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 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

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 part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
  - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); 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 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers 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 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; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- 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.

#### **ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK**

##### **4.01 *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 Contract 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 Contract. 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 Contract, whichever date is earlier.

##### **4.02 *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 such date.

##### **4.03 *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.

##### **4.04 *Progress Schedule***

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 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 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
  2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.
- B. 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, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

##### **4.05 *Delays in Contractor's Progress***

- A. If Owner, Engineer, 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 Times and Contract Price. 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.

- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. 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. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
  - 1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
  - 2. abnormal weather conditions;
  - 3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
  - 4. acts of war or terrorism.
- D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.
- E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.
- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

## **ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS**

### **5.01 *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.
- 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 permanent improvements are to be made 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.

## 5.02 *Use of Site and Other Areas*

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

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
  2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, 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 any such claim, and against all 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 directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent 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 and adjacent areas 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 of 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 structures or land to stresses or pressures that will endanger them.

### 5.03 *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 adjacent to the Site;
  2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
  3. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on 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.

### 5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site 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 5.03 is materially inaccurate; or
  2. is of such a nature as to require a change in the Drawings or Specifications; 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 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site

condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, 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 fall within any one or more of the categories described in Paragraph 5.04.A;
    - 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 Paragraph 13.03; and,
    - c. 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.
  2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
    - a. Contractor knew of the existence of such condition at the time Contractor made a 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 otherwise; or
    - b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
    - c. Contractor failed to give the written notice as required by Paragraph 5.04.A.
  3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
  4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent 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 do not warrant or guarantee 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 information and data regarding existing Underground Facilities at the Site;
    - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
    - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
    - d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then 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 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.
- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with

reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
  - 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 Paragraph 13.03;
  - c. 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; and
  - d. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
  3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
  1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
  2. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on 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 removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such

removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) 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 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. 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, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.
- H. 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, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. 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 (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph

5.06.H shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- J. 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 failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

## **ARTICLE 6 – BONDS AND INSURANCE**

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

- A. Contractor shall furnish a performance bond and a payment bond, 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. 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 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond 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 the accompanying bond.
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then 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 bond and surety requirements above.
- E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, 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.
- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.



- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

- A. *Workers' Compensation*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
  2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
  3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).
  4. Foreign voluntary worker compensation (if applicable).
- B. *Commercial General Liability—Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
  2. claims for damages insured by reasonably available personal injury liability coverage.
  3. 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.
- C. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage:
    - a. Such insurance shall be maintained for three years after final payment.
    - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
  2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
  3. Broad form property damage coverage.
  4. Severability of interest.
  5. Underground, explosion, and collapse coverage.
  6. Personal injury coverage.
  7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.

8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, “Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured” or its equivalent.
- D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against 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. The automobile liability policy shall be written on an occurrence basis.
  - E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer’s liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
  - F. *Contractor’s pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor’s operations and completed operations. This insurance shall be maintained for no less than three years after final completion.
  - G. *Additional insureds*: The Contractor’s commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; 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 (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
  - H. *Contractor’s professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
  - I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:
    1. include at least the specific coverages provided in this Article.
    2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
    3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
    4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or

replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.

5. be appropriate for the Work being performed and provide protection from claims that 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.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

#### 6.04 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, 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.
- B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

#### 6.05 *Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable 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 Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."
  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; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; 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. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.
  3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication,

construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
  5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
  6. extend to cover damage or loss to insured property while in transit.
  7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
  8. allow for the waiver of the insurer's subrogation rights, as set forth below.
  9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
  10. not include a co-insurance clause.
  11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
  12. include performance/hot testing and start-up.
  13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.
- C. *Deductibles:* The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- D. *Partial Occupancy or Use by Owner:* If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
- E. *Additional Insurance:* If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.

- F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

#### 6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, 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 insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the 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 Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, 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 or Contractor as trustee or fiduciary, 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 occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.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, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.
- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, 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 builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

**ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES**

7.01 *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.
- 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.

7.02 *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, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *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, whether or not such items are specifically called for in the Contract Documents.

- B. All materials and equipment incorporated into the Work 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.

7.04 “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 Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item 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 is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.
  - 1. If Engineer in its sole discretion determines that 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, Engineer shall deem it an “or equal” item. For the purposes of this paragraph, 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;
      - 3) it has a proven record of performance and availability of responsive service; and
      - 4) it is not objectionable to Owner.
    - 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.
- B. *Contractor’s Expense:* Contractor shall provide all data in support of any proposed “or equal” item at Contractor’s expense.
- C. *Engineer’s Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each “or-equal” request. Engineer may require Contractor to furnish additional data about the proposed “or-equal” item. Engineer will be the sole judge of acceptability. No “or-equal” item will be ordered, furnished, installed, or utilized until Engineer’s review is complete and Engineer determines that the proposed item is an “or-equal”, which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

- D. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
  - 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.
  - 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
  - 3. 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:
    - a. shall certify that the proposed substitute item will:
      - 1) perform adequately the functions and achieve the results called for by the general design,
      - 2) be similar in substance to that specified, and
      - 3) be suited to the same use as that specified.
    - b. will state:
      - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
      - 2) 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
      - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
    - c. will identify:
      - 1) all variations of the proposed substitute item from that specified, and
      - 2) available engineering, sales, maintenance, repair, and replacement services.



- d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. 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.
- E. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.
- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require

Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. 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 the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. 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.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. 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.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.
- O. 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 money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

#### 7.07 *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.

#### 7.08 *Permits*

- A. Unless otherwise provided in the Contract Documents, 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 the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

#### 7.09 *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.

#### 7.10 *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 or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and

losses, and 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 such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

- C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

#### 7.11 *Record Documents*

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

#### 7.12 *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, other work in progress, 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 Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

- 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 7.12.A.2 or 7.12.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 at its expense (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 protection 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 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
- G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

#### 7.13 *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.

#### 7.14 *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.

#### 7.15 *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.

#### 7.16 *Shop Drawings, Samples, and Other Submittals*

- A. *Shop Drawing and Sample Submittal Requirements:*
  1. Before submitting a Shop Drawing or Sample, Contractor shall have:
    - a. reviewed and coordinated the 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 and equipment 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 of that submittal, and that Contractor approves the 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 set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.
  - 1. *Shop Drawings:*
    - a. Contractor shall submit the number of copies required in the Specifications.
    - 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 7.16.D.
  - 2. *Samples:*
    - a. Contractor shall submit the number of Samples required in the Specifications.
    - b. Contractor shall 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 7.16.D.
  - 3. 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. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- 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 or to safety precautions or programs incident thereto.
3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
4. Engineer's review and approval of a Shop Drawing or Sample 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 7.16.A.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 will document any such approved variation from the requirements of the Contract Documents in a Field Order.
5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

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.
2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *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 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;
  - 6. the issuance of a notice of acceptability by Engineer;
  - 7. any inspection, test, or approval by others; or
  - 8. any correction of defective Work by Owner.
- D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, 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 7.18.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 7.18.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.

#### 7.19 *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 Laws and Regulations.
- 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, 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, 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 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

### **ARTICLE 8 – OTHER WORK AT THE SITE**

#### 8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may

also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. 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.
- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, 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.

#### 8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
  - 1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
  - 2. an itemization of the specific matters to be covered by such authority and responsibility; and
  - 3. the extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

#### 8.03 *Legal Relationships*

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any)

regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. 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.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.
- C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.
- D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) 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 any such claims, and against all 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 damage, delay, disruption, or interference.

## **ARTICLE 9 – OWNER'S RESPONSIBILITIES**

### **9.01 *Communications to Contractor***

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

### **9.02 *Replacement of Engineer***

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

### **9.03 *Furnish Data***

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

- 9.04 *Pay When Due*
- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.
- 9.05 *Lands and Easements; Reports, Tests, and Drawings*
- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.
- 9.06 *Insurance*
- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.
- 9.07 *Change Orders*
- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.
- 9.08 *Inspections, Tests, and Approvals*
- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.
- 9.09 *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.
- 9.10 *Undisclosed Hazardous Environmental Condition*
- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.
- 9.11 *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 (including obligations under proposed changes in the Work).
- 9.12 *Safety Programs*
- 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.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

## **ARTICLE 10 – ENGINEER’S STATUS DURING CONSTRUCTION**

### **10.01 *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.

### **10.02 *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 10.08. 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.

### **10.03 *Project Representative***

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. 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.

### **10.04 *Rejecting Defective Work***

- A. Engineer has the authority to reject Work in accordance with Article 14.

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

- A. Engineer’s authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. 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, are set forth in Paragraph 7.19.
- C. Engineer’s authority as to Change Orders is set forth in Article 11.
- D. Engineer’s authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

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

- A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, 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 15.06.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 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

**ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK**

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

1. *Change Orders:*
  - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
  - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
2. *Work Change Directives:* A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.
3. *Field Orders:* Engineer may authorize minor changes in the Work if the changes 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. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

#### 11.02 *Owner-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. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

#### 11.03 *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, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

#### 11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.
- B. 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, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or
  - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or
  - 3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).
- C. *Contractor's Fee*: When applicable, 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 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;
    - b. for costs incurred under Paragraph 13.01.B.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 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
    - d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
    - 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 11.04.C.2.a through 11.04.C.2.e, inclusive.

#### 11.05 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

#### 11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.
  - 1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
  - 2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
  - 3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

#### 11.07 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
  - 1. 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;
  - 2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
  - 3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and
  - 4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

#### 11.08 *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.

### **ARTICLE 12 – CLAIMS**

#### 12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:
  - 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
  - 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
  - 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of

Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

- C. *Review and Resolution:* The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation:*
  - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
  - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.
  - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval:* If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim:* If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results:* If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

## **ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK**

### **13.01 *Cost of the Work***

- A. *Purposes for Determination of Cost of the Work:* The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
  - 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
  - 2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or

incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work 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 13.01.C, 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, and 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 13.01.
  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 6.05), 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 communication 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 that Contractor is required by the Contract Documents to purchase and maintain.

C. *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 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here 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 Paragraph 13.01.B.

D. *Contractor's Fee:* When the Work as a whole 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, Change Proposal, Claim, set-off, or other 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 11.04.C.

- E. *Documentation*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, 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.

#### 13.02 *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*: Contractor agrees that:
  - 1. 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
  - 2. 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*: 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.

#### 13.03 *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. Payments to Contractor for Unit Price Work will be based on actual quantities.
- 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. 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 the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price 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;
2. there is no corresponding adjustment with respect to any other item of Work; and
3. Contractor believes that it 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 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK**

**14.01** *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction 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.

**14.02** *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.
- 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, obtaining, and paying for all inspections and tests required:
  1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
  2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
  3. by manufacturers of equipment furnished under the Contract Documents;
  4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
  5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. 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. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

#### 14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

#### 14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages 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. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.



#### 14.05 *Uncovering Work*

- A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then 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, and provide all necessary labor, material, and equipment.
  - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages 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 pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
  - 2. 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, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

#### 14.06 *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, then 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.

#### 14.07 *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, 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, then 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 14.07, 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, 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 incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. 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 14.07.

## **ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD**

### **15.01 Progress Payments**

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 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 during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *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, a warehouse bond, 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.
- C. *Review of Applications:*
  - 1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, 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 13.03, 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; 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 money 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 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
- a. the Work is defective, requiring correction or replacement;
  - b. the Contract Price has been reduced by Change Orders;
  - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
  - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

- e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due:*

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

E. *Reductions in Payment by Owner:*

- 1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
  - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
  - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
  - c. Contractor has failed to provide and maintain required bonds or insurance;
  - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
  - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
  - f. the Work is defective, requiring correction or replacement;
  - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
  - h. the Contract Price has been reduced by Change Orders;
  - i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
  - j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
  - k. 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;
  - l. there are other items entitling Owner to a set off against the amount recommended.
- 2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, 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, if Contractor remedies the reasons for such action. The reduction imposed shall be

binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

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 15.01.C.1 and subject to interest as provided in the Agreement.

#### 15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

#### 15.03 *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 and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- 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 preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

- F. 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 punch list.

15.04 *Partial Use or Occupancy*

- 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. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be 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 15.03.A through E for that part of the Work.
  - 2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work 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 15.03 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 6.05 regarding builder's risk or other property insurance.

15.05 *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, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *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, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:
  - a. all documentation called for in the Contract Documents;
  - b. consent of the surety, if any, to final payment;
  - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
  - d. a list of all disputes that Contractor believes are unsettled; and
  - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) 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, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

**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 have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. 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 15.07. 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. *Completion of Work:*** The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

**D. *Payment Becomes Due:*** Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *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 Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
  - 1. correct the defective repairs to the Site or such other adjacent areas;
  - 2. correct such defective Work;
  - 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 to 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. 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 repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- 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, 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 are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.



## **ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION**

### **16.01 *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 written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

### **16.02 *Owner May Terminate for Cause***

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and 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);
  - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
  - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;  
or
  - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:
  - 1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
  - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, 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 complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.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 the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds 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.

- F. 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, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

#### 16.03 *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; and
  - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

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

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) 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 16.03.
- 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 are not intended to preclude Contractor from submitting a Change Proposal 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 17 – FINAL RESOLUTION OF DISPUTES**

### **17.01 *Methods and Procedures***

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this Article:
  - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and
  - 2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this Article, Owner or Contractor may:
  - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or
  - 2. agree with the other party to submit the dispute to another dispute resolution process; or
  - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

## **ARTICLE 18 – MISCELLANEOUS**

### **18.01 *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, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
  - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

### **18.02 *Computation of Times***

- A. When any period of time is referred to in the Contract 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.

### **18.03 *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. 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.

### **18.04 *Limitation of Damages***

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to

Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Headings*

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



## SECTION 011000

### SUMMARY

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Contract description.
2. Contractor's use of Site
3. Work sequence.
4. Owner occupancy.
5. Permits.
6. Specification conventions.

##### 1.2 CONTRACT DESCRIPTION

- ###### A.
- The Contractor shall furnish all the labor, material and construction equipment and perform all the work for this project as shown on the Drawings and described in the specifications prepared by Spicer Group, Inc. Contractor shall be responsible for the entire work until completed and accepted by the Owner.

##### 1.3 CONTRACTOR'S USE OF SITE

###### A. Limit use of Site to allow:

1. Owner occupancy.
2. Use of site by Public.

##### 1.4 WORK SEQUENCE

- ###### A.
- Construct Work in a positive direction during the construction period, coordinate construction schedule and operations with Engineer.

##### 1.5 OWNER OCCUPANCY

- ###### A.
- Schedule and substantially complete designated portions of the Work for occupancy before Substantial Completion of the entire Work.
- ###### B.
- Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

1.6 PERMITS

- A. Furnish necessary permits for construction of Work.

1.7 SPECIFICATION CONVENTIONS

- A. These Specifications are written in imperative mood and streamlined form. This imperative language is directed to Contractor unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

END OF SECTION

## SECTION 012000

### PRICE AND PAYMENT PROCEDURES

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. Cash allowances.
- B. Application for Payment.
- C. Change procedures.
- D. Defect assessment.
- E. Unit prices.

##### 1.2 ALLOWANCES

- A. Costs Included in Cash Allowances: Cost of product to Contractor or Subcontractor, less applicable trade discounts; delivery to Site and applicable taxes unless stated otherwise in Allowance Schedule.
- B. Costs Not Included in Cash Allowances but Included in Contract Sum/Price: Product handling at Site including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing unless stated otherwise in Allowance Schedule.
- C. Engineer Responsibilities:
  - 1. Consult with Contractor for consideration and selection of products suppliers and installers.
  - 2. Select products in consultation with Owner and transmit decision to Contractor.
  - 3. Prepare Change Order.
- D. Contractor Responsibilities:
  - 1. Assist Engineer in selection of products, suppliers.
  - 2. Obtain proposals from suppliers and installers and offer recommendations.
  - 3. Upon notification of selection by Engineer and Owner execute purchase agreement with designated supplier.
  - 4. Arrange for and process Shop Drawings, Product Data, and Samples. Arrange for delivery.
  - 5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.



E. Differences in costs will be adjusted by Change Order.

F. Material Testing

1. NOT USED, BY OTHERS.

G. Construction Staking

1. NOT USED, BY OTHERS.

### 1.3 APPLICATION FOR PAYMENT

A. Contractor will prepare progress payments in accordance with the Payment Schedule shown in the Agreement. Progress payments shall be submitted in AIA Document G702 and G703.

B. Format will follow the itemized bid in the Proposal.

C. Contractor shall submit waivers for each progress payment in accordance with the General Conditions.

D. Payment will be subject to retainage as set forth in Public Act No. 524.

### 1.4 CHANGE PROCEDURES

A. Submittals: Submit name of individual who is authorized to receive change documents and is responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. Carefully study and compare Contract Documents before proceeding with fabrication and installation of Work. Promptly advise Engineer of any error, inconsistency, omission, or apparent discrepancy.

C. Requests for Interpretation (RFI) and Clarifications: Allot time in construction scheduling for liaison with Engineer; establish procedures for handling queries and clarifications.

D. Engineer will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing a field order.

E. Engineer may issue a Bulletin or Notice of Changer including a detailed description of proposed change with supplementary or revised Drawings and Specifications. Contractor will prepare and submit estimate within (2) two days.

F. Contractor may propose changes by submitting a request for change to Engineer, describing proposed change and its full effect on the Work. Include a statement describing reason for the change and the effect on Contract Sum/Price and Contract Time with full documentation and a statement describing effect on the Work.

G. Stipulated Sum/Price Change Order: Based on Bulletin or Notice of Change and Contractor's price quotation and Contractor's request for Change Order as approved by Engineer.

- H. Unit Price Change Order: For Contract unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of that which are not predetermined, execute Work under Work Directive Change. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.
- I. Work Directive Change: Engineer may issue directive, signed by Owner, instructing Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute change.
- J. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in Conditions of the Contract. Engineer will determine change allowable in Contract Sum/Price and Contract Time as provided in Contract Documents.
- K. Maintain detailed records of Work done on time and material basis. Provide full information required for evaluation of proposed changes and to substantiate costs for changes in the Work.
- L. Document each quotation for change in Project Cost or Time with sufficient data to allow evaluation of quotation.
- M. Change Order Forms: Architects/Engineer's Form.
- N. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in Conditions of the Contract.

#### 1.5 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of Engineer, it is not practical to remove and replace the Work, Engineer will direct appropriate remedy or adjust payment.
- C. Authority of Engineer and Owner to assess defects and identify payment adjustments is final.
- D. Nonpayment for Rejected Products: Payment will not be made for rejected products.

#### 1.6 UNIT PRICES

- A. Authority: Measurement methods are delineated in individual Specification Sections.
- B. Measurement methods delineated in individual Specification Sections complement criteria of this Section. In event of conflict, requirements of individual Specification Section govern.
- C. Engineer will take measurements and compute quantities accordingly. Provide assistance in taking of measurements.
- D. Unit Quantities: Quantities and measurements indicated on Bid Form are for Contract purposes only. Actual quantities provided shall determine payment.

- E. Payment Includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application, or installation of item of the Work; overhead and profit.
- F. Final payment for Work governed by unit prices will be made on basis of actual measurements and quantities accepted by Engineer multiplied by unit sum/price for Work incorporated in or made necessary by the Work.
- G. Measurement of Quantities:
  - 1. Weigh Scales: Inspected, tested, and certified by applicable State weights and measures department within past year.
  - 2. Platform Scales: Of sufficient size and capacity to accommodate conveying vehicle.
  - 3. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel, or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
  - 4. Measurement by Volume: Measured by cubic dimension using mean length, width, and height or thickness.
  - 5. Measurement by Area: Measured by square dimension using mean length and width or radius.
  - 6. Linear Measurement: Measured by linear dimension, at item centerline or mean chord.
  - 7. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as completed item or unit of the Work.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

## SECTION 012500

### SUBSTITUTION PROCEDURES

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. Quality assurance.
- B. Product options.
- C. Product substitution procedures.

##### 1.2 QUALITY ASSURANCE

- A. Contract is based on products and standards established in Contract Documents without consideration of proposed substitutions.
- B. Products specified define standard of quality, type, function, dimension, appearance, and performance required.
- C. Substitution Proposals: Permitted for specified products except where specified otherwise. Do not substitute products unless substitution has been accepted and approved in writing by Owner.

##### 1.3 PRODUCT OPTIONS

- A. See Section 016000 - Product Requirements.

##### 1.4 PRODUCT SUBSTITUTION PROCEDURES

- A. Engineer will consider requests for substitutions only within **15** days after date of Owner-Contractor Agreement.
- B. Substitutions may be considered when a product becomes unavailable through no fault of Contractor.
- C. Document each request with complete data, substantiating compliance of proposed substitution with Contract Documents, including:
  - 1. Manufacturer's name and address, product, trade name, model, or catalog number, performance and test data, and reference standards.
  - 2. Itemized point-by-point comparison of proposed substitution with specified product, listing variations in quality, performance, and other pertinent characteristics.
  - 3. Reference to Article and Paragraph numbers in Specification Section.

4. Cost data comparing proposed substitution with specified product and amount of net change to Contract Sum.
5. Changes required in other Work.
6. Availability of maintenance service and source of replacement parts as applicable.
7. Certified test data to show compliance with performance characteristics specified.
8. Samples when applicable or requested.
9. Other information as necessary to assist Engineer's evaluation.

D. A request constitutes a representation that Contractor:

1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
2. Will provide same warranty for substitution as for specified product.
3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
4. Waives claims for additional costs or time extension that may subsequently become apparent.
5. Will coordinate installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
6. Will reimburse Owner for review or redesign services associated with reapproval by authorities having jurisdiction.

E. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals without separate written request or when acceptance will require revision to Contract Documents.

F. Substitution Submittal Procedure:

1. Submit requests for substitutions.
2. Submit three copies of Request for Substitution for consideration. Limit each request to one proposed substitution.
3. Submit Shop Drawings, Product Data, and certified test results attesting to proposed product equivalence. Burden of proof is on proposer.
4. Engineer will notify Contractor in writing of decision to accept or reject request.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

## SECTION 013000

### ADMINISTRATIVE REQUIREMENTS

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. Coordination and Project conditions.
- B. Field Engineering
- C. Cutting and Patching
- D. Preconstruction meeting.
- E. Site mobilization meeting.
- F. Progress meetings.
- G. Preinstallation meetings.
- H. Closeout meeting.
- I. Alteration procedures.

##### 1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of various Sections of Owner Contract Agreement to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Verify that utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing operating equipment in service.
- C. Coordination Meetings: In addition to other meetings specified in this Section, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.
- D. Coordinate completion and clean-up of Work of separate Sections in preparation for Substantial Completion and for portions of Work designated for Owner's partial occupancy.
- E. After Owner's occupancy of premises, coordinate access to Site for correction of defective Work and Work not complying with Contract Documents, to minimize disruption of Owner's activities.

### 1.3 ALLOWANCES

#### A. MATERIALS TESTING

1. NOT USED, BY OTHERS.

#### B. CONSTRUCTION STAKING

1. NOT USED, BY OTHERS.

C. Control datum for survey is that established by Owner provided survey shown on Drawings.

D. Engineer will **NOT** provide construction staking.

E. When finished surfaces are cut so that a smoother transition and new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Engineer.

F. Where a change of plane of 1/4 inch or more occurs, submit recommendation for providing a smooth transition for Engineer review and request instructions from Engineer.

G. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.

H. Finish surfaces as specified in individual product sections.

I. Where there are changes in open drain cross sections, excavate a 20-foot smooth transition between sections.

### 1.4 CUTTING AND PATCHING

A. Coordinate with Engineer 48 hours prior to cutting and patching.

B. Employ skilled and experienced installer to perform cutting and patching.

C. Submit written request in advance of cutting or altering elements which affects:

1. Structural integrity of element.
2. Integrity of weather-exposed or moisture-resistant elements.
3. Efficiency, maintenance, or safety of element.
4. Visual quantities of sight-exposed elements.
5. Work of Owner or separate contractor.

D. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:

1. Fit the several parts together, to integrate with other Work.
2. Uncover Work to install or correct ill-timed Work.
3. Remove and replace defective and non-conforming Work.
4. Remove samples of installed Work for testing.

- E. Execute work by methods which will avoid damage to other Work, and provide proper surfaces to receive patching and finishing.
- F. Cut rigid materials using masonry saw or core drill.
- G. Restore Work with new products in accordance with requirements of Contract Documents.
- H. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
- J. Identify any hazardous substance or condition exposed during the Work to the Engineer for decision or remedy.

#### 1.5 PRECONSTRUCTION MEETING

- A. Engineer will schedule and preside over meeting after Notice of Award.
- B. Attendance Required: Engineer, Owner, appropriate governmental agency representatives, applicable public and private utility companies and Contractor, subcontractors to be utilized on the project.

#### 1.6 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work, if required.
- B. Engineer will make arrangements for meetings, prepare agenda with copies for participants, and preside over meetings.
- C. Attendance Required: Job superintendent, major Subcontractors, Contractors and suppliers, and Engineer, Owner, as appropriate to agenda topics for each meeting.

### PART 2 - PRODUCTS - Not Used

### PART 3 - EXECUTION

#### 3.1 ALTERATION PROCEDURES

- A. Entire facility will be occupied for normal operations during progress of construction. Cooperate with Owner in scheduling operations to minimize conflict and to permit continuous usage.
  - 1. Perform Work not to interfere with operations of occupied areas.
  - 2. Keep utility and service outages to a minimum and perform only after written approval of Owner.



3. Clean Owner-occupied areas daily. Clean spillage, overspray, and heavy collection of dust in Owner-occupied areas immediately.
- B. Materials: As specified in product Sections.
  - C. Employ skilled and experienced installer to perform alteration and renovation Work.
  - D. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion. Comply with Section 017000 - Execution and Closeout Requirements
  - E. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
  - F. Remove debris and abandoned items from area and from concealed spaces.
  - G. Prepare surface and remove surface finishes to permit installation of new Work and finishes.
  - H. Close openings in exterior surfaces to protect existing Work from weather and extremes of temperature and humidity.
  - I. Remove, cut, and patch Work to minimize damage and to permit restoring products and finishes to original or specified condition.
  - J. Refinish existing visible surfaces to remain in renovated rooms and spaces, to specified or new condition for each material, with neat transition to adjacent finishes.
  - K. Where new Work abuts or aligns with existing Work, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
  - L. When finished surfaces are cut so that smooth transition with new Work is not possible, terminate existing surface along straight line at natural line of division and submit recommendation to Engineer for review.
  - M. Where change of plane of 1/4 inch or more occurs, submit recommendation for providing smooth transition to Engineer for review.
  - N. Patch or replace portions of existing surfaces that are damaged, lifted, discolored, or showing other imperfections.
  - O. Finish surfaces as specified in individual product Sections.

END OF SECTION

SECTION 013300  
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Definitions.
- B. Submittal procedures.
- C. Construction progress schedules.
- D. Proposed product list.
- E. Product data.
- F. Shop Drawings.
- G. Samples.
- H. Other submittals.
- I. Test reports.
- J. Certificates.
- K. Manufacturer's instructions.
- L. Manufacturer's field reports.
- M. Erection Drawings.
- N. Contractor review.
- O. Engineer review.
- P. MDOT Mix Design.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action.
- B. Informational Submittals: Written and graphic information and physical Samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

### 1.3 SUBMITTAL PROCEDURES

- A. Transmit each submittal with Engineer-accepted form.
- B. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.
- C. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and Specification Section number appropriate to submittal.
- D. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite Project, and deliver to Engineer. Coordinate submission of related items.
- F. For each submittal for review, allow 15 days excluding delivery time to and from Contractor.
- G. Revise and resubmit submittals as required, identify all changes made since previous submittal.
- H. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.
- I. Allow space on submittals for Contractor and Engineer review stamps.
- J. When revised for resubmission, identify changes made since previous submission.
- K. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

### 1.4 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial progress schedule in duplicate within 15 days after date established in Notice to Proceed for Engineer and Owner review.
- B. Revise and resubmit as required.
- C. Submit revised schedules with each Application for Payment, identifying changes since previous version.
- D. Submit horizontal bar chart with separate line for each major section of Work or operation, identifying first workday of each week.
- E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- F. Indicate estimated percentage of completion for each item of Work at each submission.

- G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and under Allowances.

#### 1.5 PROPOSED PRODUCT LIST

- A. Within 5 days after date of Owner-Contractor Agreement, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

#### 1.6 PRODUCT DATA

- A. Product Data: Action Submittal: Submit to Engineer for review for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Submit number of copies Contractor requires, plus three copies Engineer will retain.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- D. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

#### 1.7 SHOP DRAWINGS

- A. Shop Drawings: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer responsible for designing components shown on Shop Drawings.
  - 1. Include signed and sealed calculations to support design.
  - 2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
  - 3. Make revisions and provide additional information when required by authorities having jurisdiction.
- D. Submit number of opaque reproductions Contractor requires, plus two copies Engineer will retain.
- E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

## 1.8 SAMPLES

- A. Samples: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Samples for Selection as Specified in Product Sections:
  - 1. Submit to Engineer for aesthetic, color, and finish selection.
  - 2. Submit Samples of finishes, textures, and patterns for Engineer selection.
- C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.
- D. Include identification on each Sample, with full Project information.
- E. Submit number of Samples specified in individual Specification Sections; Engineer will retain one Sample.
- F. Reviewed Samples that may be used in the Work are indicated in individual Specification Sections.
- G. Samples will not be used for testing purposes unless specifically stated in Specification Section.
- H. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

## 1.9 OTHER SUBMITTALS

- A. Closeout Submittals: Comply with Section 017000 - Execution and Closeout Requirements.
- B. Informational Submittal: Submit data for Engineer's knowledge for Owner.
- C. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

## 1.10 TEST REPORTS

- A. Informational Submittal: Submit reports for Engineer's knowledge for Owner.
- B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

## 1.11 CERTIFICATES

- A. Informational Submittal: Submit certification when specified in individual specification sections from manufacturer, installation/application Subcontractor, or Contractor 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 certifications as appropriate.
- C. Certificates may be recent or previous test results on material or product but must be acceptable to Engineer.

#### 1.12 MANUFACTURER'S INSTRUCTIONS

- A. Informational Submittal: Submit manufacturer's installation instructions for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing, to Engineer in quantities specified for Product Data.
- C. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

#### 1.13 MANUFACTURER'S FIELD REPORTS

- A. Informational Submittal: Submit reports for Engineer's knowledge for Owner.
- B. Submit report in duplicate within 5 days of observation to Engineer for information.
- C. Submit reports for information for assessing conformance with information given and design concept expressed in Contract Documents.
- D. Identify conflicts between manufacturer's instructions and Contract Documents.

#### 1.14 ERECTION DRAWINGS

- A. Informational Submittal: Submit Drawings for Engineer's knowledge for Owner.
- B. Submit Drawings for information assessing conformance with information given and design concept expressed in Contract Documents.
- C. Data indicating inappropriate or unacceptable Work may be subject to action by Engineer or Owner.

#### 1.15 CONTRACTOR REVIEW

- A. Review for compliance with Contract Documents and approve submittals before transmitting to Engineer.
- B. Contractor: Responsible for:
  - 1. Determination and verification of materials including manufacturer's catalog numbers.
  - 2. Determination and verification of field measurements and field construction criteria.

3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
  4. Determination of accuracy and completeness of dimensions and quantities.
  5. Confirmation and coordination of dimensions and field conditions at Site.
  6. Construction means, techniques, sequences, and procedures.
  7. Safety precautions.
  8. Coordination and performance of Work of all trades.
- C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.
- D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Engineer.

#### 1.16 ENGINEER REVIEW

- A. Do not make "mass submittals" to Engineer. "Mass submittals" are defined as six or more submittals or items in one day or 15 or more submittals or items in one week. If "mass submittals" are received, Engineer's review time stated above will be extended as necessary to perform proper review. Engineer will review "mass submittals" based on priority determined by Engineer after consultation with Owner and Contractor.
- B. Informational submittals and other similar data are for Engineer's information, do not require Engineer's responsive action, and will not be reviewed or returned with comment.
- C. Submittals made by Contractor that are not required by Contract Documents may be returned without action.
- D. Submittal approval does not authorize changes to Contract requirements unless accompanied by Change Order.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 014000  
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Quality control.
- B. Tolerances.
- C. References.
- D. Field Samples.
- E. Labeling.
- F. Testing and inspection services.
- G. Bench marks and control elevations.
- H. Manufacturers' field services.

1.2 QUALITY CONTROL

- A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence.
- C. Should manufacturer's instructions conflict with Contract Documents, requires clarification from Engineer before proceeding.
- D. Comply with specified standards as the minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work using persons qualified to produce required and specified quality.
- F. Products, materials, and equipment may be subject to inspection by Engineer and Owner at place of manufacture or fabrication. Such inspections shall not relieve Contractor of complying with requirements of Contract Documents.
- G. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.



- H. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

### 1.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

### 1.4 REFERENCES

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

### 1.5 FIELD SAMPLES

- A. Acceptable samples represent a quality level for the Work.

### 1.6 LABELING

- A. Attach label from agency approved by authorities having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.
- B. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label:
  - 1. Model number.
  - 2. Serial number.
  - 3. Performance characteristics.

- C. Manufacturer's Nameplates, Trademarks, Logos, and Other Identifying Marks on Products: Not allowed on surfaces exposed to view in public areas, interior or exterior.

#### 1.7 TESTING AND INSPECTION SERVICES

- A. Contractor will employ and pay for services to perform materials inspection and testing including compaction.
- B. Then Contractor will perform inspections, tests, and other services specified in individual specification sections and as required.
- C. Reports will be submitted by Contractor, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- D. Cooperate with the Engineer; furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.
- E. Retesting required because of non-conformance to specified requirements shall be performed by the Contractor at the Contractors expense.

#### 1.8 BENCHMARKS AND CONTROL ELEVATIONS

- A. Elevations for proposed work shall be from bench marks established for this project.
- B. Verify elevations of existing features against project benchmarks.
- C. Notify Engineer of conflicts in elevations, which affect the proposed work.

#### 1.9 MANUFACTURER'S FIELD SERVICES

- A. When specified in individual Specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe Site conditions, conditions of surfaces and installation, quality of workmanship, startup of equipment, testing, adjusting, and balancing of equipment commissioning and as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Engineer 30 days in advance of required observations. Observer is subject to approval of Engineer.
- C. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.
- D. Refer to Section 013300 - Submittal Procedures, "Manufacturer's Field Reports" Article

END OF SECTION



## SECTION 015000

### TEMPORARY FACILITIES AND CONTROLS

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. Temporary Electricity:
- B. Construction Facilities:
  - 1. Parking.
  - 2. Progress cleaning and waste removal.
  - 3. Fire-prevention facilities.
- C. Temporary Controls:
  - 1. Barriers.
  - 2. Water control.
  - 3. Dust control.
  - 4. Erosion and sediment control.
  - 5. Noise control.
  - 6. Pest and rodent control.
  - 7. Pollution control.
- D. Removal of utilities, facilities, and controls.
- E. Protection of Installed Work.
- F. Protection of Existing.
- G. Progress Cleaning.

##### 1.2 TEMPORARY ELECTRICITY

- A. Provide and pay for power service required from utility source as needed for construction operation.
- B. Complement existing power service capacity and characteristics as required for construction operations.
- C. Provide power outlets with branch wiring and distribution boxes located as required for construction operations. Provide suitable, flexible power cords as required for portable construction tools and equipment.
- D. Provide main service disconnect and overcurrent protection at convenient location switch at source distribution equipment meter.

- E. Permanent convenience receptacles may be used during construction.

### 1.3 PARKING

#### A. Maintenance:

1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, ice, and the like.
2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original condition.

#### B. Removal, Repair:

1. Remove temporary materials and construction at Substantial Completion.
2. Remove underground Work and compacted materials to depth of 2 feet fill and grade Site as indicated.
3. Repair existing and permanent facilities damaged by use, to original condition.

- C. Mud from Site vehicles: Provide means of removing mud from vehicle wheels before entering streets.

### 1.4 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.

- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, before enclosing spaces.

- C. Broom and vacuum clean interior areas before starting surface finishing, and continue cleaning to eliminate dust.

- D. Collect and remove waste materials, debris, and rubbish from Site and dispose of off-Site.

- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

### 1.5 FIRE-PREVENTION FACILITIES

- A. Prohibit smoking within buildings under construction and demolition. Designate area on Site where smoking is permitted. Provide approved ashtrays in designated smoking areas.

- B. Establish fire watch for cutting, welding, and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.

- C. Standpipes: Maintain existing standpipes in usable condition to height within one floor of floor being demolished.

- D. Portable Fire Extinguishers: NFPA 10; 10-pound capacity, 4A-60B: C UL rating.
  - 1. Provide one fire extinguisher at each stairway on each floor of buildings under construction and demolition.
  - 2. Provide minimum of one fire extinguisher in every construction trailer and storage shed.
  - 3. Provide minimum of one fire extinguisher on roof during roofing operations using heat-producing equipment.

## 1.6 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by authorities having jurisdiction for public rights-of-way and for public access to existing building.
  - 1. Barricade Construction: As indicated on Drawings.
  - 2. Covered Walkway Construction: As indicated on Drawings.
- C. Tree and Plant Protection: Preserve and protect existing trees and plants designated to remain.
  - 1. Protect areas within drip lines from traffic, parking, storage, dumping, chemically injurious materials and liquids, ponding, and continuous running water.
  - 2. Provide 6 foot-high barriers around drip line, with access for maintenance.
  - 3. Replace trees and plants damaged by construction operations.
- D. Protect non-owned vehicular traffic, stored materials, Site, and structures from damage.
- E. Provide access to all adjacent buildings for use during construction.

## 1.7 WATER CONTROL

- A. Grade Site to drain. Maintain excavations free of water. Provide, operate, and maintain necessary pumping equipment.
- B. Protect Site from puddles or running water. Provide water barriers as required to protect Site from soil erosion.
- C. Trenches shall be dewatered to provide a stable base for structures and piping.

## 1.8 DUST CONTROL

- A. Execute Work by methods that minimize raising dust from construction operations.
- B. Provide positive means to prevent airborne dust from dispersing into atmosphere and into Owner-occupied areas.

## 1.9 EROSION AND SEDIMENT CONTROL

- A. Conform to Part 91 of Public Act 451 of 1994, relative to Soil Erosion and Sedimentation Control for the life of the project.
- B. Minimize amount of bare soil exposed at one time.
- C. Provide temporary measures such as berms, dikes, and drains to prevent sediment from entering adjacent waterways.
- D. Do not deposit trash, debris, or sediment in tile or open drains.
- E. Immediately repair trenches located within the traveled surface of roadways.
- F. Landscape construction areas as soon as practical after work is complete according to Sections 32 91 19 – Landscape Grading, 32 92 19 – Seeding.

## 1.10 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise produced by construction operations.

## 1.11 PEST AND RODENT CONTROL

- A. Provide methods, means, and facilities to prevent pests and insects from damaging the Work and entering facility.
- B. Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

## 1.12 POLLUTION CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.
- B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

## 1.13 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials before Substantial Completion inspection.
- B. Remove underground installations to minimum depth of **4 feet**. Grade Site as indicated on Drawings.
- C. Clean and repair damage caused by installation or use of temporary Work.
- D. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

- E. A sufficient sum of money to remove and replace or repair any utilities damaged or relocated during the construction of the project shall be included in total contract amount.

#### 1.14 PROTECTION OF INSTALLED WORK

- A. Protect installed work and provide special protection where specified in individual specification Sections.
- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.
- C. Prohibit traffic from landscaped areas.

#### 1.15 PROTECTION OF EXISTING

- A. CALL “MISS DIG” 811 or (1-800-482-7171) A MINIMUM OF THREE WORKING DAYS PRIOR TO CONSTRUCTION.
- B. Obtain a copy of Positive Response. Contact Miss Dig for additional assistance if there are any utilities not marked or cleared through the Positive Response System.
- C. Contact Miss Dig for additional assistance if there is a discrepancy in the field from the Positive Response System.
- D. Contact Miss Dig for additional assistance if utility is not found within the applicable “approximate locations” marked in the field.
- E. Protect landscaped areas. Damaged areas shall be replaced in kind.
- F. Protect utilities encountered during the work. Replace or repair damaged utilities.
- G. Protect drives, roadways, and sidewalks. Repair as required in following sections.
- H. Protect mailboxes. Relocate temporarily until mailboxes can be returned to original location. All mail boxes and posts must be returned to their original condition or better at no additional cost to the project.
- I. Protect trees, shrubs, and bushes:
  - 1. Where trees, shrubs, and bushes are too large to be replaced in kind, the proposed utility shall be installed in a boring or tunneling operation unless written consent is given by the property owner for removal. Owner and Engineer shall each be given one copy of consent letters.
  - 2. Where requested by the Property Owner, timber from removed trees shall be cut into 6 foot lengths and stockpiled along the work or as specified in the consent letter.
  - 3. Proper disposal of removed trees or sections of removed trees not wanted by the property owner shall become the responsibility of the Contractor.
  - 4. Trees, shrubs, and bushes that are removed and replaced shall be transplanted by an established nursery.



- J. Utilities must remain in service. If it becomes necessary to interrupt a utility service, the utility authority must be notified immediately and steps taken to restore temporary or permanent service as soon as possible.
- K. Maintain outlets for drains. Provide temporary pumping if necessary.
- L. Expose utility mains and services by hand in the trench.
- M. Where utility and drainage piping crosses the trench, support the piping according to the utility authority's standards and backfill to the top with compacted sand.

#### 1.16 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Clean road surface daily to the Owner's and/or Engineer's satisfaction.
- C. Complete leveling, remove excess material and debris and restore drainage not more than 1000 feet behind construction.
- D. A sufficient sum of money to remove and replace or repair any utilities damaged or relocated during the construction of the project shall be included in total contract amount.

END OF SECTION

## SECTION 01 60 00

### PRODUCT REQUIREMENTS

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. Products.
- B. Product delivery requirements.
- C. Product storage and handling requirements.
- D. Product options.

##### 1.2 PRODUCTS

- A. At minimum, comply with specified requirements and reference standards.
- B. Specified products define standard of quality, type, function, dimension, appearance, and performance required.
- C. Furnish products of qualified manufacturers that are suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.
- D. Domestic Products: Except where specified otherwise, domestic products are required and interpreted to mean products mined, manufactured, fabricated, or produced in United States or its territories.
- E. Do not use materials and equipment removed from existing premises except as specifically permitted by Contract Documents.
- F. Furnish interchangeable components from same manufacturer for components being replaced.

##### 1.3 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products according to manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products; use methods to prevent soiling, disfigurement, or damage.

#### 1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products according to manufacturer's instructions.
- B. Store products with seals and labels intact and legible.
- C. Store sensitive products in weathertight, climate-controlled enclosures in an environment suitable to product.
- D. For exterior storage of fabricated products, place products on sloped supports aboveground.
- E. Provide off-Site storage and protection when Site does not permit on-Site storage or protection.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products; use methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

#### 1.5 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Products complying with specified reference standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of one of manufacturers named and complying with Specifications; no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit Request for Substitution for any manufacturer not named, according to Section 012500 - Substitution Procedures.

END OF SECTION

## SECTION 01 70 00

### EXECUTION AND CLOSEOUT REQUIREMENTS

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. Field engineering.
- B. Closeout procedures.
- C. Project record documents.
- D. Maintenance service
- E. Warranties
- F. Progress Payments.
- G. Examination.
- H. Preparation.
- I. Execution.
- J. Cutting and patching.
- K. Protecting installed construction.
- L. Final cleaning.

##### 1.2 FIELD ENGINEERING

- A. Control datum for survey is established by Owner-provided survey indicated on Drawings.
- B. Verify setbacks and easements; confirm Drawing dimensions and elevations.
- C. Field engineering services will not be provided by the Engineer.
- D. Maintain complete and accurate log of control and survey Work as Work progresses.
- E. Protect survey control points prior to starting Site Work; preserve permanent reference points during construction.
- F. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Owner.

### 1.3 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed. Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's inspection.
- B. Provide submittals to Engineer that are required by governing or other authorities.
- C. Provide Consent of Surety and all Final Waivers.

### 1.4 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.
- B. Remove sediment from storm sewers, and catch basins.
- C. Clean site; sweep paved areas, rake clean landscaped surfaces.
- D. Remove waste and surplus materials, rubbish, and construction facilities from the site.
- E. Landscape areas as required in documents.
- F. Restore roads, driveways, parking areas, lawns, drainage, and other items disturbed during construction to original condition or as required by the documents.

### 1.5 PROJECT RECORD DOCUMENTS

- A. Maintain on Site one set of the following record documents; record actual revisions to the Work:
  - 1. Drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other modifications to the Contract.
  - 5. Reviewed Shop Drawings, product data, and Samples.
  - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Store record documents separate from documents used for construction.
- C. Record information concurrent with construction progress.
- D. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:
  - 1. Manufacturer's name and product model and number.
  - 2. Product substitutions or alternates used.
  - 3. Changes made by Addenda and modifications.
- E. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction as follows:

1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
2. Include locations of concealed elements of the Work.
3. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.
4. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
5. Identify and locate existing buried or concealed items encountered during Project.
6. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
7. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
8. Field changes of dimension and detail.
9. Details not on original Drawings.

F. Submit marked-up paper copy documents to Engineer before Substantial Completion.

#### 1.6 MAINTENANCE SERVICE

- A. Furnish service and maintenance of components indicated in Specification Sections for 1 year from date of Substantial Completion.
- B. Examine system components at frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by manufacturer of original component.
- D. Do not assign or transfer maintenance service to agent or Subcontractor without prior written consent of Owner.

#### 1.7 WARRANTIES

- A. Execute and assemble documents from Sub-contractors, suppliers, and manufacturers.
- B. Provide Table of Contents and assemble in three D size ring three ring binder with durable plastic cloth cover.
- C. Submit prior to final Application for Payment.
- D. Warranty all work for a period of one year from the date of the final progress payment.

#### 1.8 PROGRESS PAYMENTS

- A. The Owner may request from the Contractor waivers for proof of payment to all sub-contractors and suppliers utilized on this project prior to issuing payments.

- B. The Owner may request from the Contractor a Sworn Statement listing all sub-contractors and suppliers, their involvement with the project, their subcontracted amount, amount paid to date, and balance due prior to issuing payment.
- C. Failure to provide this information may result in not receiving payments or payments not being issued in a timely manner.

#### 1.9 CORRECTION PERIOD

- A. For the period of one year from the date of final payment, promptly correct work or replace materials that are found to be defective.

### PART 2 - PRODUCTS - Not Used

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual Specification Sections.
- D. Verify that utility services are available with correct characteristics and in correct locations.

#### 3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance according to manufacturer's instructions.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer-required or -recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

#### 3.3 EXECUTION

- A. Comply with manufacturer's installation instructions, performing each step in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.
- B. When manufacturer's installation instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

- C. Verify that field measurements are as indicated on approved Shop Drawings or as instructed by manufacturer.
- D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
  - 1. Secure Work true to line and level and within specified tolerances, or if not specified, industry-recognized tolerances.
  - 2. Physically separate products in place, provide electrical insulation, or provide protective coatings to prevent galvanic action or corrosion between dissimilar metals.
  - 3. Exposed Joints: Provide uniform joint width and arrange to obtain best visual effect. Refer questionable visual-effect choices to Engineer for final decision.
- E. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components as recommended by manufacturer.

#### 3.4 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual Specification Sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.
- C. Prohibit traffic from landscaped areas.

END OF SECTION





## SECTION 31 05 13

### SOILS FOR EARTHWORK

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Subsoil materials.
2. Topsoil materials.

###### B. Related Sections:

1. Section 312213 - Rough Grading.
2. Section 312323 - Fill.
3. Section 329119 - Landscape Grading.
4. Section 329219 - Seeding and Soil Supplements.
5. Section 312500 - Erosion and Sedimentation Controls: Slope protection and erosion control.

##### 1.2 REFERENCES

###### A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

###### B. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
2. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>)).
3. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

##### 1.3 SUBMITTALS

###### A. Section 013300 - Submittal Procedures: Requirements for submittals.

###### B. Samples: Maybe requested for submittal by the Engineer for testing. Submit, in air-tight containers, 10 lb sample of each type of fill to testing laboratory.

###### C. Materials Source: Submit name of imported materials source.

###### D. Manufacturer's Certificate: Certify soils meet or exceed specified requirements.

#### 1.4 QUALITY ASSURANCE

- A. Furnish each subsoil and topsoil material from single source throughout the Work. A second source maybe requested for approval by the Engineer.
- B. Perform Work in accordance with State of Michigan Department of Transportation standard specifications for construction.

#### PART 2 - PRODUCTS

##### 2.1 SUBSOIL MATERIALS

- A. Subsoil Type S1: Native material conforming to State of Michigan Department of Transportation standard specifications for construction.
- B. Subsoil Type S2:
  - 1. Native material.
  - 2. Graded.
  - 3. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.

##### 2.2 TOPSOIL MATERIALS

- A. Topsoil Type S3: Native material conforming to State of Michigan Department of Transportation standard specifications for construction.
- B. Topsoil Type S4:
  - 1. Native Topsoil.
  - 2. Graded.
  - 3. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.
    - a. Screening: Double screened.
- C. Topsoil Type S5:
  - 1. Imported borrow.
  - 2. Friable loam.
  - 3. Reasonably free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds, and foreign matter.
    - a. Screening: Double screened.
  - 4. Acidity range (pH) of 5.5 to 7.5.
  - 5. Containing minimum of 4 percent and maximum of 25 percent inorganic matter.

## 2.3 SOURCE QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Testing and Inspection Services Testing and analysis of soil material.
- B. Testing and Analysis of Subsoil Material: Perform in accordance with AASHTO T180.
- C. Testing and Analysis of Topsoil Material: Perform in accordance with AASHTO T180.
- D. When tests indicate materials do not meet specified requirements, change material and retest.
- E. Furnish materials of each type from same source throughout the Work.

## PART 3 - EXECUTION

### 3.1 EXCAVATION

- A. Excavate subsoil and topsoil as required for utility and/or road installation. Strip topsoil to full depth of topsoil for complete installation.
- B. Stockpile excavated material meeting requirements for subsoil materials and topsoil materials.
- C. Remove excess excavated materials subsoil and topsoil not intended for reuse, from site.
- D. Remove excavated materials not meeting requirements for subsoil materials and topsoil materials from site.

### 3.2 STOCKPILING

- A. Stockpile materials on site at locations approved by the Engineer.
- B. Stockpile in sufficient quantities to meet Project schedule and requirements.
- C. Separate differing materials with dividers or stockpile apart to prevent mixing.
- D. Stockpile topsoil 8 feet high maximum.
- E. Prevent intermixing of soil types or contamination.
- F. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.
- G. Stockpile unsuitable or hazardous materials on impervious material and cover to prevent erosion and leaching, until disposed of.

### 3.3 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION



## SECTION 31 05 21

### SOIL STABILIZATION SYSTEM

#### PART 1-GENERAL

##### 1.1 SUMMARY

- A. Work Included: This section includes providing all material, labor, tools and equipment for installation of Geoweb® geocell system as shown in the Contract Documents and as specified in this section.
- B. The Geoweb® geocell system shall be used for a canoe launch and slope protection.

##### 1.2 RELATED SECTIONS AND DIVISIONS

- A. The applicable provisions of the General Conditions shall govern the work in this Section.
- B. Section 0130000 – Administrative Requirements
- C. Section 0220000 – Site Preparation
- D. Section 312000 – Earth Moving
- E. Section 313221-Filter Fabric
- F. Section 312500 - Erosion and Sedimentation Control

##### 1.3 REFERENCES

- A. American Society of Testing and Materials (ASTM)
  - 1. ASTM D792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
  - 2. ASTM D1505 - Density of Plastics by the Density-Gradient Technique.
  - 3. ASTM D1603 – Standard Test for Carbon Black in Olefin Plastics.
  - 4. ASTM D1693 – Environmental Stress-Cracking of Ethylene Plastics.
  - 5. ASTM D 5394 - Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics.
  - 6. ASTM D 5199 – Measuring Nominal Thickness of Geotextiles and Geomembranes.

7. ASTM D 5596 - Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics.
  8. ASTM D 5721 - Standard Practice for Air-Oven Aging of Polyolefin Geomembranes.
  9. ASTM D 5885 - Standard Test Method for Oxidative Induction Time of Polyolefin Geosynthetics by High-Pressure Differential Scanning Calorimetry.
  10. ASTM D 6693 (Type IV) - Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes.
  11. ASTM D 7328 - Standard Test Method for Effect of Exposure of Unreinforced Polyolefin Geomembrane Using Fluorescent UV Condensation Apparatus
  12. ASTM E 41 – Terminology Relating to Conditioning.
- B. US Army Corps of Engineers (USACE)
- a. Technical Report GL-86-19, Appendix A.

#### 1.4 SUBMITTALS

- A. Submit manufacturer's shop drawings in accordance with Section 013000, submittals including Manufacturer's product data, samples and section layout.
- B. Submit qualifications certifying installer experience in the installation of Geoweb® system.
- C. No material will be considered as an equivalent to the geocell material specified herein unless it meets all requirements of this specification, without exception. Manufacturers seeking to supply equivalent material must submit records, data, independent test results, samples, certifications, and documentation deemed necessary by the Engineer to prove equivalency. The Engineer shall approve or disapprove other Manufacturers' materials in accordance with the General Conditions after submission and review of provided information. All substitute materials submitted shall be subject to independent lab testing at the contractor's expense.

#### 1.5 QUALITY ASSURANCE AND CONTROL

- A. The Geoweb® geocell system material shall be provided from a single Manufacturer for the entire project.
- B. The Manufacturer's Quality Management System shall be certified and in accordance with ISO 9001:2008 and CE certification. Substitute materials submitted shall provide a certification that the manufacturing process is part of an ISO program. Certification is required specifically stating that the testing facility is certified and in accordance with ISO. An ISO certification for the substitute material will not be acceptable unless it is proven it pertains specifically to the geocell manufacturing operations.
- C. The Manufacturer shall provide certification of compliance to all applicable testing procedures and related specifications upon the customer's written request. Request for certification shall be

submitted no later than the date of order placement. The Manufacturer shall have a minimum of 20 years experience producing Geoweb® geocell systems.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in Manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and Manufacturer.
- B. The materials shall be stored in accordance with Manufacturer's instructions. The materials shall be protected from damage and away from direct sunlight.
- C. The materials shall be delivered, unloaded and installed in a manner to prevent and minimize damage.

## 1.7 WARRANTY

- A. The Manufacturer shall warrant each section that it ships to be free from defects in materials and workmanship at the time of manufacture. The Manufacturer's exclusive liability under this warranty or otherwise will be to furnish without charge to the original f.o.b. point a replacement for any section which proves to be defective under normal use and service during the 10-year period which begins on the date of shipment. The Manufacturer reserves the right to inspect any allegedly defective section in order to verify the defect and ascertain its cause.
- B. This warranty shall not cover defects attributable to causes or occurrences beyond the Manufacturer's control and unrelated to the manufacturing process, including, but not limited to, abuse, misuse, mishandling, neglect, improper storage, improper installation, improper alteration or improper application.
- C. In no event shall the Manufacturer be liable for any special, indirect, incidental or consequential damages for the breach of any express or implied warranty or for any other reason, including negligence, in connection with the Geoweb® geocell system.

## PART 2 PRODUCTS

### 2.1 ACCEPTABLE MANUFACTURER

- A. Presto Geosystems, PO Box 2399, Appleton, Wisconsin 54912-2399. Toll Free: (800) 548-3424. Phone:(920) 738-1328.Fax:(920) 738-1222.E-Mail: info@prestogeo.com.Website: www.prestogeo.com



## 2.2 GEOWEB® GEOCELL SYSTEM

### A. Manufacturing Certification

1. The Manufacturer shall have earned a certificate of registration, which demonstrates that its quality-management system for its Geoweb® geocell system is currently registered to the ISO 9001:2015 and CE quality standards.

### B. Base Materials

1. Polyethylene Stabilized with Carbon Black
  - a. Density shall be 58.4 to 60.2 pound/ft<sup>3</sup> (0.935 to 0.965 g/cm<sup>3</sup>) in accordance with ASTM D 1505 or D 792.
  - b. Environmental Stress Crack Resistance (ESCR) shall be 5000 hours in accordance with ASTM D 1693.
  - c. Ultra-Violet light stabilization with carbon black.
  - d. Carbon Black content shall be 1.5 to 2 percent by weight, through addition of a carrier with certified carbon black content, in accordance with ASTM D 1603.
  - e. Carbon black shall be homogeneously distributed throughout material, in accordance with ASTM D 5596.
  - f. The manufacturer shall have an in-place quality control to prevent irregularities in strip material.

### C. Cell Properties

1. Individual cells shall be uniform in shape and size when expanded.
2. Individual cell dimensions (nominal) shall be dimensions  $\pm 10\%$ .
3. GW20V-Cell
  - a. Length shall be 8.8 inches (224 mm).
  - b. Width shall be 10.2 inches (259 mm).
  - c. Nominal area shall be 44.8 in<sup>2</sup> (289 cm<sup>2</sup>) plus or minus 1%.
  - d. Nominal depth shall be 6 inches (150 mm).

### D. Strip Properties and Assembly

1. Perforated Textured Strip/Cell
  - a. Strip sheet thickness shall be 50 mil (1.27 mm), minus 5 percent, plus 10 percent in accordance with ASTM D 5199. Determine thickness flat, before surface disruption.
  - b. Polyethylene strips shall be textured surface with a multitude of rhomboidal (diamond shape) indentations.
  - c. Textured sheet thickness shall be 60 mil plus or minus 6 mil (1.52 mm plus or minus 0.15 mm).
  - d. Indentation surface density shall be 140 to 200 per in<sup>2</sup> (22 to 31 per cm<sup>2</sup>).

- e. Perforated with horizontal rows of 0.4 inch (10 mm) diameter holes.
- f. Perforations within each row shall be 0.75 inches (19 mm) on-center.
- g. Horizontal rows shall be staggered and separated 0.50 inches (12 mm) relative to hole centers.
- h. Edge of strip to nearest edge of perforation shall be a minimum of 0.3 inches (8 mm).
- i. Centerline of spot weld to nearest edge of perforation shall be a minimum of 0.7 inches (18 mm).
- j. A slot with a dimension of 3/8 inch x 1-3/8 inch (10 mm x 35 mm) is standard in the center of the non-perforated areas and at the center of each weld.
- 1. Assembly of Cell Sections
  - a. Fabricate using strips of sheet polyethylene each with a length of 142 inches (3.61 m) and a width equal to cell depth.
  - b. Connect strips using full depth ultrasonic spot-welds aligned perpendicular to the longitudinal axis of strip.
  - c. Ultrasonic weld melt-pool width shall be 1.0 inch (25 mm) maximum.
  - d. Weld spacing for GW20V-cell sections shall be 14.0 inches plus or minus 0.10 inch (356 mm plus or minus 2.5 mm).

#### E. Cell Seam Strength Tests

- 1. 1. Minimum seam strengths are required by design and shall be reported in test results. Materials submitted with average or typical values will not be accepted. Written certification of minimum strengths must be supplied to the engineer at the time of submittals.
- 2. Short-Term Seam Peel-Strength Test
  - a. Cell seam strength shall be uniform over full depth of cell.
  - b. Minimum seam peel strength shall be 480 lbf (2,130 N) for 6 inch (150 mm) depth.
- 3. Long-Term Seam Peel-Strength Test
  - a. Conditions: Minimum of 7 days in a temperature-controlled environment that undergoes change on a 1-hour cycle from room temperature to 130 °F (54 °C).
  - b. Room temperature shall be in accordance with ASTM E41.
  - c. Test samples shall consist of two, four-inch (100 mm) wide strips welded together.
  - d. Test sample consisting of two carbon black stabilized strips shall support a 160 pound (72.5 kg) load for test period.
- 4. 10,000-hour Seam Peel Strength Certification. Presto Geosystems shall provide data showing that the high-density polyethylene resin used to produce the Geoweb® sections has been tested using an appropriate number of seam samples and varying loads to generate data indicating that the seam peel strength shall survive a loading of at least 209 lbf (95 kg) for a minimum of 10,000 hours.

## 2.3 INTEGRAL COMPONENTS

### A. ATRA® Tendon Clip

1. The ATRA® Tendon Clip is a molded, high-strength polyethylene device with a locking member and post with minimum pull-through of 420 lbs (191 kg).
2. The ATRA® Tendon Clip is the recommended anchorage connection method for securing sections with tendons and transferring the driving gravity forces to the cell wall.

### B. ATRA® Stake Clip

1. The ATRA® Stake Clip is a molded, high-strength polyethylene device available in standard (0.5 inch) and metric (10–12 mm) versions.
2. ATRA® Stake Clips are installed as an end cap on standard (0.5 inch) and metric (10–12 mm) steel reinforcing rods to form ATRA Anchors.

### C. ATRA® Key

1. ATRA® Keys shall be constructed of polyethylene and provide a high strength connection with minimum pull-through of 275 lbs (125 kg).
2. ATRA® Keys shall be used to connect sections together at each interleaf and end to end connection.
3. Metal staples and plastic zip ties are not an acceptable panel connection method.

## 2.4 STAKE ANCHORAGE

### A. ATRA® Anchors

1. ATRA® Anchors shall consist of standard (0.5 inch) or metric (10–12 mm) steel reinforcing rod with an ATRA® Stake Clip attached as an end cap.
2. ATRA® Anchors shall be assembled by inserting the ATRA® Stake Clip onto the reinforcing rod so that the end is flush with the top of the ATRA® Stake Clip. Prior to attaching the ATRA® Stake Clip, the reinforcing rod shall be beveled and free from all burrs.
3. The anchor length and staking pattern shall be as shown in the Contract Documents.

### B. ATRA® Speed Stakes

1. ATRA® Speed Stake shall be one piece injected molded design with integral flanged arms and barbs.
2. The stake shall be constructed of a specialty based HDPE polymer alloy.
3. The minimum tensile strength shall be 14.5 kips (100 mPa).
4. The minimum bending strength shall be 575 lbs (2.55 kN).
5. The stake shall be non-magnetic, non-conducting and corrosion resistant.
6. The stake length and placement shall be as shown in the Contract Documents.

### C. ATRA® Glass Fiber Reinforced Polymer (GFRP) Anchors

1. ATRA® GFRP Anchors shall be pre-assembled units consisting of the ATRA® Stake Clip inserted onto a GFRP stake.
2. The glass reinforcement content shall be 75% minimum by weight and shall be continuous longitudinal filament.
3. Polymer shall be vinyl ester, isophthalic polyester or other matrix material.
4. The outer surface shall be sand coated and deformed by a helical glass wrap.
5. The minimum compressive strength shall be 95 kips (655 MPa) in accordance with ASTM D 638.
6. The anchor shall be non-magnetic, non-conducting and corrosion resistant.
7. The anchor length and placement shall be as shown in the Contract Documents.

### D. ATRA® Driver and ATRA® Gad

1. The ATRA driver shall be Hilti, Model TE-1000 electric impact hammer.
2. The ATRA gad shall be constructed of heat-treated alloy steel shaft and aluminum head. The head shall fit directly over the arms of the ATRA Anchors or ATRA Speed stakes.
3. The ATRA driver increases installation rates by driving anchors faster while decreasing worker fatigue.

## 2.5 TENDON ANCHORAGE

### A. Tendon Type

1. Woven Polypropylene - TPP-55
2. Material shall be bright yellow, high-tenacity, industrial-continuous-filament, polypropylene yarn woven into a braided strap.
3. Minimum break strength shall be 1250 lbf (5.56 kN)

### B. Woven Polyester - TP-67

1. Material shall be bright, high-tenacity, industrial-continuous-filament, polyester yarn woven into a braided strap.
2. Elongation shall be 9 to 15 percent at break.
3. Minimum break strength shall be 1506 lbf (6.70 kN) for TP-67

### C. Types of Tendon Anchorage

1. Tendons, ATRA® Tendon Clips and ATRA® Anchors.
2. Tendons, ATRA® Tendon Clips and ATRA® Speed Stakes.

3. Tendons, ATRA® Tendon Clips and ATRA® GFRP Anchors.
4. Tendons, ATRA® Tendon Clips and Deadman Pipe Anchorage.
5. Tendons, ATRA® Tendon Clips and Earth Anchors.

## 2.6 INFILL MATERIALS

- A. Infill material shall be topsoil for vegetated surfaces and shall have an SCS texture of loam, sandy loam or silty loam. Topsoil shall be neither excessively acidic nor alkaline.
- B. Infill material shall be gravel, crushed aggregate or stone with a maximum particle size of one-third cell depth.
- C. Engineered infill shall consist of topsoil and aggregate mixture for vegetated surfaces for structural strength.
  6. Engineered infill shall be a mix of topsoil and aggregate having a homogeneous mixture of a clear crushed aggregate having an AASHTO #5 or similar designation blended with pulverized topsoil and a minimum 30% void space for air and/or water.
  7. The mixture shall promote vegetation growth and provide structural support.
  8. The aggregate portion shall have a particle range from 0.375 to 1.0 inches (9.5 to 25 mm) with a D50 of 0.5 inches (13 mm) and shall be 67% of the total volume.
  9. The percentage void space of the aggregate portion when compacted shall be at least 30%.
  10. The pulverized topsoil portion shall equal 33% of the total volume. The topsoil shall be blended with the aggregate to produce a homogeneous mixture.
  11. Once placed, the mixture shall be compacted to a 95% Standard Proctor.
- D. Infill material shall be free of any foreign material.
- E. Clays and silts are not acceptable infill material.
- F. Infill material shall be free-flowing and not frozen when placed in the Geoweb® panels.

## 2.7 ADDITIONAL COMPONENTS

### A. Geotextile

1. The geotextile separation layer shall be as specified in the Contract Documents.

## PART 3- EXECUTION

### 3.1 EXAMINATION

- A. Verify site conditions are as indicated on the drawings. Notify the Engineer if site conditions are not acceptable. Do not begin preparation or installation until unacceptable conditions have been corrected.
- B. Verify layout of structure is as indicated on the drawings. Notify the Engineer if layout of structure is not acceptable. Do not begin preparation or installation until unacceptable conditions have been corrected.

### 3.2 INSTALLATION OF THE SLOPE PROTECTION SYSTEM

- A. Prepare sub grade and install protection system in accordance with Manufacturer's recommendations.
  - 1. Install geotextile separation layer on prepared surfaces ensuring required overlaps are maintained and outer edges of geotextile are buried in accordance with the Manufacturer's recommendations.
  - 2. Install geomembrane separation layer on prepared surfaces ensuring seams are welded and outer edges of geomembrane are buried in accordance with the Manufacturer's recommendations.
- B. Section Anchorage
  - 1. Anchorage requirements for the sections shall be as shown on the Contract Documents and as directed by the Engineer.
  - 2. Anchorage with Tendons, ATRA® Tendon Clips and ATRA® Speed Stakes
  - 3. Preferred Method – Top of Slope Installation
    - a. Excavate the anchor trench at the top of the slope to the depth as shown on the Contract Documents.
    - b. Position the collapsed sections at the crest of the slope.
    - c. Measure and cut the tendon run lengths for each tendon location.
    - d. Mark the tendons with a black permanent marker per the ATRA® Tendon Clip Location Chart.
    - e. Thread the tendons through the unexpanded section.
    - f. Starting from the first cell, count the number of cells to the next ATRA® Tendon Clip location and repeat along that cell row.
    - g. Repeat this procedure for each additional cell row tendon/ATRA® Tendon Clip run.
    - h. With all the ATRA® Tendon Clips placed in the section, thread the tendons through the cell wall I-slots in the unexpanded section.
    - i. Locate the corresponding mark on the Tendon and position it in front of the cell wall. Hold the tendon and connect to the ATRA® Tendon Clip. Refer to the Slope Installation Manual for ATRA® Tendon Clip tie-off instructions.

- j. Repeat this process on each cell row tendon/ATRA® Tendon Clip run.
- k. Place the collapsed section in the anchor trench, drive ATRA® Anchors in the first row of cells so the arm of the anchor engages with the top of the cell wall and expand down the slope. Number of anchors shall be per the Contract Documents.
- l. Adjust the section (i.e. a shake or two of the expanded section works well for this) so that the section and tendons are uniformly taut.
- m. After the sections are expanded, drive ATRA® Speed Stake so the arm of the stake engages with the top of the cell wall.
- n. Anchorage pattern and stake length shall be as indicated on the Contract Documents.
- o. Terminate the bottom of the tendons with ATRA® Tendon Clips.
- p. Fill the anchorage trench with the specified material and compact as required by the Contract Documents.
- q. Alternate Method – On Slope Installation
- r. Excavate the anchor trench at the top of the slope to the depth as shown on the Contract Documents.
- s. Position collapsed sections at the crest of the slope.
- t. Feed precut lengths of specified tendon material through the I-slots in the cell walls before expanding individual sections into position. Number of tendons per section shall be per the Contract Documents. Leave the trailing length of the tendon on the upslope side of the section to allow for connection of the ATRA® Tendon Clips.
- u. Place the collapsed section in the anchor trench, drive ATRA® Anchors in the first row of cells so the arm of the anchor engages with the top of the cell wall and expand down the slope.
- v. Install the ATRA® Tendon Clips at the locations indicated on the Contract Documents.
- w. Hold the tendon and connect to each ATRA® Tendon Clip. Refer to the Slope Installation Manual for ATRA® Tendon Clip tie-off instructions.
- x. Adjust the section (i.e. a shake or two of the expanded section works well for this) so that the section and tendons are uniformly taut.
- y. After the sections are expanded as desired, drive ATRA® Speed Stake so the arm of the stake engages with the top of the cell wall.
- z. Anchorage pattern and stake length shall be as indicated on the Contract Documents.
- aa. Terminate the bottom of the tendons as required.
- bb. Fill the anchorage trench with the specified material and compact as required by the Contract Documents.

### C. Section Placement and Connection

- 1. Verify all sections are expanded uniformly to required dimensions and that outer cells of each section are correctly aligned. Interleaf or overlap edges of adjacent sections. Ensure upper surfaces of adjoining sections are flush at joint and adjoining cells are fully aligned at the cell wall slot.

2. Connect the sections with ATRA® Keys at each interleaf and end to end connection. Insert the ATRA® Key through the cell wall I-slot before inserting through the adjacent cell. Turn the ATRA® Key 90 degrees to lock the sections together.

#### D. Topsoil Infill Placement

1. Place specified infill in expanded cells with suitable material handling equipment, such as a backhoe, front-end loader, conveyor, or crane-mounted skip.
2. Limit drop height to prevent panel distortion.
3. Fill sections from the crest of the slope to toe or in accordance with Engineer's direction.
4. Infill material shall be free-flowing and not frozen when placed into the Geoweb® sections.
5. Evenly spread infill and tamp into place.

#### E. Aggregate Infill Placement

1. Place specified infill in expanded cells with suitable material handling equipment, such as a backhoe, front-end loader, conveyor, or crane-mounted skip.
2. Limit drop height to a maximum to prevent panel distortion.
3. Fill sections from the crest of the slope to toe or in accordance with Engineer's direction.
4. Infill material shall be free-flowing and not frozen when placed into the Geoweb® sections.
5. Evenly spread infill and ensure the infill is flush with the cell walls.

#### F. Engineered Infill Placement

1. Place specified infill in expanded cells with suitable material handling equipment, such as a backhoe, front-end loader, conveyor, or crane-mounted skip.
2. Limit drop height to prevent panel distortion.
3. Fill sections from the crest of the slope to toe or in accordance with Engineer's direction.
4. Infill material shall be free-flowing and not frozen when placed into the Geoweb® sections.
5. Evenly spread infill and ensure the infill is flush with the cell walls.

#### G. Surface Treatment

- a. Surface protection (erosion control blanket, hydroseed, or turf reinforcement mat) shall be installed immediately after placement of the infill material and secured per the Manufacturer's instructions.

END OF SECTION





## SECTION 311000

### SITE CLEARING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Removing surface debris.
2. Removing designated paving, curbs, and sidewalk.
3. Removing designated trees, shrubs, and other plant life.
4. Removing abandoned utilities.
5. Excavating topsoil.

###### B. Related Sections:

1. Section 312213 - Rough Grading.
2. Section 312318 - Rock Removal.

##### 1.2 SUBMITTALS

###### A. Section 013300 - Submittal Procedures: Requirements for submittals.

###### B. Product Data: Submit data for herbicide. Indicate compliance with applicable codes for environmental protection.

##### 1.3 QUALITY ASSURANCE

###### A. Conform to applicable code for environmental requirements, disposal of debris.

###### B. Perform Work in accordance with State of Michigan Department of Transportation standard specification for construction.

###### C. Coordinate clearing work with utility companies.

#### PART 2 - PRODUCTS

##### A. NOT USED

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify existing plant life designated to remain is tagged or identified.
- C. Identify waste area for placing removed materials.

### 3.2 PREPARATION

- A. Call Miss Dig (Local Utility Line) Information service at 1-800-482-7171 not less than three working days before performing Work.
  - 1. Request underground utilities to be located and marked within and surrounding construction areas.

### 3.3 PROTECTION

- A. Locate, identify, and protect utilities indicated to remain, from damage.
- B. Protect trees, plant growth, and features designated to remain, as final landscaping as specified in Section 015000 - Temporary Facilities and Controls.
- C. Protect bench marks, survey stakes, survey control points, and existing structures from damage or displacement.
- D. All trees, shrubs, and bushes which are too large to be replaced in kind, shall be let undisturbed, with the utility being installed in a boring and/or tunneling operation, unless written consent from the property owner to remove the tree is obtained.
- E. The boring or tunneling operation shall be constructed in accordance with these specifications.
- F. The Contractor shall locate the boring or tunneling pit at a sufficient distance to insure no damage will occur to the tree.

### 3.4 CLEARING

- A. Clear areas required for access to site and execution of Work.
- B. Remove trees and shrubs indicated. Remove stumps, main root ball, surface rock, and as indicated on the plans.
- C. Clear undergrowth and deadwood, without disturbing subsoil.
- D. Apply herbicide to remaining stumps to inhibit growth.

### 3.5 REMOVAL

- A. Remove debris, rock, and extracted plant life from site.
- B. Partially remove paving, curbs, and, sidewalk as indicated on Drawings. Neatly saw cut edges at right angle to surface.
- C. Remove abandoned utilities. Indicated removal termination point for underground utilities on Record Documents.
- D. Continuously clean-up and remove waste materials from site. Do not allow materials to accumulate on site.
- E. Trees, shrubs, and bushes which are removed and which are to be replaced shall be done so by an established nursery.
- F. Trees, shrubs, and bushes to be removed shall be done by falling the tree in sections, beginning from the top down and removing the stump and debris from the site.
- G. The property owner, at his option, may elect to claim the usable timber.
- H. If so, the Contractor shall be responsible for cutting the tree into manageable lengths and stockpiling same along the line of the work.
- I. If the property owner does not want the timber, it shall become the property of the Contractor.
- J. The cost of removing trees, brush, and bushes and the cutting of timber and removing debris from the site shall be included in the unit price for cleanup of the project.
- K. Continuously clean-up and remove waste materials from site. Do not allow materials to accumulate on site.
- L. Do not burn or bury materials on site. Leave site in clean condition.

### 3.6 TOPSOIL EXCAVATION

- A. Excavate topsoil from areas to be further excavated, relandscaped, or regraded, without mixing with foreign materials for use in finish grading.
- B. Do not excavate wet topsoil.
- C. Stockpile in area designated on site approved by the Engineer to depth not exceeding **8 feet** and protect from erosion.

END OF SECTION



## SECTION 312213

### ROUGH GRADING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Excavating topsoil.
2. Excavating subsoil.
3. Cutting, grading, filling, rough contouring, and compacting the site for site structures.

###### B. Related Sections:

1. Section 310513 - Soils for Earthwork: Soils for fill.
2. Section 311000 - Site Clearing: Excavating topsoil.
3. Section 312316 - Excavation: Utility and road excavation.
4. Section 312323 - Fill: General building area backfilling.
5. Section 329119 - Landscape Grading: Finish grading with topsoil to contours.

##### 1.2 REFERENCES

###### A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

###### B. ASTM International:

1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
3. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
4. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>)).
5. ASTM D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
6. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
7. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

##### 1.3 CLOSEOUT SUBMITTALS

###### A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

- B. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

#### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with State of Michigan Department of Transportation 2012 standard specifications for construction.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Topsoil: Type S4 as specified in Section 310513.
- B. Subsoil Fill: Type S2 as specified in Section 310513.
- C. Structural Fill: Type A2 as specified in Section 310516.
- D. Granular Fill: Type A3 as specified in Section 310516.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify site conditions under provisions of Section 013000.
- C. Verify survey bench mark and intended elevations for the Work are as indicated on Drawings.
- D. Verify fill materials are acceptable.

#### 3.2 PREPARATION

- 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Notify utility company to remove and relocate utilities.
- D. Protect utilities indicated to remain from damage.
- E. Protect plant life, lawns, rock outcropping and other features remaining as portion of final landscaping.

- F. Protect bench marks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

### 3.3 FILLING

- A. Fill areas to contours and elevations with unfrozen materials.
- B. Place fill material in continuous layers and compact in accordance with schedule at end of this section.
- C. Maintain optimum moisture content of fill materials to attain required compaction density.
- D. Slope grade away from building minimum 2 percent slope for minimum distance of 10 ft, unless noted otherwise.
- E. Make grade changes gradual. Blend slope into level areas.
- F. Repair or replace items indicated to remain damaged by excavation or filling.
- G. The Owner may have a use for the surplus excess excavated material. If they do it shall be their property and the Contractor's responsibility to transport said material to the Owner's stockyard. All cost associated with transporting, hauling, and loading said material shall be included in other pay items of this project.

### 3.4 TOLERANCES

- A. Section 014000 - Quality Requirements: Tolerances.
- B. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation.

### 3.5 SPOIL LEVELING

- A. As indicated on Drawings, or as directed by Engineer.
- B. Contractor shall be responsible for loading, hauling and spreading of all excess excavated material generated from this project.
- C. Place no excavated materials on roads without written permission of the authorities having jurisdiction of said road.
- D. Remove excavation in areas adjacent to yards where there is not suitable place to deposit spoils and dispose of as indicated on the drawings or off site as directed by the Engineer.
- E. Place no spoils in a watercourse or drain.

### 3.6 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.



- B. Test and analysis of fill material will be performed in accordance with MDOT Standards and with Section 014000.
- C. Compaction testing will be performed in accordance with MDOT Standards and with Section 014000.
- D. If testes indicate Work does not meet specified requirement, remove Work, replace and retest at no cost to the Owner.
- E. Frequency of Tests: As directed by the Engineer.

### 3.7 SCHEDULES

#### A. Subsoil Fill:

1. Fill Type A3 to subgrade elevation.
2. Fill Type S2.
3. Compact uniformly to minimum 95 percent of maximum density.

#### B. Topsoil Fill:

1. Fill Type S3: Proposed elevation, 4 inches thick.
2. Compact uniformly to minimum 95 percent of maximum density.

END OF SECTION

## SECTION 312316

### EXCAVATION

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Soil densification.
2. Excavating for work areas.

###### B. Related Sections:

1. Section 310513 - Soils for Earthwork: Stockpiling excavated materials.
2. Section 312213 - Rough Grading: Topsoil and subsoil removal from site surface.
3. Section 312323 - Fill.
4. Section 312500 - Slope protection and erosion control.

##### 1.2 REFERENCES

- A. MISS DIG System, Inc.
- B. Act No. 174, Public Acts of 2013, latest revision.
- C. Special provisions made by local utility having jurisdiction.

##### 1.3 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan.
- C. Shop Drawings: Indicate soil densification grid for each size and configuration footing requiring soils densification.

##### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with State of Michigan Department of Transportation standard specifications for construction.

## PART 2 - PRODUCTS

Not Used.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Call MISS DIG at 811 not less than three working days before performing Work.
  - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Notify utility company when specified to remove and relocate utilities.
- D. Identify known underground, above ground, and aerial utilities, stake, and flag locations.
- E. Protect above and below ground utilities indicated to remain from damage.
- F. Protect plant life, lawns, rock outcroppings and other features remaining as portion of final landscaping.
- G. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- H. Protect grade and slope stakes.

### 3.2 SPOIL LEVELING

- A. Seed spoils in accordance with Section 329219 – Seeding.
- B. Place soil erosion and sedimentation control measures per SESC plan.
- C. Spoils placed on tillable land shall be spread evenly to allow for tilling.
- D. Spoils in wooded areas shall be stockpiled as shown on plans.
- E. Spoils are to be kept a minimum 3 feet from excavation area.
- F. No excavated materials shall be placed on roads without written permission of the authorities having jurisdiction of said road.
- G. Spoils excavated in areas adjacent to residential or lawn areas are to be removed from the area unless directed by the Engineer, shown on plans, or Contractor receives written permission from Landowner to level in area.
- H. No spoils are to be placed in any watercourse or drain.

- I. Side grade outs for watercourse and ditches shall be done at the time of open drain excavation or channel cleanout.
- J. Non-combustible items (i.e. roots and stumps), brush, or debris shall not be mixed with leveled spoil material.
- K. Shape leveled spoils to prevent the ponding of water behind spoil pile.
- L. Level spoils on the same side of the drain which excavation occurs. If excavation occurs from both sides of drain then made even spoil piles on both sides of drain unless otherwise directed by the Engineer.
- M. In agricultural areas, root rake and hand pick sticks and rocks so that foreign debris 1' in length and/or 6" in diameter is disposed of.

### 3.3 EXCAVATION

- A. Underpin adjacent structures which may be damaged by excavation work.
- B. Excavate subsoil to accommodate building foundations, paving and site structures, construction operations, and utility trenches.
- C. Slope banks with machine to angle of repose or less until shored.
- D. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- E. Trim excavation. Remove loose matter.
- F. Remove lumped subsoil, boulders, and rock up to 0.5 cu ft measured by volume. Remove larger material as specified in Section 312318.
- G. Notify Engineer of unexpected subsurface conditions.
- H. Correct areas over excavated with structural fill type A2 as directed by Engineer.
- I. Remove excess and unsuitable material from site.

### 3.4 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Request visual inspection of bearing surfaces by Engineer before installing subsequent work.

### 3.5 PROTECTION

- A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

- C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

3.6 DUST CONTROL

- A. The Contractor shall implement measures to minimize dust, especially near residents, upon the Engineers request.

END OF SECTION

## SECTION 31 23 23

### FILL

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Backfilling site to subgrade elevations.
2. Fill for over-excavation.
3. Consolidation and Compaction.
4. Fill Under Traveled Surfaces.
5. Fill Materials.

###### B. Related Sections:

1. Section 31 22 13 - Rough Grading: Site filling.
2. Section 31 23 16 - Excavation.
3. Section 32 11 35 - Crushed Stone Path.
4. Section 31 05 21 - Soil Stabilization System (Geoweb).

##### 1.2 REFERENCES

###### A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

###### B. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
2. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>)).
4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

###### C. Michigan Department of Transportation (MDOT)

1. MDOT Standard Specification for Construction, current edition.
2. MDOT Density Control Handbook, current edition.

###### D. ANSI/ASTM

1. ANSI/ASTM C136 or MTM 108 & 109 - Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ANSI/ASTM C117 or MTM 108 - Test method for materials finer than 15mm (No. 200 Sieve) in mineral aggregates by washing.

### 1.3 SUBMITTALS

- A. Product Data: Submit data for geotextile fabric indicating fabric and construction.
- B. Samples: Submit, in air-tight containers, 10 lb. sample of each type of fill to testing laboratory.
- C. Materials Source: Submit name of imported fill materials suppliers.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with MDOT Standard Specifications for Construction, current edition.

## PART 2 - PRODUCTS

### 2.1 FILL MATERIALS

- A. Type B - Granular Fill and Subbase: MDOT Class II - for dry excavation . Compacted to a minimum of 95 percent of the materials maximum dry density as determined by Michigan one-point cone method in layers not to exceed 12 inches loose depth. Substitute with Type A MDOT 6A coarse stone for wet excavation.
- B. Type D - Native Subsoil: Site soils reused, free of gravel larger than 3-inch size, organic material, and debris. Compacted to a minimum of 90 percent of the materials maximum dry density, in layers not to exceed 12 inches loose depth, unless otherwise specified or as approved by the Engineer.
- C. Type E - Dense Aggregate: MDOT 22A for base course under path, compacted to 98% of the maximum unit weight at no greater than optimum moisture content. Compacted in layers not to exceed 12 inches loose depth.
- D. Type H - Granular Embankment: MDOT Class I, Class II, or Class III – for granular embankment construction, compacted to a minimum of 95% of its maximum dry density as determined by the Michigan one-point cone method in layers not to exceed 12 inches loose depth.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and Project conditions.
- B. Verify subdrainage, damp proofing, or waterproofing installation has been inspected.
- C. Verify underground tanks are anchored to their own foundations to avoid flotation after backfilling.
- D. Verify structural ability of unsupported walls to support loads imposed by fill.

- E. Verify that all fill materials to be used are acceptable.
- F. Verify foundation and/or perimeter drainage installation has been inspected.

### 3.2 PREPARATION

- A. Compact subgrade to density requirements for subsequent backfill materials.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with structural fill and compact to density equal to or greater than requirements for subsequent fill material.
  - 1. In areas that are suspect and may require subgrade undercutting, notify Engineer immediately. Do not proceed until it is agreed subgrade undercutting is required and quantities can be documented. See Section 31 23 16 - Excavation.
- C. Scarify subgrade surface to depth of 6 inch.
- D. Proof roll to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.
  - 1. Thoroughly proof-roll all areas of building pads, slabs-on-grade, bituminous pavement, concrete curb and gutter and sidewalks with a fully loaded tandem-axle truck, or its equivalent.
  - 2. Loose or soft areas revealed during the proof-rolling operations are to be compacted or removed and replaced according to See Section 31 23 16 - Excavation.

### 3.3 BACKFILLING

- A. Backfill areas to contours and elevations with unfrozen materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- C. Place geotextile fabric over Type A fill prior to placing next lift of fill.
- D. Place material in continuous layers as follows:
  - 1. Subsoil Fill: Maximum 12 inches compacted depth.
  - 2. Structural Fill: Maximum 8 inches compacted depth.
  - 3. Granular Fill: Maximum 8 inches compacted depth.
- E. Maintain optimum moisture content of backfill materials to attain required compaction density.
- F. Make gradual grade changes. Blend slope into level areas.
- G. Remove surplus backfill materials from site.
- H. Leave fill material stockpile areas free of excess fill materials.
- I. Type B – Granular Fill: Place and compact materials as specified in Part 2 of this Section.
- J. Type D – Native Subsoil: Place on compact materials as specified in Part 2 of this Section.
- K. Machine compact under springline of pipe with T-bar or Engineer approved equivalent.
- L. Backfill simultaneously on all side of utility structures, manholes, and catch basins.



M. Backfill wet excavation and subgrade undercutting according to Section 31 23 16 - Excavation.

N. Backfill subgrade undercutting in open drain according to See Section 31 23 16 - Excavation.

### 3.4 TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances.

B. Top Surface of Backfilling Within Building Areas: Plus or minus 1 inch from required elevations.

C. Top Surface of Backfilling Under Paved Areas: Plus or minus 0.10-foot, inch from required elevations.

D. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

### 3.5 FIELD QUALITY CONTROL

A. Section 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Perform laboratory material tests in accordance with AASHTO T180.

C. Perform in place compaction tests in accordance with the following:

1. Density Tests: ASTM D1556 or ASTM D2922.
2. Moisture Tests: ASTM D3017.

D. When tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

E. Tests and analysis of fill material will be performed in accordance with One Point Michigan Cone Test.

F. Compaction testing will be performed in accordance with MDOT standard requirements.

G. Frequency of tests: At the discretion of the Engineer.

H. Proof roll compacted fill surfaces under slabs-on-grade.

### 3.6 PROTECTION OF FINISHED WORK

A. Section 01 70 00 - Execution and Closeout Requirements: Protecting finished Work.

B. Reshape and re-compact fills subjected to vehicular traffic.

END OF SECTION

SECTION 31 25 00

SOIL EROSION PREVENTION AND SEDIMENTATION CONTROL

1. PART 1 GENERAL

1.1 SECTION INCLUDES

- A. System Description.
- B. Quality Assurance.
- C. Regulatory Requirements.
- D. Method of Payment.

1.2 SYSTEM DESCRIPTION

- A. Methods of control are identified on Drawings by numbers corresponding to the Michigan Department of Management and Budget keying system for soil erosion and sedimentation control.
- B. Additional control measures shall be employed as required by site conditions and applicable enforcing agency having project jurisdiction.

1.3 QUALITY ASSURANCE

- A. Perform and maintain work in accordance with the Soil Erosion and Sedimentation Control Part 91 of Act 451 of 1994, as amended, and corresponding rules of the Michigan Department of Natural Resources.

1.4 REGULATORY REQUIREMENTS

- A. Contractor shall obtain permit and pay fees for plan review, inspection and bonding as required by applicable enforcing agency having jurisdiction.
- B. Submit installation time schedule for temporary and permanent soil erosion and sedimentation control measures to applicable enforcing agency having jurisdiction, as well as to Engineer. Make submittals prior to start of construction.

2. PART 2 PRODUCTS

2.1 MATERIALS

- A. In accordance with standards and specifications for soil erosion and sediment control with approved plans and requirements of applicable enforcing agency.

### 3. PART 3 EXECUTION

#### 3.1 EXAMINATION AND PREPARATION

- A. Identify required lines, levels, contours and datum.
- B. Field locate known utility locations. Notify Engineer of conflicts and attain removal or relocation instructions prior to continuing installation activities.
- C. Maintain and protect existing utilities to remain.

#### 3.2 PROTECTION OF ADJACENT WORK

- A. Protect adjacent structures and property which may be damaged by execution of work.
- B. Protect existing trees, shrubs, landscaping and lawn areas designated to remain.

#### 3.3 INSTALLATION AND MAINTENANCE

- A. Construct soil erosion and sedimentation control measures in accordance with approved plans and requirements of applicable enforcing agency.
- B. Schedule planned control measures with construction operations to limit the area of any disturbed land to the shortest possible period of exposure.
- C. Conduct earth changes to effectively reduce accelerated soil erosion and resulting sedimentation.
- D. Remove sediment from runoff water before it leaves the site.
- E. Inspect, maintain and repair temporary control measures until permanent control measures are implemented.
- F. Maintain permanent control measures until final acceptance by Owner.
- G. Install silt fences around catchbasin inlets, to be removed after final inspection of the project.

#### 3.4 SOIL EROSION PREVENTION AND SEDIMENTATION CONTROL MEASURES

- A. Permanent and minimum temporary control measures as scheduled on Drawings.
- B. Additional temporary measures (over and above those scheduled on Drawings) due to site grading/construction activities that in any way differ from that shown on Drawings.

END OF SECTION

## SECTION 31 32 21

### FILTER FABRIC

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Filter Fabric for Soil Stabilization System Applications.
  - 2. Filter Fabric for Heavy Riprap Applications.
- B. Related Sections:
  - 1. Section 31 22 13 – Rough Grading
  - 2. Section 31 35 21 – Slope Protection and Erosion Control

##### 1.2 REFERENCES

- A. ASTM D-4632 - Test method for Tensile Strength and Elongation
- B. ASTM D-3786 - Test method for Mullen Burst.
- C. ASTM D-4533 - Test method for Trapezoidal Tear Strength.
- D. ASTM D-3787 - Test method for Puncture Strength.
- E. ASTM D-4751 - Test method for Apparent Opening Size.
- F. ASTM D-4491 - Test method for Coefficient of Permeability

##### 1.3 COORDINATION

- A. Section 01 30 00 – Administrative Requirements specifies requirements for coordination.
- B. Coordinate Work of this Section with Section 31 37 00 – Riprap.

##### 1.4 SUBMITTALS

- A. Submit shop drawings and product data for all items to be installed and/or constructed within this Section.
- B. Submit manufacturer's instructions for all product data.
- C. Submit manufacturer's certificate, which shall show actual test values obtained for the physical properties as tested for compliance with the specifications, for all product data.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Mechanically bonded, non-woven, long-chain polymeric fibers or yarns. The edges of the fabric shall be finished to prevent the outer fiber from pulling away from the fabric.

1. Filter fabric for Geoweb is to have, at minimum, the following properties:

|                             |                             |
|-----------------------------|-----------------------------|
| Tensile Strength            | 100 lbs                     |
| Tensile Elongation (max)    | 100 %                       |
| Mullen Burst                | 210 psi                     |
| Trapezoidal Tear Strength   | 40 lbs                      |
| Puncture Strength           | 65 lbs                      |
| Apparent Opening Size (max) | 70 sieve                    |
| Flow Rate                   | 140 gal/min/ft <sup>2</sup> |

2. Filter fabric for heavy riprap applications are to have, at minimum, the following properties:

|                             |               |
|-----------------------------|---------------|
| Tensile Strength            | 200 lbs       |
| Tensile Elongation (max)    | 100 %         |
| Mullen Burst                | 350 psi       |
| Trapezoidal Tear Strength   | 75 lbs        |
| Puncture Strength           | 100 lbs       |
| Apparent Opening Size (max) | 0.210 mm      |
| Flow Rate                   | 63 gal/min/ft |

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Section 01 70 00 - Execution and Closeout Requirements specifies requirements for installation examination.
- B. Verify the correct fabric is specified for the specific use.
- C. At the time of installation, the filter fabric may be rejected at the discretion of the Engineer if it has been removed from its protective cover for over 72 hours or has defects, tears, punctures, flow deterioration, or damage incurred during manufacture, transportation or storage.
- D. No torn, punctured, or otherwise damaged fabric shall be installed.

### 3.2 PREPARATION

- A. Section 01 70 00 - Execution and Closeout Requirements specifies requirements for installation preparation.
- B. Remove large stones or other debris, which could damage the filter fabric.

C. Adjacent Surfaces: Protect adjacent surfaces.

### 3.3 STORAGE

A. During all periods of shipment and storage, the filter fabric shall be protected from abrasion, direct sunlight, ultraviolet rays, and temperatures greater than 140 degrees Fahrenheit (or as directed by the manufacturer). To the extent possible, the fabric shall be maintained wrapped in its protective covering.

### 3.4 INSTALLATION

A. All joints/overlaps in material shall be a minimum of 2 feet.

B. Any damaged material shall be repaired by placing a piece of fabric that is sufficiently large to cover the damaged area plus 2 feet of adjacent undamaged geotextile in all directions.

C. Finish according to specific use requirements.

D. Edges of filter fabric shall be toed in 12 inches unless specified otherwise. Work will not pass inspection if filter fabric is not "toed in."

### 3.5 PROTECTION

A. Section 01 70 00 - Execution and Closeout Requirements specifies requirements for protecting finished Work.

B. Do not permit Traffic over unprotected surface.

C. Take care placing material over filter fabric so as not to damage the material.

END OF SECTION



SECTION 31 35 21

SLOPE PROTECTION AND EROSION CONTROL

1. PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Rip-rap grade and bank protection (see Section 31 37 00).
- B. Coir Rolls.

1.2 RELATED SECTIONS

- A. Section 01 50 00 - Construction Facilities and Temporary Controls.
- B. Section 31 10 00 - Site Clearing.
- C. Section 31 22 13 - Rough Grading.
- D. Section 31 23 16 - Excavation.
- E. Section 31 25 00 - Soil Erosion and Sedimentation Control.
- F. Section 31 32 21 - Filter Fabric.
- G. Section 32 91 19 - Landscape Grading.
- H. Section 32 92 19 - Seeding.

1.3 REFERENCES

- A. ASTM D-4595 - Test Method for geo-grid tensile strength.
- B. Part 91 of Act No. 451, of 1994, relative to Soil Erosion and Sedimentation Control Act.
- C. National Crushed Stone Association (N.C.S.A.).
- D. Michigan Department of Transportation: Standard Specifications for Construction.
- E. ANSI Z60.1 - Nursery Stock; current edition
- F. American Standard for Nursery Stock; current edition
- G. Hortus III - current edition. Bailey Horatium, Cornell University

1.5 QUALITY ASSURANCE

- A. Acceptability of plants will be determined by the Engineer.
- B. Plants must be clearly labeled according to species.



1.6 SUBMITTALS

- A. Submit under provisions of Section 01 33 00 - Submittals.
- B. Submit shop drawings and product data for all items to be installed and/or constructed within this Section.

1.7 REGULATORY REQUIREMENTS

- A. Plant Materials: Certified by the State Department of Agriculture as described by ANSI-Z60.1 to be free of disease or hazardous insects.
- B. Comply with state agencies for plant material certification and inspection.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.
- B. Coir Rolls:
  - 1. Plant material shall be harvested just before shipment to the site or harvested no earlier than two months before planting and put in refrigerated storage at 40°F to 50°F.
  - 2. When shipped, plants shall be transported in enclosed or covered vehicles and scheduled to arrive on site within 24 hours.
  - 3. The plants shall be bundled and packed to prevent damage to the bark, limbs or root systems.
  - 4. All bare root plants shall be treated with a root gel to prevent drying.
  - 5. Furnish standard products in manufacturer's standard containers bearing original labels legibly showing quantity, analysis, genus/species and name of manufacturer/grower.
  - 6. Keep plants moist at all times and protected from the wind, sun, drying out or other damage. Cuttings shall be stored to protect them from drying out by keeping them in a cool place and damp. Cuttings or unrooted stock not planted within two days after arrival on the site shall be discarded unless refrigerated at 40°F to 50°F. Discarded materials shall be replaced from commercial sources at the contractor's expense.
  - 7. The Engineer may reject injured plants.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Coir Rolls: All planting of woody vegetation shall be accomplished during the dormant season, between October 1<sup>st</sup> and May 15<sup>th</sup>.

1.10 COORDINATION

- A. Coordinate work under provisions of Section 01 30 00.
- B. Perform Planting as other construction activities allow.
- C. Do not install plant materials prior to acceptance of final grades.

## 2. PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Coir Rolls.
  - 1. See typical detail in drawings.
- B. Heavy Rip rap.
  - 1. See typical detail in drawings.

## 3. PART 3 EXECUTION

### 3.1 PREPARATION

- A. Implement temporary controls under provisions of Section 01 50 00 - Temporary Controls.

### 3.2 EXECUTION

- A. Install per typical in drawings.

END OF SECTION



## SECTION 31 37 00

### RIPRAP

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Riprap placed loose.
- B. Related Sections:
  - 1. Section 31 22 13 - Rough Grading.
  - 2. Section 31 23 16 - Excavation: Excavating for riprap.
  - 3. Section 31 23 23 - Fill.
  - 4. Section 32 91 19 - Landscape Grading: Topsoil placement.

##### 1.2 QUALITY ASSURANCE

- A. Furnish each aggregate material from single source throughout the Work.
- B. Perform Work in accordance with MDOT Standard Specifications for Construction, current edition.

#### PART 2 - PRODUCTS

##### 2.1 MATERIALS

- A. Heavy Riprap – Sound, tough, durable rock or uniformly white crushed limestone free from structural defects. Material to be uniform in size and not less than 16 inches in the least dimension, with an average of 18 inches to 24 inches diameter conforming to MDOT 916.01. No rebar, steel, or paint by-products shall be mixed with the material. Concrete and bituminous/asphalt material is not acceptable.
- B. All materials must be approved by Owner before use on project.
- C. Filter Fabric – As specified in Section 31 32 21 – Filter Fabric.

#### PART 3 - EXECUTION

##### 3.1 PREPARATION

- A. Exact location of plain riprap, plain riprap spillways, riprap cross vanes, and splash pads shall be determined by Engineer during construction.

### 3.2 RIPRAP AND RIPRAP TOE OF SLOPE

- A. Clear topsoil and rough grade to required contours. Over excavate protection area equal to the thickness of the protection.
- B. Place filter fabric with all edges "toed in" a minimum of 12 inches. Riprap will not pass inspection if filter fabric is not "toed in."
- C. Place protection on filter fabric; tamp protection until individual pieces are firmly bedded.
- D. Hand place stone, if necessary, to assure that there are no void spaces in protection. Upon completion the filter fabric should not be visible.
- E. Bank and grade protection shall be installed as needed per location as directed by the Engineer.
- F. Toe of slope protection shall be installed along the bank to a height of 3 feet vertically above the flow line of the drain.

END OF SECTION

SECTION 321123  
AGGREGATE BASE COURSES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Aggregate base course for crushed stone path.

B. Related Sections:

1. Section 312213 - Rough Grading: Preparation of site for base course.
2. Section 312323 - Fill: Compacted fill under base course.
3. Section 329119 - Landscape Grading: Topsoil fill at areas adjacent to aggregate base course.

1.2 REFERENCES

- A. ANSI/ASTM C117 – Test Method for Materials Finer than 75 mm (No. 200) Sieve in Mineral Aggregates by Washing.
- B. ANSI/ASTM C136 – Method for Sieve Analysis of Fine and Coarse Aggregates.
- C. Test method for density of soil in place with loss by wash less than 15% - One Point Michigan Cone Test.
- D. Test method for density of soil in place with loss by wash greater than 15% - One Point T-99 Test.
- E. MDOT 2012 Standard Specifications for Construction.
- F. ASTM D2992 – Test Methods of Density of Soil and Soil – Aggregate in Place by the Nuclear Method (Shallow Depth).

1.3 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data:
- C. Materials Source: Submit name of aggregate materials suppliers.

#### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with MDOT 2012 Standard Specifications for Construction.

### PART 2 - PRODUCTS

#### 2.1 AGGREGATE MATERIALS

- A. Trail subbase aggregate: MDOT 22A crushed limestone. Any substitutions must be approved by the Engineer prior to bidding.
- B. Trail surface aggregate: Crushed limestone fines. Any substitutions must be approved by the Engineer prior to bidding. See Section 321135.

#### 2.2 ACCESSORIES

- A. Geotextile Fabric: AASHTO M288; non-woven, polypropylene.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Verify subbase has been inspected, gradients and elevations are correct, and are dry.

#### 3.2 AGGREGATE PLACEMENT

- A. Spread aggregate to a total compacted thickness as shown on detail sheet.
- B. Place subbase aggregate in lifts no greater than 6" and roller compact. Place crushed limestone fines in 2" lift and roller compact. Subbase for concrete sidewalk can be compacted with a vibratory plate compactor.
- C. Level and contour surfaces to elevations and gradients indicated.
- D. Compact placed aggregate materials to achieve compaction to 95 percent of its maximum dry density in accordance with MDOT Standard requirements.
- E. If needed, add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- F. Use mechanical vibrating tamping in areas inaccessible to compaction equipment.

#### 3.3 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.

- B. Scheduled Compacted Thickness: Within 1/4 inch.
- C. Variation from True Elevation: Within 1/2 inch.

3.4 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01400.
- B. Gradation of Aggregate: In accordance with ASTM C136.
- C. Compaction testing will be performed as specified.
- D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.
- E. Frequency of Tests: At the discretion of Engineer.

END OF SECTION





## SECTION 321135

### CRUSHED STONE PATH

#### 1 PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Crushed stone limestone mix for path topping.
- B. Aggregate base course.

##### 1.2 RELATED SECTIONS

- A. Section 312213 - Rough Grading: Preparation of site for base course.
- B. Section 321123 - Aggregate Base Course.
- C. Section 329119 - Landscape Grading: Soil fill at areas adjacent to base course.

##### 1.3 REFERENCES

- A. ANSI/ASTM C117 - Test Method for Materials Finer than 75 mm (No. 200) Sieve in Mineral Aggregates by Washing.
- B. ANSI/ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.
- C. Test method for density of soil in place with loss by wash less than 15% - One Point Michigan Cone Test.
- D. Test method for density of soil in place with loss by wash greater than 15% - One Point T-99 Test.
- E. MDOT Standard Specifications for Construction.
- F. ASTM D2992 - Test Methods of Density of Soil and Soil - Aggregate in Place by the Nuclear Method (Shallow Depth).

##### 1.4 SUBMITTALS

- A. Submit under provisions of Section 013300.

## PART 2 PRODUCTS

### 1.5 MATERIALS

- A. Crushed stone topping: Shall be a 50/50 mix of MDOT 29A crushed limestone aggregate and Limestone Dust.

Limestone Dust shall meet the following specification:

|        |                    |
|--------|--------------------|
| 100%   | 3/8"               |
| 100%   | #4                 |
| 85-95% | #8                 |
| 60-70% | #16                |
| 45-55% | #30                |
| 40-50% | #40                |
| 35-45% | #50                |
| 35-45% | #60                |
| 25-35% | #100               |
| 15-25% | Loss By Wash (LBW) |

- B. Aggregate for base course: MDOT 22A compacted crushed limestone.
- C. Subbase: MDOT Class II specified in Section 312323 or as specified in drawings.

## 2 PART 3 EXECUTION

### 2.1 EXAMINATION

- A. Verify subbase and base have been inspected, gradients and elevations are correct, and are dry.

### 2.2 AGGREGATE PLACEMENT

- A. Spread aggregate to a total compacted thickness as shown on detail sheet.
- B. Place aggregate in 1-2" layer and roller compact.
- C. Level and contour surfaces to elevations and gradients indicated.
- D. Compact placed aggregate materials to achieve compaction to 95 percent of its maximum dry density in accordance with MDOT Standard requirements.
- E. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- F. Use mechanical vibrating tamping in areas inaccessible to compaction equipment.

2.3 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Scheduled Compacted Thickness: Within 1/4 inch.
- C. Variation from True Elevation: Within 1/2 inch.

2.4 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 014000.
- B. Gradation of Aggregate: In accordance with ASTM C136.
- C. Compaction testing will be performed as specified.
- D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.
- E. Frequency of Tests: At the discretion of Engineer.

END OF SECTION



SECTION 329113  
SOIL PREPARATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Preparation of subsoil.
2. Soil testing.
3. Placing topsoil.

B. Related Sections:

1. Section 310513 – Soils for Earthwork: Topsoil material.
2. Section 312213 - Rough Grading: Rough grading of site.
3. Section 329119 - Landscape Grading: Preparation of subsoil and placement of topsoil in preparation for the Work of this section.
4. Section 329219 - Seeding

1.2 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Submit minimum 10 lb. sample of topsoil proposed. Forward sample to approved testing laboratory in sealed containers to prevent contamination.

C. Test Reports: Indicate topsoil nutrient and pH levels with recommended soil supplements and application rates.

D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

E. Disregard sample submission if recent test results are available for type of fill.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with MDOT Standard.

B. Maintain one copy of each document on site.

## PART 2 - PRODUCTS

### 2.1 PROTECTION

- A. Protect landscaping and other features remaining as final work.
- B. Protect existing structures, fences, roads, sidewalks, paving, mailboxes, and curbs.

### 2.2 SOIL MATERIALS

- A. Topsoil Minimum 4" Compacted Depth: As specified in Section 310513.
- B. Topsoil: Imported, fabric loam; free of subsoil, roots, grass, excessive amount of weeds, stone, and foreign matter; acidity range (pH) of 5.5 to 7.5; containing a minimum of 4 percent and a maximum of 25 percent organic matter.
- C. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds, and roots; pH value of minimum 5.5 and maximum 7.5.

### 2.3 ACCESSORIES

- A. Mulching Material: Conwed Verdoyl #2000.
- B. Fertilizer: FS O-F-241, Commercial Grade with 12-12-12 analysis.
- C. Water: Clean, fresh, and free of substances or matter which could inhibit vigorous growth of grass.
- D. Erosion Fabric: Jute matting, open weave.
- E. Stakes: softwood lumber, chisel pointed.

### 2.4 SOURCE QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Testing, inspection, and analysis requirements.
- B. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.
- C. Provide recommendation for fertilizer and lime application rates for specified seed mix as result of testing.
- D. Testing is not required when recent tests and certificates are available for imported topsoil. Submit these test results to testing laboratory. Indicate, by test results, information necessary to determine suitability.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify prepared soil base is ready to receive the Work of this section.

### 3.2 PREPARATION OF SUBSOIL

- A. Prepare sub-soil to eliminate uneven areas and low spots. Maintain lines, levels, profiles, and contours. Make changes in grade gradual. Blend slopes into level areas.
- B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated sub-soil.
- C. Eliminate uneven areas and low spots. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove subsoil contaminated with petroleum products.
- D. Scarify subsoil to depth of 3 inches where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted sub-soil.

### 3.3 PLACING TOPSOIL

- A. Spread topsoil to minimum compacted depth of 4 inches over area to be seeded. Rake until smooth.
- B. Place topsoil during dry weather and on dry unfrozen subgrade.
- C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.
- D. Fine grade topsoil to eliminate rough, low, or soft areas, and to ensure positive drainage.
- E. Install edging at periphery of seeded areas in straight lines to consistent depth.
- F. Remove stone, roots, grass, weeds, debris, and foreign material while spreading.
- G. Manually spread topsoil around trees and plants to prevent damage.
- H. Lightly compact. Roll placed topsoil.
- I. Remove surplus subsoil and topsoil from site.



- J. Leave stockpile area and site clean and raked, ready to receive landscaping.
- K. Place required trees shrubs, fences, and mailboxes in their proper locations.
- L. Reconstruct and place guard rails in proper locations to meet MDOT and Municipal specifications.

END OF SECTION

SECTION 32 91 19  
LANDSCAPE GRADING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Final grade topsoil for finish landscaping.

B. Related Sections:

1. Section 329219 - Seeding and Soil Supplements: Finish ground cover.
2. Section 329300 - Plants: Topsoil fill for trees, plants and ground cover.

1.2 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures

B. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with State of Michigan Department of Transportation Standards.

PART 2 - PRODUCTS

2.1 MATERIAL

A. Topsoil: As specified in Section 329113.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify building and trench backfilling have been inspected.

C. Verify substrate base has been contoured and compacted.

### 3.2 PREPARATION

- A. Protect landscaping and other features remaining as final Work.
- B. Protect existing structures, fences, sidewalks, utilities, paving, and curbs.

### 3.3 SUBSTRATE PREPARATION

- A. Eliminate uneven areas and low spots.
- B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove contaminated subsoil.
- C. Scarify surface to depth of 3 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

### 3.4 PLACING TOPSOIL

- A. Place topsoil in areas where seeding, sodding or planting, is required to minimum depth of 4 inches. Place topsoil during dry weather.
- B. Fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.
- C. Remove roots, weeds, rocks, and foreign material while spreading.
- D. Manually spread topsoil close to plant material, building, utilities and curbs to prevent damage.
- E. Roll placed topsoil.
- F. Remove surplus subsoil and topsoil from site.
- G. Leave stockpile area and site clean and raked, ready to receive landscaping.

### 3.5 TOLERANCES

- A. Section 014000 - Quality Requirements: Tolerances.
- B. Top of Topsoil: Plus or minus 1/2 inch.

### 3.6 PROTECTION OF INSTALLED WORK

- A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Prohibit construction traffic over topsoil.

END OF SECTION

## SECTION 329219

### SEEDING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Fertilizing.
2. Seeding.
3. Hydroseeding.
4. Mulching.
5. Maintenance.

###### B. Related Sections:

1. Section 329113 - Soil Preparation
2. Section 329119 - Landscape Grading: Preparation of subsoil and placement of topsoil in preparation for the Work of this section.

##### 1.2 REFERENCES

###### A. ASTM International:

1. ASTM C602 - Standard Specification for Agricultural Liming Materials.

###### B. FS 0-F-241 – Fertilizers, Mixed, Commercial.

##### 1.3 DEFINITIONS

- ###### A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

##### 1.4 PROTECTION

- ###### A. Protect landscaping and other features remaining as final Work.
- ###### B. Protect existing structures, fences, roads, sidewalks, paving, mailboxes curbs, etc.

##### 1.5 SUBMITTALS

- ###### A. Section 013300 - Submittal Procedures: Requirements for submittals.

- B. Product Data: Submit data for seed mix, fertilizer, mulch, and other accessories.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

#### 1.6 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
- B. Operation and Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

#### 1.7 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging.
- B. Perform Work in accordance with State of Michigan Department of Transportation Standards.
- C. Provide signed affidavit stating the amount and type of seed, fertilizer, and mulch applied per acre.
- D. Maintain one copy of each document on site.

#### 1.8 REGULATOR REQUIREMENTS

- A. Comply with regulatory agencies for fertilizer and herbicide composition.

#### 1.9 QUALIFICATIONS

- A. Seed Supplier: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum 3 years documented experience.
- C. Maintenance Services: Shall be paid by the Contractor for up to one (1) year to guarantee establishment of growth.

#### 1.10 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Product storage and handling requirements.
- B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.
- C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.11 MAINTENANCE SERVICE

- A. Section 017000 - Execution and Closeout Requirements: Requirements for maintenance service.
- B. Maintain seeded and sodded areas immediately after placement until grass is well established, exhibits a vigorous growing condition and is accepted by Owner. Guarantee replacement of dead material for one year from date of substantial completion.
- C. Contractor shall be responsible for maintaining adequate seedbed moisture until the sodbed is established.

1.12 WARRANTY AND REPLACEMENT

- A. Seeded areas must have a relatively uniform stand of grass with no bare spots over 6 inches square at the time of substantial completion. Reseed at the original rate. All areas failing to establish growth within ninety (90) days after germination or one growing season, whichever is longest, for any reason whatsoever, will be redone at the contractor's expense.

PART 2 - PRODUCTS

2.1 SEED MIXTURE

- A. Furnish materials in accordance with Municipal, Federal and State Standards.
  - 1. Native Grass Mix:
    - a. Seeding rate: 5 oz. per 1,000 s.f. or 10 lbs. per acre

| Scientific Name         | Common Name      | %  |
|-------------------------|------------------|----|
| <b>Grasses</b>          |                  |    |
| Andropogon Gerardii     | Big Blue stem    | 24 |
| Panicum Virgatum        | Switch Grasses   | 12 |
| Sheizachyrium Scoparius | Little Blue stem | 40 |
| Sorghastrum             | Indian Grass     | 24 |

|        |   |     |
|--------|---|-----|
| Nutans | s |     |
| Total  |   | 100 |

2. Acceptable Seed Supplier, Michigan Wildflower Farm, phone: 517-647-6010, email: wildflower@voyager.net, [www.michiganwildflowerfarm.com](http://www.michiganwildflowerfarm.com)

## 2.2 ACCESSORIES

- A. Fertilizer: FS O-F-241, type and grade recommended for grass, with 50% of the elements derived from organic sources and of proportion necessary to eliminate deficiencies of topsoil to the following proportions: 18% nitrogen, 24% phosphoric acid, 6% potassium.
  - 1. To be placed on landscaping seeding.
- B. Mulch: Small grain straw mulch that is clean and weed free unless otherwise indicated.
  - 1. Hydroseeding Mulching Material: Conwed Verdoyl #2000
  - 2. Mulch Blankets:
    - a. North American Green SC150BN, or approved equal, in areas with slopes 4 horizontal to 1 vertical and steeper as indicated on the plans or directed by the Engineer.
    - i. Install all mulch blankets with 6-inch North American Green Eco Stakes, or approved equal. Stake according to manufacturer's recommendations as approved by the Engineer.
- C. Soil Binding Agent: Non-toxic, biodegradable materials that are environmentally safe. Applied at a rate of 1 lb per 1000 square feet.
- D. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass.
- E. Lime: ASTM C602, Class T agricultural limestone containing a minimum 80 percent calcium carbonate equivalent.
- F. Erosion Fabric: Jute matting, open weave.
- G. Stakes: Softwood lumber, chisel pointed.
- H. String: Inorganic fiber.
- I. Herbicide: 25% Prometon, 4-bis, and 75% inert ingredients.

## 2.3 SOURCE QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Testing, inspection and analysis requirements.
- B. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.

- C. Provide recommendation for fertilizer and lime application rates for specified seed mix as result of testing.
- D. Testing is not required when recent tests and certificates are available for imported topsoil. Submit these test results to testing laboratory. Indicate, by test results, information necessary to determine suitability.
- E. Notify Engineer 72 hours prior to hydroseeding and fertilizing for approval to proceed.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify prepared soil base is ready to receive the Work of this section.
- C. Landscape Seeding: Verify that prepared soil base is read to receive the work of this section. See Section 329119 – Landscape Grading.

### 3.2 FERTILIZING

- A. Apply fertilizer at application rate 500 lbs per acre.
- B. Apply after smooth raking of topsoil and prior to roller compaction.
- C. Do not apply fertilizer at same time or with same machine used to apply seed.
- D. Mix fertilizer thoroughly into upper 2 inches of topsoil.
- E. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.

### 3.3 SEEDING

- A. Apply seed at rate of 500 lbs per acre evenly in two intersecting directions. Rake in lightly.
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Planting Season: May 1 to October 10 unless otherwise approved by the Engineer.
- D. Do not sow immediately following rain, when ground is too dry, or when winds are over 12 mph.
- E. Roll seeded area with roller not exceeding 112 lbs/linear foot.
- F. Immediately following seeding and compacting, apply mulch to thickness of 1/8 inches. Maintain clear of shrubs and trees.



- G. Apply water with fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

### 3.4 HYDROSEEDING

- A. Apply seeded slurry for lawn with a hydraulic seeder at a rate of 8 lbs per 1000 sq ft evenly in two intersecting directions. Native seed will be seeded at at the rate earlier specified in this section.
- B. Do not hydroseed area in excess of what which can be mulched on same day.
- C. Immediately following seeding, apply mulch at a rate of 50 lbs per 1000 sq ft. Maintain clear of shrubs and trees.
- D. Apply water with a fine spray immediately after each area has been mulched. Saturate to 3 inches of soil.

### 3.5 SEED PROTECTION

- A. Cover seeded slopes where grade is 6 inches per foot or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.
- B. Lay fabric smoothly on surface, bury top end of each section in 6-inch-deep excavated topsoil trench. Overlap edges and ends of adjacent rolls minimum 12 inches. Backfill trench and rake smooth, level with adjacent soil.
- C. Secure outside edges and overlaps at 36 inch intervals with stakes.
- D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- E. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

### 3.6 QUALITY CONTROL

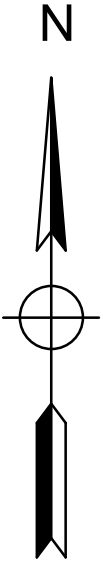
- A. Notify Engineer 3 working days prior to seeding and fertilizing for approval to proceed.
- B. Seeding shall not be done during windy weather (above 25 mph) or when the ground is overly wet (saturated) or frozen.
- C. All areas that are partially completed to grade, will be prepare and seeded during the first available planting period and will not be allowed to sit idle for long periods of time without receiving the erosion control specified in the contract.
- D. Planting Season: April 1 to May 31, or September 1 to October 31. No Seeding shall be done before or after these dates with the Engineer's written approval.

3.7 MAINTENANCE

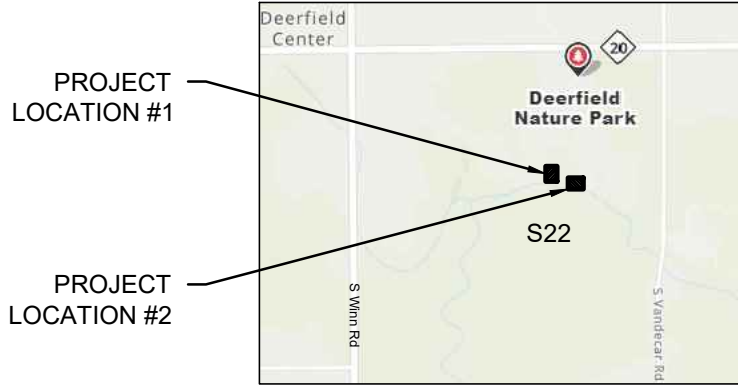
- A. Immediately reseed areas showing bare spots.
- B. Repair any eroded areas and reseed immediately.
- C. Contractor shall guarantee a uniform grass growth over the entire project and shall reseed bare and thin areas until this is accomplished at no additional cost to the project.
- D. Water to prevent grass and soil from drying out.
- E. Roll surface to remove minor depressions or irregularities.
- F. Control growth of weeds. Apply herbicides. Remedy damage resulting from improper use of herbicides.
- G. Repair washouts or gullies.
- H. Protect from traffic and erosion in newly seeded areas is the responsibility of the Contractor. Safety fences and/or silt fences with appropriate signage may be used at the Contractor's expense until the grasses are fully established.

END OF SECTION

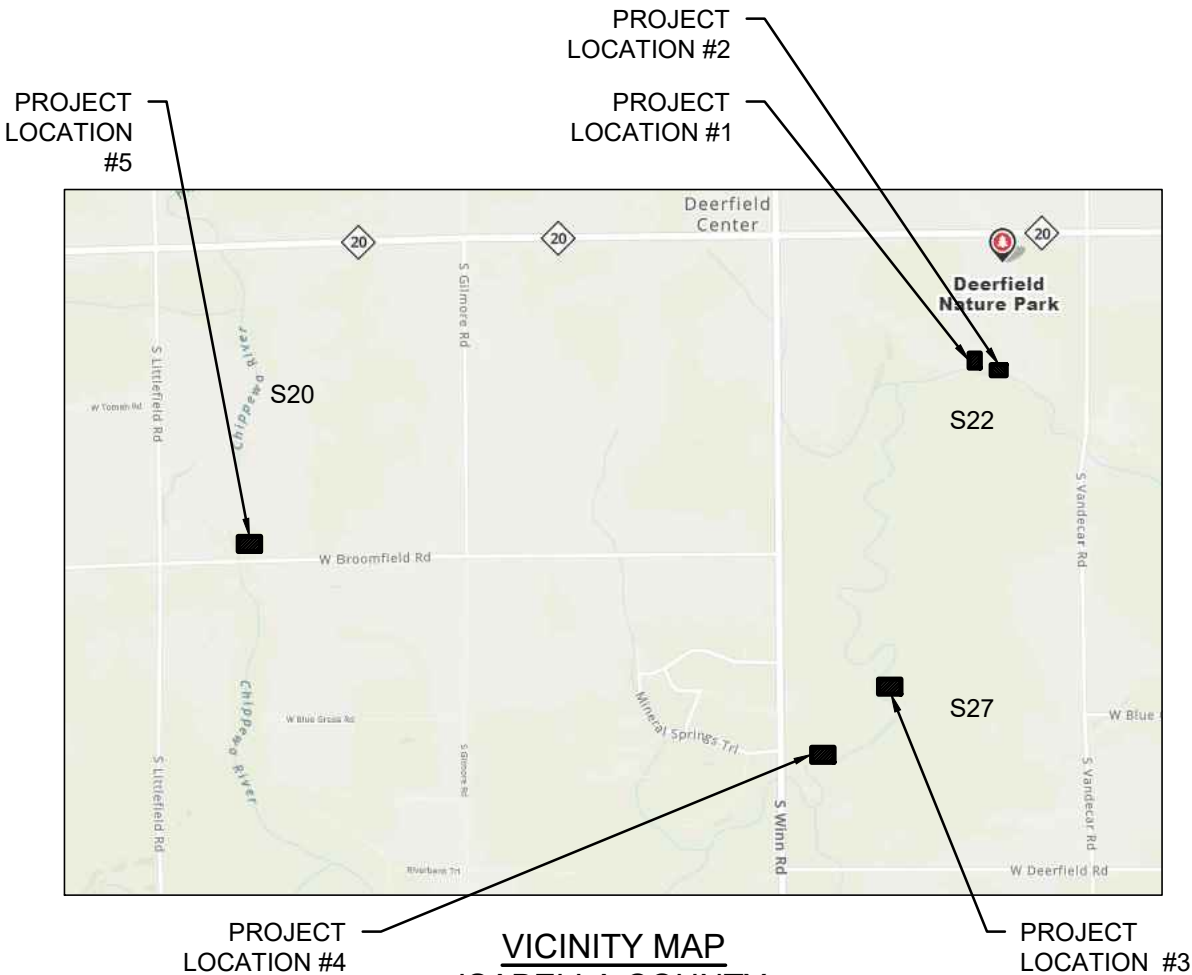




NOT TO SCALE



LOCATION MAP



VICINITY MAP  
ISABELLA COUNTY

SECTIONS 20, 22, & 27  
T.14 N. - R.5 W.  
MOUNT PLEASANT  
ISABELLA COUNTY, MICHIGAN

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Fax. 989-754-4440  
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VICINITY MAP

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
ISABELLA COUNTY

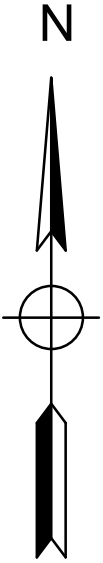
PROJECT NO.  
130591SG2021

DATE:  
AUGUST, 2021

SHEET 1 OF 44

DESIGNED BY: LTP  
DRAWN BY: LTP  
CHECKED BY: CAR  
APPROVED BY: DSB

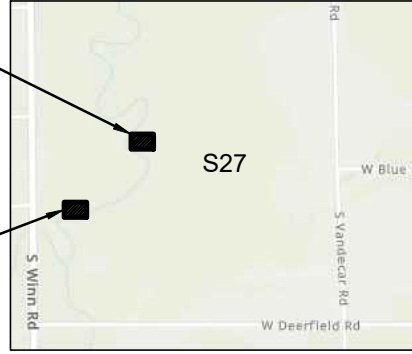
FILE NO.  
PERM1



NOT TO SCALE

PROJECT LOCATION #3

PROJECT LOCATION #4



LOCATION MAP

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VICINITY MAP

PROJECT LOCATION #5

PROJECT LOCATION #2

PROJECT LOCATION #1



PROJECT LOCATION #4

VICINITY MAP  
ISABELLA COUNTY

SECTIONS 20, 22, & 27  
T.14 N. - R.5 W.  
MOUNT PLEASANT  
ISABELLA COUNTY, MICHIGAN

PROJECT LOCATION #3

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
ISABELLA COUNTY

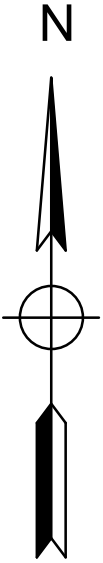
PROJECT NO.  
130591SG2021

DATE:  
AUGUST, 2021

SHEET 2 OF 44

DESIGNED BY: LTP  
DRAWN BY: LTP  
CHECKED BY: CAR  
APPROVED BY: DSB

FILE NO.  
PERM2



NOT TO SCALE

PROJECT LOCATION #5



LOCATION MAP

PROJECT LOCATION #5



PROJECT LOCATION #2

PROJECT LOCATION #1

PROJECT LOCATION #4

PROJECT LOCATION #3

VICINITY MAP  
ISABELLA COUNTY

SECTIONS 20, 22, & 27  
T.14 N. - R.5 W.  
MOUNT PLEASANT  
ISABELLA COUNTY, MICHIGAN

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VICINITY MAP

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
ISABELLA COUNTY

PROJECT NO.  
130591SG2021

DATE:  
AUGUST, 2021

SHEET 3 OF 44

DESIGNED BY: LTP  
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APPROVED BY: DSB

FILE NO.  
PERM3

**BENCHMARKS:**  
 BM 216 - SET GEAR SPIKE IN EAST FACE OF EAST LEG OF PARK INFORMATION SIGN.  
 NAVD88 ELEV. 801.54

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**DEMOLITION NOTES**

- 1 REMOVE 12" PINE TREE & ROOT SYSTEM
- 2 REMOVE AREA OF BRUSH & GRADE SMOOTH
- 3 AREAS OF RIVER BANK EROSION
- 4 EXIST. CANOE LAUNCH

EXISTING CONDITIONS PLAN  
 PROJECT LOCATION #1

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
 ISABELLA COUNTY

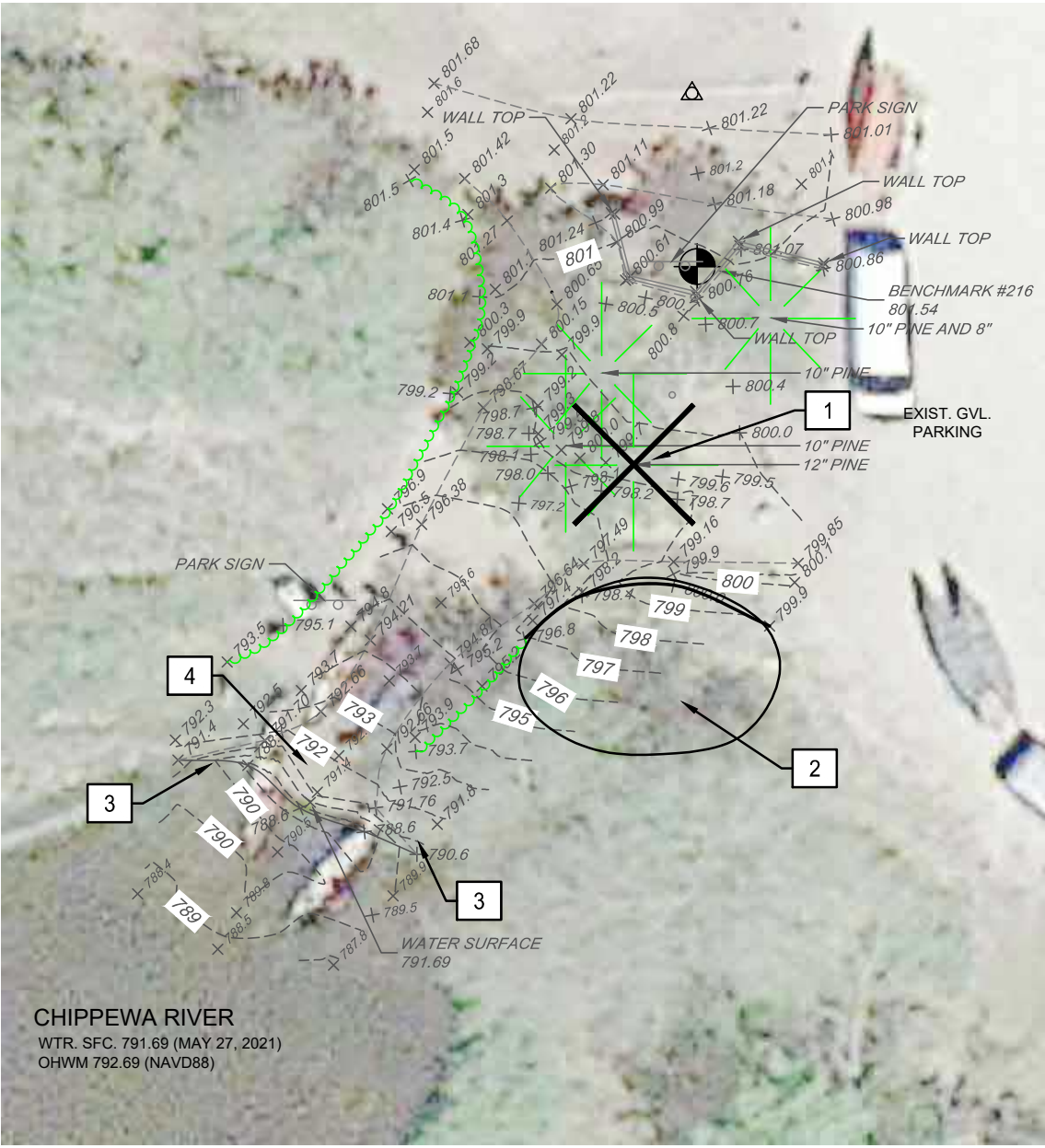
PROJECT NO.  
 130591SG2021

DATE:  
 AUGUST, 2021

SHEET 4 OF 44

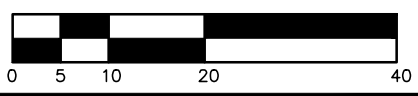
DESIGNED BY: LTP  
 DRAWN BY: LTP  
 CHECKED BY: CAR  
 APPROVED BY: DSB

FILE NO.  
 PERM4

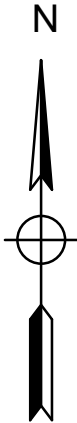


**CHIPPEWA RIVER**  
 WTR. SFC. 791.69 (MAY 27, 2021)  
 OHWM 792.69 (NAVD88)

**FLOOD PLAIN NOTE**  
 ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY MAPS,  
 COMMUNITY PANEL #26073C0285D THE SUBJECT PROPERTY LIES WITHIN  
 ZONE AE, AREAS TO BE DETERMINED TO BE AND IN THE 100 YEAR FLOOD PLAIN  
 AT ELEVATION 797.25.



BENCHMARKS:  
 BM 216 - SET GEAR SPIKE IN EAST FACE OF EAST LEG OF PARK INFORMATION SIGN.  
 NAVD88 ELEV. 801.54



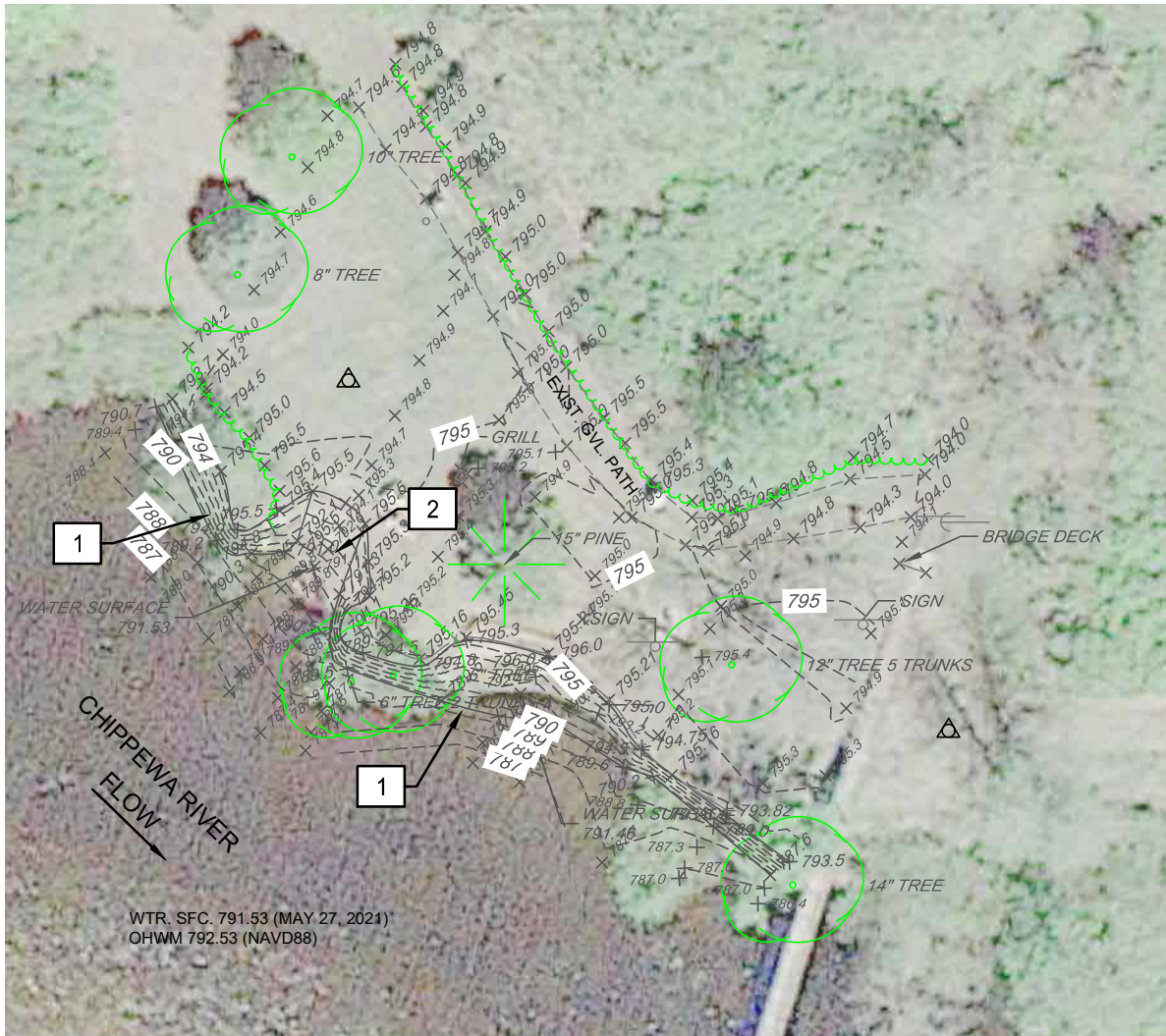
**NOTES**

- 1 AREAS OF RIVER BANK EROSION
- 2 EXIST. AREA BEING USED AS A CANOE LAUNCH

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EXISTING CONDITIONS PLAN  
 PROJECT LOCATION #2



WTR. SFC. 791.53 (MAY 27, 2021)  
 OHWM 792.53 (NAVD88)

**FLOOD PLAIN NOTE**  
 ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY MAPS,  
 COMMUNITY PANEL #26073C0285D THE SUBJECT PROPERTY LIES WITHIN  
 ZONE AE, AREAS TO BE DETERMINED TO BE AND IN THE 100 YEAR FLOOD PLAIN  
 AT ELEVATION 797.2.



RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
 ISABELLA COUNTY

PROJECT NO.  
 130591SG2021

DATE:  
 AUGUST, 2021

SHEET 5 OF 44

DESIGNED BY: LTP  
 DRAWN BY: LTP  
 CHECKED BY: CAR  
 APPROVED BY: DSB

FILE NO.  
 PERM5

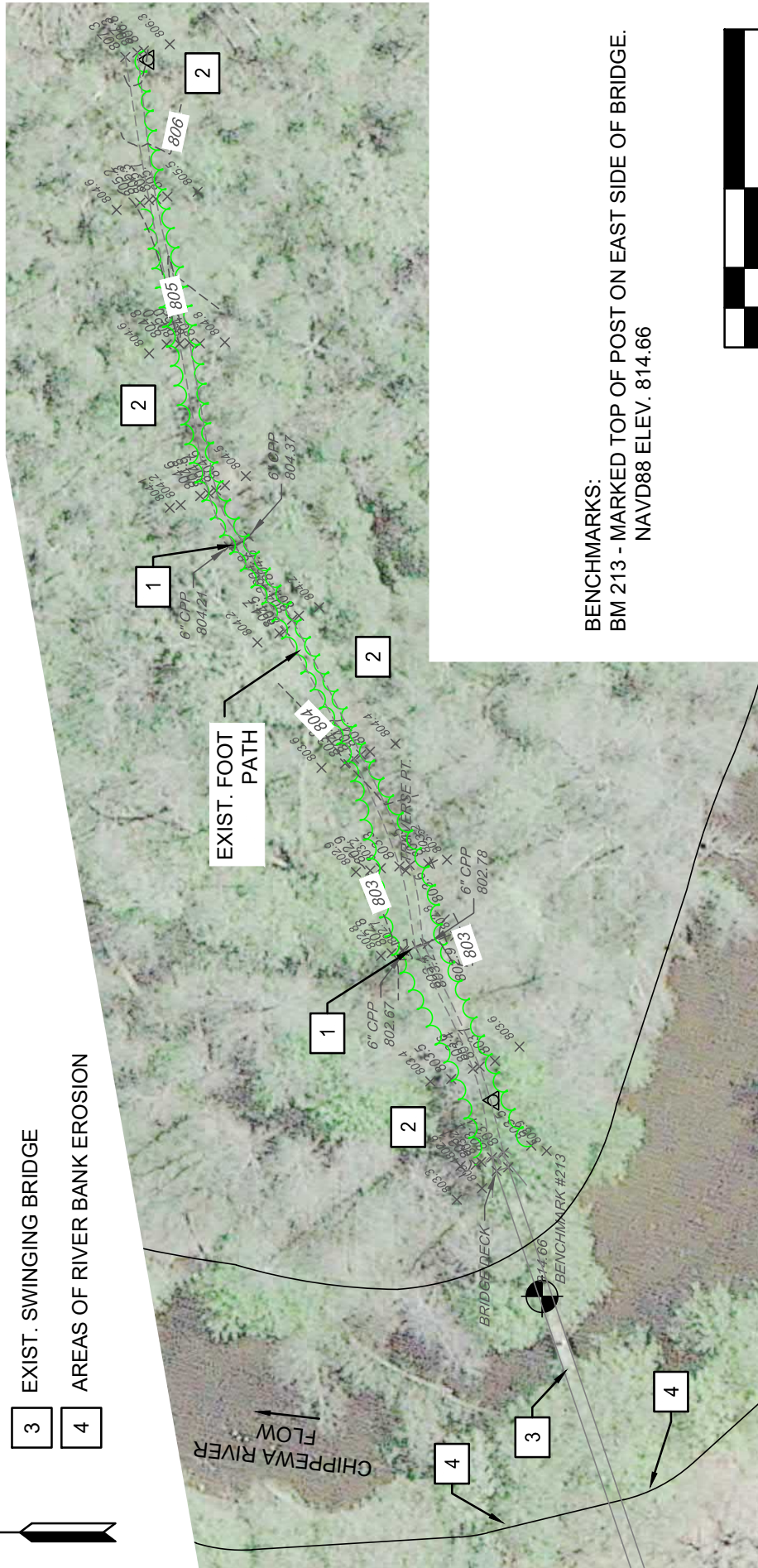




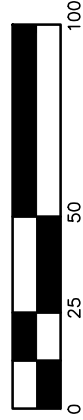
**NOTES**

- 1 SUBSURFACE DRAIN TILE TO REMAIN, DO NOT DISTURB
- 2 ALONG PATH AREA REMOVE SMALL BRUSH & DEBRIS AS NECESSARY FOR A NEW 6' WIDE LAY-DOWN BOARDWALK (TREE REMOVAL IS NOT EXPECTED TO BE NECESSARY FOR THIS AREA)
- 3 EXIST. SWINGING BRIDGE
- 4 AREAS OF RIVER BANK EROSION

**FLOOD PLAIN NOTE**  
 ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY MAPS, COMMUNITY PANEL #26073C0285D THE SUBJECT PROPERTY LIES WITHIN ZONE AE. AREAS TO BE DETERMINED TO BE AND IN THE 100 YEAR FLOOD PLAIN AT ELEVATION 805.8.

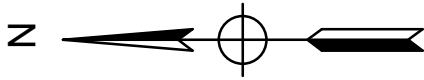
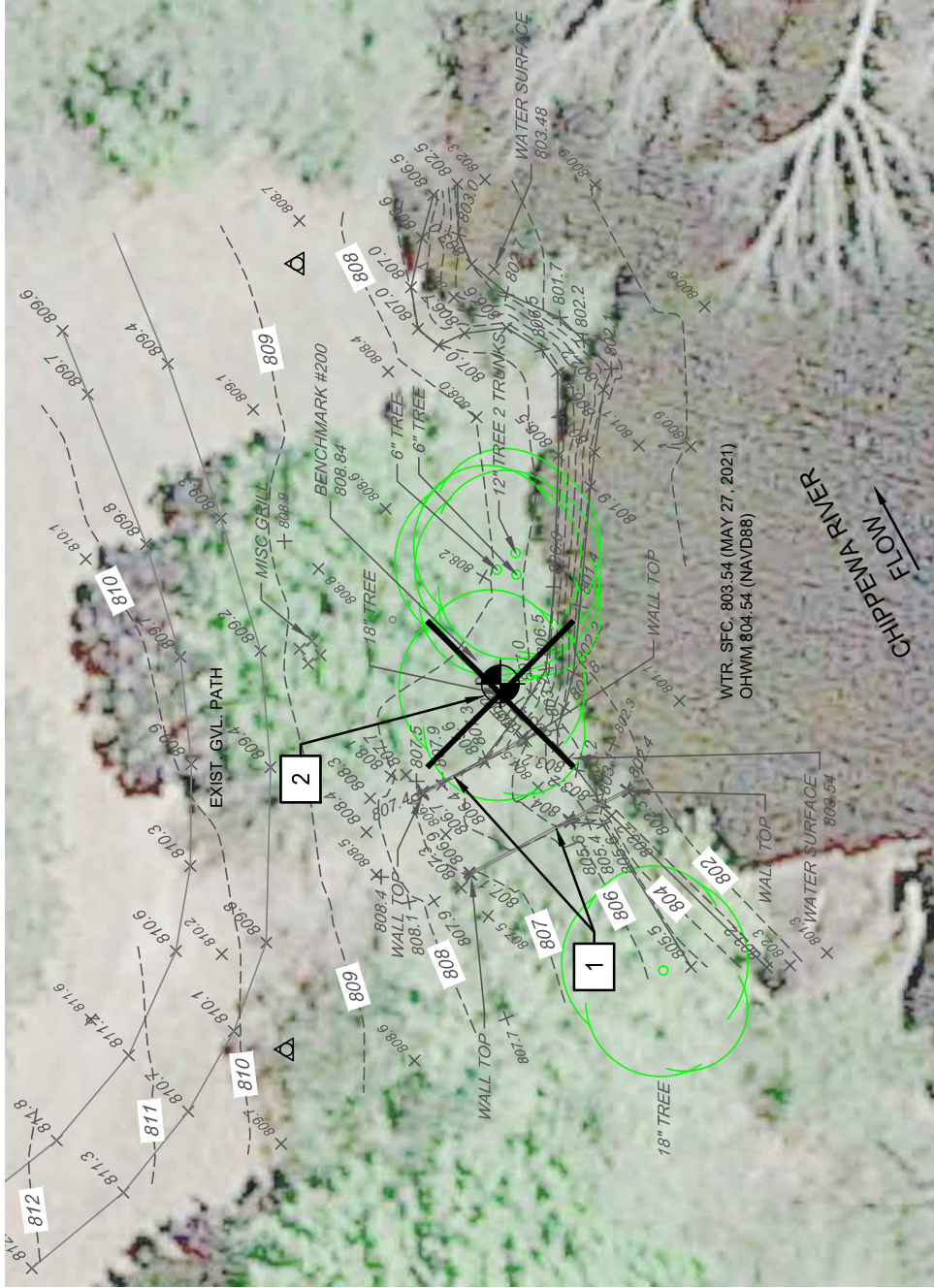


**BENCHMARKS:**  
 BM 213 - MARKED TOP OF POST ON EAST SIDE OF BRIDGE.  
 NAVD88 ELEV. 814.66



|  |  |   |  |
|--|--|---|--|
| <p><b>RIVER EROSION &amp; CANOE LAUNCH</b></p> <p>CHIPPEWA RIVER<br/>ISABELLA COUNTY</p> |  | <p>EXISTING CONDITIONS PLAN<br/>PROJECT LOCATION #3</p>   |  |
|  |  | <p>Spicer Group<br/>230 S. Washington Ave.<br/>Saginaw, MI 48607-1286<br/>Tel. 989-754-4717<br/>Fax. 989-754-4440<br/>www.spicergroup.com</p> |  |
| <p>PROJECT NO.<br/>130591SG2021</p>  |  | <p>DATE:<br/>AUGUST, 2021</p>   |  |
| <p>SHEET 6 OF 44</p>   |  | <p>DESIGNED BY: LTP<br/>DRAWN BY: LTP<br/>CHECKED BY: CAR<br/>APPROVED BY: DSB</p>  |  |
| <p>FILE NO.<br/>PERM6</p>  |  |   |  |

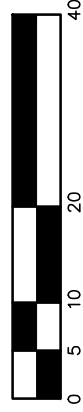
**BENCHMARKS:**  
 BM 200 - SET GEAR SPIKE IN NORTH FACE OF TREE, 6'± EAST OF RETAINING WALL AT LAUNCH.  
 NAVD88 ELEV. 808.84



**DEMOLITION NOTES**

- 1** REMOVE CANOE LAUNCH & WALLS
- 2** REMOVE 18" TREE & ROOT SYSTEM

**FLOOD PLAIN NOTE**  
 ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY MAPS,  
 COMMUNITY PANEL #26073C0285D, THE SUBJECT PROPERTY LIES WITHIN  
 ZONE AE. AREAS TO BE DETERMINED TO BE AND IN THE 100 YEAR FLOOD PLAIN  
 AT ELEVATION 812.



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**EXISTING CONDITIONS PLAN  
 PROJECT LOCATION #4**

**RIVER EROSION & CANOE LAUNCH**

**CHIPPEWA RIVER  
 ISABELLA COUNTY**

|  |
|--|
| PROJECT NO.<br>130591SG2021  |
| DATE:<br>AUGUST, 2021  |
| SHEET 7 OF 44  |
| DESIGNED BY: LTP<br>DRAWN BY: LTP<br>CHECKED BY: CAR<br>APPROVED BY: DSB |
| FILE NO.<br><b>PERM7</b>   |

BENCHMARKS:  
 BM 214 - MARKED 'X' ON TOP OF DRY HYDRANT, 12'± SOUTHWEST OF GRAVEL DRIVE.  
 NAVD88 ELEV. 834.94

**NOTES**

- 1 EXIST. CANOE LAUNCH
- 2 AREAS OF RIVER BANK EROSION

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ALTERNATE ADD #2  
 EXISTING CONDITIONS PLAN -  
 MAJESKE LANDING  
 PROJECT LOCATION #5

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
 ISABELLA COUNTY

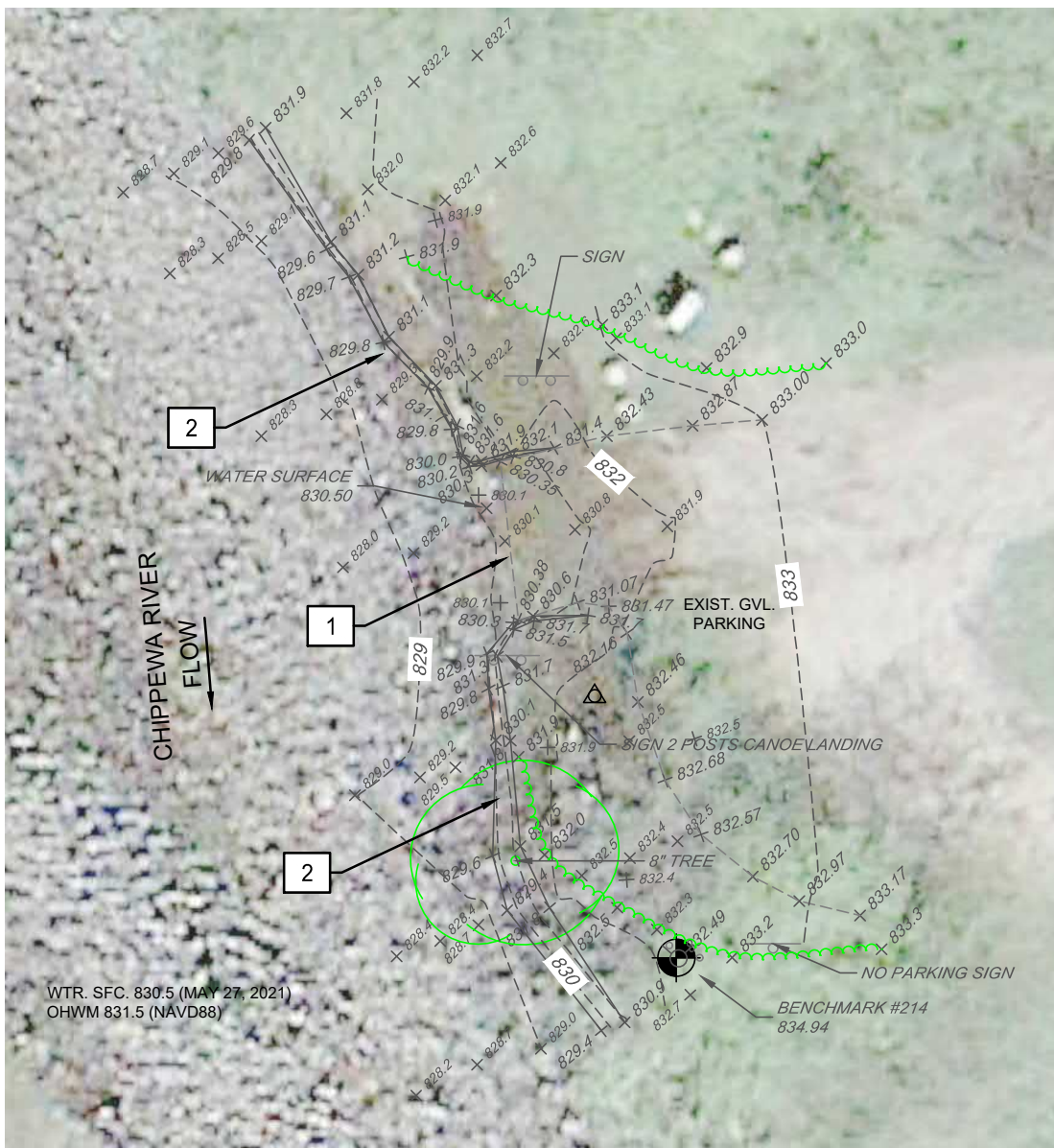
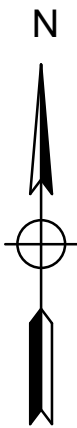
PROJECT NO.  
 130591SG2021

DATE:  
 AUGUST, 2021

SHEET 8 OF 44

DESIGNED BY: LTP  
 DRAWN BY: LTP  
 CHECKED BY: CAR  
 APPROVED BY: DSB

FILE NO.  
 PERM8



WTR. SFC. 830.5 (MAY 27, 2021)  
 OHWM 831.5 (NAVD88)

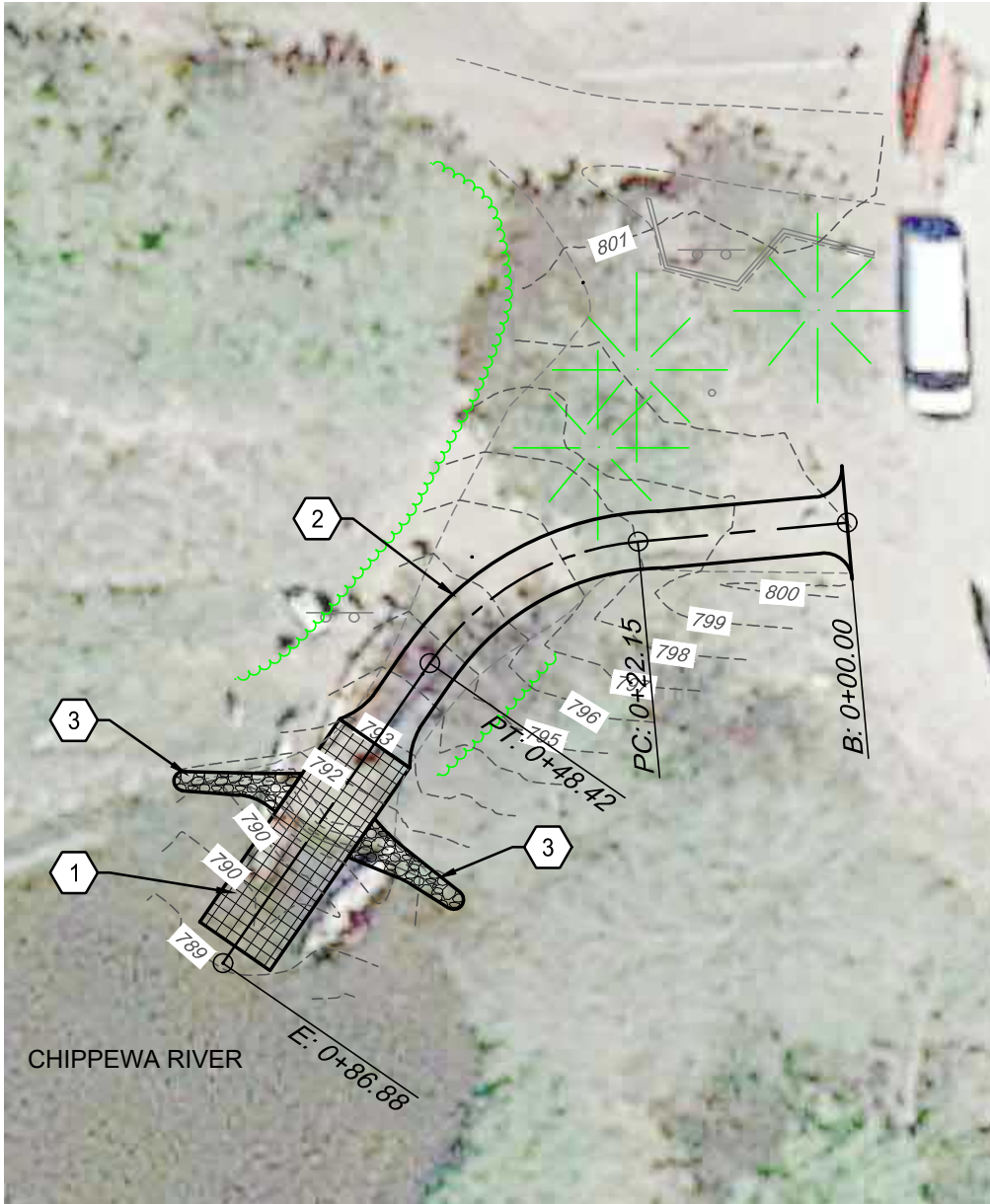
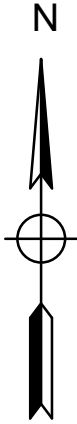
FLOOD PLAIN NOTE  
 ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY MAPS,  
 COMMUNITY PANEL #26073C0280D THE SUBJECT PROPERTY LIES WITHIN  
 ZONE AE, AREAS TO BE DETERMINED TO BE AND IN THE 100 YEAR FLOOD PLAIN  
 AT ELEVATION 838.



BENCHMARKS:  
 BM 216 - SET GEAR SPIKE IN EAST FACE OF EAST LEG OF PARK INFORMATION SIGN.  
 NAVD88 ELEV. 801.54

**CONSTRUCTION NOTES**

- 1 PROP. GEOWEB MAT CANOE LAUNCH
- 2 PROP. 6' WIDE CRUSHED STONE PATH
- 3 PROP. HEAVY RIPRAP BANK STABILIZATION



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SITE PLAN  
 PROJECT LOCATION #1

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
 ISABELLA COUNTY

PROJECT NO.  
 130591SG2021

DATE:  
 AUGUST, 2021

SHEET 9 OF 44

DESIGNED BY: LTP  
 DRAWN BY: LTP  
 CHECKED BY: CAR  
 APPROVED BY: DSB

FILE NO.  
 PERM9

**CONSTRUCTION NOTES**

- 1 PROP. GEOWEB MAT CANOE LAUNCH
- 2 PROP. 6' WIDE CRUSHED STONE PATH

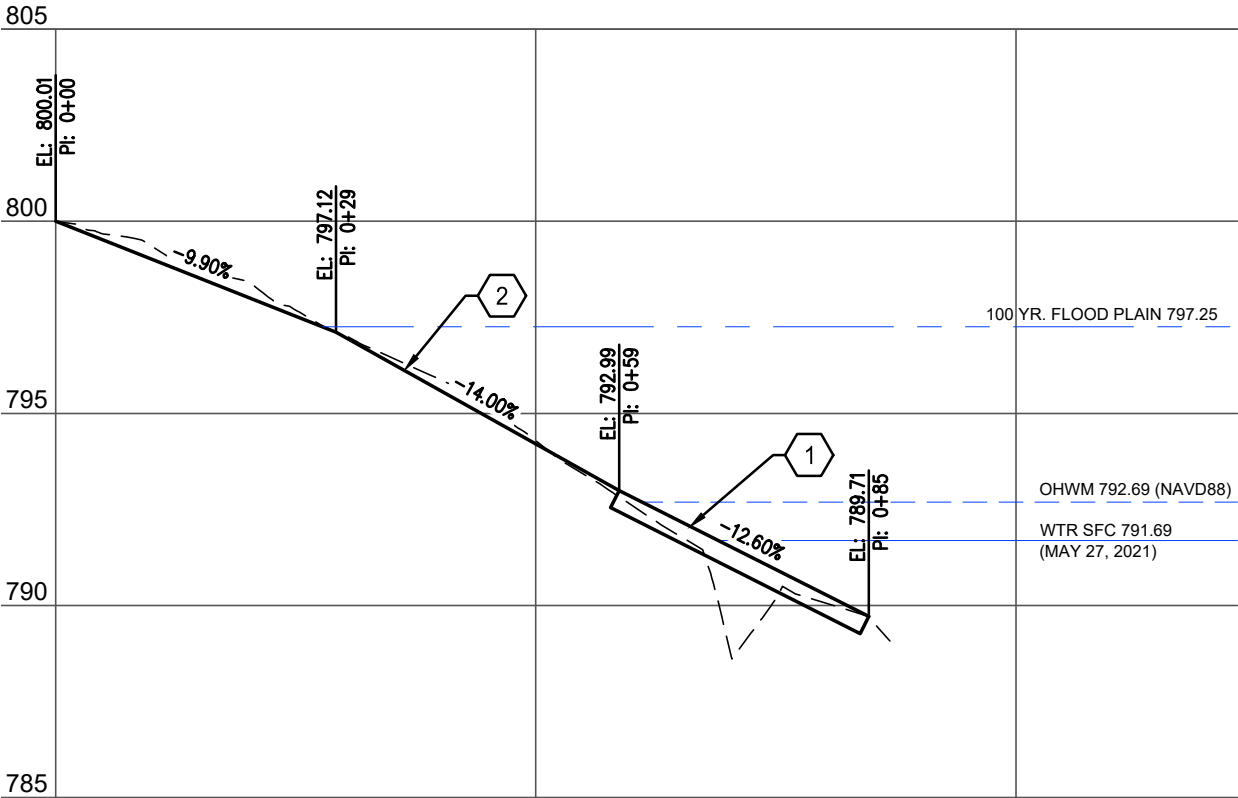
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PROFILE  
 PROJECT LOCATION #1

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
 ISABELLA COUNTY



800.00  
 800.01  
 0

794.29  
 794.20

1

**LAUNCH PROFILE**

SCALE: 1" = 20' H. & 1" = 5' V.

PROJECT NO.  
 130591SG2021

DATE:  
 AUGUST, 2021

SHEET 10 OF 44

DESIGNED BY: LTP  
 DRAWN BY: LTP  
 CHECKED BY: CAR  
 APPROVED BY: DSB

FILE NO.  
 PERM10

BENCHMARKS:  
 BM 216 - SET GEAR SPIKE IN EAST FACE OF EAST LEG OF PARK INFORMATION SIGN.  
 NAVD88 ELEV. 801.54

**CONSTRUCTION NOTES**

- 1 PROP. GEOWEB MAT CANOE LAUNCH
- 2 PROP. 6' WIDE CRUSHED STONE PATH
- 3 PROP. HEAVY RIPRAP BANK STABILIZATION

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SITE PLAN  
 PROJECT LOCATION #2

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
 ISABELLA COUNTY

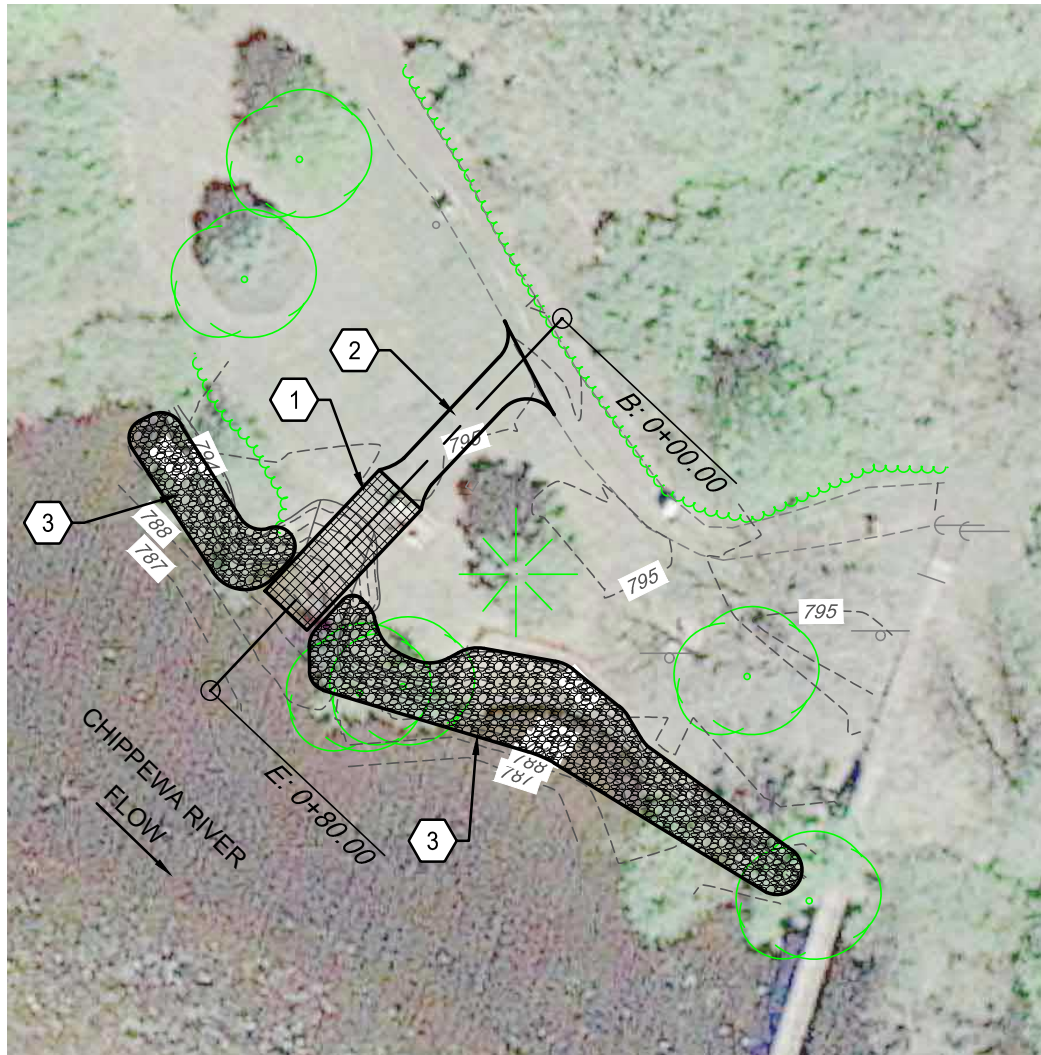
PROJECT NO.  
 130591SG2021

DATE:  
 AUGUST, 2021

SHEET 11 OF 44

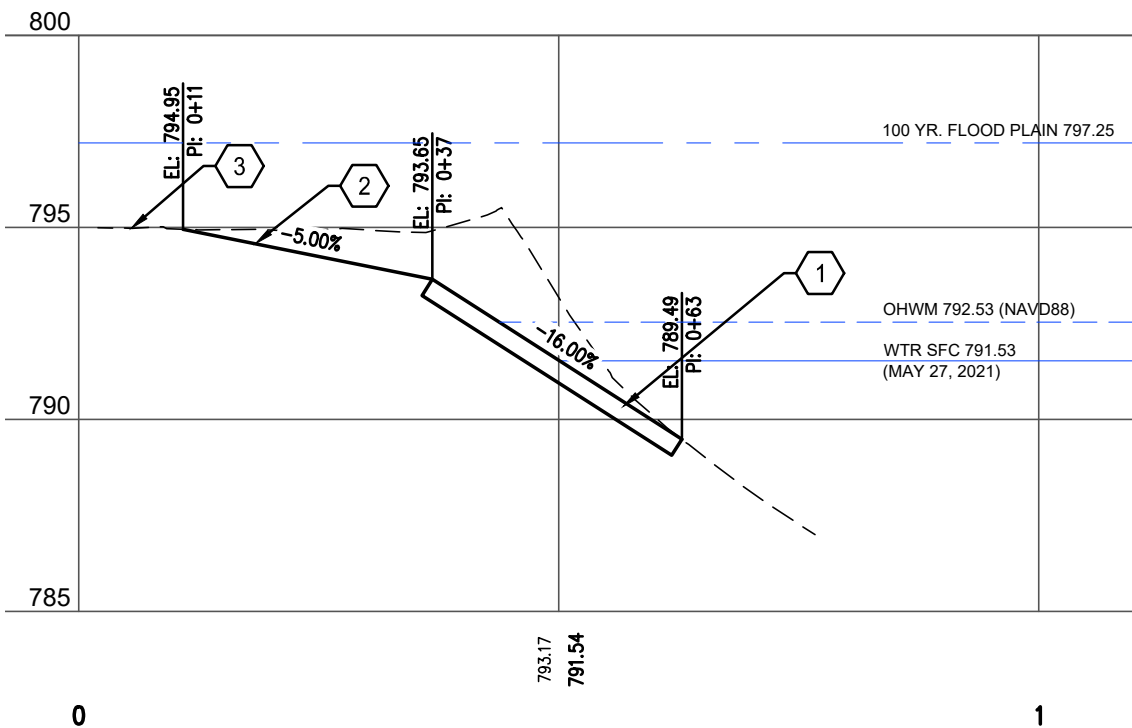
DESIGNED BY: LTP  
 DRAWN BY: LTP  
 CHECKED BY: CAR  
 APPROVED BY: DSB

FILE NO.  
 PERM11



## CONSTRUCTION NOTES

- 1 PROP. GEOWEB MAT CANOE LAUNCH
- 2 PROP. 6' WIDE CRUSHED STONE PATH
- 3 EXIST. GRAVEL PATH



## LAUNCH PROFILE

SCALE: 1" = 20' H. & 1" = 5' V.

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PROFILE  
 PROJECT LOCATION #2

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
 ISABELLA COUNTY

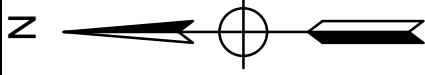
PROJECT NO.  
 130591SG2021

DATE:  
 AUGUST, 2021

SHEET 12 OF 44

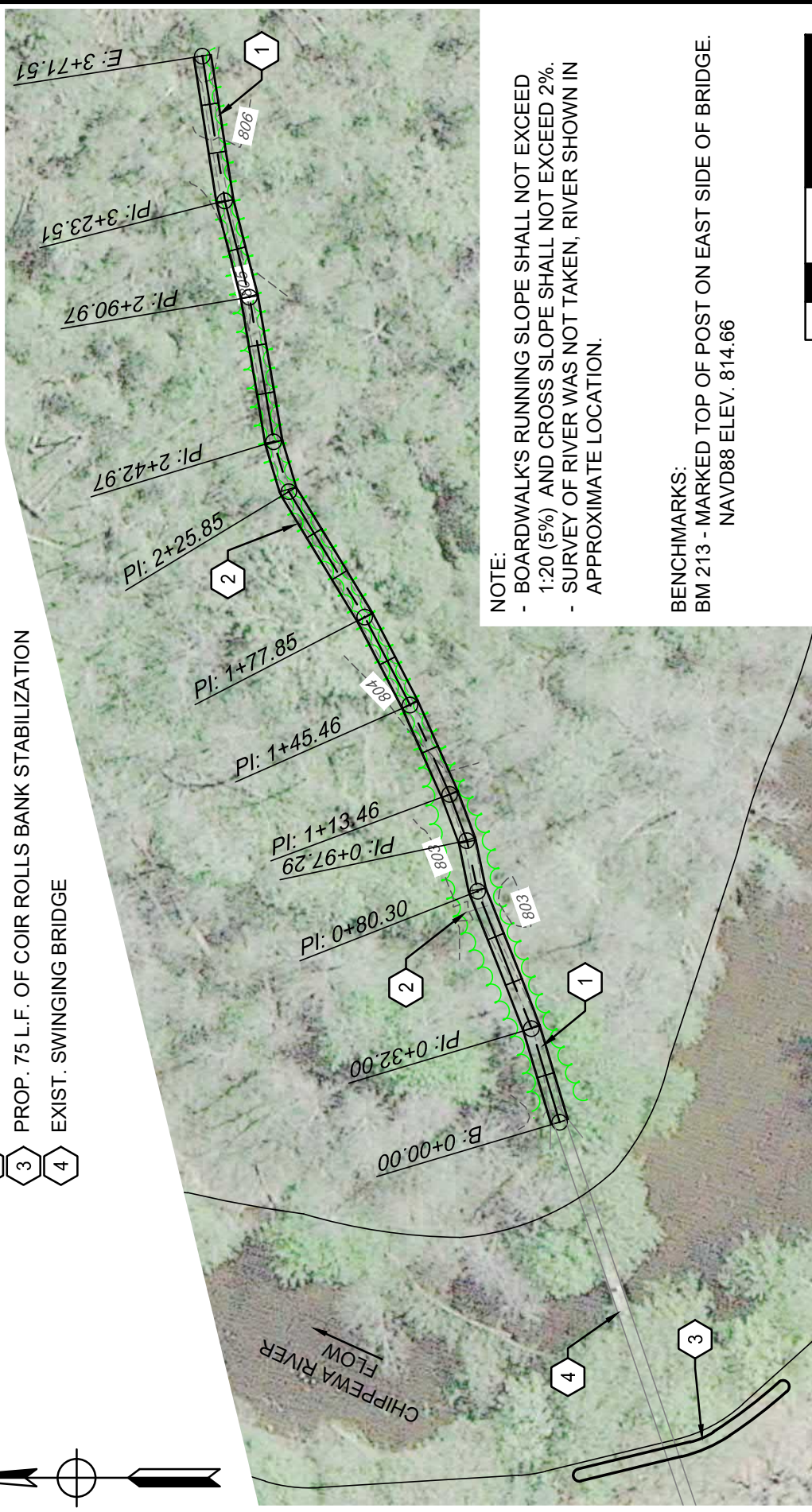
DESIGNED BY: LTP  
 DRAWN BY: LTP  
 CHECKED BY: CAR  
 APPROVED BY: DSB

FILE NO.  
 PERM12



**CONSTRUCTION NOTES**

- 1 PROP. 6' WIDE LAY-DOWN BOARDWALK
- 2 EXIST. 6" DIA. CPP TO REMAIN
- 3 PROP. 75 L.F. OF COIR ROLLS BANK STABILIZATION
- 4 EXIST. SWINGING BRIDGE



**NOTE:**

- BOARDWALK'S RUNNING SLOPE SHALL NOT EXCEED 1:20 (5%) AND CROSS SLOPE SHALL NOT EXCEED 2%.
- SURVEY OF RIVER WAS NOT TAKEN, RIVER SHOWN IN APPROXIMATE LOCATION.

**BENCHMARKS:**

BM 213 - MARKED TOP OF POST ON EAST SIDE OF BRIDGE.  
NAVD88 ELEV. 814.66

**ALTERNATE ADD #1**

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
ISABELLA COUNTY

ALTERNATE ADD #1  
SITE PLAN  
PROJECT LOCATION #3

|  |
|--|
| PROJECT NO.<br>130591SG2021  |
| DATE:<br>AUGUST, 2021  |
| SHEET 13 OF 44   |
| DESIGNED BY: LTP<br>DRAWN BY: LTP<br>CHECKED BY: CAR<br>APPROVED BY: DSB |

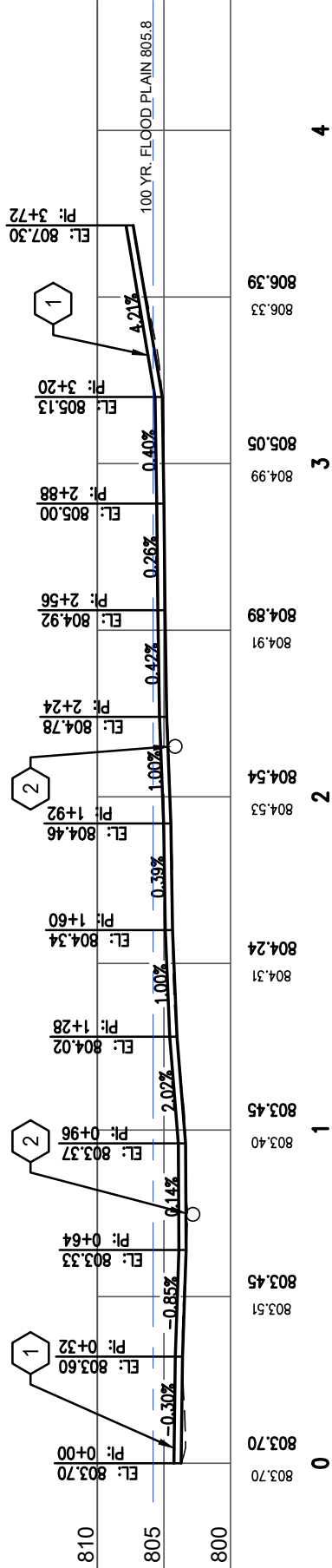
FILE NO.  
PERM13

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**CONSTRUCTION NOTES**


- 1 PROP. 6' WIDE LAY-DOWN BOARDWALK
- 2 EXIST. 6" DIA. CPP TO REMAIN



NOTE:  
 BOARDWALK'S RUNNING SLOPE SHALL NOT EXCEED 1:20 (5%) AND CROSS SLOPE SHALL NOT EXCEED 2%.

**ALTERNATE ADD #1  
 LAY-DOWN BOARDWALK PROFILE**

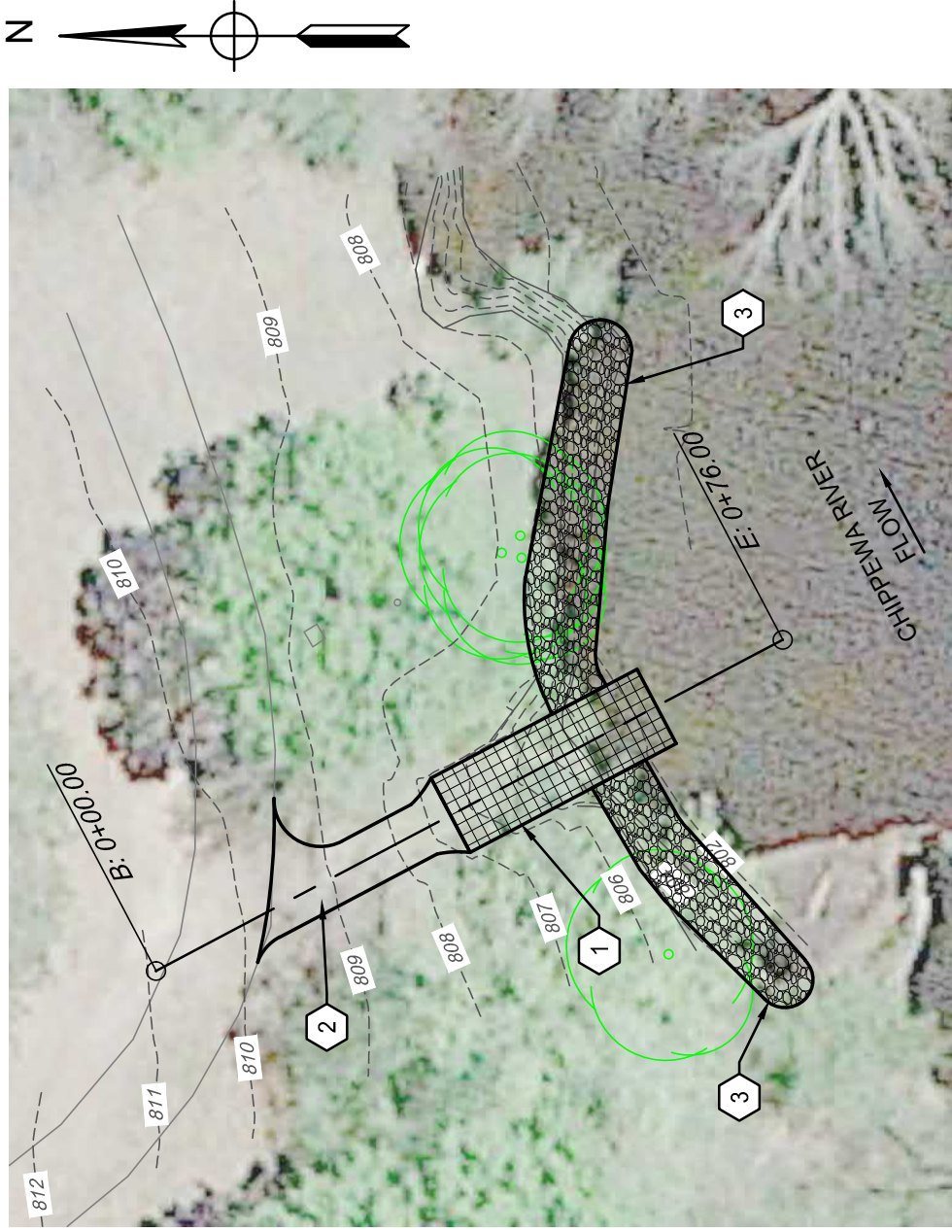
SCALE: 1" = 50' H. & 1" = 5' V.

|   |  |   |                             |
|---|--|---|-----------------------------|
|    | ALTERNATE ADD #1<br>PROFILE<br>PROJECT LOCATION #3 | RIVER EROSION & CANOE LAUNCH<br>CHIPPEWA RIVER<br>ISABELLA COUNTY | PROJECT NO.<br>130591SG2021 |
| DATE:<br>AUGUST, 2021   |  | SHEET 14 OF 44  |                             |
| DESIGNED BY: LTP<br>DRAWN BY: LTP<br>CHECKED BY: CAR<br>APPROVED BY: DSB  |  | FILE NO.<br>PERM14  |                             |
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**BENCHMARKS:**  
 BM 200 - SET GEAR SPIKE IN NORTH FACE OF TREE, 6± EAST OF RETAINING WALL AT LAUNCH.  
 NAVD88 ELEV. 808.84

**CONSTRUCTION NOTES**

- 1 PROP. GEOWEB MAT CANOE LAUNCH
- 2 PROP. 6' WIDE CRUSHED STONE PATH
- 3 PROP. HEAVY RIPRAP BANK STABILIZATION



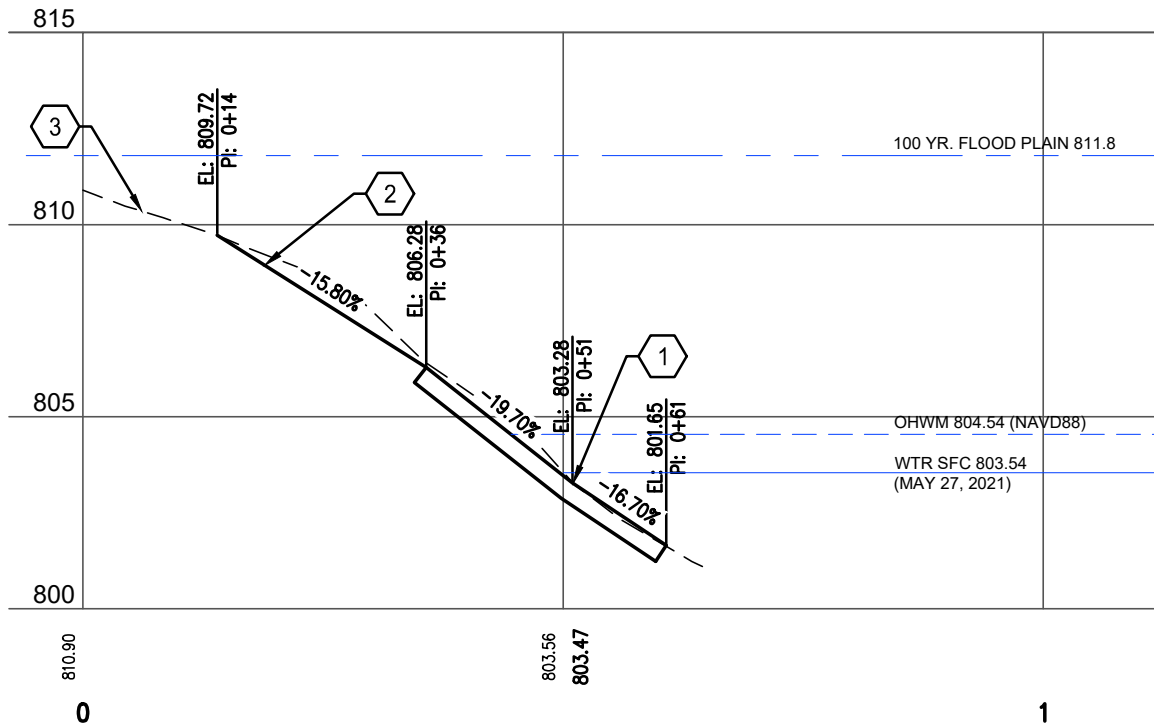
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|---|-----------------------|
| <b>RIVER EROSION &amp; CANOE LAUNCH</b> |                       |
| CHIPPEWA RIVER<br>ISABELLA COUNTY       |                       |
| PROJECT NO.<br>130591SG2021             | DATE:<br>AUGUST, 2021 |
| SHEET 15 OF 44                          |                       |
| DESIGNED BY: LTP                        | DRAWN BY: LTP         |
| CHECKED BY: CAR                         | APPROVED BY: DSB      |
| FILE NO.<br>PERM15                      |                       |

**SITE PLAN**  
**PROJECT LOCATION #4**

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## CONSTRUCTION NOTES

- 1 PROP. GEOWEB MAT CANOE LAUNCH
- 2 PROP. 6' WIDE CRUSHED STONE PATH
- 3 EXIST. GRAVEL PATH



## LAUNCH PROFILE

SCALE: 1" = 20' H. & 1" = 5' V.

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PROFILE  
PROJECT LOCATION #4

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
ISABELLA COUNTY

PROJECT NO.  
130591SG2021

DATE:  
AUGUST, 2021

SHEET 16 OF 44

DESIGNED BY: LTP  
DRAWN BY: LTP  
CHECKED BY: CAR  
APPROVED BY: DSB

FILE NO.  
PERM16

BENCHMARKS:  
 BM 214 - MARKED 'X' ON TOP OF DRY HYDRANT, 12'± SOUTHWEST OF GRAVEL DRIVE.  
 NAVD88 ELEV. 834.94

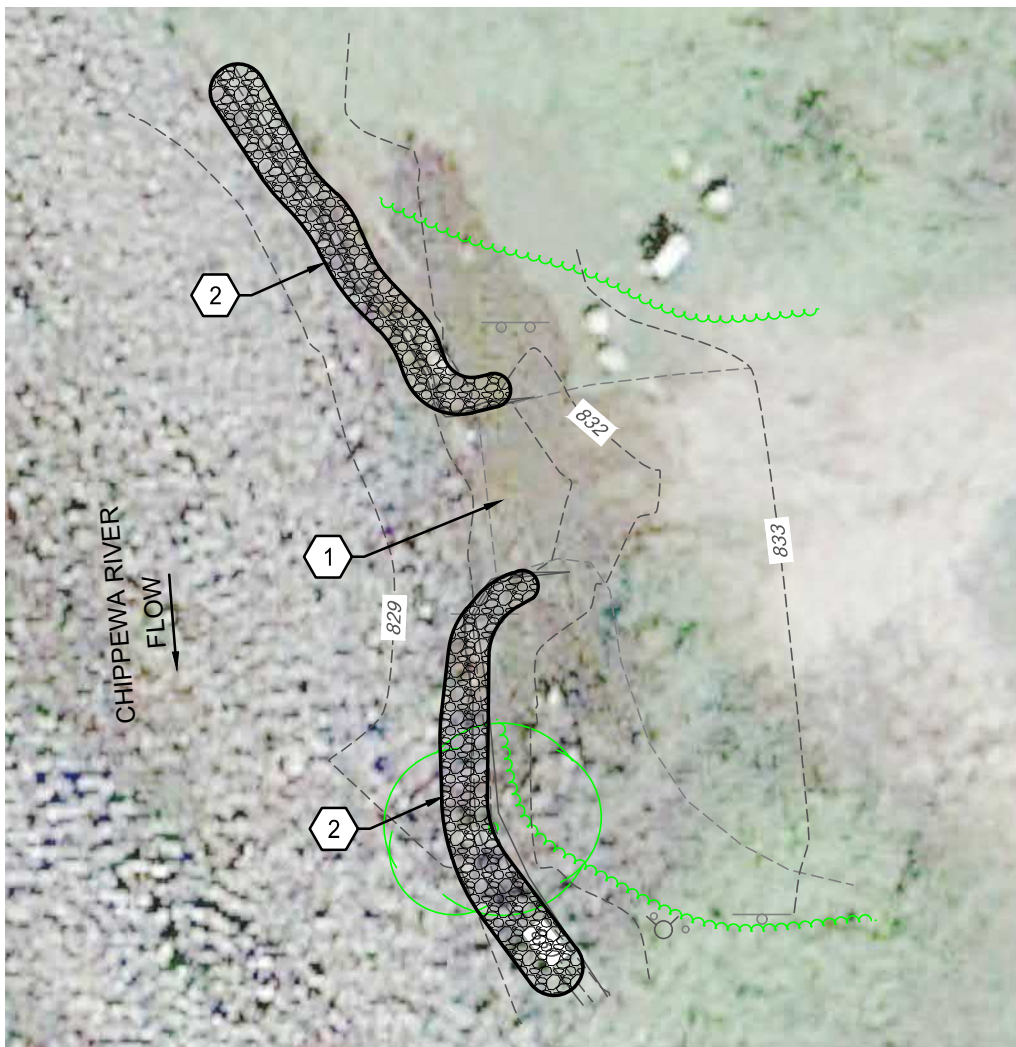
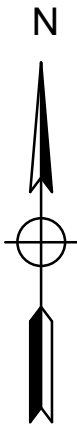
**CONSTRUCTION NOTES**

- ① EXIST. CANOE LAUNCH
- ② PROP. HEAVY RIPRAP BANK STABILIZATION

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ALTERNATE ADD #2  
 SITE PLAN - MAJESKE LANDING  
 PROJECT LOCATION #5



RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
 ISABELLA COUNTY

PROJECT NO.  
 130591SG2021

DATE:  
 AUGUST, 2021

SHEET 17 OF 44

DESIGNED BY: LTP  
 DRAWN BY: LTP  
 CHECKED BY: CAR  
 APPROVED BY: DSB

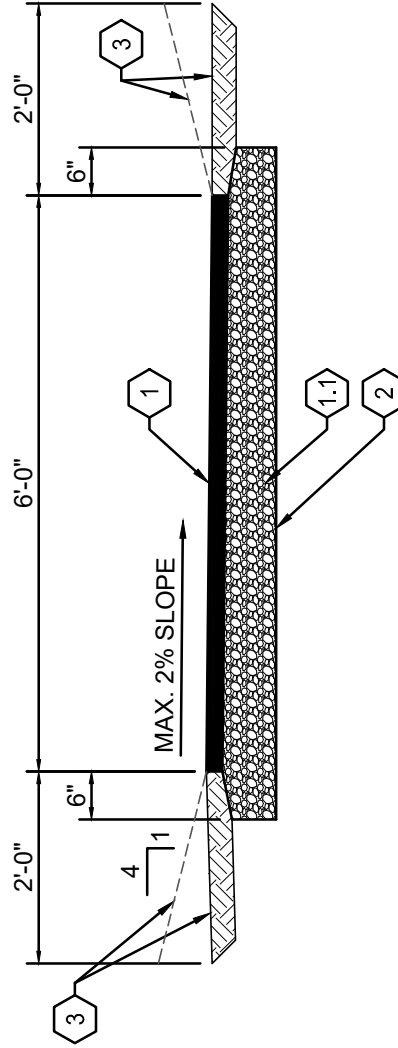
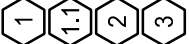
**ALTERNATE ADD #2**



FILE NO.  
 PERM17

**CONSTRUCTION NOTES**

- 1 PROP. 2" CRUSHED STONE DUST MIX TOPPING, C.I.P.
- 1.1 PROP. MIN. 6" CRUSHED LIMESTONE, 22A BASE, C.I.P.
- 2 NATIVE SUBBASE, C.I.P.
- 3 RESTORE DISTURBED AREAS W/ MIN. 3" TOPSOIL, FINE GRADE, & SEED



**TYP. CRUSHED STONE PATH CROSS SECTION**

SCALE: 1/2" = 1'-0"

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
ISABELLA COUNTY

CRUSHED STONE PATH  
CROSS SECTION  
PROJECT LOCATIONS  
#1, #2, & #4

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PROJECT NO.  
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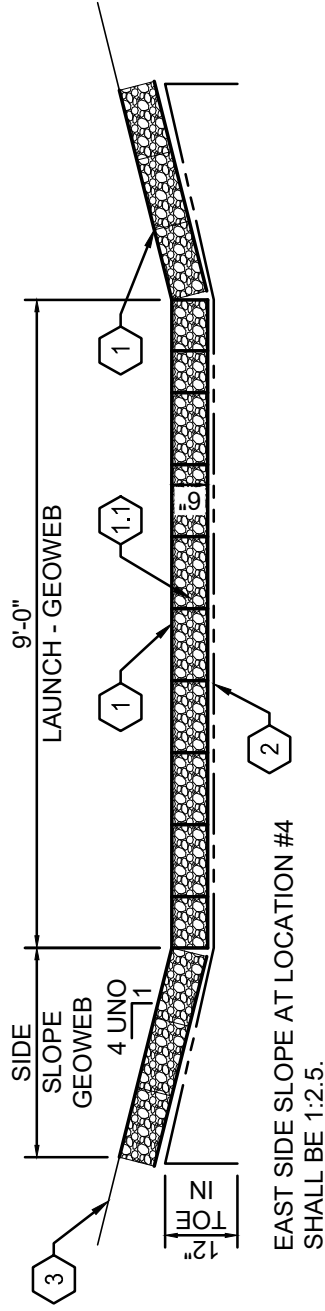
SHEET 18 OF 44

DESIGNED BY: LTP  
DRAWN BY: LTP  
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FILE NO.  
PERM18

**CONSTRUCTION NOTES**

- 1 PROP. GEOWEB, GW20V-6
- 1.1 PROP. MDOT 7A CRUSHED LIMESTONE (GEOWEB CELL FILL)
- 2 PROP. 8 OZ. NON-WOVEN FILTER FABRIC (TOED IN 12")
- 3 RESTORE DISTURBED AREAS W/ MIN. 3" TOPSOIL, FINE GRADE, & SEED



**TYP. CANOE LAUNCH CROSS SECTION**

SCALE: 3/8" = 1'-0"

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
ISABELLA COUNTY

CANOE LAUNCH  
CROSS SECTION  
PROJECT LOCATIONS  
#1, #2, & #4

PROJECT NO.  
130591SG2021

DATE:  
AUGUST, 2021

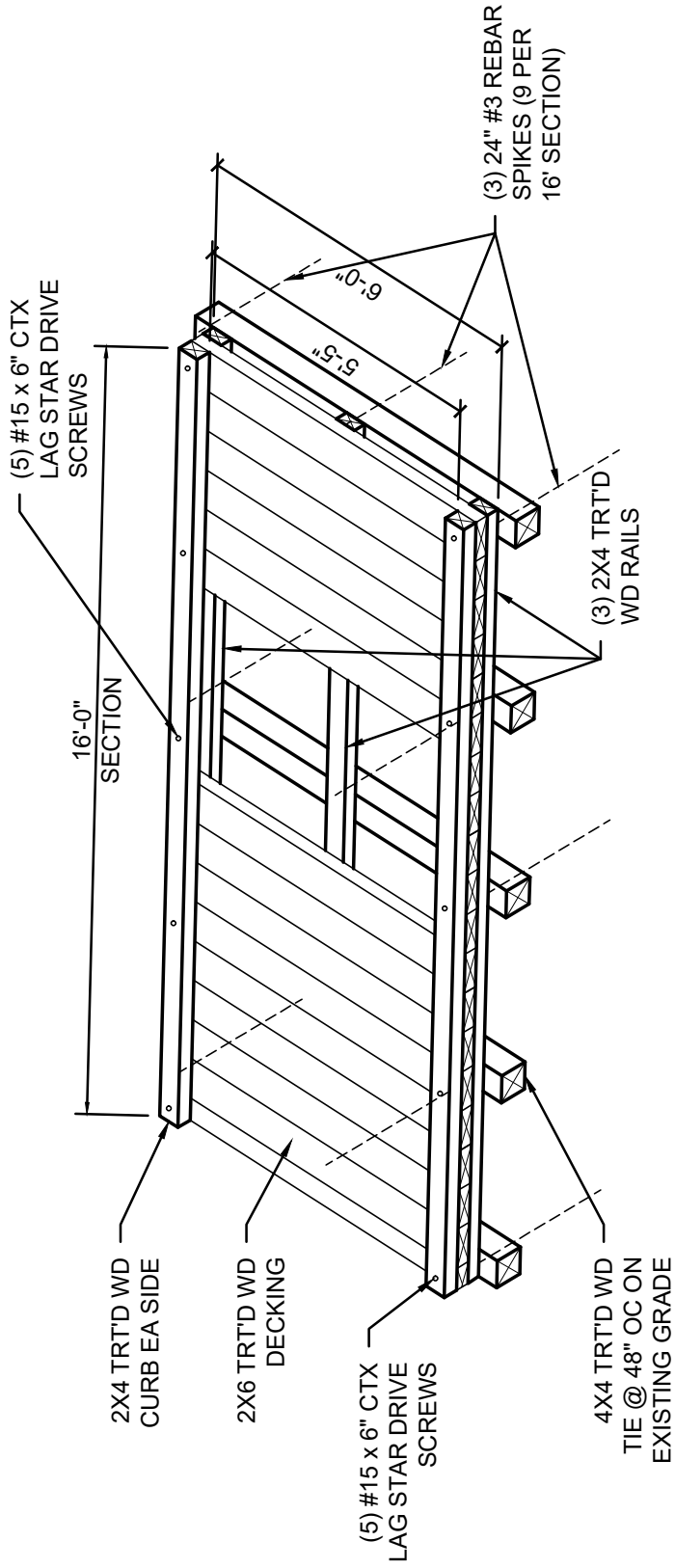
SHEET 19 OF 44

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FILE NO.  
PERM19



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## ALTERNATE ADD #1 TYP. LAY-DOWN BOARDWALK DETAIL

SCALE: NONE

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ALTERNATE ADD #1  
 BOARDWALK DETAIL

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
 ISABELLA COUNTY

PROJECT NO.  
 130591SG2021

DATE:  
 AUGUST, 2021

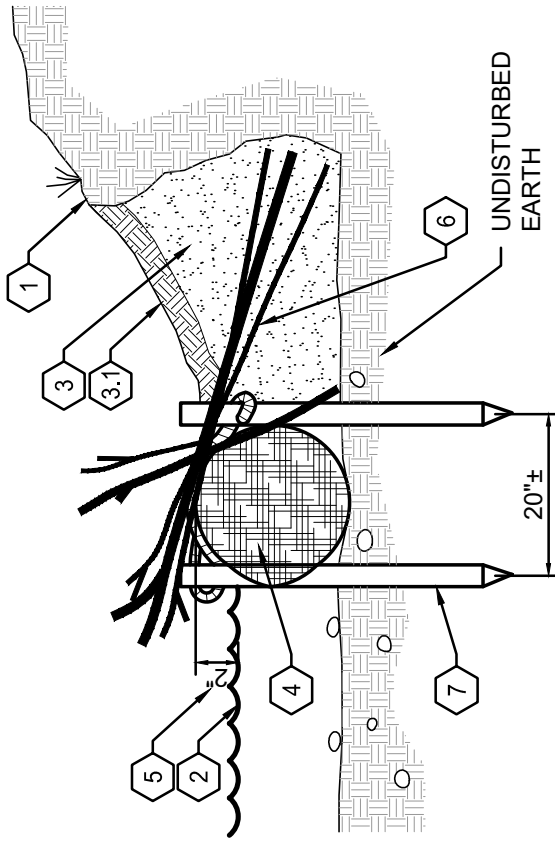
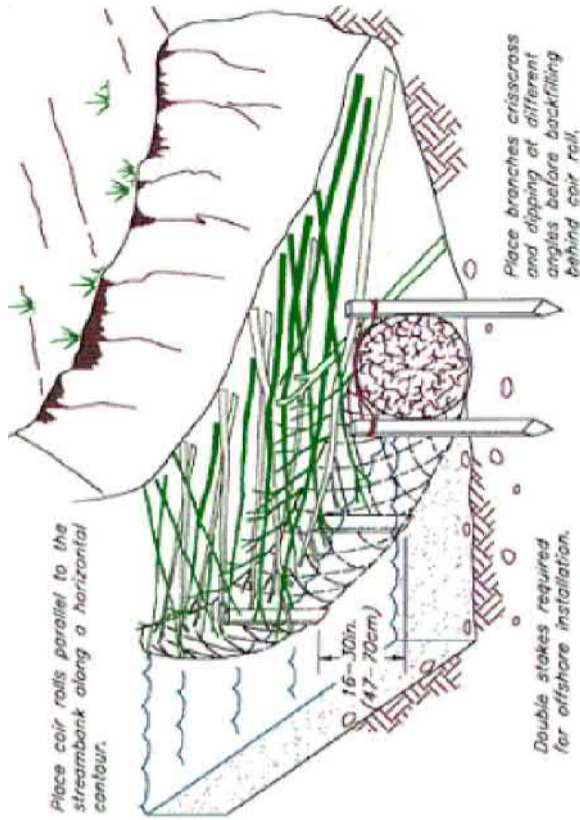
SHEET 20 OF 44

DESIGNED BY: LTP  
 DRAWN BY: LTP  
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FILE NO.  
 PERM20

**CONSTRUCTION NOTES**

- 1. ERODING RIVER BANK
- 2. MEAN WATER ELEVATION
- 3. PROP. FILL MATERIAL
- 3.1. PROP. MIN. 3" TOPSOIL & SEED
- 4. PROP. COIR ROLL PLACED PARALLEL TO THE RIVERBANK ALONG A HORIZONTAL CONTOUR
- 5. PLACE COIR ROLL SUCH THAT THE ROLL EXTENDS 2" ABOVE MEAN WATER ELEVATION
- 6. PLACE BRANCHES CRISSCROSS & DIPPING AT DIFFERENT ANGLES BEFORE BACKFILLING BEHIND COIL ROLL
- 7. PLACE STAKES 16" - 30" APART PARALLEL W/ COIR ROLL



**ALTERNATE ADD #1  
TYP. COIR ROLL DETAIL**

SCALE: NONE

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
ISABELLA COUNTY

PROJECT NO.  
130591SG2021

DATE:  
AUGUST, 2021

SHEET 21 OF 44

DESIGNED BY: LTP  
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FILE NO.  
PERM21



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ALTERNATE ADD #1  
COIR ROLL DETAIL  
PROJECT LOCATION #3



# Cut/Fill Report

| Volume Summary |      |            |             |                   |               |                |               |
|----------------|------|------------|-------------|-------------------|---------------|----------------|---------------|
| Name           | Type | Cut Factor | Fill Factor | 2d Area (Sq. Ft.) | Cut (Cu. Yd.) | Fill (Cu. Yd.) | Net (Cu. Yd.) |
| Volume Sfc-1   | full | 1.000      | 1.000       | 962.50            | 3.90          | 11.09          | 7.19<Fill>    |
| Totals         |      |            |             |                   |               |                |               |
|                |      |            |             | 2d Area (Sq. Ft.) | Cut (Cu. Yd.) | Fill (Cu. Yd.) | Net (Cu. Yd.) |
| Total          |      |            |             | 962.50            | 3.90          | 11.09          | 7.19<Fill>    |

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GRADING PLAN  
 PROJECT LOCATION #1

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
 ISABELLA COUNTY

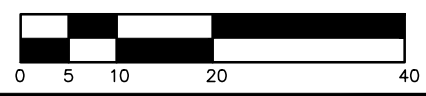
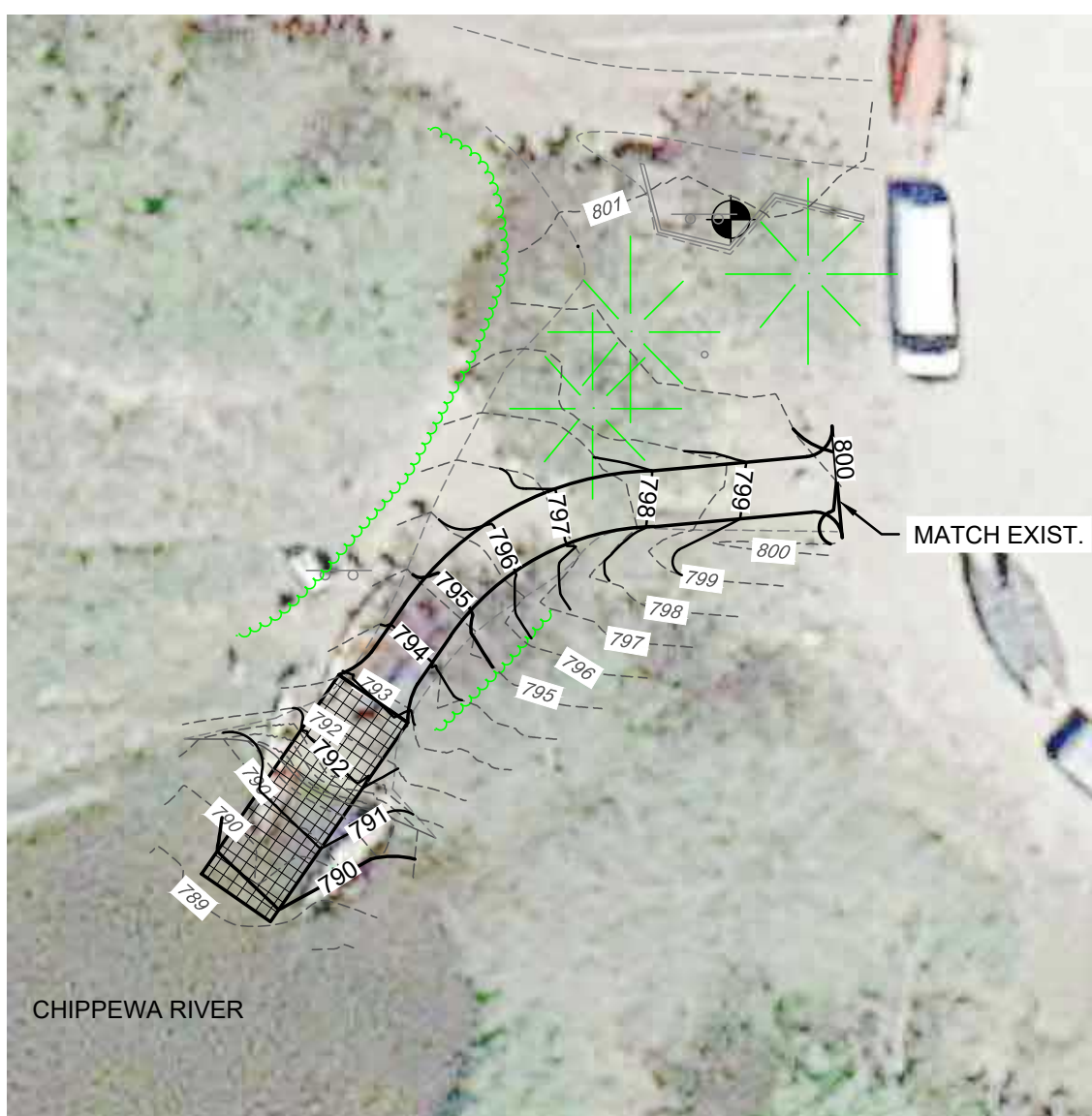
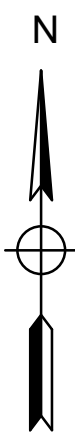
PROJECT NO.  
 130591SG2021

DATE:  
 AUGUST, 2021

SHEET 22 OF 44

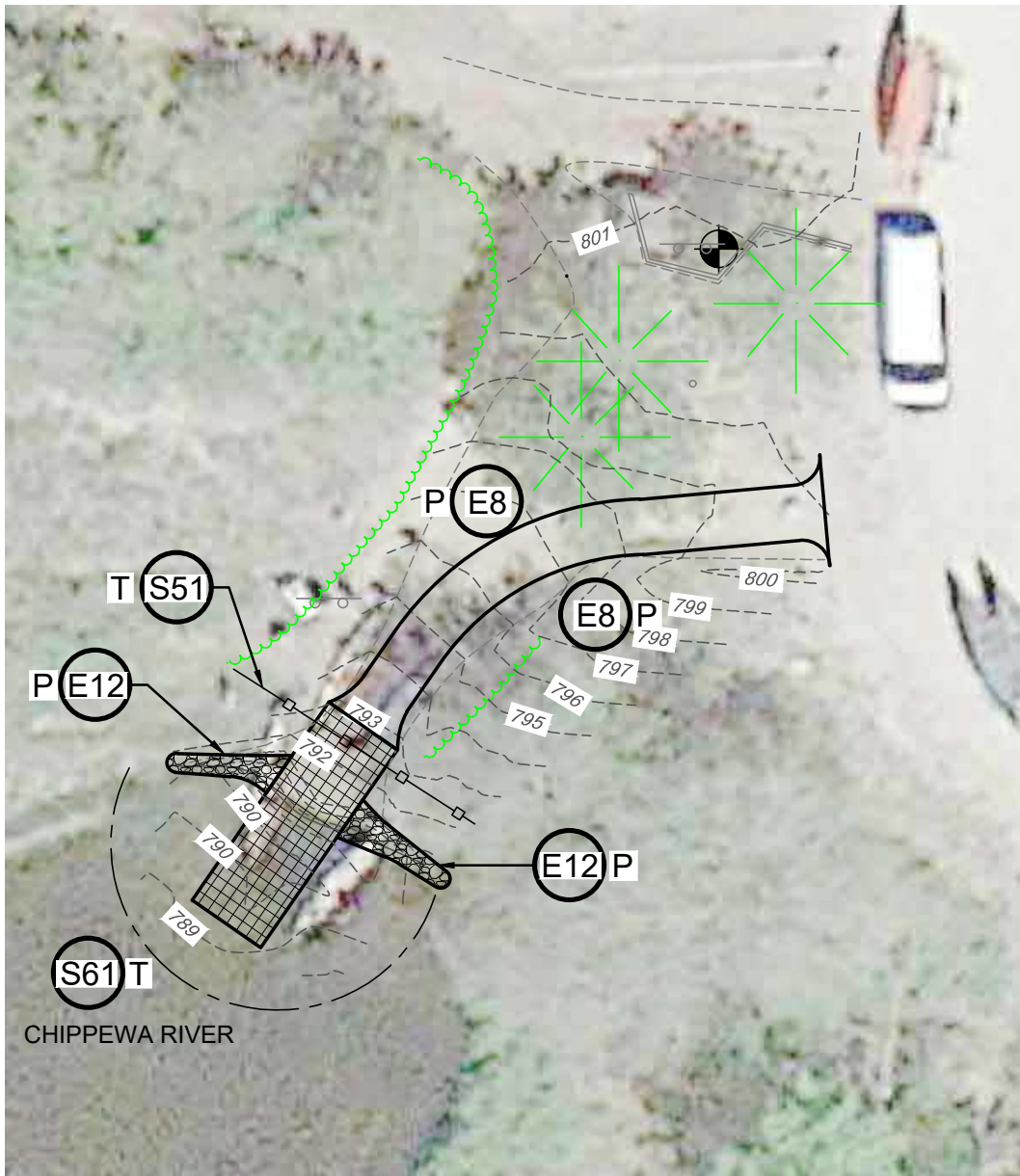
DESIGNED BY: LTP  
 DRAWN BY: LTP  
 CHECKED BY: CAR  
 APPROVED BY: DSB

FILE NO.  
 PERM22



## SOIL EROSION KEY

- |       |                     |               |                       |
|-------|---------------------|---------------|-----------------------|
| (E8)  | - PERMANENT SEEDING |               | T = TEMPORARY MEASURE |
| (E9)  | - MULCH BLANKETS    |               | P = PERMANENT MEASURE |
| (E12) | - RIPRAP            | — □ — □ — □ — | = SILT FENCE          |
| (S51) | - SILT FENCE        | - - - - -     | = TURBIDITY CURTAIN   |
| (S61) | - TURBIDITY CURTAIN |               |                       |



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SESC PLAN  
 PROJECT LOCATION #1

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
 ISABELLA COUNTY

PROJECT NO.  
 130591SG2021

DATE:  
 AUGUST, 2021

SHEET 23 OF 44

DESIGNED BY: LTP  
 DRAWN BY: LTP  
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 APPROVED BY: DSB

FILE NO.  
 PERM23

## Cut/Fill Report

| Volume Summary |      |            |             |                   |               |                |               |
|----------------|------|------------|-------------|-------------------|---------------|----------------|---------------|
| Name           | Type | Cut Factor | Fill Factor | 2d Area (Sq. Ft.) | Cut (Cu. Yd.) | Fill (Cu. Yd.) | Net (Cu. Yd.) |
| Volume Sfc-2   | full | 1.000      | 1.000       | 1078.11           | 44.68         | 0.09           | 44.58<Cut>    |

| Totals |                   |               |                |               |
|--------|-------------------|---------------|----------------|---------------|
|        | 2d Area (Sq. Ft.) | Cut (Cu. Yd.) | Fill (Cu. Yd.) | Net (Cu. Yd.) |
| Total  | 1078.11           | 44.68         | 0.09           | 44.58<Cut>    |

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GRADING PLAN  
 PROJECT LOCATION #2

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
 ISABELLA COUNTY

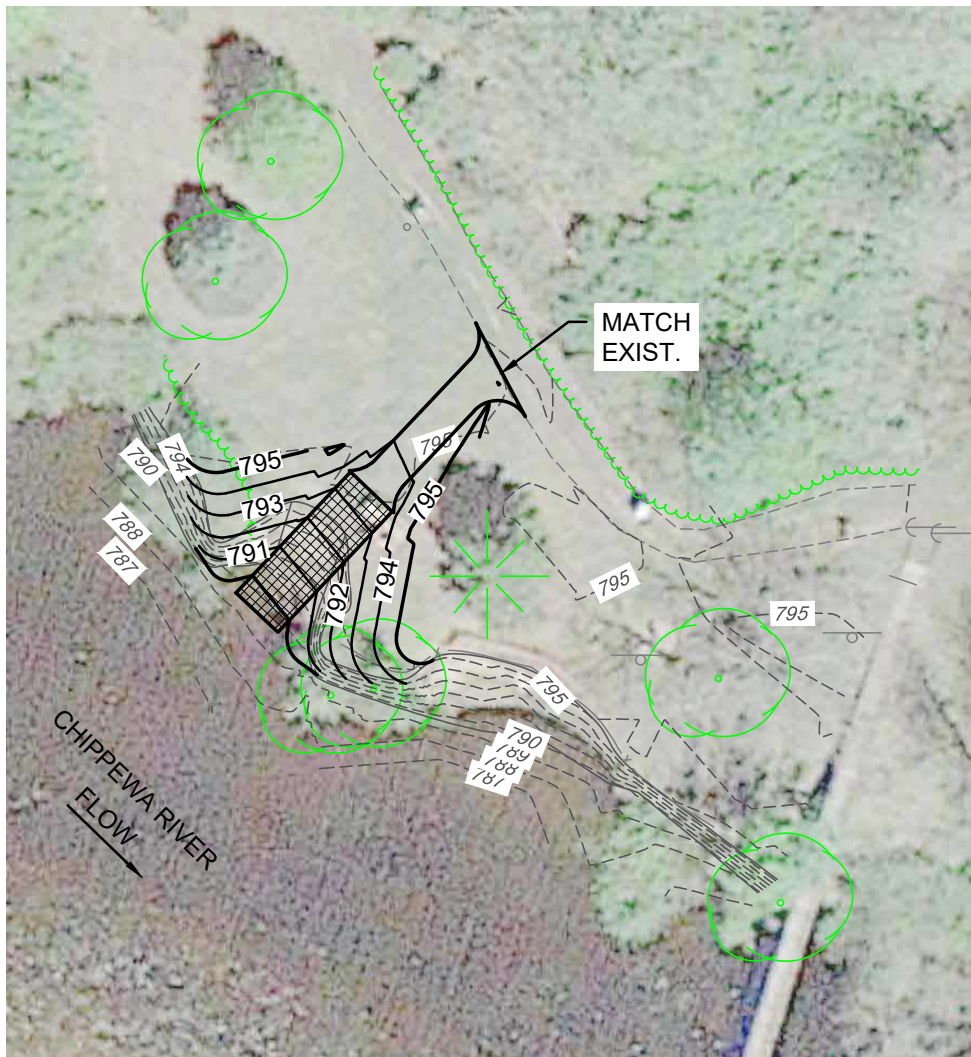
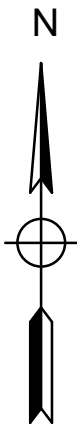
PROJECT NO.  
130591SG2021

DATE:  
AUGUST, 2021

SHEET 24 OF 44

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 DRAWN BY: LTP  
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FILE NO.  
PERM24



## SOIL EROSION KEY

**(E8)**

- PERMANENT SEEDING

T = TEMPORARY MEASURE

P = PERMANENT MEASURE

**(E9)**

- MULCH BLANKETS

— □ — □ — □ — = SILT FENCE

**(E12)**

- RIPRAP

— - - - - = TURBIDITY CURTAIN

**(S51)**

- SILT FENCE

**(S61)**

- TURBIDITY CURTAIN

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SESC PLAN  
PROJECT LOCATION #2

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
ISABELLA COUNTY

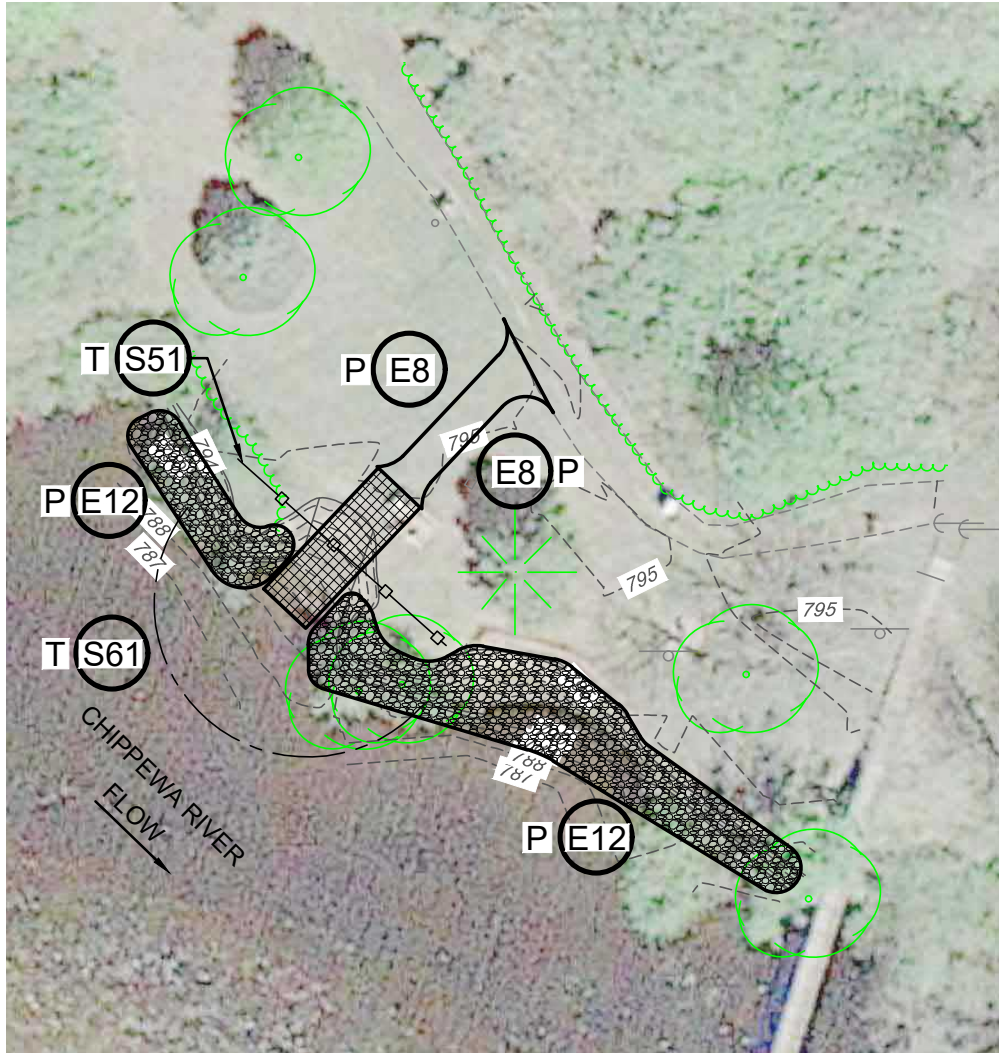
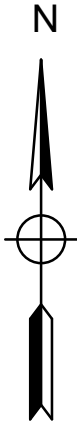
PROJECT NO.  
130591SG2021

DATE:  
AUGUST, 2021

SHEET 25 OF 44

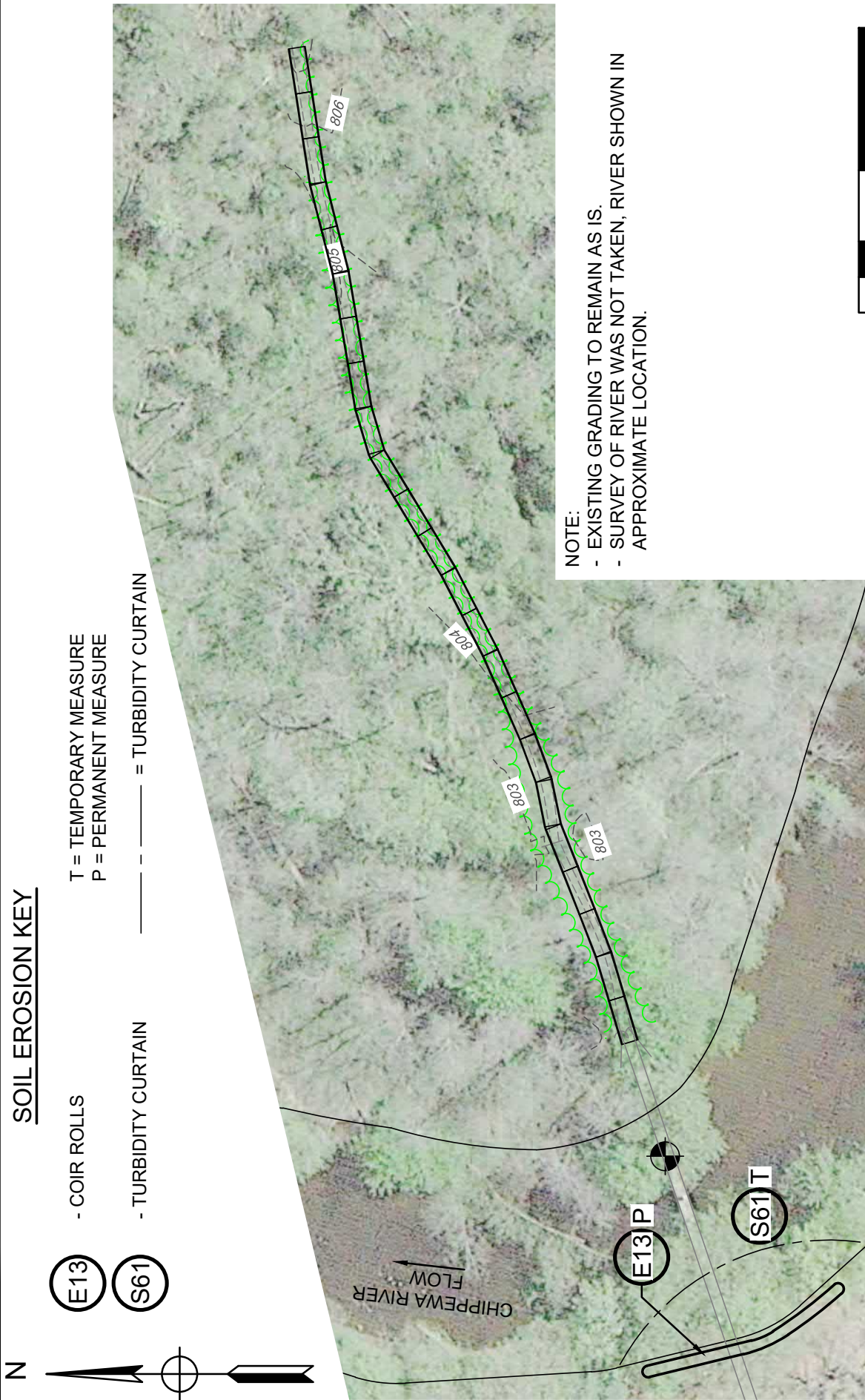
DESIGNED BY: LTP  
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FILE NO.  
PERM25



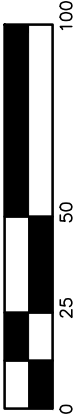
**SOIL EROSION KEY**

- (E13) - COIR ROLLS
- (S61) - TURBIDITY CURTAIN
- T = TEMPORARY MEASURE
- P = PERMANENT MEASURE
- = TURBIDITY CURTAIN



**NOTE:**

- EXISTING GRADING TO REMAIN AS IS.
- SURVEY OF RIVER WAS NOT TAKEN, RIVER SHOWN IN APPROXIMATE LOCATION.



**ALTERNATE ADD #1**

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
ISABELLA COUNTY

ALTERNATE ADD #1  
GRADING/ SESC PLAN  
PROJECT LOCATION #3

PROJECT NO.  
130591SG2021

DATE:  
AUGUST, 2021

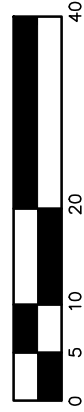
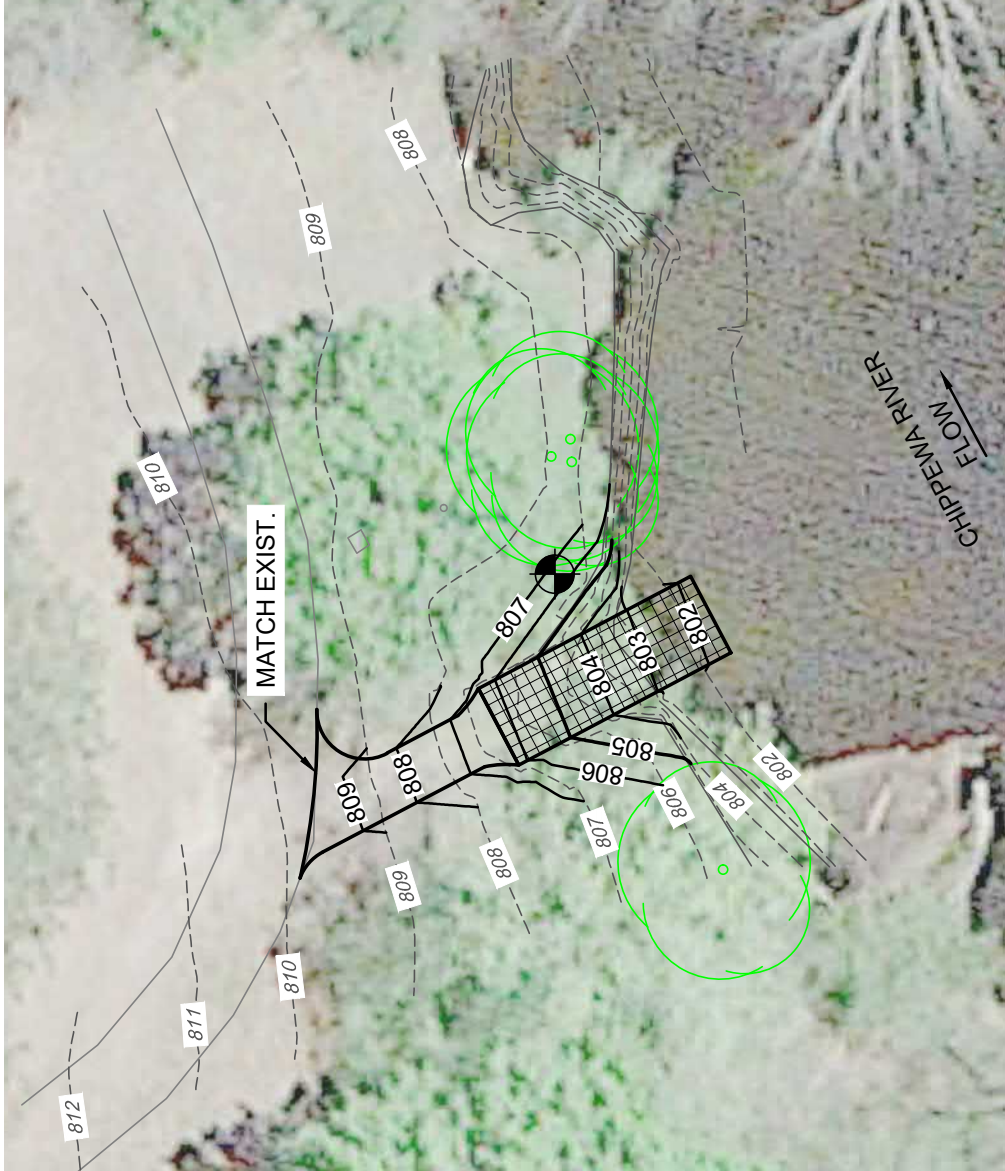
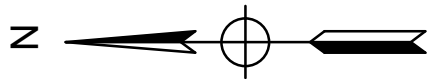
SHEET 26 OF 44

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APPROVED BY: DSB

FILE NO.  
PERM26

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GRADING PLAN  
 PROJECT LOCATION #4

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
 ISABELLA COUNTY

**Cut/Fill Report**

| Volume Summary |      |            |             |                   |               |                |               |
|----------------|------|------------|-------------|-------------------|---------------|----------------|---------------|
| Name           | Type | Cut Factor | Fill Factor | 2d Area (Sq. Ft.) | Cut (Cu. Yd.) | Fill (Cu. Yd.) | Net (Cu. Yd.) |
| Volume Site-4  | fill | 1.000      | 1.000       | 710.76            | 12.62         | 0.41           | 12.21<Cut>    |
| Totals         |      |            |             |                   |               |                |               |
| Total          |      |            |             | 710.76            | 12.62         | 0.41           | 12.21<Cut>    |

PROJECT NO.  
130591SG2021

DATE:  
AUGUST, 2021

SHEET 27 OF 44

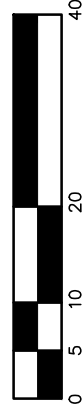
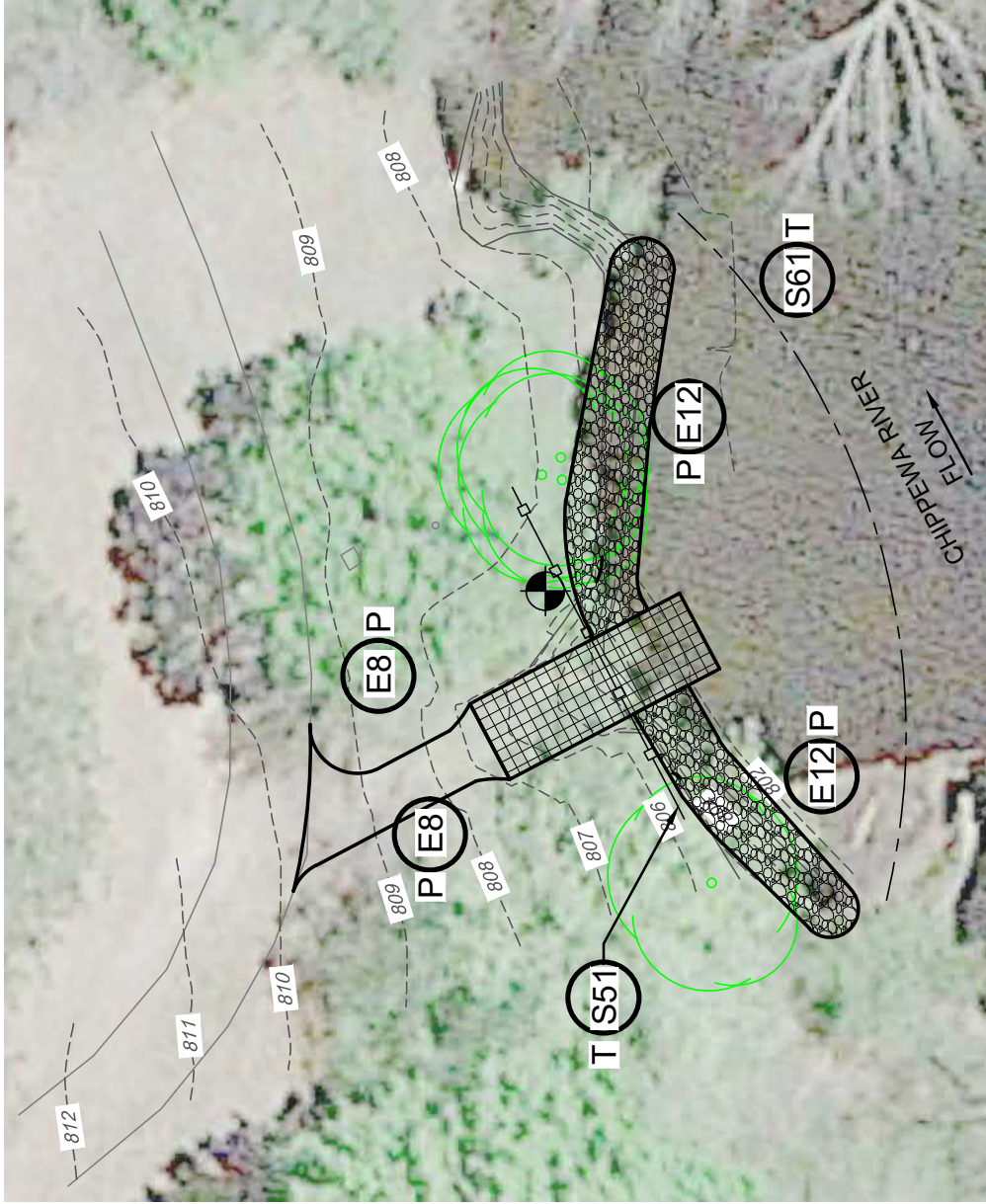
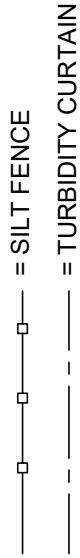
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 APPROVED BY: DSB

FILE NO.  
PERM27

**SOIL EROSION KEY**

- (E8)** - PERMANENT SEEDING
- (E9)** - MULCH BLANKETS
- (E12)** - RIPRAP
- (S51)** - SILT FENCE
- (S61)** - TURBIDITY CURTAIN

T = TEMPORARY MEASURE  
 P = PERMANENT MEASURE



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SESC PLAN  
 PROJECT LOCATION #4

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
 ISABELLA COUNTY

PROJECT NO.  
 130591SG2021

DATE:  
 AUGUST, 2021

SHEET 28 OF 44

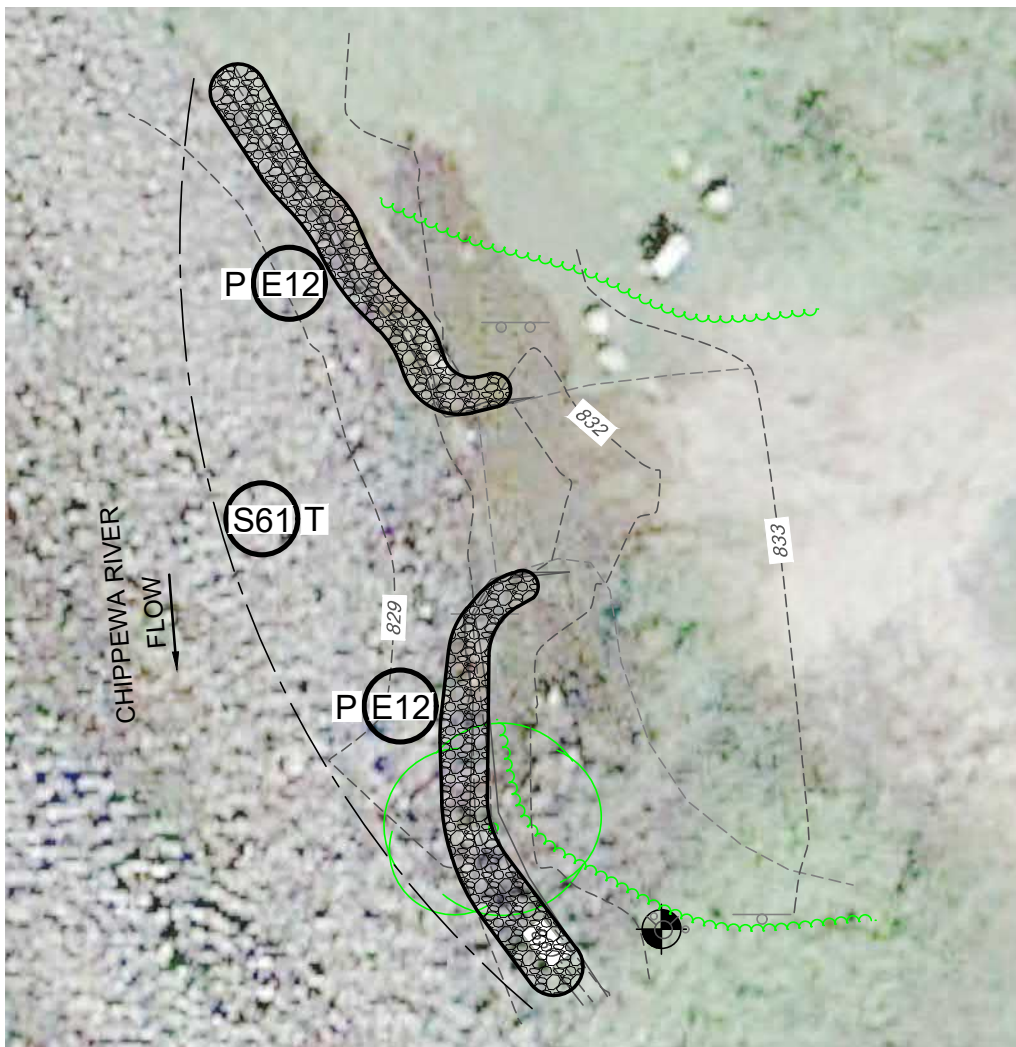
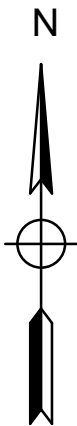
DESIGNED BY: LTP  
 DRAWN BY: LTP  
 CHECKED BY: CAR  
 APPROVED BY: DSB

FILE NO.  
 PERM28

# SOIL EROSION KEY

- E12 - RIPRAP
- S61 - TURBIDITY CURTAIN
- T = TEMPORARY MEASURE
- P = PERMANENT MEASURE
- - - - - = TURBIDITY CURTAIN

NOTE:  
- EXISTING GRADING TO REMAIN AS IS.



## ALTERNATE ADD #2



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**ALTERNATE ADD #2  
GRADING/ SESC PLAN -  
MAJESKE LANDING  
PROJECT LOCATION #5**

**RIVER EROSION & CANOE LAUNCH**

**CHIPPEWA RIVER  
ISABELLA COUNTY**

PROJECT NO.  
130591SG2021

DATE:  
AUGUST, 2021

SHEET 29 OF 44

DESIGNED BY: LTP  
DRAWN BY: LTP  
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APPROVED BY: DSB

FILE NO.  
**PERM29**



# SOIL EROSION NOTES

1. ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE AREA ENFORCEMENT AGENCY.
2. DAILY INSPECTIONS SHALL BE MADE BY THE CONTRACTOR FOR EFFECTIVENESS OF THE EROSION AND SEDIMENT CONTROL MEASURES, AND ANY NECESSARY REPAIRS SHALL BE MADE WITHOUT DELAY.
3. EROSION AND SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT BE ALLOWED TO COLLECT ON ANY OFF SITE AREAS OR IN WATERWAYS. WATERWAYS INCLUDE BOTH NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES, WETLANDS, AND PONDS.
4. THE CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES WHEN REQUIRED AND AS DIRECTED ON THESE PLANS. HE SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES, AND OR EARTH CHANGES HAVE BEEN ACCOMPLISHED.
5. STAGING OF THE WORK WILL BE DONE BY THE CONTRACTOR AS DIRECTED IN THE PLANS AND AS REQUIRED TO INSURE PROGRESSIVE STABILIZATION ON THE DISTURBED EARTH.
6. SOIL EROSION CONTROL PRACTICES WILL BE ESTABLISHED IN EARLY STAGES OF CONSTRUCTION BY THE CONTRACTOR. SEDIMENT CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTATION OF SILT OFF THE SITE.
7. ALL MUD/DIRT TRACKED ONTO EXISTING CITY/COUNTY ROADS FROM THIS SITE DUE TO THE CONSTRUCTION SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR/BUILDER.
8. ALL SLOPES 3:1 OR STEEPER SHALL BE STABILIZED WITH PEGGED SOD OR SEED AND MULCH SECURED WITH EROSION MATTING FOLLOWING MASS GRADING OPERATIONS.
9. ALL EROSION CONTROLS SHALL BE INSTALLED ACCORDING TO THE FOLLOWING WORK SEQUENCE:
  - A) INSTALL SEDIMENT CONTROL FABRIC FENCE AT ALL LOCATIONS AS SHOWN.
  - B) INSTALL TURBIDITY CURTAIN AT ALL LOCATIONS AS SHOWN.
  - C) CLEAR AND MASS GRADE SITE.
  - D) INSTALL RIPRAP AT ALL LOCATIONS AS SHOWN.
  - E) PLACE GEOWEB MAT AND INFILL STONE, REPLACE TOPSOIL, SEED AND MULCH ALL DISTURBED AREAS IN CONJUNCTION WITH THE REMOVAL OF ALL EROSION CONTROL DEVICES.
  - F) VEGETATION MUST BE ACCEPTABLY ESTABLISHED PRIOR TO THE FINAL RELEASE OF THE CONSTRUCTION GUARANTEE.
10. SILT FENCE SHOULD ONLY BE USED AS NEEDED ON THIS PROJECT IN SPECIFIC AREAS WHERE ITS APPLICATION IS DEEMED NECESSARY.

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SESC NOTES

RIVER EROSION & CANOE LAUNCH  
 CHIPPEWA RIVER  
 ISABELLA COUNTY

PROJECT NO.  
130591SG2021

DATE:  
AUGUST, 2021

SHEET 30 OF 44

DESIGNED BY: LTP  
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FILE NO.  
PERM30



# PERMANENT SEEDING

|  |  |  |                           |
|--|--|--|---------------------------|
| <u>Planting Zones:</u>                     | Lower Peninsula<br>(South of T20N)<br>Zone 1 | Lower Peninsula<br>(North of T20N)<br>Zone 2 | Upper Peninsula<br>Zone 3 |
| <u>Seeding Window</u><br>Permanent Seeding | 4/15 – 10/10                                 | 5/1 – 10/1                                   | 5/1 – 9/20                |
| <u>Seeding Window</u><br>Dormant Seeding*  | 11/15 – Freeze                               | 11/01 – Freeze                               | 11/01 – Freeze            |

Source: Adapted from MDOT Interim 2003 Standard Specifications for Construction

|   | <u>Zone 1</u><br>Lower Peninsula<br>(South of U.S. 10) | <u>Zone 2</u><br>Lower Peninsula<br>(North of U.S. 10) | <u>Zone 3</u><br>Upper<br>Peninsula |
|---|--|--|-------------------------------------|
| <u>Seeding Dates</u><br>(with Irrigation<br>or Mulch) | 4/1 – 8/1  | 5/1 – 9/20   | 5/1 – 9/10                          |
| <u>Seeding Dates</u><br>(w/o Irrigation<br>or Mulch)  | 4/1 – 5/20<br>or<br>8/10 – 10/1                        | 5/1 – 6/10<br>or<br>8/1 – 9/20                         | 5/1 – 6/15<br>or<br>8/1 – 9/20      |
| <u>Dormant Seeding<br/>Dates*</u>                     | 11/1 – Freeze  | 10/25 – Freeze   | 10/25 – Freeze                      |

Source: Adapted from USDA NRCS Technical Guide #342 (1999)

\* Dormant seeding is for use in the late fall after the soil temperature remains consistently below 50°F, prior to the ground freezing. This practice is appropriate if construction on a site is completed in the fall but the seed was not planted prior to recommended seeding dates. No seed germination will take place until spring. A cool season annual grass may be added in an attempt to have some fall growth.

- Mulch must be used with dormant seed.
- Do not seed when the ground is frozen or snow covered.
- Do not use a dormant seed mix on grassed waterways.



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SESC DETAILS AND  
SPECIFICATIONS

RIVER EROSION & CANOE LAUNCH

CHIPPEWA RIVER  
ISABELLA COUNTY

PROJECT NO.  
130591SG2021

DATE:  
AUGUST, 2021

SHEET 31 OF 44

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FILE NO.  
PERM31



# PERMANENT SEEDING SPECIFICATIONS

- When**
- To finalize stabilization of temporary seeding areas or when an area needs permanent stabilization following completion of construction. Also used when vegetative establishment can correct existing soil erosion or sedimentation problem.
  - Within 5 days of final grade.
- Why**
- To stabilize soil and prevent or reduce soil erosion/sedimentation problems from developing.
- Where**
- Used on construction and earth change sites which require permanent vegetative stabilization.
- How**
1. Review SESC plan and construction phasing to identify areas in need of permanent vegetative stabilization.
  2. Select perennial grass and ground cover for permanent cover.
  3. Seed mixes vary. However, they should contain native species.
  4. Seed mixes should be selected through consultation with a certified seed provider and with consideration of soil type, light, moisture, use applications, and native species content.
  5. Soil tests should be performed to determine the nutrient and pH levels in the soil. The pH may need to be adjusted to between 6.5 and 7.0.
  6. Prepare a 3–5” deep seedbed, with the top 3–4” consisting of topsoil.
  7. Slopes steeper than 1:3 should be roughened.
  8. Apply seed as soon as possible after seedbed preparation. Seed may be broadcast by hand, hydroseeding, or by using mechanical drills.
  9. Mulch immediately after seeding.
  10. Dormant seed mixes are for use after the growing season, using seed which lies dormant in the winter and begins growing as soon as site conditions become favorable.



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# PERMANENT SEEDING SPECIFICATIONS



How  
(cont.)

11. Protect seeded areas from pedestrian or vehicular traffic.
12. Divert concentrated flows away from the seeded area until vegetation is established.

Maintenance

- Inspect weekly and within 24 hours following each rain event in the first few months following installation to be sure seed has germinated and permanent vegetative cover is being established.
- Add supplemental seed as necessary.

Limitations

- Seeds need adequate time to establish.
- May not be appropriate in areas with frequent traffic.
- Seeded areas may require irrigation during dry periods.
- Seeding success is site specific, consider mulching or sodding when necessary.



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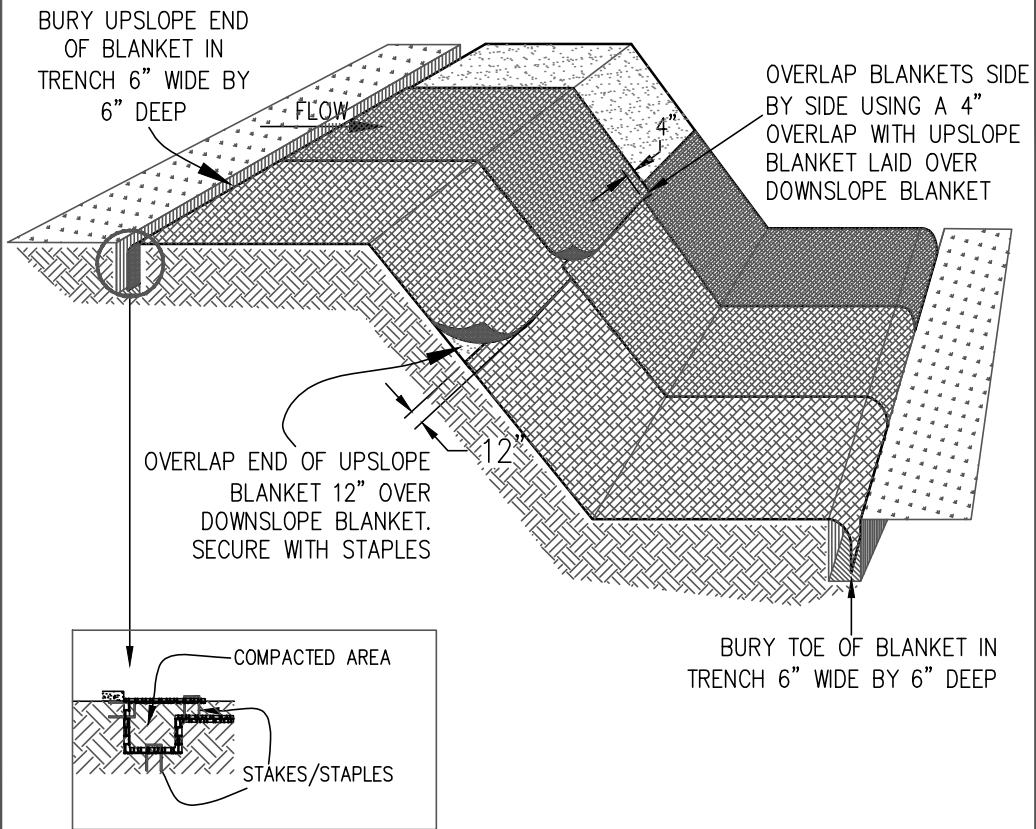
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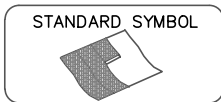
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PERM33

E9

# MULCH BLANKETS



- NOTES:
- ① PLACE MULCH BLANKET PARALLEL TO FLOW AND ANCHOR SECURELY.
  - ② WHEN BLANKETS ARE USED IN FLOWING DITCH, BLANKETS SHOULD NOT OVERLAP IN DITCH CENTER PARALLEL TO FLOW.
  - ③ STAPLES INSTALLED/SECURED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
  - ④ WHERE POSSIBLE, CONSTRUCT WITH BIODEGRADABLE MATERIAL.



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E9

# MULCH BLANKETS SPECIFICATIONS

- When**
- When seeded areas are subject to erosive surface flows, severe wind, or to protect non-vegetated slopes or areas during the winter.
- Why**
- Protects seeded areas and slopes against erosion from rain or wind. Holds soil moisture to allow for seed germination and reduces wind desiccation of germinated seeds.
- Where**
- Use on exposed slopes, newly seeded areas, new ditch bottoms, and other areas subject to erosion.
- How**
1. Prepare subgrade to proper grade and compaction requirements.
  2. Remove ruts, roots, soil clods, or other debris from surface subject to mulch blanket installation.
  3. Spread or drill seed.
  4. Consult with erosion control material supplier to select mulch blanket based on slope gradient, expected surface run-off, and protection term necessary (long or short term).
  5. Position selected mulch blanket as close as possible to intended use location.
  6. Install blanket at top of slope, first anchoring toe in trench 6” wide X 6” deep, progressing down-slope or down-gradient with approximately 12” of blanket extended beyond the up-slope portion of the trench.
  7. Anchor the blanket with staples/stakes placed approximately 12” apart in the bottom of the trench. Backfill and compact the trench after securing.
  8. Apply seed to compacted soil and fold the 12” portion of the blanket over compacted area and secure with a row of staples/stakes placed 12” apart across the width of the blanket.
  9. Unroll the blankets down or horizontally across the slope.



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# MULCH BLANKETS SPECIFICATIONS

How  
(cont.)

- 10. Overlap blanket edges by a minimum of 4” and blanket ends by a minimum of 12”. Overlaps should be in the direction of expected flow with the up-slope blanket placed over the down-slope blanket edge.
- 11. Secure down-slope end of blanket with staples/stakes and trench in.

Maintenance

- Check after a rain event to ensure the blanket is still in place.
- Keep eroded soil, vehicular and pedestrian traffic, and concentrated runoff away from the blanketed area.

Limitations

- Mulch blankets and anchors may inhibit mowing.



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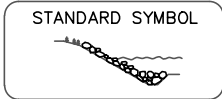
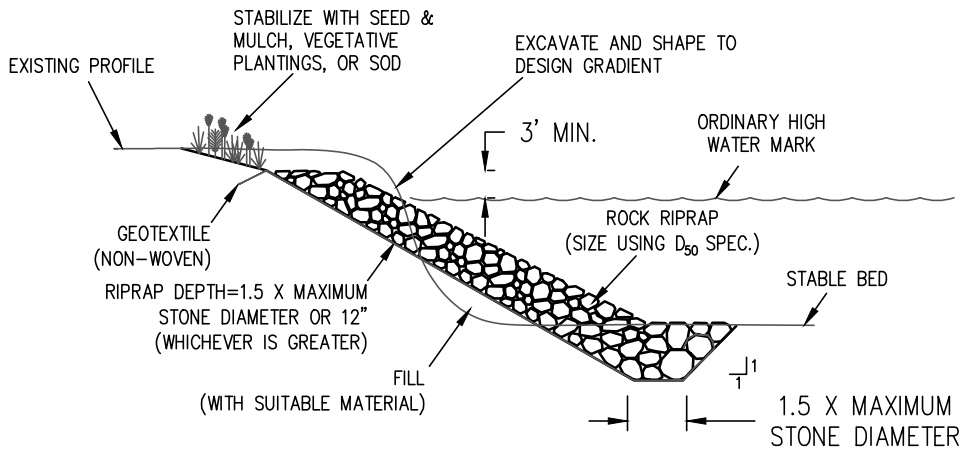
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E12

# RIPRAP

## STREAM BANK APPLICATION



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# RIPRAP SPECIFICATIONS

E12

- |       |  |
|-------|--|
| When  | <ul style="list-style-type: none"> <li>• When concentrated water flows have the potential to create scour, down-cutting, or lateral cutting.</li> </ul>  |
| Why   | <ul style="list-style-type: none"> <li>• To prevent loss of land or damage to utilities or structures. In aquatic applications, riprap is used to control channel meander and maintain capacity, protect against wave attack, and reduce sediment load.</li> </ul>   |
| Where | <ul style="list-style-type: none"> <li>• In natural or constructed channels with areas susceptible to erosion from the action of water, ice, or debris, or to damage by livestock or vehicular traffic.</li> <li>• In shoreline areas where the erosion problem may be solved through simple structural measures.</li> <li>• On slopes with profiles measuring 1:1.5 or less.</li> </ul>   |
| How   | <ol style="list-style-type: none"> <li>1. Review subject site to identify areas subject to concentrated flows or wave/current attack.</li> <li>2. The appropriateness and extent of riprap placement is site specific and should be determined in the field.</li> <li>3. The area under review for riprap placement must be shaped and contoured appropriately by grading prior to material placement.</li> <li>4. Non-woven geotextile fabric should be installed prior to riprap placement, with upper end and toe end of fabric buried or anchored to prevent movement.</li> <li>5. Riprap placement should be started at a stabilized location and ended at a stabilized or contoured point.</li> <li>6. Material selected for riprap should be hard, angular, and resistant to weathering. Appropriate material size depends on expected water energy and intended function of the material.</li> </ol> |



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**E12**

**RIPRAP SPECIFICATIONS**

How (cont.)

- 7. Riprap mixture should be an even mixture of stone sizes based on the average, or  $D_{50}$ . This means 50% of the stone, by size, will be larger than the diameter specified, and 50% will be smaller than the size specified. The diameter of the largest stone should not be more than 1.5 times the  $D_{50}$  stone size.
- 8. See table on the following page for typical riprap stone sizes.
- 9. Rock shall be placed so that larger rocks are uniformly distributed and in contact with one another. Smaller rocks should fill the voids.
- 10. When in contact with moving water, riprap will tie into a stable bank at the downstream end and will be keyed into the bank at the upstream end. Riprap should extend 3 ft. above the ordinary high water mark or to the top of the bank on short slopes. Extend riprap a minimum 10 ft. beyond active erosion area.

Maintenance

- All installations should be inspected immediately after the first rainfall to confirm the stability of the placed material. Follow-up inspections should occur regularly and provisions made for prompt repair if needed.

Limitations

- Area is cleared prior to the addition of riprap, therefore no areas are preserved with native vegetation.

| SIZE OF TYPICAL RIPRAP STONES |   |  |                    |
|-------------------------------|---|--|--------------------|
| Weight (lbs.)                 | Average Spherical Diameter (in.) $D_{50}$ | Typical Rectangular Shape Length (in.) | Width/Height (in.) |
| 50                            | 10  | 18                                     | 6                  |
| 100                           | 13  | 21                                     | 7                  |
| 150                           | 14  | 24                                     | 8                  |
| 300                           | 18  | 30                                     | 10                 |
| 500                           | 22  | 36                                     | 12                 |
| 1000                          | 27  | 45                                     | 15                 |
| 1500                          | 31  | 52                                     | 17                 |
| 2000                          | 34  | 57                                     | 19                 |
| 4000                          | 43  | 72                                     | 24                 |
| 6000                          | 49  | 83                                     | 28                 |
| 8000                          | 54  | 90                                     | 30                 |

Source: Adapted from USDA NRCS



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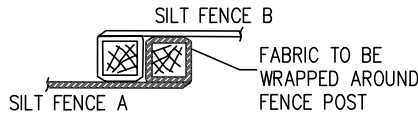
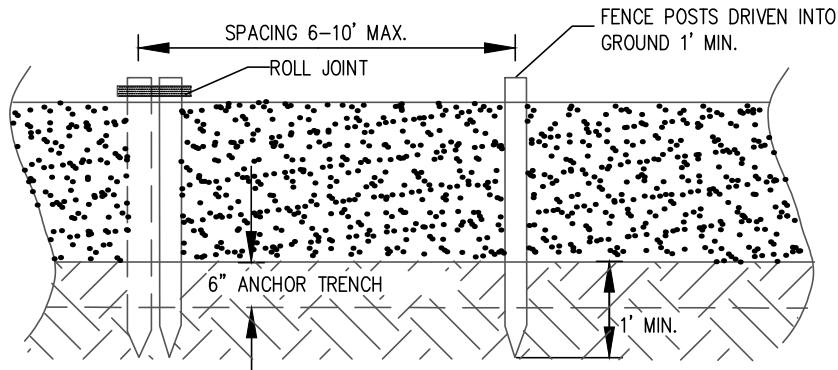
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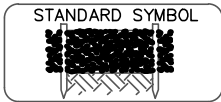
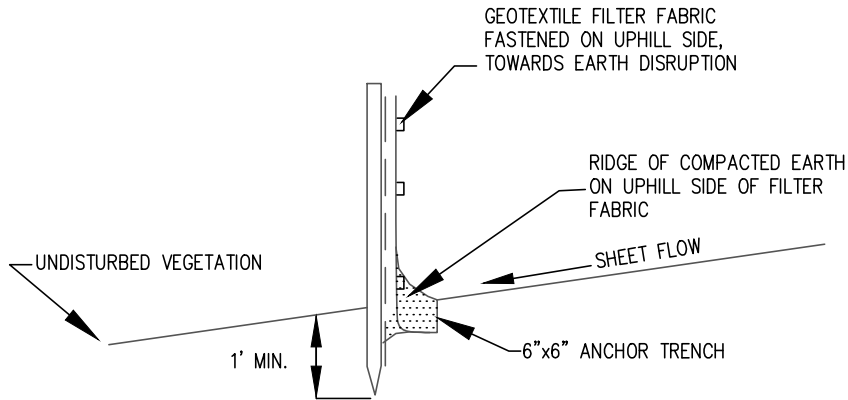
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PERM39

S51

# SILT FENCE



## ROLL JOINTS



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PERM40

# SILT FENCE SPECIFICATIONS

S51

- When**
- A temporary measure for preventing sediment movement.
- Why**
- Used to prevent sediment suspended in runoff from leaving an earth change area.
- Where**
- Use adjacent to critical areas, wetlands, base of slopes, and watercourses.
- How**
1. Install parallel to a contour.
  2. The silt fence should be made of woven geotextile fabric.
  3. Silt fence should accommodate no more than 1/2 to 1 acre of drainage per 100' of fence and on slopes less than 1:2 (v:h).
  4. Dig a 6" trench along the area where the fence is to be installed.
  5. Place 6" of the silt fence bottom flap into the trench.
  6. Backfill the trench with soil and compact the soil on both sides. Create a small ridge on the up-slope side of the fence.
  7. Install wooden stakes 6 – 10' apart and drive into the ground a minimum of 12".
  8. Staple the geotextile fabric to the wooden stakes.
  9. Join sections of silt fence by wrapping ends together (See drawing).
- Maintenance**
- Inspect frequently and immediately after each storm event. Check several times during prolonged storm events. If necessary, repair immediately.
  - If the sediment has reached 1/3 the height of the fence, the soil should be removed and disposed of in a stable upland site.
  - The fence should be re-installed if water is seeping underneath it or if the fence has become ineffective.
  - Silt fence should be removed once vegetation is established and up-slope area has stabilized.



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PERM41

S51

# SILT FENCE SPECIFICATIONS

## Limitations

- Silt fence may cause temporary ponding and could fail if too much water flows through the area.
- Do not use in areas with concentrated flows.
- Chance of failure increases if fence is installed incorrectly or if sediment accumulation is not removed.



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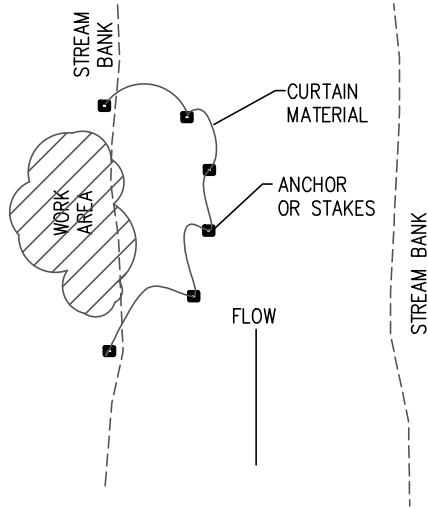
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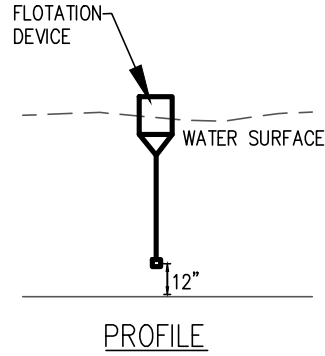
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S61

# TURBIDITY CURTAIN

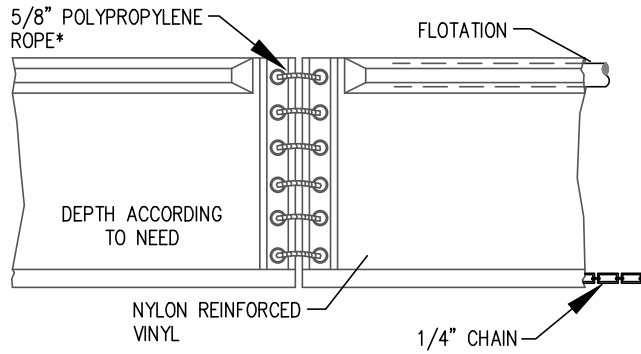


PLAN VIEW



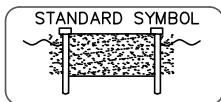
PROFILE

\* JOINTS VARY DEPENDING ON TYPE OF WATERBODY AND VELOCITY OF WATERFLOW.



PROFILE - CURTAIN DETAIL

NOTES:  
TYPE OF TURBIDITY CURTAIN TO BE DETERMINED BY A QUALIFIED ENGINEER or CPESC.



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PERM43

# TURBIDITY CURTAIN SPECIFICATIONS

S61

- |             |   |
|-------------|---|
| When        | <ul style="list-style-type: none"> <li>• During construction adjacent to a water resource, to contain sediment within the work area when other BMPs cannot be used.</li> </ul>  |
| Why         | <ul style="list-style-type: none"> <li>• To prevent silt-laden runoff from entering adjacent water resources or carrying sediment downstream.</li> </ul>  |
| Where       | <ul style="list-style-type: none"> <li>• Along stream banks, within watercourses and water bodies.</li> </ul>   |
| How         | <ul style="list-style-type: none"> <li>• A qualified engineer or Certified Professional in Erosion and Sediment Control (CPESC) should assess the site conditions to ensure the proper type of turbidity curtain is selected and installed.</li> <li>• The curtain will be anchored to the bank and anchors placed at joints where necessary.</li> <li>• The lower edge of the barrier should be 12" above the water resource bottom. Flotation devices are used to keep the curtain suspended in the water.</li> <li>• The curtain can be used in shallow waters without flotation devices, held by stakes not more than 6 feet apart.</li> <li>• Turbidity curtain should be installed parallel, not perpendicular to stream flow (see plan view).</li> </ul> |
| Maintenance | <ul style="list-style-type: none"> <li>• Remove sediment buildup as necessary.</li> <li>• Frequently check the anchors and joints to ensure they are functioning properly.</li> </ul>   |
| Limitations | <ul style="list-style-type: none"> <li>• If the turbidity curtain is suspended too close to the stream bed, silt buildup may cause the curtain to be pulled under the surface of the water.</li> <li>• Use is limited in areas with high flow velocities or at times when the stream is at peak volume.</li> </ul>  |



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