

PROJECT MANUAL

CITY OF BIG RAPIDS
MECOSTA COUNTY, MICHIGAN

HEMLOCK PARK SPLASH PAD & PLAYGROUND



FUNDING PROVIDED BY
MICHIGAN DEPARTMENT OF NATURAL RESOURCES (MDNR)
&
MICHIGAN ECONOMIC DEVELOPMENT CORPORATION (MEDC)



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ADVERTISEMENT FOR BIDS

**City of Big Rapids
Hemlock Park Splash Pad & Playground**

The City of Big Rapids is requesting Bids for the construction of Hemlock Park Improvements. Bids for the construction of the project will be received at the City of Big Rapids City Offices located at 226 N. Michigan Avenue, Big Rapids, MI 49307 until **2:00 p.m.** local time, **Monday, December 11, 2023.** At that time the Bids received will be publicly opened and read.

Items of work include earthwork, site grading, and removals for concrete sidewalk and sidewalk ramps, concrete paving, concrete seat wall, underdrain, drain inlets, splash pad, installing playground equipment, splash pad pump station, benches, landscaping, site electrical, site lights, community fireplace, and all related work.

Prospective Bidders may request the Bidding Documents from the Issuing Office. The Issuing Office of the Bidding Documents is: Fleis & VandenBrink, 2690 Lucerne Drive SE, Grand Rapids, MI 49546 email: bidroom@fveng.com Telephone: (616) 977-1000. Bidding Documents will be emailed in portable document format (PDF) at no charge; hard copy documents are not available. Non-biddable documents may be viewed in the on-line Bid Room at www.fveng.com.

A copy of the bidding documents will be available at the City of Big Rapids offices located at 226 N. Michigan Avenue, Big Rapids, MI 49307 for review only after September 5, 2023.

The date that the Bidding Documents are transmitted by the Issuing Office will be considered the Bidder's date of receipt of the Bidding Documents.

A pre-bid conference will not be held.

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

The City of Big Rapids reserves the right to accept any bid, reject any or all bids, to waive informalities and make the award in any manner deemed in the best interest of the City of Big Rapids.

City of Big Rapids
Mark Gifford
City Manager

END OF SECTION

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INSTRUCTIONS TO BIDDERS

ARTICLE 1 - DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:
- A. *Issuing Office*—The office from which the Bidding Documents are to be issued, and which registers plan holders.
 - B. *Plan Holders* – Entities that obtain Bidding Documents from the Issuing Office.

ARTICLE 2 - BIDDING DOCUMENTS

- 2.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents. It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, by Bidder itself or by its prospective Subcontractors and Suppliers.
- 2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use. Authorization to download documents, or other distribution, includes the right for Plan Holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the plan holder pays all costs associated with printing or reproduction. Printed documents may not be re-sold under any circumstances.
- 2.03 Owner may establish a Bidding Documents Website as indicated in the Advertisement or invitation to bid. Owner requires that Bidder register as a plan holder with the Issuing Office at such website, and obtain a complete set of the Bidding Documents from such website. Bidders may rely that sets of Bidding Documents obtained from the Bidding Documents Website are complete, unless an omission is blatant. Registered Plan Holders will receive Addenda issued by Owner.
- 2.04 Bidders registered as a plan holder can obtain complete sets of Bidding Documents, in the number and format stated in the Advertisement or invitation to bid, from the Issuing Office. Bidders may rely that sets of Bidding Documents obtained from the Issuing Office are complete, unless an omission is blatant. Registered Plan Holders will receive Addenda issued by Owner.
- 2.05 Plan rooms (including construction information subscription services, and electronic and virtual plan rooms) will make the Bidding Documents available for examination. Those prospective bidders that obtain an electronic (digital) copy of the Bidding Documents from a plan room are required to register as Plan Holders from the Bidding Documents Website or Issuing Office. Owner is not responsible for omissions in Bidding Documents or other documents obtained from plan rooms, or for a Bidder's failure to obtain Addenda from a plan room.

2.06 *Electronic Documents*

- A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified.
 - 1. Bidding Documents will be provided in Portable Document Format (.pdf). It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.
- B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.06.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.

ARTICLE 3 - QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within five days of Owner's request, Bidder must submit the following information:
 - A. Written evidence establishing its qualifications such as financial data, previous experience, and present commitments.
 - B. A written statement that Bidder is authorized to do business in the state where the Project is located, or a written certification that Bidder will obtain such authority prior to the Effective Date of the Contract.
 - C. Bidder's state or other contractor license number, if applicable.
 - D. Subcontractor and Supplier qualification information.
 - E. Other required information regarding qualifications.
- 3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

ARTICLE 4 - PRE-BID CONFERENCE

- 4.01 A pre-bid conference will not be conducted for this Project.

ARTICLE 5 - SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

5.01 *Site and Other Areas*

- A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

5.02 *Existing Site Conditions*

- A. Subsurface and Physical Conditions; Hazardous Environmental Conditions
1. The Supplementary Conditions identify the following regarding existing conditions at or adjacent to the Site:
 - a. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data.
 - b. Those drawings known to Owner of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data.
 - c. Reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
 - d. Technical Data contained in such reports and drawings.
 2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
 3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.
 4. *Geotechnical Baseline Report/Geotechnical Data Report*: The Bidding Documents contain a Geotechnical Baseline Report (GBR) and Geotechnical Data Report (GDR).
 - a. As set forth in the Supplementary Conditions, the GBR describes certain select subsurface conditions that are anticipated to be encountered by Contractor during construction in specified locations ("Baseline Conditions"). The GBR is a Contract Document.
 - b. The Baseline Conditions in the GBR are intended to reduce uncertainty and the degree of contingency in submitted Bids. However, Bidders cannot rely solely on the Baseline Conditions. Bids should be based on a comprehensive approach that includes an independent review and analysis of the GBR, all other Contract Documents, Technical Data, other available information, and observable surface conditions. Not all potential subsurface conditions are baselined.
 - c. Nothing in the GBR is intended to relieve Bidders of the responsibility to make their own determinations regarding construction costs, bidding strategies, and Bid prices, nor of the responsibility to select and be responsible for the means, methods, techniques, sequences, and procedures of construction, and for safety precautions and programs incident thereto.
 - d. As set forth in the Supplementary Conditions, the GDR is a Contract Document containing data prepared by or for the Owner in support of the GBR.

- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05 of the General Conditions, and not in the drawings referred to in Paragraph 5.02.A of these Instructions to Bidders. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

5.03 *Other Site-related Documents*

- A. In addition to the documents regarding existing Site conditions referred to in Paragraph 5.02.A, record drawings at or adjacent to the Site are known to Owner and made available to Bidders for reference. Owner will make copies of these other Site-related documents available to any Bidder on request.
- B. Owner has not verified the contents of these other Site-related documents, and Bidder may not rely on the accuracy of any data or information in such documents. Bidder is responsible for any interpretation or conclusion Bidder draws from the other Site-related documents.
- C. The other Site-related documents are not part of the Contract Documents.
- D. Bidders are encouraged to review the other Site-related documents, but Bidders will not be held accountable for any data or information in such documents. The requirement to review and take responsibility for documentary Site information is limited to information in (1) the Contract Documents and (2) the Technical Data.
- E. No other Site-related documents are available.

5.04 *Site Visit and Testing by Bidders*

- A. Bidder is required to visit the Site and conduct a thorough visual examination of the Site and adjacent areas. During the visit the Bidder must not disturb any ongoing operations at the Site.
- B. If a pre-bid conference is held, a Site visit may be held immediately following the conference.
- C. Bidder may conduct a Site visit on publicly available lands at Bidders convenience.
- D. Bidder may request a Site visit on private property and restricted areas during normal working hours.
- E. Bidders visiting the Site are required to arrange their own transportation to the Site.
- F. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- G. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder general access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site. Bidder is responsible for establishing access needed to reach specific selected test sites.

- H. Bidder must comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- I. Bidder must fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

5.05 *Owner's Safety Program*

- A. Site visits and work at the Site may be governed by an Owner safety program. If an Owner safety program exists, it will be noted in the Supplementary Conditions.

5.06 *Other Work at the Site*

- A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 6 - BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Express Representations and Certifications in Bid Form, Agreement*

- A. The Bid Form that each Bidder will submit contains express representations regarding the Bidder's examination of Project documentation, Site visit, and preparation of the Bid, and certifications regarding lack of collusion or fraud in connection with the Bid. Bidder should review these representations and certifications, and assure that Bidder can make the representations and certifications in good faith, before executing and submitting its Bid.
- B. If Bidder is awarded the Contract, Bidder (as Contractor) will make similar express representations and certifications when it executes the Agreement.

ARTICLE 7 - INTERPRETATIONS AND ADDENDA

- 7.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.
- 7.02 Bidder shall submit all questions about the meaning or intent of the Bidding Documents to Engineer in writing.
- 7.03 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all registered Plan Holders. Questions received less than seven days prior to the date for opening of Bids may not be answered.
- 7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Contract Documents.

ARTICLE 8 - BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5% of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a Bid bond issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions. Such Bid bond will be issued in the form included in the Bidding Documents.
- 8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract and furnish the required Contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited, in whole in the case of a penal sum bid bond, and to the extent of Owner's damages in the case of a damages-form bond. Such forfeiture will be Owner's exclusive remedy if Bidder defaults.
- 8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Contract or 91 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.
- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within 7 days after the Bid opening.

ARTICLE 9 - CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, the Work is to be (a) substantially completed and (b) ready for final payment, and (c) Milestones (if any) are to be achieved, are set forth in the Agreement.
- 9.02 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 10 - SUBSTITUTE AND "OR-EQUAL" ITEMS

- 10.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal" item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.
- 10.02 All prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 11 - SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 11.01 A Bidder must be prepared to retain specific Subcontractors and Suppliers for the performance of the Work if required to do so by the Bidding Documents or in the Specifications. If a

prospective Bidder objects to retaining any such Subcontractor or Supplier and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

- 11.02 If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder will submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.
- 11.03 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors and Suppliers. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor or Supplier, so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.07 of the General Conditions.

ARTICLE 12 - PREPARATION OF BID

- 12.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form must be completed in ink and the Bid Form signed in ink. Erasures or alterations must be initialed in ink by the person signing the Bid Form. A Bid price must be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
- B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."
- 12.02 If Bidder has obtained the Bidding Documents as Electronic Documents, then Bidder shall prepare its Bid on a paper copy of the Bid Form printed from the Electronic Documents version of the Bidding Documents. The printed copy of the Bid Form must be clearly legible, printed on 8½ inch by 11-inch paper and as closely identical in appearance to the Electronic Document version of the Bid Form as may be practical. The Owner reserves the right to accept Bid Forms which nominally vary in appearance from the original paper version of the Bid Form, providing that all required information and submittals are included with the Bid.
- 12.03 A Bid by a corporation must be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown.
- 12.04 A Bid by a partnership must be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership must be shown.
- 12.05 A Bid by a limited liability company must be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown.
- 12.06 A Bid by an individual must show the Bidder's name and official address.

- 12.07 A Bid by a joint venture must be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture must have been formally established prior to submittal of a Bid, and the official address of the joint venture must be shown.
- 12.08 All names must be printed in ink below the signatures.
- 12.09 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.
- 12.10 Postal and e mail addresses and telephone number for communications regarding the Bid must be shown.
- 12.11 The Bid must contain evidence of Bidder's authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.
- 12.12 If Bidder is required to be licensed to submit a Bid or perform the Work in the state where the Project is located, the Bid must contain evidence of Bidder's licensure, or Bidder must certify in writing that it will obtain such licensure within the time for acceptance of Bids and attach such certification to the Bid. Bidder's state contractor license number, if any, must also be shown on the Bid Form.

ARTICLE 13 - BASIS OF BID

13.01 *Unit Price*

- A. Bidders must submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.
- B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity", which Owner or its representative has set forth in the Bid Form, for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.
- C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

ARTICLE 14 - SUBMITTAL OF BID

- 14.01 The Bidding Documents include the Bid Form, and, if required, the Bid Bond Form. The Bid Form is to be printed, completed, and submitted with the Bid security and the other documents required to be submitted under the terms of Article 2 of the Bid Form.
- 14.02 A Bid must be received no later than the date and time prescribed and at the place indicated in the Advertisement or invitation to bid and must be enclosed in a plainly marked package with the Project title, and, if applicable, the designated portion of the Project for which the Bid is submitted, the name and address of Bidder, and must be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid must be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid must be addressed to the location designated in the Advertisement.

- 14.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 15 - MODIFICATION AND WITHDRAWAL OF BID

- 15.01 An unopened Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.
- 15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 15.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, the Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, the Bidder will be disqualified from further bidding on the Work.

ARTICLE 16 - OPENING OF BID

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

ARTICLE 17 - BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

ARTICLE 18 - EVALUATION OF BIDS AND AWARD OF CONTRACT

- 18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner also reserves the right to waive all minor Bid informalities not involving price, time, or changes in the Work.
- 18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible.
- 18.03 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, whether in the Bid itself or in a separate communication to Owner or Engineer, then Owner will reject the Bid as nonresponsive.
- 18.04 If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest responsive Bid.

18.05 *Evaluation of Bids*

- A. In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.
 - B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.
 - C. The Owner has the right to accept alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest responsive and responsible Bidder on the basis of the sum of the Base Bid and alternates accepted
- 18.06 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.
- 18.07 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 19 - BONDS AND INSURANCE

- 19.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds, other required bonds (if any), and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it must be accompanied by required bonds and insurance documentation.
- 19.02 Article 8, Bid Security, of these Instructions, addresses any requirements for providing bid bonds as part of the bidding process.

ARTICLE 20 - SIGNING OF THE AGREEMENT

- 20.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder must execute and deliver the required number of counterparts of the Agreement and any bonds and insurance documentation required to be delivered by the Contract Documents to Owner. Within 10 days thereafter, Owner will deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 23 – EQUAL OPPORTUNITY / CIVIL RIGHTS

- 23.01 Communities must comply with all requirements of Executive Directive 2019-9 (Equal Opportunity in State Employment, State Contracting and Grant and Loan Programs, and the Provision of State Services), 1976 PA 453 (Elliott-Larsen Civil Rights Act) and 1976 PA 220 (Persons with Disabilities Civil Rights Act), as amended. In accordance with these laws, "The contractor and any subcontractors 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 a disability that is unrelated to the individual's ability to perform the duties of a particular job or position.

END OF SECTION

SECTION 00 41 00

BID FORM

ARTICLE 1 - OWNER & BIDDER

1.01 This Bid is submitted to: **City of Big Rapids
226 N. Michigan Avenue
Big Rapids, Michigan 49307**

1.01 Name of Project: **Hemlock Park Splash Pad & Playground, F&V 858220**

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 - ATTACHMENTS TO THIS BID

2.01 The following documents are submitted with and made a condition of this Bid.

- A. Required Bid security;
- B. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids;
- C. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids;

ARTICLE 3 - BASIS OF BID

3.01 *Unit Price Bids*

- A. Bidder will perform the following Work at the indicated unit prices:

Item No.	Description	Unit	Estimated Qty	Bid Unit Price	Bid Amount
1	General Conditions, Bonds, and Insurance, Max. 5%	LSum	1	\$	\$
2	Traffic Control	LSum	1	\$	\$
3	Soil Erosion Control	LSum	1	\$	\$
4	MDNR LWCF Sign	LSum	1	\$	\$
5	Site Grading and Excavation	LSum	1	\$	\$
6	Remove Wood Play Structure	LSum	1	\$	\$
7	Sidewalk, Rem	Syd	17	\$	\$
8	Pavt, Rem	Syd	14	\$	\$

Item No.	Description	Unit	Estimated Qty	Bid Unit Price	Bid Amount
9	Remove Picnic Table A, Salvage	Ea	2	\$	\$
10	Remove Picnic Table B, Salvage	Ea	2	\$	\$
11	Remove Bench, Salvage	Ea	2	\$	\$
12	Remove Book Library, Salvage	Ea	1	\$	\$
13	Remove Grill, Salvage	Ea	1	\$	\$
14	Remove Water Fountain, Salvage	Ea	1	\$	\$
15	Remove Sign, Salvage	Ea	1	\$	\$
16	Remove Fence, Salvage	Ft	80	\$	\$
17	Relocate Picnic Table A	Ea	2	\$	\$
18	Relocate Bench	Ea	2	\$	\$
19	Relocate Book Library	Ea	1	\$	\$
20	Relocate Grill	Ea	1	\$	\$
21	Drinking Water Bottle Filling Station with Pet Fountain	Ea	1	\$	\$
22	Trash Receptacle	Ea	1	\$	\$
23	Recycling Receptacle	Ea	1	\$	\$
24	Relocate Sign	Ea	1	\$	\$
25	Relocate Fence	Ft	80	\$	\$
26	Splash Pad Equipment and Installation	LSum	1	\$	\$
27	Splash Pad Reinforced Concrete, 6 inch	Syd	400	\$	\$
28	Splash Pump Station	LSum	1	\$	\$
29	Playground Equipment	LSum	1	\$	\$
30	Playground Safety Surface	LSum	1	\$	\$
31	24" Catch Basin	Ea	1	\$	\$
32	Storm Sewer, 8 inch	Ft	76	\$	\$
33	Connect to Ex. Strm CB	Ea	1	\$	\$
34	Connect to Ex. San MH	Ea	1	\$	\$
35	6" San Sewer	Ft	20	\$	\$

Item No.	Description	Unit	Estimated Qty	Bid Unit Price	Bid Amount
36	4" PVC Forcemain, Directional Drill	Ft	200	\$	\$
37	Play Area Concrete Curb Edge	Ft	800	\$	\$
38	Underdrain, Subbase, 4 inch	Ft	200	\$	\$
39	Dr Structure Cover, Adj	Ea	12	\$	\$
40	Aggregate Base, LM	Cyd	10	\$	\$
41	Aggregate Base, 8 inch	Syd	35	\$	\$
42	Subbase, CIP	Cyd	677	\$	\$
43	HMA, 4 EL	Ton	500	\$	\$
44	HMA Approach	Ton	5	\$	\$
45	HMA Valley Gutter	Ft	1,340	\$	\$
46	Concrete Driveway, Nonreinf, 6 inch	Sft	126	\$	\$
47	Sidewalk Ramp, Conc, 6 inch	Sft	730	\$	\$
48	Sidewalk, Conc, 4 inch	Sft	9,410	\$	\$
49	Sidewalk, Conc, 6 inch	Sft	25	\$	\$
50	Detectable Warning Surface, DI	Ft	44	\$	\$
51	21AA Crushed Limestone, CIP	Syd	1,300	\$	\$
52	Seat Wall	Ft	120	\$	\$
53	Outdoor Fireplace	LSum	1	\$	\$
54	Bench, Surface Mounted	Ea	4	\$	\$
55	Accessible Picnic Tables	Ea	2	\$	\$
56	Pavt Mrkg, Waterborne for Parking Lot, White	Ft	1,500	\$	\$
57	Pavt Mrkg, Waterborne for Parking Lot, Blue	Ft	200	\$	\$
58	Pavt Mrkg, Waterborne, Accessible Sym	Ea	3	\$	\$
59	Pavt Mrkg, Waterborne, 12 inch, Crosswalk	Ft	80	\$	\$
60	Ostrya Virginiana, 2 inch	Ea	2	\$	\$
61	Acer Rubrum, 2 inch	Ea	2	\$	\$
62	Acer X 'Freemanii', 2 inch	Ea	2	\$	\$

Item No.	Description	Unit	Estimated Qty	Bid Unit Price	Bid Amount
63	Liriodendron Tulipifera, 2 inch	Ea	2	\$	\$
64	Site Light W/Concrete Base	Ea	6	\$	\$
65	Site Electrical Distribution	LSum	1	\$	\$
66	Gas Service	Allowance	1	\$ 10,000	\$ 10,000
67	4 Inch Water Service	Ft	90	\$	\$
68	1 1/2" Irrigation Pipe	Ft	150	\$	\$
69	Landscaping Area with Metal Edging	Sft	1,300	\$	\$
70	Turf Restoration	Syd	5,100	\$	\$
Total of All Unit Price Bid Items				\$	

Alternate to Bid:

29*	Alternate 1 – Playground Equipment [Add] [Deduct] (Circle one)	LSum	1	\$	\$
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* Add/deduct to provide and install Playcraft Systems equipment by Playcore in lieu of the GameTime – Sinclair Recreation Proposal.

B. 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 Work will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 4 - TIME OF COMPLETION

4.01 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.

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

ARTICLE 5 - BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.01 Bid Acceptance Period

- A. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 Instructions to Bidders

- A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 *Receipt of Addenda*

A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

5.04 *Subcontractor and Supplier List:*

A. Bid is submitted on the basis of the use of the following Subcontractors

Work Item	Firm	City
Bituminous Paving		
Concrete Work		
Earthwork		
Pump Brand		
Site Electrical		
Playground & Surface		
Splash Pad Equipment		
Splash Pad Certified Installer		
Landscaping		
Turf Restoration		

ARTICLE 6 - BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder's Representations*

- A. In submitting this Bid, Bidder represents the following:
1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
 2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
 5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

6. 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 the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Bidder 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.
8. 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.

6.02 Bidder's Certifications

- A. The Bidder certifies the following:
 1. 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.
 2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
 3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
 4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:
 - a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
 - b. 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.
 - c. 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.
 - d. 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.

BIDDER hereby submits this Bid as set forth above:

Bidder: _____
(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(typed or printed)

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

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(typed or printed)

Address for giving notices:

Bidder's Contact:
Name: _____
(typed or printed)

Title: _____
(typed or printed)

Phone: _____

Email: _____

Address: _____

Bidder's Contractor License No.: (if applicable) _____

END OF SECTION

NOT FOR BIDDING

SECTION 00 43 13

BID BOND

<p>Bidder</p> <p>Name: [Full formal name of Bidder]</p> <p>Address (<i>principal place of business</i>): [Address of Bidder's principal place of business]</p>	<p>Surety</p> <p>Name: [Full formal name of Surety]</p> <p>Address (<i>principal place of business</i>): [Address of Surety's principal place of business]</p>
<p>Owner</p> <p>Name: [Full formal name of Owner]</p> <p>Address (<i>principal place of business</i>): [Address of Owner's principal place of business]</p>	<p>Bid</p> <p>Project (<i>name and location</i>): [Owner project/contract name, and location of the project]</p> <p>Bid Due Date: [Enter date bid is due]</p>
<p>Bond</p> <p>Penal Sum: [Amount]</p> <p>Date of Bond: [Date]</p>	
<p>Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.</p>	
<p>Bidder</p> <p align="center"><i>(Full formal name of Bidder)</i></p> <hr/> <p>By: _____ <i>(Signature)</i></p> <p>Name: _____ <i>(Printed or typed)</i></p> <p>Title: _____</p> <p>Attest: _____ <i>(Signature)</i></p> <p>Name: _____ <i>(Printed or typed)</i></p> <p>Title: _____</p>	<p>Surety</p> <p align="center"><i>(Full formal name of Surety) (corporate seal)</i></p> <hr/> <p>By: _____ <i>(Signature) (Attach Power of Attorney)</i></p> <p>Name: _____ <i>(Printed or typed)</i></p> <p>Title: _____</p> <p>Attest: _____ <i>(Signature)</i></p> <p>Name: _____ <i>(Printed or typed)</i></p> <p>Title: _____</p>
<p><i>Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.</i></p>	

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

SECTION 00 45 46

GOVERNMENTAL CERTIFICATIONS AND DOCUMENTS

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section provides for inclusion of various governmental certifications and forms into the Contract Documents.

1.02 Michigan Economic Development Corporation (MEDC) attached documents:

- A. Verification of Contractor's Bonding and Insurance
- B. Federal Labor Standards Provisions (HUD form 4010, 07/2021)
- C. U.S. Department of Labor Posters
- D. Payroll Form OMB No: 1215-0149 (Rev 12/08)
- E. Equal Opportunity Clause (Executive Order 11246)
- F. Contract and Subcontract Activity; (HUD form 2516, 8/1998)
- G. Minimum Wage Rates
- H. Section 3 Contractor Plan
- I. Contractor Permanent Workforce
- J. Section 3 Labor Hours Tracking
- K. Safe Harbor
- L. Section 3 Clause
- M. 4-L Contract Special Provisions

1.03 City of Big Rapids attached documents:

- A. Income Tax Ordinance
- B. Equal Employment Opportunity Statement

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

VERIFICATION OF CONTRACTOR'S BONDING AND INSURANCE

The CDBG Contract:

Grantee Name _____

CDBG Contract # _____

Information regarding prime contractor's bonding entities:

Name of Contractor _____

Name of Insurance Agent _____

Agent's Company Name _____

Name of Surety Company _____

Location (Domicile) _____

U.S. Department of the Treasury: www.fms.treas.gov/c570 or telephone at (202) 874-6850

Does the above listed surety company's name appear in the U. S. Department of the Treasury's listing of approved sureties having a license to do business in Michigan? (Circular 570) _____ Yes _____ No

With internet verification, print the page that lists the surety company and attach it to this form. With telephone verification, list the name of the person you spoke to and the date below:

Name _____ Date _____

Michigan Department of State: www.michigan.gov/lara

Does the above listed surety company's name appear on the list of insurance companies which are licensed to do business in Michigan? _____ Yes _____ No

With internet verification, print the page that lists the surety company and attach it to this form. With telephone verification, list the name of the person you spoke to and the date below:

Name _____ Date _____

Bond(s) Cleared? _____ Yes _____ No By _____

Date _____

A. APPLICABILITY

The Project or Program to which the construction work covered by this Contract pertains is being assisted by the United States of America, and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

(1) MINIMUM WAGES

- (i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment, computed at rates not less than those contained in the wage determination of the Secretary of Labor (which is attached hereto and made a part hereof), regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH1321)) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place, where it can be easily seen by the workers.

(ii) Additional Classifications.

- (A) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:
- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination;
 - (2) The classification is utilized in the area by the construction industry; and
 - (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (B) If the contractor, the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division ("Administrator"), Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget ("OMB") under OMB control number 1235-0023.)
- (C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, or HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1235-0023.)

(D) The wage rate (including fringe benefits, where appropriate) determined pursuant to subparagraphs (1)(ii)(B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this Contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1235-0023.)

(2) **Withholding.** HUD or its designee shall, upon its own action or upon written request of an authorized representative of the U.S. Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work, all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The Department of Labor shall make such disbursements in the case of direct Davis-Bacon Act contracts.

(3) **Payrolls and basic records.**

(i) **Maintaining Payroll Records.** Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification(s), hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made, and actual wages paid.

Whenever the Secretary of Labor has found, under 29 CFR 5.5(a)(1)(iv), that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1235-0023 and 1215-0018)

(ii) **Certified Payroll Reports.**

(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead, the payrolls only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <https://www.dol.gov/agencies/whd/forms> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee, the contractor, or the Wage and Hour Division of the U.S. Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this subparagraph for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to HUD or its designee. (Approved by the Office of Management and Budget under OMB Control Number 1235-0008.)

- (B)** Each payroll submitted shall be accompanied by a “Statement of Compliance,” signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
- (1)** That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(i), and that such information is correct and complete;
 - (2)** That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;
 - (3)** That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract; and
- (C)** The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the “Statement of Compliance” required by subparagraph (a)(3)(ii)(b).
- (D)** The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 3729 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under subparagraph (a)(3)(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the U.S. Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency (where appropriate), to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman’s hourly rate) specified in the contractor’s or subcontractor’s registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice’s level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination.

Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program.

If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- (ii) **Trainees.** Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed, unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- (iii) **Equal employment opportunity.** The utilization of apprentices, trainees, and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

- (5) **Compliance with Copeland Act requirements.** The contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this Contract.
- (6) **Subcontracts.** The contractor or subcontractor will insert in any subcontracts the clauses contained in subparagraphs (1) through (11) in this paragraph (a) and such other clauses as HUD or its designee may, by appropriate instructions, require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this paragraph.
- (7) **Contract termination; debarment.** A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.
- (8) **Compliance with Davis-Bacon and Related Act Requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this Contract.
- (9) **Disputes concerning labor standards.** Disputes arising out of the labor standards provisions of this Contract shall not be subject to the general disputes clause of this Contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.
- (10) **Certification of Eligibility.**
- (i) By entering into this Contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this Contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) Anyone who knowingly makes, presents, or submits a false, fictitious, or fraudulent statement, representation or certification is subject to criminal, civil and/or administrative sanctions, including fines, penalties, and imprisonment (e.g., 18 U.S.C. §§ 287, 1001, 1010, 1012; 31 U.S.C. §§ 3729, 3802).

(11) Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic, to whom the wage, salary, or other labor standards provisions of this Contract are applicable, shall be discharged or in any other manner discriminated against by the contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The provisions of this paragraph (b) are applicable where the amount of the prime contract exceeds **\$100,000**. As used in this paragraph, the terms “laborers” and “mechanics” include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work, which may require or involve the employment of laborers or mechanics, shall require or permit any such laborer or mechanic in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek, unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph B(1) of this paragraph, the contractor, and any subcontractor responsible therefor, shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph B(1) of this paragraph, in the sum of **\$27** for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in subparagraph B(1) of this paragraph. In accordance with the Federal Civil Penalties Inflation Adjustment Act of 1990 (28 U.S.C. § 2461 Note), the Department of Labor adjusts this civil monetary penalty for inflation no later than January 15 each year.

(3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall, upon its own action or upon written request of an authorized representative of the U.S. Department of Labor, withhold or cause to be withheld from any moneys payable on account of work performed by the contractor or subcontractor under any such contract, or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages, as provided in the clause set forth in subparagraph B(2) of this paragraph.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph B(1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs B(1) through (4) of this paragraph.

C. HEALTH AND SAFETY

The provisions of this paragraph (c) are applicable where the amount of the prime contract exceeds **\$100,000**.

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his or her health and safety, as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The contractor shall comply with all regulations issued by the Secretary of Labor pursuant to 29 CFR Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, (Public Law 91-54, 83 Stat 96), 40 U.S.C. § 3701 et seq.

(3) The contractor shall include the provisions of this paragraph in every subcontract, so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontractor as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

Equal Employment Opportunity is **THE LAW**

Private Employers, State and Local Governments, Educational Institutions, Employment Agencies and Labor Organizations

Applicants to and employees of most private employers, state and local governments, educational institutions, employment agencies and labor organizations are protected under Federal law from discrimination on the following bases:

RACE, COLOR, RELIGION, SEX, NATIONAL ORIGIN

Title VII of the Civil Rights Act of 1964, as amended, protects applicants and employees from discrimination in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment, on the basis of race, color, religion, sex (including pregnancy), or national origin. Religious discrimination includes failing to reasonably accommodate an employee's religious practices where the accommodation does not impose undue hardship.

DISABILITY

Title I and Title V of the Americans with Disabilities Act of 1990, as amended, protect qualified individuals from discrimination on the basis of disability in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment. Disability discrimination includes not making reasonable accommodation to the known physical or mental limitations of an otherwise qualified individual with a disability who is an applicant or employee, barring undue hardship.

AGE

The Age Discrimination in Employment Act of 1967, as amended, protects applicants and employees 40 years of age or older from discrimination based on age in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment.

SEX (WAGES)

In addition to sex discrimination prohibited by Title VII of the Civil Rights Act, as amended, the Equal Pay Act of 1963, as amended, prohibits sex discrimination in the payment of wages to women and men performing substantially equal work, in jobs that require equal skill, effort, and responsibility, under similar working conditions, in the same establishment.

GENETICS

Title II of the Genetic Information Nondiscrimination Act of 2008 protects applicants and employees from discrimination based on genetic information in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment. GINA also restricts employers' acquisition of genetic information and strictly limits disclosure of genetic information. Genetic information includes information about genetic tests of applicants, employees, or their family members; the manifestation of diseases or disorders in family members (family medical history); and requests for or receipt of genetic services by applicants, employees, or their family members.

RETALIATION

All of these Federal laws prohibit covered entities from retaliating against a person who files a charge of discrimination, participates in a discrimination proceeding, or otherwise opposes an unlawful employment practice.

WHAT TO DO IF YOU BELIEVE DISCRIMINATION HAS OCCURRED

There are strict time limits for filing charges of employment discrimination. To preserve the ability of EEOC to act on your behalf and to protect your right to file a private lawsuit, should you ultimately need to, you should contact EEOC promptly when discrimination is suspected:

The U.S. Equal Employment Opportunity Commission (EEOC), 1-800-669-4000 (toll-free) or 1-800-669-6820 (toll-free TTY number for individuals with hearing impairments). EEOC field office information is available at www.eeoc.gov or in most telephone directories in the U.S. Government or Federal Government section. Additional information about EEOC, including information about charge filing, is available at www.eeoc.gov.

Employers Holding Federal Contracts or Subcontracts

Applicants to and employees of companies with a Federal government contract or subcontract are protected under Federal law from discrimination on the following bases:

RACE, COLOR, RELIGION, SEX, NATIONAL ORIGIN

Executive Order 11246, as amended, prohibits job discrimination on the basis of race, color, religion, sex or national origin, and requires affirmative action to ensure equality of opportunity in all aspects of employment.

INDIVIDUALS WITH DISABILITIES

Section 503 of the Rehabilitation Act of 1973, as amended, protects qualified individuals from discrimination on the basis of disability in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment. Disability discrimination includes not making reasonable accommodation to the known physical or mental limitations of an otherwise qualified individual with a disability who is an applicant or employee, barring undue hardship. Section 503 also requires that Federal contractors take affirmative action to employ and advance in employment qualified individuals with disabilities at all levels of employment, including the executive level.

DISABLED, RECENTLY SEPARATED, OTHER PROTECTED, AND ARMED FORCES SERVICE MEDAL VETERANS

The Vietnam Era Veterans' Readjustment Assistance Act of 1974, as amended, 38 U.S.C. 4212, prohibits job discrimination and requires affirmative action to employ and advance in employment disabled veterans, recently separated veterans (within

three years of discharge or release from active duty), other protected veterans (veterans who served during a war or in a campaign or expedition for which a campaign badge has been authorized), and Armed Forces service medal veterans (veterans who, while on active duty, participated in a U.S. military operation for which an Armed Forces service medal was awarded).

RETALIATION

Retaliation is prohibited against a person who files a complaint of discrimination, participates in an OFCCP proceeding, or otherwise opposes discrimination under these Federal laws.

Any person who believes a contractor has violated its nondiscrimination or affirmative action obligations under the authorities above should contact immediately:

The Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, 200 Constitution Avenue, N.W., Washington, D.C. 20210, 1-800-397-6251 (toll-free) or (202) 693-1337 (TTY). OFCCP may also be contacted by e-mail at OFCCP-Public@dol.gov, or by calling an OFCCP regional or district office, listed in most telephone directories under U.S. Government, Department of Labor.

Programs or Activities Receiving Federal Financial Assistance

RACE, COLOR, NATIONAL ORIGIN, SEX

In addition to the protections of Title VII of the Civil Rights Act of 1964, as amended, Title VI of the Civil Rights Act of 1964, as amended, prohibits discrimination on the basis of race, color or national origin in programs or activities receiving Federal financial assistance. Employment discrimination is covered by Title VI if the primary objective of the financial assistance is provision of employment, or where employment discrimination causes or may cause discrimination in providing services under such programs. Title IX of the Education Amendments of 1972 prohibits employment discrimination on the basis of sex in educational programs or activities which receive Federal financial assistance.

INDIVIDUALS WITH DISABILITIES

Section 504 of the Rehabilitation Act of 1973, as amended, prohibits employment discrimination on the basis of disability in any program or activity which receives Federal financial assistance. Discrimination is prohibited in all aspects of employment against persons with disabilities who, with or without reasonable accommodation, can perform the essential functions of the job.

If you believe you have been discriminated against in a program of any institution which receives Federal financial assistance, you should immediately contact the Federal agency providing such assistance.

EMPLOYEE RIGHTS

UNDER THE DAVIS-BACON ACT

FOR LABORERS AND MECHANICS EMPLOYED ON FEDERAL OR FEDERALLY ASSISTED CONSTRUCTION PROJECTS

PREVAILING WAGES

You must be paid not less than the wage rate listed in the Davis-Bacon Wage Decision posted with this Notice for the work you perform.

OVERTIME

You must be paid not less than one and one-half times your basic rate of pay for all hours worked over 40 in a work week. There are few exceptions.

ENFORCEMENT

Contract payments can be withheld to ensure workers receive wages and overtime pay due, and liquidated damages may apply if overtime pay requirements are not met. Davis-Bacon contract clauses allow contract termination and debarment of contractors from future federal contracts for up to three years. A contractor who falsifies certified payroll records or induces wage kickbacks may be subject to civil or criminal prosecution, fines and/or imprisonment.

APPRENTICES

Apprentice rates apply only to apprentices properly registered under approved Federal or State apprenticeship programs.

PROPER PAY

If you do not receive proper pay, or require further information on the applicable wages, contact the Contracting Officer listed below:

or contact the U.S. Department of Labor's Wage and Hour Division.



WAGE AND HOUR DIVISION
UNITED STATES DEPARTMENT OF LABOR

1-866-487-9243
TTY: 1-877-889-5627
www.dol.gov/whd



EMPLOYEE RIGHTS UNDER THE FAMILY AND MEDICAL LEAVE ACT

THE UNITED STATES DEPARTMENT OF LABOR WAGE AND HOUR DIVISION

LEAVE ENTITLEMENTS

Eligible employees who work for a covered employer can take up to 12 weeks of unpaid, job-protected leave in a 12-month period for the following reasons:

- The birth of a child or placement of a child for adoption or foster care;
- To bond with a child (leave must be taken within 1 year of the child's birth or placement);
- To care for the employee's spouse, child, or parent who has a qualifying serious health condition;
- For the employee's own qualifying serious health condition that makes the employee unable to perform the employee's job;
- For qualifying exigencies related to the foreign deployment of a military member who is the employee's spouse, child, or parent.

An eligible employee who is a covered servicemember's spouse, child, parent, or next of kin may also take up to 26 weeks of FMLA leave in a single 12-month period to care for the servicemember with a serious injury or illness.

An employee does not need to use leave in one block. When it is medically necessary or otherwise permitted, employees may take leave intermittently or on a reduced schedule.

Employees may choose, or an employer may require, use of accrued paid leave while taking FMLA leave. If an employee substitutes accrued paid leave for FMLA leave, the employee must comply with the employer's normal paid leave policies.

While employees are on FMLA leave, employers must continue health insurance coverage as if the employees were not on leave.

Upon return from FMLA leave, most employees must be restored to the same job or one nearly identical to it with equivalent pay, benefits, and other employment terms and conditions.

An employer may not interfere with an individual's FMLA rights or retaliate against someone for using or trying to use FMLA leave, opposing any practice made unlawful by the FMLA, or being involved in any proceeding under or related to the FMLA.

An employee who works for a covered employer must meet three criteria in order to be eligible for FMLA leave. The employee must:

- Have worked for the employer for at least 12 months;
- Have at least 1,250 hours of service in the 12 months before taking leave;* and
- Work at a location where the employer has at least 50 employees within 75 miles of the employee's worksite.

*Special "hours of service" requirements apply to airline flight crew employees.

Generally, employees must give 30-days' advance notice of the need for FMLA leave. If it is not possible to give 30-days' notice, an employee must notify the employer as soon as possible and, generally, follow the employer's usual procedures.

Employees do not have to share a medical diagnosis, but must provide enough information to the employer so it can determine if the leave qualifies for FMLA protection. Sufficient information could include informing an employer that the employee is or will be unable to perform his or her job functions, that a family member cannot perform daily activities, or that hospitalization or continuing medical treatment is necessary. Employees must inform the employer if the need for leave is for a reason for which FMLA leave was previously taken or certified.

Employers can require a certification or periodic recertification supporting the need for leave. If the employer determines that the certification is incomplete, it must provide a written notice indicating what additional information is required.

Once an employer becomes aware that an employee's need for leave is for a reason that may qualify under the FMLA, the employer must notify the employee if he or she is eligible for FMLA leave and, if eligible, must also provide a notice of rights and responsibilities under the FMLA. If the employee is not eligible, the employer must provide a reason for ineligibility.

Employers must notify its employees if leave will be designated as FMLA leave, and if so, how much leave will be designated as FMLA leave.

Employees may file a complaint with the U.S. Department of Labor, Wage and Hour Division, or may bring a private lawsuit against an employer.

The FMLA does not affect any federal or state law prohibiting discrimination or supersede any state or local law or collective bargaining agreement that provides greater family or medical leave rights.

BENEFITS & PROTECTIONS

ELIGIBILITY REQUIREMENTS

REQUESTING LEAVE

EMPLOYER RESPONSIBILITIES

ENFORCEMENT

For additional information or to file a complaint:

1-866-4-USWAGE

(1-866-487-9243) TTY: 1-877-889-5627

www.dol.gov/whd

U.S. Department of Labor | Wage and Hour Division



EMPLOYEE RIGHTS UNDER THE FAIR LABOR STANDARDS ACT

FEDERAL MINIMUM WAGE

\$7.25

 PER HOUR

BEGINNING JULY 24, 2009

The law requires employers to display this poster where employees can readily see it.

OVERTIME PAY At least 1½ times the regular rate of pay for all hours worked over 40 in a workweek.

CHILD LABOR An employee must be at least 16 years old to work in most non-farm jobs and at least 18 to work in non-farm jobs declared hazardous by the Secretary of Labor. Youths 14 and 15 years old may work outside school hours in various non-manufacturing, non-mining, non-hazardous jobs with certain work hours restrictions. Different rules apply in agricultural employment.

TIP CREDIT Employers of “tipped employees” who meet certain conditions may claim a partial wage credit based on tips received by their employees. Employers must pay tipped employees a cash wage of at least \$2.13 per hour if they claim a tip credit against their minimum wage obligation. If an employee’s tips combined with the employer’s cash wage of at least \$2.13 per hour do not equal the minimum hourly wage, the employer must make up the difference.

NURSING MOTHERS The FLSA requires employers to provide reasonable break time for a nursing mother employee who is subject to the FLSA’s overtime requirements in order for the employee to express breast milk for her nursing child for one year after the child’s birth each time such employee has a need to express breast milk. Employers are also required to provide a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public, which may be used by the employee to express breast milk.

ENFORCEMENT The Department has authority to recover back wages and an equal amount in liquidated damages in instances of minimum wage, overtime, and other violations. The Department may litigate and/or recommend criminal prosecution. Employers may be assessed civil money penalties for each willful or repeated violation of the minimum wage or overtime pay provisions of the law. Civil money penalties may also be assessed for violations of the FLSA’s child labor provisions. Heightened civil money penalties may be assessed for each child labor violation that results in the death or serious injury of any minor employee, and such assessments may be doubled when the violations are determined to be willful or repeated. The law also prohibits retaliating against or discharging workers who file a complaint or participate in any proceeding under the FLSA.

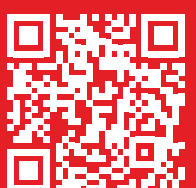
ADDITIONAL INFORMATION

- Certain occupations and establishments are exempt from the minimum wage, and/or overtime pay provisions.
- Special provisions apply to workers in American Samoa, the Commonwealth of the Northern Mariana Islands, and the Commonwealth of Puerto Rico.
- Some state laws provide greater employee protections; employers must comply with both.
- Some employers incorrectly classify workers as “independent contractors” when they are actually employees under the FLSA. It is important to know the difference between the two because employees (unless exempt) are entitled to the FLSA’s minimum wage and overtime pay protections and correctly classified independent contractors are not.
- Certain full-time students, student learners, apprentices, and workers with disabilities may be paid less than the minimum wage under special certificates issued by the Department of Labor.



WAGE AND HOUR DIVISION
UNITED STATES DEPARTMENT OF LABOR

1-866-487-9243
TTY: 1-877-889-5627
www.dol.gov/whd





Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number.

Rev. Dec. 2008

NAME OF CONTRACTOR OR SUBCONTRACTOR ADDRESS PROJECT AND LOCATION PROJECT OR CONTRACT NO.

PAYROLL NO. FOR WEEK ENDING

(1) NAME AND INDIVIDUAL IDENTIFYING NUMBER (e.g., LAST FOUR DIGITS OF SOCIAL SECURITY NUMBER) OF WORKER	(2) EXEMPTIONS OR REASON	(3) WORK CLASSIFICATION	(4) DAY AND DATE			(5) TOTAL HOURS	(6) RATE OF PAY	(7) GROSS AMOUNT EARNED	(8) DEDUCTIONS			(9) NET WAGES PAID FOR WEEK
			HOURS	WORKED	EACH DAY				FICA	WITH- HOLDING TAX	OTHER	
						0.00	\$0.00					\$0.00
						0.00	\$0.00					\$0.00
						0.00	\$0.00					\$0.00
						0.00	\$0.00					\$0.00
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While completion of Form WH-347 is optional, it is mandatory for covered contractors and subcontractors performing work on Federally financed or assisted construction projects to respond to the information collection contained in 29 C.F.R. §§ 3.3, 5.5(a). The Copeland Act (40 U.S.C. § 3145) contractors and subcontractors performing work on Federally financed or assisted construction projects to "furnish weekly a statement with respect to the wages paid each employee during the preceding week." U.S. Department of Labor (DOL) regulations at 29 C.F.R. § 5.5(a)(3)(ii) require contractors to submit weekly a copy of all payrolls to the Federal agency contracting for or financing the construction project, accompanied by a signed "Statement of Compliance" indicating that the payrolls are correct and complete and that each laborer or mechanic has been paid not less than the proper Davis-Bacon prevailing wage rate for the work performed. DOL and federal contracting agencies receiving this information review the information to determine that employees have received legally required wages and fringe benefits.

Public Burden Statement
We estimate that it will take an average of 55 minutes to complete this collection, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. If you have any comments regarding these estimates or any other aspect of this collection, including suggestions for reducing this burden, send them to the Administrator, Wage and Hour Division, U.S. Department of Labor, Room S3502, 200 Constitution Avenue, N.W., Washington, D.C. 20210

Date _____

I, _____ (Name of Signatory Party) _____ (Title) do hereby state:

(1) That I pay or supervise the payment of the persons employed by _____ (Contractor or Subcontractor) _____ on the _____ day of _____, _____; that during the payroll period commencing on the _____ day of _____, _____, and ending the _____ day of _____, _____ all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said _____ (Contractor or Subcontractor) _____ from the full

weekly wages earned by any person and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part 3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948, 63 Stat. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. § 3145), and described below:

(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the applicable wage rates contained in any wage determination incorporated into the contract; that the classifications set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That: (a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

- in addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

- Each laborer or mechanic listed in the above referenced payroll has been paid, as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in section 4(c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION

REMARKS:

NAME AND TITLE SIGNATURE

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 3729 OF TITLE 31 OF THE UNITED STATES CODE.

EQUAL OPPORTUNITY CLAUSE (EXECUTIVE ORDER 11246)

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advancements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.

(3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The contractor will comply with all provisions of Executive Order No. 11246 of Sept. 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of Sept.

24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The contractor will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States." [Sec. 202 amended by EO 11375 of Oct. 13, 1967, 32 FR 14303, 3 CFR, 1966-1970 Comp., p. 684, EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230]



Office of Federal Contract Compliance Programs

Executive Order 11246, As Amended

Executive Order 11246 — Equal Employment Opportunity

SOURCE: The provisions of Executive Order 11246 of Sept. 24, 1965, appear at 30 FR 12319, 12935, 3 CFR, 1964–1965 Comp., p.339, unless otherwise noted.

Under and by virtue of the authority vested in me as President of the United States by the Constitution and statutes of the United States, it is ordered as follows:

Part I — Nondiscrimination in Government Employment

[Part I superseded by EO 11478 of Aug. 8, 1969, 34 FR 12985, 3 CFR, 1966–1970 Comp., p. 803]

Part II – Nondiscrimination in Employment by Government Contractors and Subcontractors

Subpart A – Duties of the Secretary of Labor

SEC. 201

The Secretary of Labor shall be responsible for the administration and enforcement of Parts II and III of this Order. The Secretary shall adopt such rules and regulations and issue such orders as are deemed necessary and appropriate to achieve the purposes of Parts II and III of this Order.

[Sec. 201 amended by EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230]

Subpart B – Contractors' Agreements

SEC. 202

Except in contracts exempted in accordance with Section 204 of this Order, all Government contracting agencies shall include in every Government contract hereafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.
2. The contractor will, in all solicitations or advancements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
3. The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the

employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
5. The contractor will comply with all provisions of Executive Order No. 11246 of Sept. 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
6. The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
7. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of Sept. 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
8. The contractor will include the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States. [Sec. 202 amended by EO 11375 of Oct. 13, 1967, 32 FR 14303, 3 CFR, 1966-1970 Comp., p. 684, EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230, EO 13665 of April 8, 2014, 79 FR 20749, EO 13672 of July 21, 2014, 79 FR 42971]

SEC. 203

- a. Each contractor having a contract containing the provisions prescribed in Section 202 shall file, and shall cause each of his subcontractors to file, Compliance Reports with the contracting agency or the Secretary of Labor as may be directed. Compliance Reports shall be filed within such times and shall contain such information as to the practices, policies, programs, and employment policies, programs, and employment statistics of the contractor and each subcontractor, and shall be in such form, as the Secretary of Labor may prescribe.

- b. Bidders or prospective contractors or subcontractors may be required to state whether they have participated in any previous contract subject to the provisions of this Order, or any preceding similar Executive order, and in that event to submit, on behalf of themselves and their proposed subcontractors, Compliance Reports prior to or as an initial part of their bid or negotiation of a contract.
- c. Whenever the contractor or subcontractor has a collective bargaining agreement or other contract or understanding with a labor union or an agency referring workers or providing or supervising apprenticeship or training for such workers, the Compliance Report shall include such information as to such labor union's or agency's practices and policies affecting compliance as the Secretary of Labor may prescribe: Provided, that to the extent such information is within the exclusive possession of a labor union or an agency referring workers or providing or supervising apprenticeship or training and such labor union or agency shall refuse to furnish such information to the contractor, the contractor shall so certify to the Secretary of Labor as part of its Compliance Report and shall set forth what efforts he has made to obtain such information.
- d. The Secretary of Labor may direct that any bidder or prospective contractor or subcontractor shall submit, as part of his Compliance Report, a statement in writing, signed by an authorized officer or agent on behalf of any labor union or any agency referring workers or providing or supervising apprenticeship or other training, with which the bidder or prospective contractor deals, with supporting information, to the effect that the signer's practices and policies do not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, or national origin, and that the signer either will affirmatively cooperate in the implementation of the policy and provisions of this Order or that it consents and agrees that recruitment, employment, and the terms and conditions of employment under the proposed contract shall be in accordance with the purposes and provisions of the order. In the event that the union, or the agency shall refuse to execute such a statement, the Compliance Report shall so certify and set forth what efforts have been made to secure such a statement and such additional factual material as the Secretary of Labor may require.

[Sec. 203 amended by EO 11375 of Oct. 13, 1967, 32 FR 14303, 3 CFR, 1966–1970 Comp., p. 684; EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230, EO 13672 of July 21, 2104, 79 FR 42971]

SEC. 204

- a. The Secretary of Labor may, when the Secretary deems that special circumstances in the national interest so require, exempt a contracting agency from the requirement of including any or all of the provisions of Section 202 of this **Order** in any specific contract, subcontract, or purchase **order**.
- b. The Secretary of Labor may, by rule or regulation, exempt certain classes of contracts, subcontracts, or purchase orders (1) whenever work is to be or has been performed outside the United States and no recruitment of workers within the limits of the United States is involved; (2) for standard commercial supplies or raw materials; (3) involving less than specified amounts of money or specified numbers of workers; or (4) to the extent that they involve subcontracts below a specified tier.
- c. Section 202 of this **Order** shall not apply to a Government contractor or subcontractor that is a religious corporation, association, educational institution, or society, with respect to the employment of individuals of a particular religion to perform work connected with the carrying on by such corporation, association, educational institution, or society of its activities. Such contractors and subcontractors are not exempted or excused from complying with the other requirements contained in this **Order**.

- d. The Secretary of Labor may also provide, by rule, regulation, or order, for the exemption of facilities of a contractor that are in all respects separate and distinct from activities of the contractor related to the performance of the contract: provided, that such an exemption will not interfere with or impede the effectuation of the purposes of this **Order**: and provided further, that in the absence of such an exemption all facilities shall be covered by the provisions of this **Order**.

[Sec. 204 amended by EO 13279 of Dec. 16, 2002, 67 FR 77141, 3 CFR, 2002 Comp., p. 77141 – 77144]

Subpart C – Powers and Duties of the Secretary of Labor and the Contracting Agencies

SEC. 205

The Secretary of Labor shall be responsible for securing compliance by all Government contractors and subcontractors with this Order and any implementing rules or regulations. All contracting agencies shall comply with the terms of this Order and any implementing rules, regulations, or orders of the Secretary of Labor. Contracting agencies shall cooperate with the Secretary of Labor and shall furnish such information and assistance as the Secretary may require.

[Sec. 205 amended by EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230]

SEC. 206

- a. The Secretary of Labor may investigate the employment practices of any Government contractor or subcontractor to determine whether or not the contractual provisions specified in Section 202 of this Order have been violated. Such investigation shall be conducted in accordance with the procedures established by the Secretary of Labor.
- b. The Secretary of Labor may receive and investigate complaints by employees or prospective employees of a Government contractor or subcontractor which allege discrimination contrary to the contractual provisions specified in Section 202 of this Order.

[Sec. 206 amended by EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230]

SEC. 207

The Secretary of Labor shall use his/her best efforts, directly and through interested Federal, State, and local agencies, contractors, and all other available instrumentalities to cause any labor union engaged in work under Government contracts or any agency referring workers or providing or supervising apprenticeship or training for or in the course of such work to cooperate in the implementation of the purposes of this Order. The Secretary of Labor shall, in appropriate cases, notify the Equal Employment Opportunity Commission, the Department of Justice, or other appropriate Federal agencies whenever it has reason to believe that the practices of any such labor organization or agency violate Title VI or Title VII of the Civil Rights Act of 1964 or other provision of Federal law.

[Sec. 207 amended by EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230]

SEC. 208

- a. The Secretary of Labor, or any agency, officer, or employee in the executive branch of the Government designated by rule, regulation, or order of the Secretary, may hold such hearings, public or private, as the Secretary may deem advisable for compliance, enforcement, or educational purposes.
- b. The Secretary of Labor may hold, or cause to be held, hearings in accordance with Subsection of this Section prior to imposing, ordering, or recommending the imposition of penalties and sanctions under this Order. No order for debarment of any contractor from further Government contracts under Section 209(6) shall be made without affording the contractor an opportunity for a hearing.

Subpart D – Sanctions and Penalties

SEC. 209

In accordance with such rules, regulations, or orders as the Secretary of Labor may issue or adopt, the Secretary may:

1. Publish, or cause to be published, the names of contractors or unions which it has concluded have complied or have failed to comply with the provisions of this Order or of the rules, regulations, and orders of the Secretary of Labor.
2. Recommend to the Department of Justice that, in cases in which there is substantial or material violation or the threat of substantial or material violation of the contractual provisions set forth in Section 202 of this Order, appropriate proceedings be brought to enforce those provisions, including the enjoining, within the limitations of applicable law, of organizations, individuals, or groups who prevent directly or indirectly, or seek to prevent directly or indirectly, compliance with the provisions of this Order.
3. Recommend to the Equal Employment Opportunity Commission or the Department of Justice that appropriate proceedings be instituted under Title VII of the Civil Rights Act of 1964.
4. Recommend to the Department of Justice that criminal proceedings be brought for the furnishing of false information to any contracting agency or to the Secretary of Labor as the case may be.
5. After consulting with the contracting agency, direct the contracting agency to cancel, terminate, suspend, or cause to be cancelled, terminated, or suspended, any contract, or any portion or portions thereof, for failure of the contractor or subcontractor to comply with equal employment opportunity provisions of the contract. Contracts may be cancelled, terminated, or suspended absolutely or continuance of contracts may be conditioned upon a program for future compliance approved by the Secretary of Labor.
6. Provide that any contracting agency shall refrain from entering into further contracts, or extensions or other modifications of existing contracts, with any noncomplying contractor, until such contractor has satisfied the Secretary of Labor that such contractor has established and will carry out personnel and employment policies in compliance with the provisions of this Order.

(b) Pursuant to rules and regulations prescribed by the Secretary of Labor, the Secretary shall make reasonable efforts, within a reasonable time limitation, to secure compliance with the contract provisions of this Order by methods of conference, conciliation, mediation, and persuasion before proceedings shall be instituted under subsection (a)(2) of this Section, or before a contract shall be cancelled or terminated in whole or in part under subsection (a)(5) of this Section.

[Sec. 209 amended by EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230]

SEC. 210

Whenever the Secretary of Labor makes a determination under Section 209, the Secretary shall promptly notify the appropriate agency. The agency shall take the action directed by the Secretary and shall report the results of the action it has taken to the Secretary of Labor within such time as the Secretary shall specify. If the contracting agency fails to take the action directed within thirty days, the Secretary may take the action directly.

[Sec. 210 amended by EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p 230]

SEC. 211

If the Secretary shall so direct, contracting agencies shall not enter into contracts with any bidder or prospective contractor unless the bidder or prospective contractor has satisfactorily complied with the provisions of this Order or submits a program for compliance acceptable to the Secretary of Labor.

[Sec. 211 amended by EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230]

SEC. 212

When a contract has been cancelled or terminated under Section 209(a)(5) or a contractor has been debarred from further Government contracts under Section 209(a)(6) of this Order, because of noncompliance with the contract provisions specified in Section 202 of this Order, the Secretary of Labor shall promptly notify the Comptroller General of the United States.

[Sec. 212 amended by EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230]

Subpart E – Certificates of Merit

SEC. 213

The Secretary of Labor may provide for issuance of a United States Government Certificate of Merit to employers or labor unions, or other agencies which are or may hereafter be engaged in work under Government contracts, if the Secretary is satisfied that the personnel and employment practices of the employer, or that the personnel, training, apprenticeship, membership, grievance and representation, upgrading, and other practices and policies of the labor union or other agency conform to the purposes and provisions of this Order.

SEC. 214

Any Certificate of Merit may at any time be suspended or revoked by the Secretary of Labor if the holder thereof, in the judgment of the Secretary, has failed to comply with the provisions of this Order.

SEC. 215

The Secretary of Labor may provide for the exemption of any employer, labor union, or other agency from any reporting requirements imposed under or pursuant to this Order if such employer, labor union, or other agency has been awarded a Certificate of Merit which has not been suspended or revoked.

Part III – Nondiscrimination Provisions in Federally Assisted Construction Contracts

SEC. 301

Each executive department and agency, which administers a program involving Federal financial assistance shall require as a condition for the approval of any grant, contract, loan, insurance, or guarantee thereunder, which may involve a construction contract, that the applicant for Federal assistance undertake and agree to incorporate, or cause to be incorporated, into all construction contracts paid for in whole or in part with funds obtained from the Federal Government or borrowed on the credit of the Federal Government pursuant to such grant, contract, loan, insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loan, insurance, or guarantee, the provisions prescribed for Government contracts by Section 202 of this Order or such modification thereof, preserving in substance the contractor's obligations thereunder, as may be approved by the Secretary of Labor, together with such additional provisions as the Secretary deems appropriate to establish and protect the interest of the United States in the enforcement of those obligations. Each such applicant shall also undertake and agree (1) to assist and cooperate actively with the Secretary of Labor in obtaining the compliance of contractors and subcontractors with those contract provisions and with the rules, regulations and relevant orders of the Secretary, (2) to obtain and to furnish to the Secretary of Labor such information as the Secretary may require for the supervision of such compliance, (3) to carry out sanctions and penalties for violation of such obligations imposed upon contractors and subcontractors by the Secretary of Labor pursuant to Part II, Subpart D, of this Order, and (4) to refrain from entering into any contract subject to this Order, or extension or other modification of such a contract with a contractor debarred from Government contracts under Part II, Subpart D, of this Order.

[Sec. 301 amended by EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230]

SEC. 302

- a. "Construction contract" as used in this Order means any contract for the construction, rehabilitation, alteration, conversion, extension, or repair of buildings, highways, or other improvements to real property.
- b. The provisions of Part II of this Order shall apply to such construction contracts, and for purposes of such application the administering department or agency shall be considered the contracting agency referred to therein.
- c. The term "applicant" as used in this Order means an applicant for Federal assistance or, as determined by agency regulation, other program participant, with respect to whom an application for any grant, contract, loan, insurance, or guarantee is not finally acted upon prior to the effective date of this Part, and it includes such an applicant after he/she becomes a recipient of such Federal assistance.

SEC. 303

- a. The Secretary of Labor shall be responsible for obtaining the compliance of such applicants with their undertakings under this Order. Each administering department and agency is directed to cooperate with the Secretary of Labor

and to furnish the Secretary such information and assistance as the Secretary may require in the performance of the Secretary's functions under this Order.

- b. In the event an applicant fails and refuses to comply with the applicant's undertakings pursuant to this Order, the Secretary of Labor may, after consulting with the administering department or agency, take any or all of the following actions: (1) direct any administering department or agency to cancel, terminate, or suspend in whole or in part the agreement, contract or other arrangement with such applicant with respect to which the failure or refusal occurred; (2) direct any administering department or agency to refrain from extending any further assistance to the applicant under the program with respect to which the failure or refusal occurred until satisfactory assurance of future compliance has been received by the Secretary of Labor from such applicant; and (3) refer the case to the Department of Justice or the Equal Employment Opportunity Commission for appropriate law enforcement or other proceedings.
- c. In no case shall action be taken with respect to an applicant pursuant to clause (1) or (2) of subsection (b) without notice and opportunity for hearing.

[Sec. 303 amended by EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230]

SEC. 304

Any executive department or agency which imposes by rule, regulation, or order requirements of nondiscrimination in employment, other than requirements imposed pursuant to this Order, may delegate to the Secretary of Labor by agreement such responsibilities with respect to compliance standards, reports, and procedures as would tend to bring the administration of such requirements into conformity with the administration of requirements imposed under this Order: Provided, That actions to effect compliance by recipients of Federal financial assistance with requirements imposed pursuant to Title VI of the Civil Rights Act of 1964 shall be taken in conformity with the procedures and limitations prescribed in Section 602 thereof and the regulations of the administering department or agency issued thereunder.

Part IV – Miscellaneous

SEC. 401

The Secretary of Labor may delegate to any officer, agency, or employee in the Executive branch of the Government, any function or duty of the Secretary under Parts II and III of this Order.

[Sec. 401 amended by EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230]

SEC. 402

The Secretary of Labor shall provide administrative support for the execution of the program known as the "Plans for Progress."

SEC. 403

- a. Executive Orders Nos. 10590 (January 19, 1955), 10722 (August 5, 1957), 10925 (March 6, 1961), 11114 (June 22, 1963), and 11162 (July 28, 1964), are hereby superseded and the President's Committee on Equal Employment Opportunity established by Executive Order No. 10925 is hereby abolished. All records and property in the custody of the Committee shall be transferred to the Office of Personnel Management and the Secretary of Labor, as appropriate.
- b. Nothing in this Order shall be deemed to relieve any person of any obligation assumed or imposed under or pursuant to any Executive Order superseded by this Order. All rules, regulations, orders, instructions, designations, and other directives issued by the President's Committee on Equal Employment Opportunity and those issued by the heads of various departments or agencies under or pursuant to any of the Executive orders superseded by this Order, shall, to the extent that they are not inconsistent with this Order, remain in full

force and effect unless and until revoked or superseded by appropriate authority. References in such directives to provisions of the superseded orders shall be deemed to be references to the comparable provisions of this Order.

[Sec. 403 amended by EO 12107 of Dec. 28, 1978, 44 FR 1055, 3 CFR, 1978 Comp., p, 264]

SEC. 404

The General Services Administration shall take appropriate action to revise the standard Government contract forms to accord with the provisions of this Order and of the rules and regulations of the Secretary of Labor.

SEC. 405

This Order shall become effective thirty days after the date of this Order.

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Office of Federal Contract Compliance Programs

An agency within the U.S. Department of Labor
200 Constitution Ave NW
Washington, DC 20210
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Contract and Subcontract Activity

U.S. Department of Housing and Urban Development

OMB Approval No.: 2535-0117 (exp. 1/31/2013)

Public Reporting Burden for this collection of information is estimated to average .50 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. This information is voluntary. HUD may not collect this information, and you are not required to complete this form, unless it displays a currently valid OMB Control Number.

Executive Order 12421 dated July 14, 1983, directs the Minority Business Development Plans shall be developed by each Federal Agency and that these annual plans shall establish minority business development objectives. The information is used by HUD to monitor and evaluate MBE activities against the total program activity and the designated minority business enterprise (MBE) goals. The Department requires the information to provide guidance and oversight for programs for the development of minority business enterprise concerning Minority Business Development. If the information is not collected HUD would not be able to establish meaningful MBE goals nor evaluate MBE performance against these goals. While no assurances of confidentiality is pledged to respondents, HUD generally discloses this data only in response to a Freedom of Information request.

Privacy Act Notice - The United States Department of Housing and Urban Development, Federal Housing Administration, is authorized to solicit the information requested in this form by virtue of Title 12, United States Code, Section 1701 et seq., and regulations promulgated thereunder at Title 12, Code of Federal Regulations. It will not be disclosed or released outside the United States Department of Housing and Urban Development without your consent, except as required or permitted by law.

1. Grantee/Project Owner/Developer/Sponsor/Builder/Agency	Check if: PHA <input type="checkbox"/> IHA <input type="checkbox"/>	2. Location (City, State, ZIP Code)		
3a. Name of Contact Person	3b. Phone Number (Including Area Code)	4. Reporting Period <input type="checkbox"/> Oct. 1 - Sept. 30 (Annual-FY)	5. Program Code (Not applicable for CPD programs.) See explanation of codes at bottom of page. Use a separate sheet for each program code. <input style="width: 50px; height: 20px;" type="text"/>	6. Date Submitted to Field Office

Grant/Project Number or HUD Case Number or other identification of property, subdivision, dwelling unit, etc. 7a.	Amount of Contract or Subcontract 7b.	Type of Trade Code (See below) 7c.	Contractor or Subcontractor Business Racial/Ethnic Code (See below) 7d.	Woman Owned Business (Yes or No) 7e.	Prime Contractor Identification (ID) Number 7f.	Sec. 3 7g.	Subcontractor Identification (ID) Number 7h.	Sec. 3 7i.	Contractor/Subcontractor Name and Address 7j.															
									Name	Street	City	State	Zip Code											

- | | | |
|--|--|--|
| CPD:
1 = New Construction
2 = Education/Training
3 = Other | 7c: Type of Trade Codes:
Housing/Public Housing:
1 = New Construction 6 = Professional
2 = Substantial Rehab. 7 = Tenant Services
3 = Repair 8 = Education/Training
4 = Service 9 = Arch./Engrg. Appraisal
5 = Project Mangt. 0 = Other | 7d: Racial/Ethnic Codes:
1 = White Americans
2 = Black Americans
3 = Native Americans
4 = Hispanic Americans
5 = Asian/Pacific Americans
6 = Hasidic Jews |
| 5: Program Codes (Complete for Housing and Public and Indian Housing programs only):
1 = All insured, including Section 8 5 = Section 202
2 = Flexible Subsidy 6 = HUD-Held (Management)
3 = Section 8 Noninsured, Non-HFDA 7 = Public/Indian Housing
4 = Insured (Management) | | |

This report is to be completed by grantees, developers, sponsors, builders, agencies, and/or project owners for reporting contract and subcontract activities of \$10,000 or more under the following programs: Community Development Block Grants (entitlement and small cities); Urban Development Action Grants; Housing Development Grants; Multifamily Insured and Noninsured; Public and Indian Housing Authorities; and contracts entered into by recipients of CDBG rehabilitation assistance.

Contracts/subcontracts of less than \$10,000 need be reported only if such contracts represent a significant portion of your total contracting activity. Include only contracts executed during this reporting period.

This form has been modified to capture Section 3 contract data in columns 7g and 7i. Section 3 requires that the employment and other economic opportunities generated by HUD financial assistance for housing and community development programs shall, to the greatest extent feasible, be directed toward low- and very low-income persons, particularly those who are recipients of government assistance for housing. Recipients using this form to report Section 3 contract data must also use Part I of form HUD-60002 to report employment and training opportunities data. Form HUD-2516 is to be

completed for public and Indian housing and most community development programs. Form HUD-60002 is to be completed by all other HUD programs including State administered community development programs covered under Section 3.

A Section 3 contractor/subcontractor is a business concern that provides economic opportunities to low- and very low-income residents of the metropolitan area (or nonmetropolitan county), including a business concern that is 51 percent or more owned by low- or very low-income residents; employs a substantial number of low- or very low-income residents; or provides subcontracting or business development opportunities to businesses owned by low- or very low-income residents. Low- and very low-income residents include participants in Youthbuild programs established under Subtitle D of Title IV of the Cranston-Gonzalez National Affordable Housing Act.

The terms "low-income persons" and "very low-income persons" have the same meanings given the terms in section 3(b)(2) of the United States Housing Act of 1937. Low-income persons mean families (including single persons) whose incomes do not exceed 80 per centum of the median income for the area, as determined by the Secretary, with adjustments for smaller and larger families, except that the Secretary

may establish income ceilings higher or lower than 80 per centum of the median for the area on the basis of the Secretary's findings that such variations are necessary because of prevailing levels of construction costs or unusually high or low-income families. Very low-income persons means low-income families (including single persons) whose incomes do not exceed 50 per centum of the median family income for the area, as determined by the Secretary with adjustments for smaller and larger families, except that the Secretary may establish income ceilings higher or lower than 50 per centum of the median for the area on the basis of the Secretary's findings that such variations are necessary because of unusually high or low family incomes.

Submit two (2) copies of this report to your local HUD Office within ten (10) days after the end of the reporting period you checked in item 4 on the front.

Complete item 7h. only once for each contractor/subcontractor on each semi-annual report.

Enter the prime contractor's ID in item 7f. for all contracts and subcontracts. Include only contracts executed during this reporting period. PHAs/IHAs are to report all contracts/subcontracts.

Community Development Programs

1. **Grantee:** Enter the name of the unit of government submitting this report.
3. **Contact Person:** Enter name and phone of person responsible for maintaining and submitting contract/subcontract data.
- 7a. **Grant Number:** Enter the HUD Community Development Block Grant Identification Number (with dashes). For example: B-32-MC-25-0034. For Entitlement Programs and Small City multi-year comprehensive programs, enter the latest approved grant number.
- 7b. **Amount of Contract/Subcontract:** Enter the dollar amount rounded to the nearest dollar. If subcontractor ID number is provided in 7f, the dollar figure would be for the subcontract only and not for the prime contract.
- 7c. **Type of Trade:** Enter the numeric codes which best indicates the contractor's/subcontractor's service. If subcontractor ID number is provided in 7f., the type of trade code would be for the subcontractor only and not for the prime contractor. The "other" category includes supply, professional services and all other activities except construction and education/training activities.
- 7d. **Business Racial/Ethnic/Gender Code:** Enter the numeric code which indicates the racial/ethnic /gender character of the owner(s) and controller(s) of 51% of the business. When 51% or more is not owned and controlled by any single racial/ethnic/gender category, enter the code which seems most appropriate. If the subcontractor ID number is provided, the code would apply to the subcontractor and not to the prime contractor.
- 7e. **Woman Owned Business:** Enter Yes or No.
- 7f. **Contractor Identification (ID) Number:** Enter the Employer (IRS) Number of the Prime Contractor as the unique identifier for prime recipient of HUD funds. Note that the Employer (IRS) Number must be provided for each contract/subcontract awarded.
- 7g. **Section 3 Contractor:** Enter Yes or No.
- 7h. **Subcontractor Identification (ID) Number:** Enter the Employer (IRS) Number of the subcontractor as the unique identifier for each subcontract awarded from HUD funds. When the subcontractor ID Number is provided, the respective Prime Contractor ID Number must also be provided.
- 7i. **Section 3 Contractor:** Enter Yes or No.
- 7j. **Contractor/Subcontractor Name and Address:** Enter this information for each

Previous editions are obsolete.

firm receiving contract/subcontract activity only one time on each report for each firm.

Multifamily Housing Programs

1. **Grantee/Project Owner:** Enter the name of the unit of government, agency or mortgagor entity submitting this report.
3. **Contact Person:** Same as item 3 under CPD Programs.
4. **Reporting Period:** Check only one period.
5. **Program Code:** Enter the appropriate program code.
- 7a. **Grant/Project Number:** Enter the HUD Project Number or Housing Development Grant or number assigned.
- 7b. **Amount of Contract/Subcontract:** Same as item 7b. under CPD Programs.
- 7c. **Type of Trade:** Same as item 7c. under CPD Programs.
- 7d. **Business Racial/Ethnic/Gender Code:** Same as item 7d. under CPD Programs.
- 7e. **Woman Owned Business:** Enter Yes or No.
- 7f. **Contractor Identification (ID) Number:** Same as item 7f. under CPD Programs.
- 7g. **Section 3 Contractor:** Enter Yes or No.
- 7h. **Subcontractor Identification (ID) Number:** Same as item 7h. under CPD Programs.
- 7i. **Section 3 Contractor:** Enter Yes or No.
- 7j. **Contractor/Subcontractor Name and Address:** Same as item 7j. under CPD Programs.

Public Housing and Indian Housing Programs

PHAs/IHAs are to report all contracts/subcontracts. Include only contracts executed during this reporting period.

1. **Project Owner:** Enter the name of the unit of government, agency or mortgagor entity submitting this report. Check box as appropriate.
3. **Contact Person:** Same as item 3 under CPD Programs.
4. **Reporting Period:** Check only one period.
5. **Program Code:** Enter the appropriate program code.
- 7a. **Grant/Project Number:** Enter the HUD Project Number or Housing Development Grant or number assigned.
- 7b. **Amount of Contract/Subcontract:** Same as item 7b. under CPD Programs.
- 7c. **Type of Trade:** Same as item 7c. under CPD Programs.
- 7d. **Business Racial/Ethnic/Gender Code:** Same as item 7d. under CPD Programs.
- 7e. **Woman Owned Business:** Enter Yes or No.
- 7f. **Contractor Identification (ID) Number:** Same as item 7f. under CPD Programs.
- 7g. **Section 3 Contractor:** Enter Yes or No.
- 7h. **Subcontractor Identification (ID) Number:** Same as item 7h. under CPD Programs.
- 7i. **Section 3 Contractor:** Enter Yes or No.
- 7j. **Contractor/Subcontractor Name and Address:** Same as item 7j. under CPD Programs.

SECTION 3 CONTRACTOR PLAN

(Contractor) agrees, to the greatest extent feasible, to implement affirmative steps to comply with the Section 3 requirements set forth at 24 CFR 75 directed at increasing the utilization of lower income residents and businesses within the **City/County/Township/Village** of _____ .

- A. To implement Section 3 requirements by seeking the assistance of local officials in determining the exact boundaries of the applicable project area.
- B. To attempt to recruit from within the City/County/Township/Village lower income workers if new employees are needed. Recruitment may be done through local advertising media, signs placed at the proposed site for the project, and community organizations and public or private institutions operating within or serving the project area.
- C. To insert this Section 3 Contractor Plan and the Section 3 Contractor’s Packet (Form 4-T) in all bid documents, and to require all bidders/contractors and subcontractors to insert in their contracts. If new employees are needed, contractors are to submit a Section 3 affirmative action plan including utilization goals and the specific steps planned to accomplish these goals.
- D. To maintain records, including copies of correspondence, memoranda, etc., which document that all the above affirmative action steps have been taken. See Section 3 Contractor & Worker Solicitation (Form 9-D) as an example of a record keeping document.
- E. To list all permanent workforce for this project by job title. See Contractor Permanent Workforce Plan (Form 9-M).
- F. To list all projected workforce needs for this project by job classification and time frame for potential hire.
- G. To complete and submit the required Section 3 Forms to municipality for MEDC reporting (Form 9-N).

As representative of _____ (Bidder), the undersigned has read and fully agree to the above and become a party to the full implementation of this program.

Signature		Date
Print Name		
Title		
Company Name		

CONTRACTOR PERMANENT WORKFORCE

This form is provided at contract signing to identify the employees already employed by the bidding contractor/subcontractor. It also needs to be updated at Completion of 9-O. The form will be used to determine the base number of employees and help identify Section 3 Workers.

Contractor/Company Name	
County (project location)	
80% Area Median Income (AMI) Limit (1 person)	\$

	EMPLOYEE NAME	JOB TITLE	ANNUAL SALARY	*IS SALARY AT OR BELOW 80% AMI? (listed above) YES or NO	IS EMPLOYEE CERTIFIED SECTION 3 WORKER? YES OR NO
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*If Yes, Employee is a Certified Section 3 Worker.

I certify the above employees are permanent employees of _____. I certify the above employees are on our regular payroll and have their W-2 tax forms for our records. If requested, these records will be available to the **County/City/Township/Village Name** for the above referenced project for verification purposes. I understand that falsifying information is perjury and subject to legal ramifications.

Signature:	Date:
Print Name, Title	

SECTION 3 LABOR HOURS TRACKING

UGLG Name	
Grant #	
Project Name	
Contractor Name	
Date	

	Number	%
Total Labor Hours for Project	0.00	
Section 3 Worker Hours	0.00	
Targeted Section 3 Worker Hours	0.00	

FALSE = Targeted Section 3 cannot be YES if Section 3 is NO, correction is required.

	Worker Name	Section 3 Worker	Targeted Section 3 Worker	SECTION 3 CHECK	TOTAL HOURS	Week #	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6
						Payroll #						
						Tot Wk Hrs	0.00	0.00	0.00	0.00	0.00	0.00
						0.00						
1				TRUE	0.00							
2				TRUE	0.00							
3				TRUE	0.00							
4				TRUE	0.00							
5				TRUE	0.00							
6				TRUE	0.00							
7				TRUE	0.00							
8				TRUE	0.00							
9				TRUE	0.00							
10				TRUE	0.00							
11				TRUE	0.00							
12				TRUE	0.00							
13				TRUE	0.00							
14				TRUE	0.00							
15				TRUE	0.00							
16				TRUE	0.00							
17				TRUE	0.00							
18				TRUE	0.00							
19				TRUE	0.00							

SAFE HARBOR

UGLG NAME	0
GRANT #	0
PROJECT NAME	0
CONTRACTOR NAME	0
DATE	

Pursuant to 24 CFR 75.23, Safe Harbor reporting is required if Section 3 benchmarks are not met.

Enter "X" for each applicable item below.

- 1 Engaged in outreach efforts to generate job applicants who are Targeted Section 3 workers.
- 2 Provided training or apprenticeship opportunities.
- 3 Provided technical assistance to help Section 3 workers compete for jobs (e.g., resume assistance, coaching).
- 4 Provided or connected Section 3 workers with assistance in seeking employment including: drafting resumes, preparing for interviews, and finding job opportunities connecting residents to job placement services.
- 5 Held one or more job fairs.
- 6 Provided or referred Section 3 workers to services supporting work readiness and retention (e.g., work readiness activities, interview clothing, test fees, transportation, child care).
- 7 Provided assistance to apply for/or attend community college, a four-year educational institution, or vocational/technical training.
- 8 Assisted Section 3 workers to obtain financial literacy training and/or coaching.
- 9 Engaged in outreach efforts to identify and secure bids from Section 3 business concerns.
- 10 Provided technical assistance to help Section 3 business concerns understand and bid on contracts.
- 11 Divided contracts into smaller jobs to facilitate participation by Section 3 business concerns.
- 12 Provided bonding assistance, guarantees, or other efforts to support viable bids from Section 3 business concerns.
- 13 Promoted use of business registries designed to create opportunities for disadvantaged and small businesses.
- 14 Outreach, engagement, or referrals with the state one-stop system as defined in Section 121(e)(2) of the Workforce Innovation and Opportunity Act.
- 15 Other:

SIGN:

TYPE: Business Owner or Designee Name

SECTION 3 CLAUSE per CFR PART 75 (FINAL RULE)

All Section 3 covered contracts shall include the following clause (referred to as the "Section 3 Clause"):

A. The work to be performed under this contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended by the Housing and Community Development Act of 1992 (Section 3). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by Section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

B. The parties to this contract agree to comply with HUD's regulations in 24 CFR Part 75, which implement Section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 75 regulations.

C. The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

D. The contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 CFR Part 75, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR Part 75. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR Part 75.

E. The contractor will certify that any vacant employment positions, including training positions that are filled (1) after the contractor is selected by before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 75 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR part 75.

F. Noncompliance with HUD's regulations in 24 CFR part 75 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

G. With respect to work performed in connection with Section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of Section 3 and Section 7(b) agree to comply with Section 3 to the maximum extent feasible, but not in derogation of compliance with Section 7(b).

MEDC
GRANTS ADMINISTRATION
COMMUNITY DEVELOPMENT BLOCK GRANT
PROGRAM

CONTRACT SPECIAL PROVISIONS

The following CDBG Contract Special Provisions should be used with all construction contracts, and professional service contracts, where CDBG funds are being used in whole or in part.

CONTRACT SPECIAL PROVISIONS

1. **Definitions:** For purposes of this Contract, the following terms shall have the meanings set forth below:
 - (a) “Assistance” means the CDBG grant funds provided, or to be provided, to the Grantee by the State, pursuant to the Grant Award Agreement.
 - (b) “CDBG” means Community Development Block Grant.
 - (c) “Contract” means the contractual agreement between the Owner and the Contractor to which these Contract Special Provisions have been incorporated and made a part thereof.
 - (d) “Contractor” means the contractor whose services are retained pursuant to the Contract.
 - (e) “Grantee” means the unit of local government designated as the recipient of the Assistance in the Grant Award and signing the acceptance provision of the Grant Award.
 - (f) “HUD” means U.S. Department of Housing and Urban Development, which is the federal agency that awards and has authority over CDBG funding to the State.
 - (g) “Owner” means the Grantee or Subrecipient, as applicable.
 - (h) “Project” means the project for which the services of the Contractor have been retained pursuant to the Contract which are funded, in whole or in part, with CDBG funds.
 - (i) “State” means the State of Michigan, or that agency, agency division, or Office of State government which has been delegated the responsibility for administering the CDBG program for the State of Michigan, as appropriate.
 - (k) “Labor Surplus Area” means a civil jurisdiction that has an unemployment rate at least 20% above the average unemployment rate for all states, the District of Columbia, and Puerto Rico during the previous two calendar years. The Department of Labor issues the labor surplus area list on a fiscal year basis.
2. **Prime Contractor Responsibilities:** The Contractor is required to assume sole responsibility for the complete effort and enforcement of laws and regulations under this Contract. The Owner will consider the Contractor to be the sole point of contact with regard to contractual matters. All contractors, including subcontractors must be registered in SAM and eligible to receive federal contracts.
3. **Federal and State Laws:** The Contractor agrees to comply with all CDBG requirements as well as other federal and state laws, regulations, or Executive Orders. The State reserves the right to add or delete terms and conditions of this Contract as may be required by revisions and additions or changes in the requirements, regulations, and laws governing the CDBG Program.

4. **Procurement and Contracting:** In accordance with 2 CFR Part 200, the cost plus a percentage of cost and percentage of construction cost methods of contracting shall not be used. This provision shall supersede any conflicting provision in an executed contract document or agreement funded in whole or in part with CDBG funds.
5. **Ownership:** Ownership of all real or personal property, acquired in whole or in part with CDBG funds for use on this Project, shall be vested in the Grantee, unless otherwise authorized by the State. When the Grantee determines that the property is no longer required for the purposes of this Project, the Grantee must notify the State and obtain approval for disposition of the property in accordance with applicable guidelines.
6. **Copyright:** Except as otherwise provided in the terms and conditions of this Contract, the Contractor paid through this Contract is free to copyright any books, publications or other copyrightable materials developed in the course of the Project and under this Contract. However, HUD and the State reserve a royalty-free, non-exclusive and irrevocable license to reproduce, publish or otherwise use and to authorize others to use, for Federal government and State purposes:
 - (a) the copyright in any work developed under this Contract; and
 - (b) any rights of copyright to which a subcontractor purchases ownership with grant support.

The Federal government's rights and the State's rights identified above must be conveyed to the publisher and the language of the publisher's release form must insure the preservation of these rights.

7. **Reporting Requirements:** The Contractor agrees to complete and submit all reports, in such form and according to such schedule, as may be required by the State or HUD. Further, the Contractor agrees to require any subcontractors to submit reports that may be required and to incorporate such language in its agreements. Failure to meet deadlines with the required information could result in sanctions.
8. **Access to Records:** All records with respect to all matters covered by this Contract shall be made available at any time for audit and inspection by HUD, the State or the Grantee or their representatives upon their request.
9. **Maintenance of Records:** Records for non-expendable property purchased totally or partially with Federal funds must be retained for five years after final close-out of the grant. All other pertinent contract records including financial records, supporting documents and statistical records shall be retained for a minimum of five years after the final close-out report. However, if any litigation, claim, or audit is started before the expiration of the five-year period, then records must be retained for five years after the litigation, claim or audit is resolved.
10. **Confidential Information:** Any reports, information, data, etc., given to, prepared by, or assembled by the Contractor under this Contract, which the Grantee or the State requests to be kept confidential, shall not be made available to any individual or organization by the Contractor without prior written approval of the Grantee or the State, as applicable.

11. **Reporting of Fraudulent Activity:** If at any time during the term of this Contract anyone has reason to believe by whatever means that, under this or any other program administered by the State, a recipient of funds has improperly or fraudulently applied for or received benefits, monies or services pursuant to this Contract or any other contract, such information shall be reported immediately to the appropriate authorities.
12. **Political Activity:** None of the funds, materials, property or services provided directly or indirectly under this Contract shall be used for any partisan political activity, or to further the election or defeat of any candidate for public office or otherwise.
13. **Conflicts of Interest and Ethical Standards:** The following provisions regarding “conflicts of interest” apply to the use and expenditure of CDBG funds by the Grantee and its subrecipients, including the Contractor.

In the procurement of supplies, equipment, construction and services, the more restrictive conflict of interest provisions of the State of Michigan Ethics laws, or of the Contractor shall apply.

In cases not governed by the above, such as the acquisition and disposition of real property and the provision of CDBG assistance to individuals, businesses and other private entities, the following provisions shall apply.

Except for eligible administrative or personnel costs, the general rule is that no person who is an employee, agent, consultant, officer, or elected or appointed official of the State or a unit of general local government or any designated public agencies or subrecipient which are receiving CDBG funds who exercise or have exercised any function or responsibilities with respect to CDBG activities assisted herein or are in a position to participate in a decision making process or gain inside information with regard to such activities, may obtain a financial interest or benefit from the activity, or have an interest in any contract, subcontract or agreement with respect thereto, or the proceeds thereunder either for themselves or those with whom they have family or business ties during their tenure or for one year thereafter. Exceptions may be granted by the State on a case by case basis as requested upon full disclosure in writing.

Should any governmental entity, contractor, subcontractor, employee or official know or perceive any breach of ethical standards or conflict of interest under the CDBG grant awarded to the Grantee or any other CDBG grant, they shall immediately notify in writing the MEDC. If the State finds any circumstances that may give rise to a breach of ethical standards or conflict of interest, under any grant, they shall notify the participating governmental entity and the State Ethics Commission as appropriate. The State may undertake any administrative remedies it deems appropriate, where there is a breach of ethical standards or conflict of interest under the regulations governing the CDBG Program and the State policies.

14. **Applicable Law:** In addition to the applicable Federal laws and regulations, this Contract is also made under and shall be construed in accordance with the laws of the State. By execution of this Contract, the Contractor agrees to submit to the jurisdiction of the State for all matters arising or to arise hereunder, including but not limited to performance of said Contract and payment of all licenses and taxes of whatever kind or nature applicable hereto.

15. **Limitation of Liability:** The Contractor will not assert in any legal action by claim or defense, or take the position in any administrative or legal procedures that he is an agent or employee of the Owner. This provision is not applicable to contracts for CDBG administration services where the Contractor is a Council of Government. The State shall not be liable for failure on the part of the Grantee or any other party to perform all work in accordance with all applicable laws and regulations. The Grantee agrees to defend, indemnify, and hold harmless the State from and against all claims, demands, judgments, damages, actions, causes of actions, injuries, administrative orders, consent agreement and orders, liabilities, penalties, costs, and expenses of any kind whatsoever, including, without limitation, claims arising out of loss of life, injury to persons, property, or business or damage to natural resources in connection with the activities of the Grantee and any other third parties in a contractual relationship with the Grantee, or a subsidiary, whether or not occasioned wholly or in part by any condition, accident, or event caused by any act or omission of the State as a result of the Assistance.
16. **Legal Services:** No attorney-at-law shall be engaged through the use of any funds provided under this Contract in any legal action or proceeding against the State, the Grantee, any local public body or any political subdivision.
17. **Contract:** If any provision in this Contract shall be held to be invalid or unenforceable, the remaining portions shall remain in effect. In the event such invalid or unenforceable provision is considered an essential element of this Contract, the parties shall promptly negotiate a replacement provision, which addresses the intent of such provision.
18. **Amendments:** Any changes to this Contract affecting the scope of work of the Project must be approved, in writing, by the Owner and the Contractor and shall be incorporated in writing into this Contract. Any amendments of the original contract must have written approval by the State prior to execution.
19. **Termination for Convenience:** This Contract may be terminated for convenience in accordance with 2 CFR Part 200.
20. **Sanctions:** If the Contractor fails or refuses to comply with the provisions set forth herein, the State or Owner may take any or all of the following actions: cancel, terminate or suspend in whole or in any part the contract, or refrain from extending any further funds to the Contractor until such time as the Contractor is in full compliance.
21. **Subcontracting:** If any part of the work covered by this Contract is to be subcontracted, the Contractor shall identify the subcontracting organization and the contractual arrangements made therewith to the Owner and to the State. All subcontracts must be approved by the Owner and the State to insure they are not debarred or suspended by the Federal or State governments and to insure the Owner and the State understand the arrangements.
22. **Subcontracting with Small and Minority Firms, Women's Business Enterprise and Labor Surplus Areas:** It is national policy to award a fair share of contracts to disadvantaged business enterprises (DBEs), small business enterprises (SBEs), minority business enterprises (MBEs) and women's business enterprises (WBEs). Accordingly, affirmative steps must be taken to assure that DBEs, SBEs, MBEs and WBEs are utilized when possible as sources of supplies, equipment, construction and services. Affirmative steps shall include the following:

- (a) Including qualified DBEs, SBEs, MBEs and WBEs on solicitation lists;
- (b) Assuring that DBEs, SBEs, MBEs and WBEs are solicited whenever they are potential sources;
- (c) Whenever economically feasible, dividing total requirements into smaller tasks or quantities so as to permit maximum participation by DBEs, SBEs, MBEs and WBEs;
- (d) Where the requirement permits, establishing delivery schedules which will encourage participation by DBEs, SBEs, MBEs and WBEs;
- (e) Using the services and assistance of the Small Business Administration, Minority Business Development Agency, the State Office of Small and Minority Business Assistance, the U.S. Department of Commerce and the Community Services Administration as required; and
- (f) Requiring the subcontractor, if any, to take the affirmative actions outlined in (1) – (5) above.

23. **Debarment Certification:** The Contractor must comply with Executive Orders 12549 and 12689 regarding Federal debarment and suspension regulations prior to entering into a financial agreement for any transaction as outlined below.

- (a) Any procurement contract for goods and services, regardless of type, expected to equal or exceed the Federal procurement small purchase threshold (which is \$250,000 and is cumulative amount from all federal funding sources).
- (b) Any procurement contract for goods and services, regardless of amount, under which the Contractor will have a critical influence on or substantive control over the transaction.

In addition, no contract may be awarded to any contractors who are ineligible to receive contracts under any applicable regulations of the State.

24. **Equal Employment Opportunity:** The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the State.

In carrying out the Project, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor must take affirmative action to insure that applicants for employment are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor shall post in conspicuous places, available to employees and applicants for employment, notices to be provided by the State setting forth the provisions of this non-discrimination clause. The Contractor shall state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin. The Contractor will, in all solicitations or advertisements for employees by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin. The Contractor shall incorporate the foregoing requirements of this paragraph in all of its subcontracts for

the Project unless exempted by rules, regulations, or orders of the State issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor.

The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the State advising the said labor union or workers' representatives of the Contractor's commitment under this Section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the State, or pursuant thereto, and will permit access to its books, records, and accounts by HUD and the State for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

In the event of the Contractor's noncompliance with the non-discrimination clauses of this Contract or with any of such rules, regulations, or orders, this Contract may be canceled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further State government contracts or federally assisted construction contract procedures authorized in Executive Order 11246 of September 24, 1965, or by rules, regulations, or orders of the State, or as otherwise provided by law.

25. **Age Discrimination:** In accordance with 45 CFR, Parts 90 and 91, the Contractor agrees there shall be no bias or age discrimination as to benefits and participation under this Contract.
26. **Section 109 of the Housing and Community Development Act of 1974:** No person in the United States shall on the grounds of race, color, national origin or sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity funded in whole or in part with funds made available under the CDBG program of the State.
27. **Section 504 of the Rehabilitation Act of 1973, as amended:** The Contractor agrees that no otherwise qualified individual with disabilities shall, solely by reason of his disability, be denied the benefits, or be subjected to discrimination including discrimination in employment, any program or activity that receives the benefits from the Assistance.
28. **Section 3, Compliance and Provision of Training, Employment and Business Opportunities:** The work to be performed under this Contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, (12 USC § 1701u). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by Section 3 shall, to the greatest extent feasible be directed to low and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

The parties to this said Contract agree to comply with HUD's regulations in 24 CFR Part 135, which implement Section 3. As evidenced by their execution of this Contract, the parties to this Contract certify that they are under no contractual or other impediment that would prevent them from complying with the 24 CFR Part 135 regulations.

The contractor agrees to send to each labor organization or representative of workers with which the Contractor has a collective bargaining agreement or other understanding, if any, a notice advising the organization or workers' representative of the contractor's commitments under this Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions; the qualifications for each; and the name and location of person(s) taking applications for each of the positions; and the anticipated date the work shall begin. The Contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 CFR Part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR Part 135. The Contractor will not subcontract with any subcontractor where the Contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR Part 135.

The Contractor will certify that any vacant employment positions including training positions, that are filled (1) after the Contractor is selected but before this Contract has been executed, and (2) with persons other than those to whom the regulations of 24 CFR Part 135 require employment opportunities to be directed, were not filled to circumvent the Contractor's obligations under 24 CFR Part 135.

The Contractor agrees to submit such reports as required to document compliance with 24 CFR Part 135. Noncompliance with the regulations in 24 CFR Part 135 may result in sanctions, termination of this Contract for default, and debarment or suspension from future HUD assisted contracts.

29. **Lead-Based Paint:** The construction or rehabilitation of residential structures with any portion of the Assistance is subject to the HUD Lead-Based Paint regulations found at 24 CFR Part 35. Any grants or loans made by the Grantee for the rehabilitation of residential structures with any portion of the Assistance shall be made subject to the provisions for the elimination of lead-based paint hazards under subpart B of said regulations, and the Grantee shall be responsible for the inspections and certifications required under Section 35.14(f) thereof.
30. **Compliance with Air and Water Acts:** (Applicable to construction contracts and related subcontracts exceeding \$100,000) This Contract is subject to the requirements of the Clean Air Act, as amended, 42 USC § 7401 et seq., the Federal Water Pollution Control Act (Clean Water Act), as amended, 33 USC § 1251 et seq., and the regulations of the Environmental Protection Agency with respect to 40 CFR Part 15, as amended from time to time. In particular, the following are required:
- (a) A stipulation by the Contractor or subcontractor that any facility to be utilized in the performance of any nonexempt contract or subcontract is not listed on the List of Violating Facilities, issued by the Environmental Protection Agency (EPA) pursuant to 40 CFR § 15.20.
 - (b) Agreement by the Contractor to comply with all the requirements of Section 114 of the Clean Air Act, as amended (42 USC § 7414) and Section 308 of the Federal Water Pollution Control Act, as amended (33 USC § 1318) relating to inspection, monitoring, entry, reports and information, as well as all other requirements specified in said Sections 114 and 308, and all regulations and guidelines issued thereunder.

- (c) A stipulation that as a condition of award of contract prompt notice will be given of any notification received from the Director, Office of Federal Activities, EPA, indicating that a facility utilized or to be utilized for the contract under consideration is to be listed on the EPA list of Violating Facilities.
- (d) Agreement by the Contractor that the Contractor will include or cause to be included the criteria and requirements in these subparagraphs (1) through (4), in every nonexempt subcontract and requiring that the Contractor will take such action as the State may direct as a means of enforcing such provisions.

In no event shall any amount of the Assistance be utilized with respect to a facility which has given rise to a conviction under section 113(c)(1) of the Clean Air Act or Section 309(c) of the Federal Water Pollution Control Act.

31. Federal Labor Standards Provisions: *(Applicable to construction contracts in excess of \$2,000 or residential rehabilitation contracts involving more than eight units)*

The Project or program to which the construction work covered by this Contract pertains is being assisted by the United States of America and the Federal Labor Standards Provisions as set forth on Attachment 1 are included in this Contract pursuant to the provisions applicable to such Federal assistance. These provisions must be complied with or sanctions will be instituted.

ATTACHMENT 1

U.S. Department of Housing and Urban Development, Office of Labor Relations form HUD4010 (06/2009)
ref. Handbook 1344.1

A. 1. (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached thereto and made a part thereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section I(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5 (a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification of the time actually work therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible, place where it can be easily seen by the workers.

(ii) (a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (1)** The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (2)** The classification is utilized in the area by the construction industry; and
- (3)** The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment

Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 12150140.)

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1214-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. Withholding. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federal-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice trainee or helper, employed or working on the site of the work, all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension or any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for an on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

3. (i) Payrolls and basic records. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section I (b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section I(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment of provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices and trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)

(ii) (a) the contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i). This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, DC 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget Under OMB Control Number 1215-0129.)

(b) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays for supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be maintained under 29 CFR 5.5 (a)(3)(i) and that such information is correct and complete;

(2) That each laborer or mechanic (including each apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph A.3.(ii)(b).

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under subparagraph A.3.(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment Training Administration, Office of Apprenticeship Training, Employer and Training Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen in any craft classification shall not be greater than the ratio permitted to the contractor as to his entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as state above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ration permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every Trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor will insert in any subcontracts the clauses contained in subparagraphs 1 through 11 of this paragraph A and such other clauses as HUD or its designee may by appropriate instructions require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this paragraph.

7. Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any

if its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) Certification of Eligibility. By entering into this contract the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1010, Title 18, U.S.C., "Federal Housing Administration transactions", provided in part: "Whoever, for the purpose of . . . influencing in any way the action of such Administration..... makes, utters or publishes any statement knowing the same to be false..... shall be fined not more than \$5,000 or imprisoned not more than two years, or both."

11. Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. Contract Work Hours and Safety Standards Act. The provisions of this paragraph B are applicable only where the amount of the prime contract exceeds \$100,000. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(1) Overtime Requirements. No Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violations of the clause set forth in subparagraph (1) of this paragraph, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in subparagraph (1) of this paragraph.

(3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract, or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. Health and Safety. The provisions of this paragraph C are applicable only where the amount of the prime contract exceeds \$100,000.

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to this health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, 40 USC 3701 et. seq.

(3) The Contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The Contractor shall take such action with respect to any subcontract as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

"General Decision Number: MI20230044 11/03/2023

Superseded General Decision Number: MI20220044

State: Michigan

Construction Type: Heavy

Counties: Arenac, Branch, Gladwin, Hillsdale, Huron, Lenawee, Mecosta, Midland, Osceola, Shiawassee and Tuscola Counties in Michigan.

Heavy, Includes Water, Sewer Lines and Excavation (Excludes Hazardous Waste Removal; Coal, Oil, Gas, Duct and other similar Pipeline Construction)

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/06/2023
1	02/03/2023
2	02/17/2023
3	07/21/2023
4	08/11/2023
5	08/25/2023
6	09/01/2023
7	09/22/2023
8	10/06/2023
9	11/03/2023

CARP0100-005 06/01/2021

MECOSTA & OSCEOLA COUNTIES

	Rates	Fringes
CARPENTER (Form Work Only).....	\$ 25.24	20.31

CARP0525-008 06/01/2021

BRANCH & HILLSDALE COUNTIES

	Rates	Fringes
CARPENTER (Form Work Only).....	\$ 25.94	20.59

CARP0706-014 06/01/2020

ARENAC, GLADWIN, HURON, MIDLAND & TUSCOLA COUNTIES

	Rates	Fringes
CARPENTER (Form Work Only).....	\$ 27.61	21.84

CARP0706-018 06/01/2021

SHIAWASSEE COUNTY

	Rates	Fringes
CARPENTER (Form Work Only).....	\$ 29.48	22.00

CARP1004-013 06/01/2021

LENAWEE COUNTY

	Rates	Fringes
CARPENTER (Form Work Only).....	\$ 27.39	20.73

ELEC0008-012 05/25/2022

HILLSDALE & LENAWE COUNTY

	Rates	Fringes
ELECTRICIAN.....	\$ 44.79	1.5%+15.61

ELEC0058-008 06/28/2022

HURON COUNTY

	Rates	Fringes
ELECTRICIAN.....	\$ 48.52	26.11

ELEC0275-009 06/01/2023		

MECOSTA COUNTY

	Rates	Fringes
ELECTRICIAN.....	\$ 35.68	38%+9.80

ELEC0275-014 06/01/2023		

OSCEOLA COUNTY (Townships of Richmond, Hersey, Ewart & Orient)

	Rates	Fringes
ELECTRICIAN.....	\$ 35.68	38%+9.80

ELEC0445-008 06/01/2023		

BRANCH COUNTY

	Rates	Fringes
ELECTRICIAN.....	\$ 35.97	24.49

ELEC0498-012 06/01/2023		

OSCEOLA COUNTY (does not include the townships of Ewart, Hersey, Orient and Richmond)

	Rates	Fringes
ELECTRICIAN.....	\$ 33.65	22.63

ELEC0557-008 06/01/2023		

MIDLAND (Townships of Ingersoll, Jasper, Mount Haley and Porter) & TUSCOLA (Townships of Almer, Arbela, Columbia, Dayton, Denmark, Elkland, Ellington, Elmwood, Fairgrove, Fremont, Gilford, Indianfields, Juniata, Kingston, Koylon, Novesta, Tuscola, Vassar, Watertown and Wells) COUNTIES

	Rates	Fringes
ELECTRICIAN.....	\$ 37.00	23.13

ELEC0665-018 05/31/2023		

SHIAWASSEE COUNTY (Townships of Perry & Woodhull)

	Rates	Fringes
ELECTRICIAN.....	\$ 40.50	5.5%+26.07

ELEC0692-017 06/01/2023		

ARENAC & GLADWIN COUNTIES

Rates	Fringes
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ELECTRICIAN.....\$ 36.00 38.03%+9.93

ELEC0692-018 06/01/2022

MIDLAND (All townships except Mount Haley, Jasper, Porter & Ingersoll) & TUSCOLA (Townships of Wisner & Akron) COUNTIES

Rates Fringes

ELECTRICIAN.....\$ 35.31 38.03%+9.25

ELEC0948-008 06/01/2023

SHIAWASSEE (All townships except Perry & Woodhull) & TUSCOLA (Township of Millington) COUNTIES

Rates Fringes

ELECTRICIAN.....\$ 41.66 23.51

* ENGI0325-021 09/01/2023

POWER EQUIPMENT OPERATORS: Underground Construction (Including Sewer)

Rates Fringes

POWER EQUIPMENT OPERATOR

GROUP 1.....\$ 39.27 25.25
GROUP 2.....\$ 34.38 25.25
GROUP 3.....\$ 33.88 25.25
GROUP 4.....\$ 33.60 25.25

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Backhoe/ Excavator, Boring Machine, Bulldozer, Crane, Scraper, Loader, Trencher (over 8 ft. digging capacity)

GROUP 2: Trencher (8-ft digging capacity and smaller)

GROUP 3: Boom Truck (non-swinging, non- powered type boom)

GROUP 4: Broom/ Sweeper, Fork Truck, Tractor

ENGI0326-014 06/01/2023

EXCLUDES UNDERGROUND CONSTRUCTION

AREA 1: BRANCH, HILLSDALE, MECOSTA & OSCEOLA COUNTIES

AREA 2: ARENAC, GLADWIN, HURON, MIDLAND, SHIAWASSEE & TUSCOLA COUNTIES

Rates Fringes

Operating Engineer:

AREA 1
Group 1.....\$ 45.48 25.25
Group 2.....\$ 42.18 25.25

Group 3.....	\$ 39.53	25.25
Group 4.....	\$ 37.82	25.25
Group 5.....	\$ 29.48	25.25
Operating Engineers:		
AREA 2		
Group 1.....	\$ 45.48	25.25
Group 2.....	\$ 42.18	25.25
Group 3.....	\$ 39.53	25.25
Group 4.....	\$ 37.82	25.25
Group 5.....	\$ 29.48	25.25

FOOTNOTES:

Crane operator with main boom and jib 300' or longer: \$1.50 per hour above the group 1 rate.
 Crane operator with main boom and jib 400' or longer: \$3.00 per hour above the group 1 rate.

PAID HOLIDAYS: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Crane operator with main boom and jib 400', 300', or 220' or longer.

GROUP 2: Crane operator with main boom and jib 140' or longer, tower crane, gantry crane, whirley derrick

GROUP 3: Backhoe/Excavator; Bulldozer; Compactor; Crane; Scraper; Loader

GROUP 4: Boom truck (non-swinging)

GROUP 5: Oiler

 ENGI0326-024 06/01/2022

EXCLUDES UNDERGROUND CONSTRUCTION

LENAWEE COUNTY

	Rates	Fringes
OPERATOR: Power Equipment		
GROUP 1.....	\$ 46.44	24.95
GROUP 2.....	\$ 44.94	24.95
GROUP 3.....	\$ 43.44	24.95
GROUP 4.....	\$ 43.14	24.95
GROUP 5.....	\$ 42.32	24.95
GROUP 6.....	\$ 41.46	24.95
GROUP 7.....	\$ 40.49	24.95
GROUP 8.....	\$ 38.78	24.95

FOOTNOTES: Tower cranes: to be paid the crane operator rate determined by the combined length of the mast and the boom.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Crane with boom & jib or leads 400' or longer

GROUP 2: Crane with boom & jib or leads 300' or longer

GROUP 3: Crane with boom & jib or leads 220' or longer

GROUP 4: Crane with boom & jib or leads 140' or longer

GROUP 5: Crane with boom & jib or leads 120' or longer

GROUP 6: Regular crane operator

GROUP 7: Backhoe/Excavator, Bulldozer, Compactor, Scraper, Loader

GROUP 8: Oiler

IRON0025-007 06/01/2022

ARENAC, GLADWIN, HURON, MIDLAND, SHIAWASSEE & TUSCOLA COUNTIES

	Rates	Fringes
IRONWORKER		
Reinforcing.....	\$ 31.43	34.77
Structural.....	\$ 34.50	38.44

IRON0025-016 06/01/2023

BRANCH, HILLSDALE, MECOSTA & OSCEOLA COUNTIES

	Rates	Fringes
IRONWORKER (REINFORCING).....	\$ 31.43	34.77
IRONWORKER (STRUCTURAL).....	\$ 34.85	38.44

IRON0055-011 07/01/2023

LENAWEE COUNTY

	Rates	Fringes
IRONWORKER, STRUCTURAL AND REINFORCING.....	\$ 34.25	28.20

LAB00334-008 09/01/2022

SCOPE OF WORK:
OPEN CUT CONSTRUCTION: Excavation of earth and sewer, utilities, and improvements, including underground piping/conduit (including inspection, cleaning, restoration, and relining)

ARENAC, BRANCH, GLADWIN, HURON, MECOSTA, MIDLAND, OSCEOLA, TUSCOLA

	Rates	Fringes
LABORER		
(1) Common or General.....	\$ 22.42	12.95
(4) Grade Checker.....	\$ 22.73	12.95

LAB00334-019 09/01/2022

SCOPE OF WORK:
OPEN CUT CONSTRUCTION: Excavation of earth and sewer, utilities, and improvements, including underground

pipng/conduit (including inspection, cleaning, restoration,
and relining)

HILLSDALE, LENAWE, SHIAWASSEE

	Rates	Fringes
LABORER		
(1) Common or General.....	\$ 23.39	13.15
(4) Grade Checker.....	\$ 23.70	13.15

LAB00355-007 06/01/2022

EXCLUDES OPEN CUT CONSTRUCTION

BRANCH COUNTY

	Rates	Fringes
LABORER		
Common or General.....	\$ 26.70	12.95

LAB00355-015 06/01/2022

EXCLUDES OPEN CUT CONSTRUCTION

MECOSTA & OSCEOLA COUNTIES

	Rates	Fringes
LABORER		
Common or General.....	\$ 26.70	12.95

LAB00499-014 06/01/2023

EXCLUDES OPEN CUT CONSTRUCTION

HILLSDALE & LENAWE COUNTIES

	Rates	Fringes
LABORER		
Common or General.....	\$ 30.20	13.45

LAB01075-011 06/01/2023

EXCLUDES OPEN CUT CONSTRUCTION

SHIAWASSEE COUNTY

	Rates	Fringes
LABORER		
Common or General.....	\$ 28.21	14.95

LAB01098-022 07/01/2023

EXCLUDES OPEN CUT CONSTRUCTION

ARENAC, GLADWIN, HURON, MIDLAND & TUSCOLA COUNTIES

	Rates	Fringes
LABORER		

Common or General.....	\$ 22.94	13.45

PLAS0016-009 04/01/2014		
MECOSTA & OSCEOLA COUNTIES		
	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 22.02	12.38

PLAS0016-021 04/01/2014		
SHIAWASSEE COUNTY		
	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 25.58	12.88

PLAS0016-023 04/01/2014		
BRANCH COUNTY		
	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 24.63	12.88

PLAS0016-031 04/01/2014		
ARENAC, GLADWIN, HURON, MIDLAND & TUSCOLA COUNTIES		
	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 25.47	12.38

PLAS0886-013 08/01/2011		
HILLSDALE & LENAWEЕ COUNTIES		
	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 27.19	16.00

PLUM0085-017 05/04/2020		
ARENAC, GLADWIN, HURON (West of M-53), MIDLAND & TUSCOLA COUNTIES		
	Rates	Fringes
PLUMBER/PIPEFITTER.....	\$ 38.25	21.07

PLUM0098-008 06/01/2019		
HURON COUNTY (East of M-53)		
	Rates	Fringes
PLUMBER.....	\$ 35.77	35.13

PLUM0174-015 07/01/2020		
MECOSTA & OSCEOLA COUNTIES		
	Rates	Fringes

PLUMBER/PIPEFITTER.....\$ 39.89 23.82

PLUM0190-012 06/01/2021

LENAWEE COUNTY (Townships of Clinton, Macon & Tecumseh)

Rates Fringes

PLUMBER/PIPEFITTER.....\$ 44.31 23.70

PLUM0333-021 06/01/2022

BRANCH & HILLSDALE COUNTIES

Rates Fringes

PLUMBER/PIPEFITTER.....\$ 42.29 23.94

PLUM0333-022 06/01/2022

LENAWEE COUNTY (Remainder of County)

Rates Fringes

PLUMBER/PIPEFITTER.....\$ 42.29 23.94

PLUM0370-007 06/01/2020

SHIAWASSEE COUNTY

Rates Fringes

PLUMBER/PIPEFITTER.....\$ 39.81 20.95

PLUM0636-008 06/05/2017

HURON COUNTY (East of M-53)

Rates Fringes

PIPEFITTER.....\$ 40.41 29.35

TEAM0007-010 06/01/2023

Rates Fringes

TRUCK DRIVER

Lowboy/Semi-Trailer Truck...\$ 31.55 .75 + a+b

FOOTNOTE:

- a. \$470.70 per week.
- b. \$68.70 daily.

* SUMI2010-042 11/09/2010

Rates Fringes

CARPENTER, Excludes Form Work....\$ 23.97 6.29

LABORER: Landscape.....\$ 10.89 ** 1.74

LABORER: Mason Tender -
Cement/Concrete.....\$ 15.97 ** 3.51

LABORER: Pipelayer.....	\$ 15.28 **	3.99
OPERATOR: Bobcat/Skid Steer/Skid Loader.....	\$ 12.98 **	6.12
OPERATOR: Grader/Blade.....	\$ 15.50 **	3.62
OPERATOR: Roller.....	\$ 13.74 **	7.93
TRUCK DRIVER: Dump Truck.....	\$ 14.06 **	1.25

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$16.20) or 13658 (\$12.15). Please see the Note at the top of the wage determination for more information.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example:

PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

"

SECTION 00 51 00

NOTICE OF AWARD
(on Engineer's Letterhead)

Date of Issuance:

Owner:

Owner's Project No.:

Engineer:

Engineer's Project No.:

Project:

Contract Name: *(Insert name of Contract as it appears in the Bidding Documents)*

Bidder:

Bidder's Address:

you are notified that Owner has accepted your Bid dated _____ for the above Contract, and that you are the Successful Bidder and are awarded a Contract for: _____

(describe Work, alternates, or sections of Work awarded)

The Contract Price of the awarded Contract is \$ _____. Contract Price is subject to adjustment based on the provisions of the Contract, including but not limited to those governing changes, Unit Price Work, and Work performed on a cost-plus-fee basis, as applicable.

An electronic counterpart of the Agreement accompanies this Notice of Award and an electronic copy of the Contract Documents will be made available upon request.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Engineer:
 - One pdf formatted counterpart of the Agreement, signed by Bidder (as Contractor).
 - EJCDC *[or other as specified]* Contract Security (Bonds) as specified in the Instructions to Bidders, General Conditions, and Supplementary Conditions.
 - Do not date the bonds. The date will be entered on the bonds after the Agreement is signed by the Owner. This is necessary to ensure the date on the Bonds do not precede the date of the Agreement.
 - Fully dated Bonds will be delivered to the Contractor after the Contract Documents are fully executed.
 - Certificates of Insurance as specified in the General Conditions and Supplementary Conditions.

2. Other conditions precedent (if any): *[Describe other conditions that require Successful Bidder's compliance]*

Electronic signatures (e-signatures) and scanned copies of handwritten signatures are acceptable forms of signatures in the pdf documents.

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

The information provided will be reviewed, bound into the Contract Documents, submitted to the Owner for signature, and distributed to the appropriate parties.

Sincerely,

[Project Manager]
Fleis & VandenBrink Engineering, Inc.

By: _____
Signature

Title

cc: [Owner]

END OF SECTION

SECTION 00 52 00

AGREEMENT

This Agreement is by and between **City of Big Rapids, 226 N Michigan Ave, Big Rapids, MI 49307** (“Owner”) and _____ (“Contractor”).

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

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: **Hemlock Park Splash Pad & Playground.**

ARTICLE 2 - THE PROJECT

2.01 Project, of which the Work under the Contract Documents is a part, is generally described as follows: **Hemlock Park Splash Pad & Playground.**

ARTICLE 3 - ENGINEER

3.01 The Owner has retained Fleis & VandenBrink Engineering, Inc. (“Engineer”) to act as Owner’s representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

3.02 The part of the Project that pertains to the Work has been designed by Engineer.

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 complete on or before June 28, 2024, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before June 28, 2024.

B. In order to maximize the use of the existing facilities demolition of existing playground structures shall not occur until work begins in the Spring of 2024 unless otherwise approved by the City, based on contractors approved construction schedule.

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 Contract Times, as duly modified. 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 \$1000 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified 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 Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$1000 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 Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.
- B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

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).

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.

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.
- B. Completed HUD Form 2516, certified payroll reports, employee interviews by Engineer, and other required MEDC documentation shall be submitted with each Application for Payment.

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on the basis of Contractor's Applications for Payment 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. 90 percent of the value of the Work completed (with the balance being retainage).
 - 1) If 50 percent or more of the Work has been completed, as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and
 - 2) Zero percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
 - B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 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.
 - C. Payments will not be recommended by Engineer unless all MEDC required documentation is provided and reviewed for general compliance.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.
- B. Final payment will not be recommended by Engineer until MEDC has completed their audit of the required documentation and has accepted the Project.

6.04 *Consent of Surety*

- A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

6.05 *Interest*

- A. All amounts not paid when due will bear interest at the percent per annum rate 2.0% higher than the Prime Rate on the date of bid opening.

ARTICLE 7 - CONTRACT DOCUMENTS

7.01 *Contents*

- A. The Contract Documents consist of all of the following:
 1. This Agreement.
 2. Bonds
 - a. Performance bond (together with power of attorney).
 - b. Payment bond (together with power of attorney).
 3. General Conditions.
 4. Supplementary Conditions.
 5. Specifications as listed in the table of contents of the project manual.

6. Drawings (not attached but incorporated by reference) consisting of 16 sheets with each sheet bearing the following general title: City of Big Rapids Hemlock Park Splash Pad & Playground.
 7. Addenda (numbers _____ to _____, inclusive).
 8. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid.
 - b. Documentation submitted by Contractor prior to Notice of Award.
 - c. _____.
 9. 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.
- B. The Contract Documents listed in Paragraph 7.01.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 7.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8 - REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 Contractor's Representations

- A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:
1. Contractor has examined and carefully studied the Contract Documents, including Addenda.
 2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, if any, with respect to the Technical Data in such reports and drawings.
 5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
 6. 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 Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.
 7. 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.

8. 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.
9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. 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.

8.02 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:
 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution.
 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.03 *Standard General Conditions*

- A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C 700, Standard General Conditions for the Construction Contract (2018), 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.

8.04 *Other*

- A. Contractor is required to comply with City of Big Rapids Income Tax Ordinance. Attached Employer registration shall be submitted to the city income tax office.
- B. Contractor shall comply with City of Big Rapids Equal Employment Opportunity Requirements attached here to.
- C. The project follows Build America, Buy America Act requirements which require all iron, steel, manufactured products and construction materials used in the project are produced in the United States. Cement, cementitious materials, aggregates, aggregate binding agents or additives are not subject to these requires.

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

This Agreement will be effective on _____, 20____ (which is the Effective Date of the Contract).

Owner:

Contractor:

(typed or printed name of organization)

(typed or printed name of organization)

By: _____
(individual's signature)

By: _____
(individual's signature)

Date: _____
(date signed)

Date: _____
(date signed)

Name: _____
(typed or printed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Title: _____
(typed or printed)

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

Attest: _____
(individual's signature)

Attest: _____
(individual's signature)

Title: _____
(typed or printed)

Title: _____
(typed or printed)

Address for giving notices:

Address for giving notices:

Designated Representative:

Designated Representative:

Name: _____
(typed or printed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

Address:

Phone: _____

Phone: _____

Email: _____

Email: _____

License No.: _____
(where applicable)

State: _____

END OF SECTION

City of Big Rapids Income Tax Ordinance

Withholding and Big Rapids Income Tax Return Filing

Dear Contractor:

According to the City of Big Rapids Income Tax Ordinance Rules and Regulations, all employers (including general contractors and subcontractors) in Big Rapids having one or more employees and all employers outside of Big Rapids who conduct business in Big Rapids, are required to withhold tax from employees and file a tax return.

In order to be in compliance with the City's Income Tax Ordinance, please provide a list of all subcontractors (including company name, mailing addresses, and phone number) doing business for the project referenced above with contracts equal to or above \$25,000.

As an employer, if you are currently withholding, please notify this office to verify the FEIN and the Name (Doing Business As) which you are reporting under. If you are not currently withholding, please complete and return the Employer Registration Form on the following page.

The City of Big Rapids withholding instructions, withholding coupons, and income tax returns are available on the City of Big Rapids website (www.cityofbr.org) or may be picked up in the Income Tax Office, located in the City of Big Rapids City Hall.

For your convenience the following page includes **the Employer Registration Form that must be completed and filed with this Bid Proposal Form for you to be considered for the bid.**

If you have any questions, please feel free to call me at (231) 592-4003.

Sincerely,

Paula Weipert
Income Tax Administrator
pweipert@cityofbr.org

CITY OF BIG RAPIDS EMPLOYER REGISTRATION

IF YOU SUBMIT CITY OF BIG RAPIDS INCOME TAX WITHHOLDING YOU MUST COMPLETELY FILL THIS REGISTRATION FORM OUT

BUSINESS NAME:

FEIN/SSN:

DBA NAME (IF DIFFERENT FROM ABOVE):

NAME & FEIN/SSN INCOME TAX RETURN IS FILED UNDER:

MAILING ADDRESS:

LOCAL ADDRESS (IF APPLICABLE):

TELEPHONE NUMBER:

PRINCIPAL BUSINESS ACTIVITY:

TYPE OF ORGANIZATION (PLEASE CIRCLE):

SOLE PROPRIETORSHIP
(FILES SCHEDULE C)

PARTNERSHIP
(FILES FORM 1065)

CORPORATION
(FILES FORM 1120)

NON-PROFIT
(DOES NOT FILE)

NAME & SSN OF OWNER:

(OR PARTNERS IF INCOME IS CLAIMED ON INDIVIDUAL RETURN)

DATE BUSINESS WAS ACQUIRED:

WAS THE BUSINESS PREVIOUSLY OPERATED BY ANOTHER EMPLOYER?

YES

NO

PREVIOUS OWNER NAME AND FEIN/SSN (IF KNOWN):

SIGNATURE:

TITLE:

DATE:

COMPLETE THIS SECTION ONLY IF YOU ARE SUBJECT TO CITY OF BIG RAPIDS WITHHOLDING

BUSINESS WITHHOLDING NAME AND FEIN:

TAXABLE YEAR:

NUMBER OF EMPLOYEES:

DATE FIRST WAGES PAID THAT ARE SUBJECT TO BIG RAIDS WITHHOLDING:

RETURN TO: CITY OF BIG RAPIDS, INCOME TAX OFFICE, 226 NORTH MICHIGAN AVE, BIG RAPIDS, MI 49307

EQUAL EMPLOYMENT OPPORTUNITY STATEMENT

Contractor hereby agrees to abide by the following requirements for affirmative action with respect to the work to be performed under this Contract:

1. Contractor shall not discriminate against any employee or applicant for employment because of race, religion, creed, color, national origin or sex and will take affirmative action to prevent such discrimination. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, transfer, recruitment advertising, layoff, termination, rates of pay, or other forms of compensation, and selection for training, including apprenticeship.
2. In soliciting or advertising for employees placed by or on behalf of the Contractor, Contractor shall state that all qualified applicants will receive consideration for employment without regard to race, creed, color, national origin or sex. For this purpose, it shall suffice to place the words "An Equal Opportunity Employer" in a predominant place at the office of said Contractor.
3. Contractor shall send notice of the City's policy regarding affirmative action to each labor union or representative of workers with which the Contractor has any agreement, contract or other understanding.
4. Contractor shall furnish information and reports as requested by the City in accordance with this policy. Contractor shall provide access to his employment books, records and accounts to any duly authorized representative of the City in order to allow such representative to ascertain whether or not this policy is being complied with by the Contractor.

The undersigned has examined the requirements herein and is prepared to perform all work in strict accordance with the stipulations contained in the EQUAL EMPLOYMENT OPPORTUNITY STATEMENT.

Name of Company _____

Address _____

City, State, Zip _____

Telephone _____

Authorized Signature: _____

Title: _____

Date: _____

SECTION 00 55 00

NOTICE TO PROCEED
(on ENGINEER's letterhead)

Dated _____

Owner: _____ Owner's Project No.: _____

Engineer: _____ Engineer's Project No.: _____

Contractor: _____ Contractor's Project No.: _____

Project: _____

Contract Name: _____

OWNER's Contract No. _____ ENGINEER's Project No. _____

On behalf of [Owner], you are hereby notified that the Contract Times under the above Contract will commence to run on _____ pursuant to Paragraph 4.01 of the General Conditions.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement: ***Note to user: select one of the two below paragraphs, fill in the blanks and modify to be consistent with the Contract Times section of the Agreement. ***

The date by which Substantial Completion must be achieved is [date for Substantial Completion, from Agreement], and the date by which readiness for final payment must be achieved is [date for readiness, from Agreement].

[or]

The number of days to achieve Substantial Completion is [number of days, from Agreement] from the date stated above for the commencement of the Contract Times, resulting in a date for Substantial Completion of [date, calculated from commencement date above]; and the number of days to achieve readiness for final payment is [number of days, from Agreement] from the commencement date of the Contract Times, resulting in a date for readiness for final payment of [date, calculated from commencement date above].

Before starting any Work at the Site, you must comply with the following:

[Note any access limitations, security procedures, or other restrictions]

Sincerely,
Fleis & VandenBrink Engineering, Inc.

By: _____
Signature

Title

cc: [Owner]

END OF SECTION

SECTION 00 61 13

PERFORMANCE BOND

<p>Contractor</p> <p>Name: [Full formal name of Contractor]</p> <p>Address (<i>principal place of business</i>): [Address of Contractor's principal place of business]</p>	<p>Surety</p> <p>Name: [Full formal name of Surety]</p> <p>Address (<i>principal place of business</i>): [Address of Surety's principal place of business]</p>
<p>Owner</p> <p>Name: [Full formal name of Owner]</p> <p>Mailing address (<i>principal place of business</i>): [Address of Owner's principal place of business]</p>	<p>Contract</p> <p>Description (<i>name and location</i>): [Owner's project/contract name, and location of the project]</p> <p>Contract Price: [Amount from Contract]</p> <p>Effective Date of Contract: [Date from Contract]</p>
<p>Bond</p> <p>Bond Amount: [Amount]</p> <p>Date of Bond: [Date] <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i></p> <p>Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 16</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.</p>	
Contractor as Principal	Surety
_____ <i>(Full formal name of Contractor)</i>	_____ <i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

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 will 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 may 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 will 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 does 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 does 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 will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will 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 will not be reduced or set off on account of any such unrelated obligations. No right of action will 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 must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must 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 will be applicable.
12. Notice to the Surety, the Owner, or the Contractor must 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 will be deemed deleted therefrom and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will 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 will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

16. Modifications to this Bond are as follows: **[Describe modification or enter “None”]**

SECTION 00 61 14

PAYMENT BOND

<p>Contractor</p> <p>Name: [Full formal name of Contractor]</p> <p>Address <i>(principal place of business)</i>: [Address of Contractor's principal place of business]</p>	<p>Surety</p> <p>Name: [Full formal name of Surety]</p> <p>Address <i>(principal place of business)</i>: [Address of Surety's principal place of business]</p>
<p>Owner</p> <p>Name: [Full formal name of Owner]</p> <p>Mailing address <i>(principal place of business)</i>: [Address of Owner's principal place of business]</p>	<p>Contract</p> <p>Description <i>(name and location)</i>: [Owner's project/contract name, and location of the project]</p> <p>Contract Price: [Amount, from Contract]</p> <p>Effective Date of Contract: [Date, from Contract]</p>
<p>Bond</p> <p>Bond Amount: [Amount]</p> <p>Date of Bond: [Date]</p> <p><i>(Date of Bond cannot be earlier than Effective Date of Contract)</i></p> <p>Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 18</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.</p>	
Contractor as Principal	Surety
<p>_____</p> <p><i>(Full formal name of Contractor)</i></p>	<p>_____</p> <p><i>(Full formal name of Surety) (corporate seal)</i></p>
<p>By: _____</p> <p style="text-align: center;"><i>(Signature)</i></p>	<p>By: _____</p> <p style="text-align: center;"><i>(Signature)(Attach Power of Attorney)</i></p>
<p>Name: _____</p> <p style="text-align: center;"><i>(Printed or typed)</i></p>	<p>Name: _____</p> <p style="text-align: center;"><i>(Printed or typed)</i></p>
<p>Title: _____</p>	<p>Title: _____</p>
<p>Attest: _____</p> <p style="text-align: center;"><i>(Signature)</i></p>	<p>Attest: _____</p> <p style="text-align: center;"><i>(Signature)</i></p>
<p>Name: _____</p> <p style="text-align: center;"><i>(Printed or typed)</i></p>	<p>Name: _____</p> <p style="text-align: center;"><i>(Printed or typed)</i></p>
<p>Title: _____</p>	<p>Title: _____</p>
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

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 will 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 will 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 will 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 will 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 will 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 will 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 satisfying 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 will 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 will be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will 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 will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will 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:
 - 16.1.1. The name of the Claimant;
 - 16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;
 - 16.1.3. 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;
 - 16.1.4. A brief description of the labor, materials, or equipment furnished;

- 16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - 16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 16.1.7. The total amount of previous payments received by the Claimant; and
 - 16.1.8. 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 is 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 will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
18. Modifications to this Bond are as follows: **[Describe modification or enter “None”]**

SECTION 00 62 67
PAYMENT APPLICATION FORM

PART 1 - GENERAL

Not Used.

PART 2 - PRODUCTS

Not Used.

PART 3 - SUMMARY

3.01 SCHEDULES:

- A. Attached are the following forms:
 - 1. Pay Application Form; EDCDC No. C-620, 2018 Edition

END OF SECTION

Contractor's Application for Payment

Owner: _____	Owner's Project No.: _____
Engineer: _____	Engineer's Project No.: _____
Contractor: _____	Contractor's Project No.: _____
Project: _____	
Contract: _____	
Application No.: _____	Application Date: _____
Application Period: From _____	to _____

1. Original Contract Price	\$
2. Net change by Change Orders	\$
3. Current Contract Price (Line 1 + Line 2)	\$
4. Total Work completed and materials stored to date (Sum of Column G Lump Sum Total and Column J Unit Price Total)	\$
5. Retainage	
a. _____ X \$ Work Completed	\$
b. _____ X \$ Stored Materials	\$
c. Total Retainage (Line 5.a + Line 5.b)	\$
6. Amount eligible to date (Line 4 - Line 5.c)	\$
7. Less previous payments (Line 6 from prior application)	
8. Amount due this application	\$
9. Balance to finish, including retainage (Line 3 - Line 4)	\$

Contractor's Certification

The undersigned Contractor certifies, to the best of its knowledge, the following:

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

Contractor: _____

Signature: _____ **Date:** _____

<p>Recommended by Engineer</p> <p>By: _____</p> <p>Title: _____</p> <p>Date: _____</p>	<p>Approved by Owner</p> <p>By: _____</p> <p>Title: _____</p> <p>Date: _____</p>
<p>Approved by Funding Agency</p> <p>By: _____</p> <p>Title: _____</p> <p>Date: _____</p>	<p>By: _____</p> <p>Title: _____</p> <p>Date: _____</p>

Progress Estimate - Lump Sum Work					Contractor's Application for Payment				
Owner:					Owner's Project No.:				
Engineer:					Engineer's Project No.:				
Contractor:					Contractor's Project No.:				
Project:									
Contract:									
Application		Application Period:		From	to	Application Date:			
A	B	C	D	E	F	G	H	I	
Item No.	Description	Scheduled Value (\$)	Work Completed		Materials	Work	% of	Balance to	
			(D + E) From	This Period	Currently	Completed	Scheduled	Finish (C - G)	
Original Contract									
Original Contract Totals									
Change Orders									
Change Order Totals									
Original Contract and Change Orders									
Project Totals									

Progress Estimate - Unit Price							Contractor's Application for				
Owner:								Owner's Project			
Engineer:								Engineer's Project			
Contractor								Contractor's			
Project:											
Contract:											
Applicatio		Application	From		to					Application Date:	
A	B	C	D	E	F	G	H	I	J	K	L
Bid Item	Description	Contract Information				Work Completed		Materials Currently	Work Complete	% of Valu	Balance to Finish (F -
		Item	Units	Unit	Value of	Estimated	Value of				
Original Contract											
Original Contract Totals					\$		\$	\$	\$		\$
Change Orders											
Change Order Totals					\$		\$	\$	\$		\$
Original Contract and Change Orders											
Project Totals					\$		\$	\$	\$		\$

Stored Materials Summary	Contractor's Application for Payment
---------------------------------	---

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

Application No.:		Application Period:	From		to		Application Date:	
------------------	--	---------------------	------	--	----	--	-------------------	--

A	B	C	D	E	F	G	H	I	J	K	L	M
Item No. (Lump Sum Tab) or Bid Item No. (Unit Price Tab)	Supplier Invoice No.	Submittal No. (with Specification Section No.)	Description of Materials or Equipment Stored	Storage Location	Application No. When Materials Placed in Storage	Materials Stored			Incorporated in Work			Materials Remaining in Storage (I-L) (\$)
						Previous Amount Stored (\$)	Amount Stored this Period (\$)	Amount Stored to Date (G+H) (\$)	Amount Previously Incorporated in the Work (\$)	Amount Incorporated in the Work this Period (\$)	Total Amount Incorporated in the Work (J+K) (\$)	
Totals						\$	\$	\$	\$	\$	\$	\$

SECTION 00 72 00
GENERAL CONDITIONS

EJCDC NO. C-700 (2018 EDITION)
2 TITLE PAGES, TABLE OF CONTENTS PAGES 1 TO 5, AND PAGES 1 THROUGH 70

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By



Endorsed By



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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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 document prepared by Contractor, in a form acceptable to Engineer, to request 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; 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; 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.
- 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.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. 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), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations 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 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. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
 21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *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.
24. *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.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *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.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *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.
30. *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.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *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.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *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.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals.
36. *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.
37. *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.
38. *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 or areas furnished by Owner which are designated for the use of Contractor.
39. *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.
40. *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.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers’ instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *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 of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, 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.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *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.
50. *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 Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* 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:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - 1. does not conform to the Contract Documents;
 - 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - 3. 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 Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
 - 1. The word “furnish,” when used in connection with services, materials, or equipment, means 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, means 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, means 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. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. 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 Performance and Payment Bonds; Evidence of Insurance*

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), 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 signed 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 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 *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 the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will 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.
 - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents 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 Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document 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 versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will 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.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will 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.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. 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.

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, means 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, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer 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 or Engineer 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 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 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 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 in writing 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.

- 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 notify Owner and Contractor in writing 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 versions, 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 precludes 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 30th 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 60th day after the day of Bid opening or the 30th 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 may 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 must 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 will 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 Contract Price or 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. Such an adjustment will 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 third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price 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. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. 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, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses 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.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing 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, or to improvements, structures, utilities, or similar facilities located at such adjacent lands 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 7.13, 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 in a court of competent jurisdiction; 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 will 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 of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

- B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

- C. *Reliance by Contractor on Technical Data*: 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 Paragraph 1.01.A.46.b.

- D. *Limitations of Other Data and Documents*: 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;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
4. 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:
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;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 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 whether it is necessary for Owner to obtain 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; 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. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, 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 subject to the provisions of Paragraphs 4.05.D and 4.05.E.
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;
 - 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 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, then any such adjustment will 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, 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.
- F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. 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 on the Drawings, or was not shown or indicated on the Drawings 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), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; 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
 4. 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. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, 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. 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;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. 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, then any such adjustment will 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, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
 4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

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

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; 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 on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. 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;
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, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, 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. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- 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, 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.I obligates 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 obligates 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 Contractor's obligations under the Contract. These bonds must 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 terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, 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 must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. 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.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

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. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages 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, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages 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, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
- F. 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, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. 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.
- H. Contractor shall require:
 - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- I. If either party does not purchase or maintain 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.
- J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
- K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) 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 will be adjusted accordingly.

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, 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 and Engineer.

6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 - 1. include at least the specific coverages required;
 - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, 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;
 - 4. apply with respect to the performance of the Work, whether such performance is 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; and
 - 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds:* The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
 - 1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 - 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 - 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other 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 Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- 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 advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. 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 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer 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.

1. 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, risks, 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 individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater 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.
 2. None of the above waivers extends 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. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, 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, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. 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 all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights 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 insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract 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 fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 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 6.04 shall maintain such proceeds in a segregated account, and 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, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *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.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *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 maintain good discipline and order at the Site.

- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. 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 will 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.

7.04 *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 must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will 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 must 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.

7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, 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 equipment or material, or items from other proposed Suppliers, under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) 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) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item 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 will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 Substitutes

- A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material 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 equipment or material under the circumstances described below. To the extent possible such requests must 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 equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.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 equipment or material that Contractor seeks to furnish or use. The application:
 - a. will 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 the item specified; and
 - 3) be suited to the same use as the item 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 the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will 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 will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers 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 or Supplier 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 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. 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 or Suppliers 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 or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, 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 or Supplier, whether initially or as a replacement, will 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 solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *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 an 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 will be disclosed 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.

7.09 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. 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.

7.10 *Taxes*

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

7.11 *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. 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 is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written 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 written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *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.

7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. 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.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.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).
- E. 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.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that 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.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. 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.

- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will 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.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as 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 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 by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) 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
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
- 2. Each Shop Drawing or Sample must 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 Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
1. *Shop Drawings*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings must 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.C.
 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.C.
 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. *Engineer's Review of Shop Drawings and Samples*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. 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, comply with the requirements of 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 will 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 or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 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, will 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 or Sample will 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.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

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

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
 2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

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 is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
1. abuse, or improper modification, 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.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
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. The end of the correction period established in Paragraph 15.08;
 8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.
- E. 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 will 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 losses, damages, costs, and judgments (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 from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage 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 will 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.

7.19 *Delegation of Professional Design Services*

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

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 third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. 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.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, 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.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

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 for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, 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. 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 will 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, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will 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 or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

- 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.
 - 1. 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 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 8.03.B.
 - 2. 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 Contractor.
- C. 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 will 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 (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 10.07. 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 *Resident 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 the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *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.

10.06 *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.

10.07 *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, will 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 Contractor under 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 10.07 also apply to the Resident Project Representative, if any.

10.08 *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 of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that 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, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in 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 11.05, (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 that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

- A. 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 11.07 regarding change of Contract Price.

- B. If Owner has issued a Work Change Directive and:
 - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

- A. 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.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *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. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work 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 must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates 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.

11.06 *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.C.2.

11.07 *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 must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must 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);
 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 11.07.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 11.07.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit will 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 will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 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 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.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 5 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 will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will 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 of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *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 must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

- A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
2. *Supporting Data:* 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.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must 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.

3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must 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.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *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 in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *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 are subject 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;
 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; and
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- 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 rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, 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 will 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 will 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 will 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 will 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 will 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 will 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 will be incorporated in a Change Order or other written document 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. When needed 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 will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will 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 in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, 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, will 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 accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will 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, which 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 will 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 or retained for services specifically related to the Work.
 5. Other costs consisting of 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, 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.

- 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
- 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
- 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed 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 builder's risk or other property insurance established in accordance with Paragraph 6.04), 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 include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will 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 does not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general 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. The cost of purchasing, renting, or furnishing small tools and hand tools.
- 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 5. 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.
- 6. Expenses incurred in preparing and advancing Claims.
- 7. 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*

- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
- 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. *Documentation and Audit:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

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 for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance:* Contractor agrees that an Owner's 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 for Work covered by allowances, and the Contract Price will 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, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

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 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 with such procedures and programs 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 will 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 will 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 will 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 written 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 will 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 additional 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, 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 will 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 defective Work as required by Engineer, then Owner may, after 7 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 for 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.
 - 2. 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 must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) 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.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. 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;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; 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 based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from 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 has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other 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; or
 - l. Other items entitle 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 will 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 will be treated as an amount due as determined by Paragraph 15.01.D.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 7 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 will 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 7 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 15.03.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 6.04 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 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must 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 duly pending Change Proposals and Claims; 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 Final Application and Recommendation of Payment:* 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 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will 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. 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. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *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 and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

- 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 as a Claim, 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 Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect 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 adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, 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 from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, 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 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). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. 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.
- E. 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.

- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to 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 directly attributable to any such suspension. Any Change Proposal seeking such adjustments must 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) 10 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) written 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 7 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 will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

- A. Upon 7 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 for any loss of anticipated profits or revenue, post-termination overhead costs, 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 7 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, 7 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, pursuant to Article 12; and
 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise 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;
 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 requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

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 will not constitute a waiver of that provision, nor will 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 of the Contract or 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 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party 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.

18.09 *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.

18.10 *Headings*

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

SECTION 00 73 00

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement EJCDC® C 700, Standard General Conditions of the Construction Contract (2018). The General Conditions remain in full force and effect except as amended.

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

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, "Paragraph SC 4.05."

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

SC-1.01 Add the following new paragraph immediately after Paragraph 1.01.A.50:

51. Bulletin - A document outlining possible changes to the Contract Documents which is issued by Engineer on behalf of Owner requesting add or deduct costs from Contractor.

ARTICLE 2 – PRELIMINARY MATTERS

2.02 *Copies of Documents:*

SC-2.02 Delete Paragraph 2.02.A. in its entirety and insert the following new paragraph in its place:

- A. Owner shall furnish to Contractor one copy of conformed Contract Documents incorporating all addenda and any amendments negotiated prior to the Effective Date of the Contract (including one fully signed counterpart of the Agreement) in electronic portable document format (PDF). Printed copies of the conformed Contract Documents will be furnished upon request at the cost of reproduction.

2.06 *Electronic Transmittals*

SC-2.06 Delete Paragraphs 2.06.B and 2.06.C in their entirety and insert the following in their place:

- B. Electronic Documents Protocol: The parties shall conform to the following provisions in Paragraphs 2.06.B and 2.06.C, together referred to as the Electronic Documents Protocol ("EDP" or "Protocol") for exchange of electronic transmittals.

1. Basic Requirements

- a. To the fullest extent practical, the parties agree to and will transmit and accept Electronic Documents in an electronic or digital format using the procedures described in this Protocol. Use of the Electronic Documents and any information contained therein is subject to the requirements of this Protocol and other provisions of the Contract.

- b. The contents of the information in any Electronic Document will be the responsibility of the transmitting party.
- c. Electronic Documents as exchanged by this Protocol may be used in the same manner as the printed versions of the same documents that are exchanged using non-electronic format and methods, subject to the same governing requirements, limitations, and restrictions, set forth in the Contract Documents.
- d. Except as otherwise explicitly stated herein, the terms of this Protocol will be incorporated into any other agreement or subcontract between a party and any third party for any portion of the Work on the Project, or any Project-related services, where that third party is, either directly or indirectly, required to exchange Electronic Documents with a party or with Engineer. Nothing herein will modify the requirements of the Contract regarding communications between and among the parties and their subcontractors and consultants.
- e. When transmitting Electronic Documents, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the receiving party's use of software application packages, operating systems, or computer hardware differing from those established in this Protocol.
- f. Nothing herein negates any obligation 1) in the Contract to create, provide, or maintain an original printed record version of Drawings and Specifications, signed and sealed according to applicable Laws and Regulations; 2) to comply with any applicable Law or Regulation governing the signing and sealing of design documents or the signing and electronic transmission of any other documents; or 3) to comply with the notice requirements of Paragraph 18.01 of the General Conditions.

2. System Infrastructure for Electronic Document Exchange

- a. Each party will provide hardware, operating system(s) software, internet, e-mail, and large file transfer functions ("System Infrastructure") at its own cost and sufficient for complying with the EDP requirements. With the exception of minimum standards set forth in this EDP, and any explicit system requirements specified by attachment to this EDP, it is the obligation of each party to determine, for itself, its own System Infrastructure.
 - 1) The maximum size of an email attachment for exchange of Electronic Documents under this EDP is 10 MB. Attachments larger than that may be exchanged using large file transfer functions or physical media.
 - 2) Each Party assumes full and complete responsibility for any and all of its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, or otherwise enabling its System Infrastructure, including operating systems and software, for use with respect to this EDP.
- b. Each party is responsible for its own system operations, security, back-up, archiving, audits, printing resources, and other Information Technology ("IT") for maintaining operations of its System Infrastructure during the Project, including coordination with the party's individual(s) or entity responsible for managing its System Infrastructure and capable of addressing routine communications and other IT issues affecting the exchange of Electronic Documents.

- c. Each party will operate and maintain industry-standard, industry-accepted, ISO-standard, commercial-grade security software and systems that are intended to protect the other party from: software viruses and other malicious software like worms, trojans, adware; data breaches; loss of confidentiality; and other threats in the transmission to or storage of information from the other parties, including transmission of Electronic Documents by physical media such as CD/DVD/flash drive/hard drive. To the extent that a party maintains and operates such security software and systems, it shall not be liable to the other party for any breach of system security.
- d. In the case of disputes, conflicts, or modifications to the EDP required to address issues affecting System Infrastructure, the parties shall cooperatively resolve the issues; but, failing resolution, the Owner is authorized to make and require reasonable and necessary changes to the EDP to effectuate its original intent.
- e. Each party is responsible for its own back-up and archive of documents sent and received during the term of the contract under this EDP, each party remains solely responsible for its own post-Project back-up and archive of Project documents after the term of the Contract, for as long as required by the Contract and as each party deems necessary for its own purposes.
- f. If a receiving party receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving party will advise the sending party of the incomplete transmission.
- g. The parties will bring any non-conforming Electronic Documents into compliance with the EDP. The parties will attempt to complete a successful transmission of the Electronic Document or use an alternative delivery method to complete the communication.

C. Software Requirements for Electronic Document Exchange; Limitations

- 1. Each party will acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party (and if relevant from third parties), using the software formats required in this section of the EDP.
 - a. Prior to using any updated version of the software required in this section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or adjust its transmission to comply with this EDP.
- 2. The parties agree not to intentionally edit, reverse engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes any Electronic Document or information contained therein that was transmitted in a software data format, including Portable Document Format (PDF), intended by sender not to be modified, unless the receiving party obtains the permission of the sending party or is citing or quoting excerpts of the Electronic Document for Project purposes.
- 3. Software and data formats for exchange of Electronic Documents will conform to the requirements below, including software versions, if listed.

Item	Electronic Documents	Transmittal Means	Data Format	Note (1)
a.1	General communications, transmittal covers, meeting notices and responses to general information requests for which there is no specific prescribed form.	Email	Email	
a.2	Meeting agendas, meeting minutes, RFI's and responses to RFI's, and Contract forms.	Email w/ Attachment	PDF	(2)
a.3	Contractors Submittals (Shop Drawings, "or equal" requests, substitution requests, documentation accompanying Sample submittals and other submittals) to Owner and Engineer, and Owner's and Engineer's responses to Contractor's Submittals, Shop Drawings, correspondence, and Applications for Payment.	Email w/ Attachment	PDF	
a.4	Correspondence; milestone and final version Submittals of reports, layouts, Drawings, maps, calculations and spreadsheets, Specifications, Drawings and other Submittals from Contractor to Owner or Engineer and for responses from Engineer and Owner to Contractor regarding Submittals.	Email w/ Attachment or LFE	PDF	
a.5	Layouts and drawings to be submitted to Owner for use.	Email w/ Attachment or LFE	DWG	
a.6	Spreadsheets and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	EXC	
Notes				
(1)	All exchanges and uses of transmitted data are subject to the appropriate provisions of Contract Documents.			
(2)	Transmittal of written notices is governed by Paragraph 18.01 of the General Conditions.			
Key				
Email	Standard Email formats (.htm, .rtf, or .txt). Do not use stationery formatting or other features that impair legibility of content on screen or in printed copies			
LFE	Agreed upon Large File Exchange method (FTP, CD, DVD, hard drive)			
PDF	Portable Document Format			
DWG	Autodesk® Civil 3D .dwg format Version 18			
EXC	Microsoft® Excel .xls or .xml format			

SC-2.06 Supplement Paragraph 2.06 of the General Conditions by adding the following paragraph:

D. Requests by Contractor for Electronic Documents in Other Formats

1. Release of any Electronic Document versions of the Project documents in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be at the sole discretion of the Owner.
2. To extent determined by Owner, in its sole discretion, to be prudent and necessary, release of Electronic Documents versions of Project documents and other Project information requested by Contractor ("Request") in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be

subject to the provisions of the Owner's response to the Request, and to the following conditions to which Contractor agrees:

- a. The content included in the Electronic Documents created by Engineer and covered by the Request was prepared by Engineer as an internal working document for Engineer's purposes solely, and is being provided to Contractor on an "AS IS" basis without any warranties of any kind, including, but not limited to any implied warranties of fitness for any purpose. As such, Contractor is advised and acknowledges that the content may not be suitable for Contractor's application, or may require substantial modification and independent verification by Contractor. The content may include limited resolution of models, not-to-scale schematic representations and symbols, use of notes to convey design concepts in lieu of accurate graphics, approximations, graphical simplifications, undocumented intermediate revisions, and other devices that may affect subsequent reuse.
 - b. Electronic Documents containing text, graphics, metadata, or other types of data that are provided by Engineer to Contractor under the request are only for convenience of Contractor. Any conclusion or information obtained or derived from such data will be at the Contractor's sole risk and the Contractor waives any claims against Engineer or Owner arising from use of data in Electronic Documents covered by the Request.
 - c. Contractor shall indemnify and hold harmless Owner and Engineer and their subconsultants from all claims, damages, losses, and expenses, including attorneys' fees and defense costs arising out of or resulting from Contractor's use, adaptation, or distribution of any Electronic Documents provided under the Request.
 - d. Contractor agrees not to sell, copy, transfer, forward, give away or otherwise distribute this information (in source or modified file format) to any third party without the direct written authorization of Engineer, unless such distribution is specifically identified in the Request and is limited to Contractor's subcontractors. Contractor warrants that subsequent use by Contractor's subcontractors complies with all terms of the Contract Documents and Owner's response to Request.
3. In the event that Owner elects to provide or directs the Engineer to provide to Contractor any Contractor-requested Electronic Document versions of Project information that is not explicitly identified in the Contract Documents as being available to Contractor, the Owner shall be reimbursed by Contractor on an hourly basis at Engineer's standard hourly rates for any engineering costs necessary to create or otherwise prepare the data in a manner deemed appropriate by Engineer.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

No Supplementary Conditions in this Article.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

SC-4.01 Delete Paragraph 4.01.A in its entirety and insert the following:

- A. The Contract Times will commence to run on the date indicated in the Notice to Proceed.

4.05 *Delays in Contractor's Progress*

SC-4.05 Amend Paragraph 4.05.C by adding the following subparagraphs:

5. Weather-Related Delays

- a. If "abnormal weather conditions" as set forth in Paragraph 4.05.C.2 of the General Conditions are the basis for a request for an equitable adjustment in the Contract Times, such request must be documented by data substantiating each of the following: 1) that weather conditions were abnormal for the period of time in which the delay occurred, 2) that such weather conditions could not have been reasonably anticipated, and 3) that such weather conditions had an adverse effect on the Work as scheduled. Extreme or unusual weather that is typical for a given region, elevation, or season should not be considered abnormal weather conditions. Requests for time extension due to abnormal weather conditions will be submitted to the Engineer within five days of the end of the abnormal weather condition event. It is the responsibility of the Contractor to provide the information listed in SC 4.05.C.5b.
- b. Should the Contractor wish to claim a delay due to adverse weather, it is the Contractor's responsibility to provide adequate documentation for the claim.

ARTICLE 5 – SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS

5.03 Subsurface and Physical Conditions

Report Title	Date of Report	Technical Data
None	N/A	N/A

Drawings Title	Date of Drawings	Technical Data
None	N/A	N/A

SC-5.03 Add the following new paragraphs immediately after Paragraph 5.03.D:

The following table lists the reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data, and specifically identifies the Technical Data in the report upon which Contractor may rely

Report Title	Date of Report	Technical Data
None	N/A	N/A

The following table lists the drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data, and specifically identifies the Technical Data upon which Contractor may rely:

Drawings Title	Date of Drawings	Technical Data
None	N/A	N/A

5.06 *Hazardous Environmental Conditions*

SC-5.06 Add the following new paragraphs immediately after Paragraph 5.06.A.3:

The following table lists the reports known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and the Technical Data (if any) upon which Contractor may rely:

Report Title	Date of Report	Technical Data
None	N/A	N/A

The following table lists the drawings known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and Technical Data (if any) contained in such Drawings upon which Contractor may rely: [If there are no such reports, so indicate "none" in the table.]

Drawings Title	Date of Drawings	Technical Data
None	N/A	N/A

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

SC-6.01 Add the following paragraphs immediately after Paragraph 6.01.A:

Required Performance Bond Form: The performance bond that Contractor furnishes will be in the form of EJCDC® C 610, Performance Bond (2018 edition).

Required Payment Bond Form: The payment bond that Contractor furnishes will be in the form of EJCDC® C 615, Payment Bond (2018 edition).

6.03 *Contractor's Insurance*

SC-6.03 Supplement Paragraph 6.03 with the following provisions after Paragraph 6.03.C:

D. Other Additional Insureds: As a supplement to the provisions of Paragraph 6.03.C of the General Conditions, the commercial general liability, automobile liability, umbrella or excess, and pollution liability must include as additional insureds (in addition to Owner and Engineer) the following: **None**.

Waiver of subrogation shall apply to additional insured.

E. *Workers' Compensation and Employer's Liability*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions).

Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory

Workers' Compensation and Related Policies	Policy limits of not less than:
Employer's Liability	
Each accident	\$500,000
Each employee	\$500,000
Policy limit	\$500,000

- F. *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 claims for:
1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,
 2. damages insured by reasonably available personal injury liability coverage, and
 3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- G. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage.
 - a. Such insurance must 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, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
 4. Underground, explosion, and collapse coverage.
 5. Personal injury coverage.
 6. 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). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.
 7. 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.
- H. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

1. Any modification of the standard definition of “insured contract” (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
2. Any exclusion for water intrusion or water damage.
3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
4. Any exclusion of coverage relating to earth subsidence or movement.
5. Any exclusion for the insured’s vicarious liability, strict liability, or statutory liability (other than worker’s compensation).
6. Any limitation or exclusion based on the nature of Contractor’s work.
7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

I. *Commercial General Liability—Minimum Policy Limits*

Commercial General Liability	Policy limits of not less than:
General Aggregate	\$2,000,000
Products—Completed Operations Aggregate	\$2,000,000
Personal and Advertising Injury	\$1,000,000
Bodily Injury and Property Damage—Each Occurrence	\$1,000,000

- J. *Automobile Liability:* Contractor shall purchase and maintain automobile liability insurance 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 must be written on an occurrence basis.

Automobile Liability	Policy limits of not less than:
Combined Single Limit (Bodily Injury & Property Damage)	\$1,000,000

- K. *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. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	Policy limits of not less than:
Each Occurrence	\$1,000,000
General Aggregate	\$1,000,000

- L. *Contractor’s Pollution Liability Insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage, including cleanup costs, as a result of pollution conditions arising from Contractor’s operations and completed operations. This insurance must be maintained for no less than three years after final completion.

Contractor's Pollution Liability	Policy limits of not less than:
Each Occurrence/Claim	\$1,000,000
General Aggregate	\$1,000,000

6.04 *Builders Risk and Other Property Insurance*

SC-6.04 Delete Paragraph 6.04 in its entirety and insert the following in its place:

6.04 Not used.

6.07 *Owner's Protective Liability Insurance*

SC-6.07 Add the following new paragraph immediately after Paragraph 6.06:

6.07 CONTRACTOR shall purchase OWNER's Protective Liability Insurance written in the name of the OWNER in the amount of One Million Dollars (\$1,000,000), Each Occurrence Limit and \$2,000,000 Aggregate Limit. Entities and persons identified as additional insureds in SC 6.03.D, except OWNER, shall be named as additional insureds in OWNER's Protective Liability Insurance.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.03 *Labor; Working Hours*

SC-7.03 Delete Paragraph 7.03.C in its entirety and insert the following in its place:

C. 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 Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with the Owner's written consent.

1. Regular working hours will be 7:00 a.m. through 7:00 p.m. Monday through Friday.

2. Owner's legal holidays are:

1. Owner's legal holidays are:

a. January 1st.

b. Memorial Day weekend from 5:00 p.m. the Friday before Memorial Day through 7:00 a.m. the Tuesday after Memorial Day.

c. July 4th holiday period from 5:00 p.m. Wednesday July 3rd, 2024 through 7:00 a.m. Monday July 8th, 2024.

d. Labor Day weekend from 5:00 p.m. the Friday before Labor Day through 7:00 a.m. the Tuesday after Labor Day.

e. Thanksgiving Day and the day after thanksgiving.

f. December 24th and 25th.

- D. Contractor shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work outside of regular working hours or during legal holidays. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, the Owner may impose a reasonable set-off against payments due under Article 15.

7.13 Safety and Protection

SC-7.13 Add the following new paragraph immediately after Paragraph 7.13.J:

- K. Contractor shall indemnify, defend and hold harmless Owner and Engineer from any liability, loss, cost, penalty, damage or expense, including attorney's fees, arising from any claim, damage, proceeding, citation, or work stoppage in any way connected with Contractor's performance of the Work and violation of any requirement of public authority or applicable Laws and Regulations, including state and federal OSHA.

ARTICLE 8 – OTHER WORK AT THE SITE

8.02 *Coordination*

No Supplementary Conditions in this Article.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

No Supplementary Conditions in this Article.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.03 *Resident Project Representative*

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.B:

- C. The Resident Project Representative (RPR) will be Engineer's representative at the Site. RPR's dealings in matters pertaining to the Work in general will be with Engineer and Contractor. RPR's dealings with Subcontractors will only be through or with the full knowledge or approval of Contractor. The RPR will:
 - 1. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings (but not including Contractor's safety meetings), and as appropriate prepare and circulate copies of minutes thereof.
 - 2. *Safety Compliance:* Comply with Site safety programs, as they apply to RPR, and if required to do so by such safety programs, receive safety training specifically related to RPR's own personal safety while at the Site.
 - 3. *Liaison*
 - a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

- c. Assist in obtaining from Owner additional details or information, when required for Contractor's proper execution of the Work.
- 4. *Review of Work; Defective Work*
 - a. Conduct on-Site observations of the Work to assist Engineer in determining, to the extent set forth in Paragraph 10.02, if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Observe whether any Work in place appears to be defective.
 - c. Observe whether any Work in place should be uncovered for observation, or requires special testing, inspection or approval.
- 5. *Inspections and Tests*
 - a. Observe Contractor-arranged inspections required by Laws and Regulations, including but not limited to those performed by public or other agencies having jurisdiction over the Work.
 - b. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Work.
- 6. *Payment Requests: Review Applications for Payment with Contractor*
- 7. *Completion*
 - a. Participate in Engineer's visits regarding Substantial Completion.
 - b. Assist in the preparation of a punch list of items to be completed or corrected.
 - c. Participate in Engineer's visit to the Site in the company of Owner and Contractor regarding completion of the Work, and prepare a final punch list of items to be completed or corrected by Contractor.
 - d. Observe whether items on the final punch list have been completed or corrected.
- D. The RPR will not:
 - 1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
 - 2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.
 - 3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.
 - 4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction.
 - 5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
 - 6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
 - 7. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 11 – CHANGES TO THE CONTRACT

No Supplementary Conditions in this Article.

ARTICLE 12 – CLAIMS

No Supplementary Conditions in this Article.

ARTICLE 13 – COST OF WORK; ALLOWANCES, UNIT PRICE WORK

13.01 Unit Price Work

E. Adjustments in Unit Price:

1. Owner reserves the right to add or delete work to the Contract using the unit prices bid. No adjustment in unit prices will be allowed.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

No Supplementary Conditions in this Article.

ARTICLE 15 – PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD

15.01 Progress Payments

SC-15.01 Delete Paragraph 15.01.D.1 in its entirety and insert the following in its place

1. 30 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.

15.03 Substantial Completion

SC-15.03 Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, will be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under this Article 15.

SC-15.03 Add the following Paragraph 15.03.G:

- G. All Work must be completed and ready for continuous use by the OWNER for the project to be considered Substantially Complete.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

No Supplementary Conditions in this Article.

ARTICLE 17 – FINAL RESOLUTIONS OF DISPUTES

17.01 Methods and Procedures

SC-17.01 Add the following new paragraphs immediately after Paragraph 17.01.

17.02 *Mediation*

- A. Before any claim, dispute or other matter between Owner and Contractor is submitted to arbitration or litigation, the Parties agree that they shall first negotiate in good faith utilizing the Chairperson of any Board or governing body and/or the President of the company in an effort to resolve the dispute(s). That negotiation shall take place within fifteen (15) days of notice of any dispute. The negotiation is a condition precedent to any continued dispute resolution proceedings. If the parties are unable to resolve the dispute through negotiation, within thirty (30) days thereafter, the parties shall mediate the matter before an experienced, professional mediator mutually agreeable to the parties. All offers, promises, conduct and statements, whether oral or written, made in the course of the negotiation by any of the Parties, their agents, employees, experts and attorneys shall be confidential, privileged and inadmissible for any purpose. Unless otherwise agreed, the mediation will occur at the location of the project and each party shall bear the costs of mediation equally. The mediation is a condition precedent to any continued dispute resolution proceedings. The mediation shall continue until an impasse is called by the appointed mediator. In the event that the attempt to resolve the matter through mediation fails then the matter may be submitted to arbitration.

17.03 *Arbitration*

- A. All matters subject to final resolution under this Article, and any related claims, shall be resolved by arbitration administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules (subject to the conditions and limitations of this Paragraph SC 17.02). Any controversy or claim in the amount of \$100,000 or less will be settled in accordance with the American Arbitration Association's supplemental rules for Fixed Time and Cost Construction Arbitration. This agreement to arbitrate will be specifically enforceable under the prevailing law of any court having jurisdiction.
- B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitration administrator, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in Article 17, or if no specified time is applicable, then within a reasonable time after the matter in question has arisen, and in no event will any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations.
- C. The arbitrator(s) must be licensed engineers, contractors, attorneys, or construction managers with fifteen (15) or more years of experience. Hearings will take place pursuant to the standard procedures of the Construction Arbitration Rules that contemplate in-person hearings. The arbitrators will have no authority to award punitive or other damages not measured by the prevailing party's actual damages. Any award in an arbitration initiated under this clause will be limited to monetary damages and include no injunction or direction to any party other than the direction to pay a monetary amount.
- D. The Arbitrators will have the authority to allocate the costs of the arbitration process among the parties, but will only have the authority to allocate attorneys' fees if a specific Law or Regulation or this Contract permits them to do so.
- E. The award of the arbitrators must be accompanied by a reasoned written opinion and a concise breakdown of the award. The written opinion will cite the Contract provisions deemed applicable and relied on in making the award.

- F. The parties agree that failure or refusal of a party to pay its required share of the deposits for arbitrator compensation or administrative charges will constitute a waiver by that party to present evidence or cross-examine witness. In such event, the other party shall be required to present evidence and legal argument as the arbitrator(s) may require for the making of an award. Such waiver will not allow for a default judgment against the non-paying party in the absence of evidence presented as provided for above.
- G. No arbitration arising out of or relating to the Contract will include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:
 - 1. the inclusion of such other individual or entity will allow complete relief to be afforded among those who are already parties to the arbitration
 - 2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration, and which will arise in such proceedings;
 - 3. such other individual or entity is subject to arbitration under a contract with either Owner or Contractor, or consents to being joined in the arbitration; and
 - 4. the consolidation or joinder is in compliance with the arbitration administrator's procedural rules.
- H. The award will be final and binding. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.
- I. Except as may be required by Laws or Regulations, neither party nor an arbitrator may disclose the existence, content, or results of any arbitration hereunder without the prior written consent of both parties, with the exception of any disclosure required by Laws and Regulations or the Contract or to the extent disclosure is necessary to enforce the award by attaching a true copy to pleadings. To the extent any disclosure is allowed pursuant to the exception, the disclosure must be strictly and narrowly limited to maintain confidentiality to the extent possible.

ARTICLE 18 – MISCELLANEOUS

- A. Contractor shall make sure all contractor and subcontractor personnel performing work onsite watch the MDNR's "60-Second Snakes: The Eastern Massasauga Rattlesnake (EMR)" video and will report any Eastern Massasauga Rattlesnake observations to the service within 24 hours.

END OF SECTION

SECTION 00 91 13

ADDENDUM

Addendum No. _____

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

NOTICE TO ALL PROSPECTIVE BIDDERS

BIDS DUE: _____ -- ISSUED TO ALL PLANHOLDERS OF RECORD

=====

This Addendum is a part of the Contract Documents and modifies the previously issued Bidding Documents. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may result in rejection of the Bid.

SPECIFICATION CHANGES

ITEM NO. 1:
 Section _____ [Title] _____
 [Paragraph] _____

 [Paragraph] _____

ITEM NO. 2:
 Section _____ [Title] _____
 [Paragraph] _____

DRAWING CHANGES

ITEM NO. 3:
 Sheet(s) _____:

ITEM NO. 4:
 Sheet(s) _____:

ATTACHMENTS:

END OF SECTION

SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY OF WORK:

The proposed project includes demolition and removal of an existing playground and construction of a new playground, splash pad, splash pad pump station including electrical, controls, and forcemain, landscaping, concrete sidewalks, concrete seat walls, a natural gas fired community fireplace, storm sewer, utility stubs for water, electricity, and splash pad drains, and HMA paving of two existing gravel parking areas and an existing non-motorized pathway.

The Contractor will be required to rough grade the splash pad to within 16" of final grade and install utilities to within 15 feet of the splash pad. The certified splash pad installer will provide and install all splash pad appurtenances including water features, electrical and controls, splash pad plumbing, and connections to the electric, water, and drain stubs provided by the general contractor. After the certified splash pad installer has completed installation of the splash pad appurtenances, the general contractor will install splash pad concrete and sidewalks according to plans and specs.

Natural gas service will be paid as an allowance for the Utility to install service to the proposed community fireplace and utility coordination by the Contractor.

Permitting:

- All proposed work will be located outside the limits of the floodplain and no cut, fill, or encroachments are proposed within the floodplain, therefore a Part 31 permit from the Michigan Department of Environment, Great Lakes, and Energy (EGLE) is not required.
- The Contractor will be required to obtain a Part 91 Soil Erosion and Sedimentation Control permit will be obtained from the Mecosta County Drain Commission prior to beginning construction activities.
- The Contractor is responsible for obtaining all local permits for construction including building, electrical, plumbing, or other local permits that may be applicable to the project.

Special agency requirements include the following:

- Wildlife safe materials will be used for erosion control and site restoration, and action personnel will watch the MDNR's "60-second snakes: The Eastern Massasauga Rattlesnake (EMR)" video, will review the EMR factsheet and will report any Eastern massasauga rattlesnake observations to the Service within 24 hours.

END OF SECTION

SECTION 01 22 00

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SUMMARY:

This Section includes, but is not necessarily limited to, descriptions of the method of measurement and basis of payment criteria applicable to the Work.

1.02 MEASUREMENT OF QUANTITIES:

A. Measurement devices:

1. Weigh scales:
 - a. Inspected, tested and certified.
2. Platform scales:
 - a. Of enough size and capacity to accommodate the conveying vehicle.
3. Metering devices:
 - a. Inspected, tested and certified.

B. Measurement by weight:

1. Concrete reinforcing steel rolled or formed steel or other metal shapes will be measured by handbook weights.
2. Welded assemblies will be measured by handbook weights.

C. Measurement by volume:

1. Measured by cubic dimension using mean length, width and height or thickness.

D. Measurement by area:

1. Measured by square dimension using mean length and width or radius.

E. Linear measurement:

1. Measured by linear dimension, at the item centerline.

1.03 MEASUREMENT AND PAYMENT SCHEDULE:

- A. The following schedule outlines the method of measurement and basis of payment to be used on the project. Requirements for materials and methods described under each item are included in the related specification SECTION.

Item 1. General Conditions, Bonds, and Insurance, Max 5%: Shall be paid for on a lump sum basis for the Contractor's costs to provide required bonds and insurances, mobilization and miscellaneous requirements stipulated in Contract Documents. This quantity shall not exceed five percent (5%) of the total contract amount.

- 50% will be paid on the first Application for Payment.
- 25% will be paid when 40%* of the project is complete.
- 25% will be paid when 80%* of the project is complete.

*Measured as the value of the Work completed relative to the current contract value not including the value of this item.

Item 2. Traffic Control: Shall be paid for on a lump sum basis complete, furnished, installed, maintained, moved, and removed, including minor traffic devices,

barricades, traffic regulator control, temporary construction signs, pavement marking, maintenance gravel and related work required to maintain traffic, to protect the work area in accordance with the plans and the *MDOT Michigan Manual of Uniform Traffic Control Devices* and to re-open the road to traffic.

- 30% will be paid when the full extent of the proposed traffic control devices are deployed.
- 35% will be paid when 40%* of the project is complete.
- 35% will be paid when 80%* of the project is complete.

*Measured as the value of the Work completed relative to the current contract value not including the value of this item.

Item 3. Soil Erosion Control: Shall be paid for on a lump sum basis complete, installed, maintained, moved, and removed. Payment includes Contractor obtaining SESC permit and furnishing copies to Owner and Engineer prior to commencement of construction activities.

- 60% will be paid when the full extent of the proposed soil erosion control devices are deployed.
- 20% will be paid when 40%* of the project is complete.
- 20% will be paid when 80%* of the project is complete.

*Measured as the value of the Work completed relative to the current contract value not including the value of this item.

Item 4. MDNR LWCF Sign: Shall be paid for on a lump sum basis complete, installed, maintained, moved, and removed. Payment includes providing all posts, hardware, materials, labor and equipment required to place funding sign where directed by Engineer. Funding sign will be provided by the Michigan Department of Natural Resources (MDNR).

Item 5. Site Grading and Excavation: Measured and paid for as a lump sum complete for all excavation, embankment, backfill and compaction required to construct the various improvements in the project in accordance with the grades, elevations and dimensions in the Drawings. Includes providing sand subbase for the splash pad. Playground area subbase will be paid for individually.

Item 6. Remove Wood Play Structure: Measured and paid for as a lump sum complete for removal and disposal of the equipment, fence, and trees as specified including any concrete bases.

Item 7. Sidewalk, Rem: Measured and paid for by the unit area including saw-cutting and disposal, regardless of sidewalk width, thickness and presence of reinforcing.

Item 8. Pavt, Rem: Measured and paid for by the unit area including saw-cutting and disposal, regardless of thickness and presence of reinforcing.

Item 9. Remove Picnic Table A, Salvage: Measured and paid for individually for removal, storage and protection of the equipment until such time as it can safely be reinstalled in its new position. Payment includes all labor, equipment and materials required to carefully remove and stockpile the existing equipment. Any equipment damaged by the Contractor will be replaced at no additional cost.

Item 10. Remove Picnic Table B, Salvage: Measured and paid for individually for removal, storage and protection of the equipment until such time as it can safely be reinstalled in its new position. Payment includes all labor, equipment and

materials required to carefully remove and stockpile the existing equipment. Any equipment damaged by the Contractor will be replaced at no additional cost.

- Item 11. Remove Bench, Salvage: Measured and paid for individually for removal, storage and protection of the equipment until such time as it can safely be reinstalled in its new position. Payment includes all labor, equipment and materials required to carefully remove and stockpile the existing equipment. Any equipment damaged by the Contractor will be replaced at no additional cost.
- Item 12. Remove Book Library, Salvage: Measured and paid for individually for removal, storage and protection of the equipment until such time as it can safely be reinstalled in its new position. Payment includes all labor, equipment and materials required to carefully remove and stockpile the existing equipment. Any equipment damaged by the Contractor will be replaced at no additional cost.
- Item 13. Remove Grill, Salvage: Measured and paid for individually for removal, storage and protection of the equipment until such time as it can safely be reinstalled in its new position. Payment includes all labor, equipment and materials required to carefully remove and stockpile the existing equipment. Any equipment damaged by the Contractor will be replaced at no additional cost.
- Item 14. Remove Water Fountain, Salvage: Measured and paid for individually for removal, storage and protection of the equipment for salvage by owner. Payment includes all labor, equipment and materials required to carefully remove and stockpile the existing equipment and abandon the existing water service. Any equipment damaged by the Contractor will be replaced at no additional cost.
- Item 15. Remove Sign, Salvage: Measured and paid for individually for removal, storage and protection of the equipment until such time as it can safely be reinstalled in its new position. Payment includes all labor, equipment and materials required to carefully remove and stockpile the existing equipment. Any equipment damaged by the Contractor will be replaced at no additional cost.
- Item 16. Remove Fence, Salvage: Measured and paid for by the linear foot for removal, storage and protection of the equipment until such time as it can safely be reinstalled in its new position. Payment includes all labor, equipment and materials required to carefully remove and stockpile the existing equipment. Any equipment damaged by the Contractor will be replaced at no additional cost.
- Item 17. Relocate Picnic Table A: Counted and paid for by the unit. Payment includes all labor, material and equipment required to reinstall the table in its new position and adjust as directed by the Engineer. Mounting hardware will be stainless steel.
- Item 18. Relocate Bench: Counted and paid for by the unit. Payment includes all labor, material and equipment required to reinstall the bench in its new position and adjust as directed by the Engineer. Mounting hardware will be stainless steel.
- Item 19. Relocate Book Library: Counted and paid for by the unit. Payment includes all labor, material and equipment required to reinstall the library in its new position and adjust as directed by the Engineer. Mounting hardware will be stainless steel.

- Item 20. Relocate Grill: Counted and paid for by the unit. Payment includes all labor, material and equipment required to reinstall the grill in its new position and adjust as directed by the Engineer.
- Item 21. Drinking Water Bottle Filling Station with Pet Fountain: Counted and paid for by the unit. Payment includes all labor, material and equipment required to install the filling station with pet fountain per manufacturer's recommendations.
- Item 22. Trash Receptacle: Counted and paid for by the unit. Payment includes all labor, material and equipment required to install the receptacle per manufacturer's recommendations.
- Item 23. Recycling Receptacle: Counted and paid for by the unit. Payment includes all labor, material and equipment required to install the receptacle per manufacturer's recommendations.
- Item 24. Relocate Sign: Counted and paid for by the unit. Payment includes all labor, material and equipment required to reinstall the sign in its new position and adjust as directed by the Engineer.
- Item 25. Relocate Fence: Counted and paid for by the linear foot. Payment includes all labor, material and equipment required to reinstall the fence in its new position and adjust as directed by the Engineer.
- Item 26. Splash Pad Equipment & Installation: Measured and paid for on a lump sum basis, including all labor, materials and equipment necessary to furnish and install underground water feature by a certified installer including all distribution lines, control panel, pumps, jet nozzles, LED lighting, conduit, pull boxes and related items as shown and detailed on the plans. Equipment and installation includes all materials and labor to provide and connect utilities within 15 feet of the splash pad.
- Item 27. Splash Pad Reinforced Concrete, 6 inch: Measured and paid for by the square yard, at the specified thickness and shall include any reinforcing, decorative saw cutting, expansion joints, reinforcing, and contraction joints specified.
- Item 28. Splash Pad Pump Station: Paid for as a lump sum including pump chamber pumps, irrigation solenoid valve, station piping, valves, electrical service to the station including conduit & wiring, control panel, forcemain cleanout, valve and box, all specified spare parts, site work, excavation and backfill, training, startup, commissioning and all related work; tested and accepted.
- Item 29. Playground Equipment: Lump sum complete, includes the manufacture, furnishing, shipping to the project site, and installation of all required components, hardware, fasteners and materials necessary for a complete installation of the play equipment as outlined in the drawings and specifications. The CONTRACTOR shall provide a certified installer approved by the Manufacturer and the Manufacturer's representative shall provide supervision and oversight of installation of the play equipment. Payment for playground equipment will be made after final inspection is complete and the play equipment is accepted by the OWNER.
- Item 30. Playground Safety Surface: Lump sum complete, tested and accepted for all work including all preparation of base surface as well as furnishing all materials

and labor required for installation of base layer and top layer of poured in place playground rubber surfacing.

- Item 31. 24" Catch Basin: Counted and paid for by the unit for the structure diameter specified including drainage structure covers; excavated, installed and backfilled.
- Item 32. Storm Sewer, 8 inch: Measured and paid by the unit length for the size identified and measured on the ground surface along the pipe centerline from center to center of structures and connection points and to the outlet of flared end sections.
- Item 33. Connect to Ex. Strm CB: Each connection shall be paid for individually including coring the existing structure and connection of the proposed pipe as specified.
- Item 34. Connect to Ex. San MH: Each connection shall be paid for individually including coring the existing manhole, connecting the proposed pipe with a watertight pipe connection, re-creation of the flow channels, and drop connections as specified.
- Item 35. 6" San Sewer: Measured and paid by the unit length for the size identified and measured on the ground surface along the pipe centerline from center to center of manholes and connection points. Item includes excavation and backfill, testing, and mainline risers.
- Item 36. 4" PVC Forcemain, Directional Drill: Measured and paid by the unit length for the size identified and measured on the ground surface along the pipe centerline including joint restraints for all labor and materials required to install forcemain via HDD methods.
- Item 37. Play Area Concrete Curb Edge: Measured and paid by the unit length as measured center of curb including expansion materials and reinforcing bars.
- Item 38. Underdrain, Subbase, 4 inch: Measured and paid by the unit length for the size identified along pipe centerline, installed and backfilled, including geotextile sock and connections to storm manholes or catch basins from center to center of structures and connection points.
- Item 39. Dr Structure Cover, Adj: Each existing adjusted structure cover shall be paid for individually. Adjustment of covers on proposed structures is included in the proposed structure item. No additional payment will be made for temporary lowering existing covers prior to paving operations. If, after paving, the adjusted cover does not meet specified tolerances relative to finished grade, it shall be readjusted at no additional cost.
- Item 40. Aggregate Base, LM: Measured and paid for based on hauling unit dimensions and load count before placement and compaction. Includes the cost of providing, hauling, placing, compacting, and grading the material and providing water for compaction.
- Item 41. Aggregate Base, 8 inch: Measured and paid by the unit area, placed and compacted and fine graded. This item includes aggregate base under the roadway as well as under HMA driveways.
- Item 42. Subbase, CIP: Calculated and paid by the unit volume from the proposed street cross section compacted in place where pre-authorized by the Engineer. Where

existing soils are adequate for subbase as determined by the Engineer, payment for subbase will not be made and shaping of the existing material shall be included in Roadway Grading.

- Item 43. HMA, 4EL: Measured and paid by the unit weight by tallying load tickets for placed and compacted HMA. Submit load tickets to Engineer at time of HMA delivery. Report all weigh-backs to the Engineer promptly following the paving operation. Payment shall include road mainline, intersection approaches, and miscellaneous asphalt handwork. HMA used in driveways will be paid for under HMA Approach.
- Item 44. HMA Approach: Measured and paid by the unit weight by tallying load tickets for placed and compacted HMA. Submit load tickets to Engineer at time of HMA delivery. Report all weigh-backs to the Engineer promptly following the paving operation. Payment shall include HMA used in driveways.
- Item 45. HMA Valley Gutter: Measured and paid by the unit length as measured along the gutter line to the dimensions specified.
- Item 46. Concrete Driveway, Nonreinf, 6 inch: Measured and paid by the unit area including expansion joints and crack control joints.
- Item 47. Sidewalk Ramp, Conc, 6 inch: Measured and paid by the unit area including expansion joints, crack control joints, landings, monolithic curb, and side flares as required to meet the ADA requirements. Ramps that don't meet ADA requirements will be replaced at no additional cost.
- Item 48. Sidewalk, Conc, 4 inch: Measured and paid by the unit area including expansion joints, reinforcing bars, and crack control joints and monolithic curb if needed.
- Item 49. Sidewalk, Conc, 6 inch: Measured and paid by the unit area including expansion joints, reinforcing bars, and crack control joints and monolithic curb if needed.
- Item 50. Detectable Warning Surface, DI: Measured and paid by the unit length along the centerline of the 24" wide ductile iron plates at required locations. This item includes both curved and straight plates.
- Item 51. 21AA Crushed Limestone, CIP: Measured and paid by the unit area, placed and compacted and fine graded. This item includes aggregate base under the playground areas.
- Item 52. Seat Wall: Measured and paid for by the unit length, as measured along the centerline of wall. Payment includes all concrete and reinforcing steel, formed, finished and cured. Excavation and backfill will be paid separately as part of Site Preparation and Grading.
- Item 53. Outdoor Fireplace: Will be paid for on a lump sum basis complete including furnishing and installing the following:
 - a. Plumbing design and modifications downstream of the meter.
 - b. Concrete foundation as indicated in the Drawings
 - c. All masonry, lintels, etc
 - d. Natural gas connection to the gas service provided by the utility.
 - e. All natural gas piping within the fireplace.
 - f. Fireplace controls
 - g. Flue, cap, fittings and other items required for a complete installation

h. Any costs from the gas company will be paid directly by the Owner.

- Item 54. Bench, Surface Mounted: Measured and paid for by the unit, installed and surface mounted per manufacturer's recommendations. Includes all required mounting hardware.
- Item 55. Accessible Picnic Tables: Counted and paid for individually assembled and surface mounted per manufacturer's recommendations.
- Item 56. Pavt Mrkg, Waterborne for Parking Lot, White: Measured and paid for by the unit length.
- Item 57. Pavt Mrkg, Waterborne for Parking Lot, Blue: Measured and paid for by the unit length.
- Item 58. Pavt Mrkg, Waterborne, Accessible Sym: Each symbol shall be paid for individually.
- Item 59. Pavt Mrkg, Waterborne, 12 inch, Crosswalk: Measured and paid by the unit length.
- Item 60. Ostrya Virginiana, 2 inch: Measured and paid by the tree including excavation, backfill, installation in accordance with the detail and full replacement of the tree should it die within the warranty period.
- Item 61. Acer Rubrum, 2 inch: Measured and paid by the tree including excavation, backfill, installation in accordance with the detail and full replacement of the tree should it die within the warranty period.
- Item 62. Acer X 'Freemanii', 2 inch: Measured and paid by the tree including excavation, backfill, installation in accordance with the detail and full replacement of the tree should it die within the warranty period.
- Item 63. Liriodendron Tulipifera, 2 inch: Measured and paid by the tree including excavation, backfill, installation in accordance with the detail and full replacement of the tree should it die within the warranty period.
- Item 64. Site Light W/Concrete Base: Measured and paid for by the unit, including all labor, materials, and equipment necessary to furnish and install light pole, concrete base, fixtures, banner arms, electrical receptacles, and related items as shown and detailed on the plans.
- Item 65. Site Electrical Distribution: Measured and paid for on a lump sum basis complete, including all labor, materials, and equipment necessary to furnish and install underground electrical utility, including all underground and above ground conduit, hand holes, conductors, connection to existing electrical panel and all associated wiring. This item includes all work to make this electrical system operational as specified and shown on the plans.
- Item 66. Gas Service: Measured and paid for as an allowance, including all labor, materials, and equipment necessary for utility to install natural gas service to the outdoor fireplace including Contractor efforts to contact utility provider and coordinate the installation.

- Item 67. 4 inch Water Service: Measured and paid for as a lump sum, including all labor, materials, and equipment necessary to construct the water service to within 15 feet of the splash pad location from the existing 4" water main, including connection to the existing 4" water main and all fittings, valves, plugs, stop and box or adapters required to make the splash pad/irrigation system operational.
- Item 68. 1 ½" Irrigation Pipe: Measured and paid for by the unit length, including irrigation service connection and all labor, materials, and equipment necessary to construct the irrigation line from the proposed 4" forcemain and all fittings, plugs, stop and box or adapters required to make the irrigation line operational.
- Item 69. Landscaping Area with Metal Edging: Measured and paid for by the square foot, including excavation, soil, plantings, drip system connection and/or micro spray heads, mulch, installation in accordance with the detail and full replacement of plantings should they die within the warranty period.
- Item 70. Turf Restoration: Measured and paid by the unit area including grading, topsoiling, topsoil testing, seeding, fertilizer nutrient, mulching, mulch anchoring, watering, mowing, weed control, maintenance and repair of turf. Turf Establishment outside of public right-of-way or easement will not be paid for. Upon completion of the initial topsoil surfacing, seeding, fertilizing and mulching stage 50 percent of the authorized amount for Turf Establishment will be paid to the Contractor. The remaining authorized amount will be paid upon final acceptance of the established turf.

Other:

- Sawcutting existing bituminous or concrete pavement:
 - Included in removal items.
- Adjustment of castings between successive paving courses:
 - Include in cost of structure or HMA mix.
- Shoring:
 - All shoring required for construction, safety, and convenience will be considered temporary and included in construction items.
- By-pass pumping:
 - Included in cost of the utility.
- Dewatering for Construction:
 - Included in cost of the utility.
- Granular material trench back-fill:
 - Included in cost of the utility.
- Bedding area trench backfill:
 - Included in cost of the utility.
- Protection of existing structures, signs, or features not indicated for removal
 - Included in cost of other items, no additional payment shall be made.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01 23 00

ALTERNATES

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Administrative and procedural requirements for Alternates.

1.02 SEQUENCING AND SCHEDULING:

- A. Coordinate related Work and modify or adjust adjacent Work as necessary to ensure that Work affected by each accepted Alternate is complete and fully integrated into the project.
- B. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials and methods necessary to achieve the Work described under each Alternate.
 - 1. Include as part of each Alternate, miscellaneous devices, accessory objects and similar items incidental to or required for a complete installation whether or not mentioned as part of the Alternate.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 SCHEDULE OF ALTERNATES:

A. Bid Alternate No. 1 – Alternate Playground Equipment

The base bid playground equipment is by GameTime per the Sinclair Recreation Proposal in SP 11 68 13 – PLAYGROUND EQUIPMENT. The Contractor shall include an add or deduct for Bid Alternate 1 – Alternate Playground Equipment to provide and install playground equipment from Playcraft Systems in lieu of the base bid GameTime playground equipment. A proposal for Playcraft Systems equipment from Play Environments Design is attached to this specification for reference. The OWNER reserves the right to accept or reject all bid Alternates.

3.02 SCHEDULES:

- A. Playcraft Systems – Play Environments Design Proposal

END OF SECTION

BIG RAPIDS - HEMLOCK PARK

TOP VIEW

ADA ACCESSIBILITY GUIDELINES - ADAAG CONFORMANCE

ELEVATED	ACCESSIBLE	RAMP ACCESSIBLE	GROUND	TYPES
3	0/2	0/0	4/1	1/1
CHILD CAPACITY 39		MAX FALL HEIGHT 96		

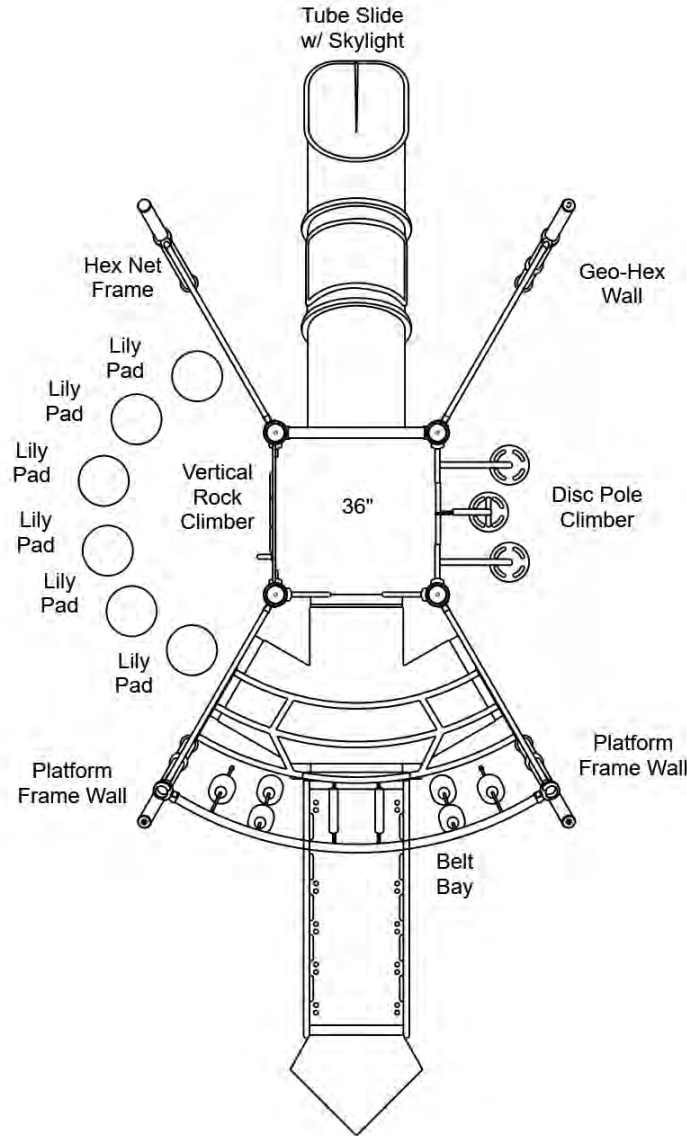
R5

FOR KIDS
AGES
5-12

GENERAL NOTES

This conceptual plan is based on information provided prior to construction. Detailed site information, including the following, should be obtained, evaluated, and utilized in the final project design. Exact site dimensions, topography, existing utilities, soil conditions and drainage solutions.

WARNING: Accessible safety surfacing material is required beneath and around this equipment that has a critical height value (Fall Height) appropriate for the highest accessible part of this equipment. Refer to the CPSC'S Handbook For Public Playground Safety, Section 4: Surfacing.



STRUCTURE # NF59B1D2A
PROJECT # PEI231D68BA
DATE 9/18/2023

Play Environments Design, LLC

MIN. USE ZONE 24' x 37' (7.163m x 11.244m)



BIG RAPIDS - HEMLOCK PARK

TOP VIEW

ADA ACCESSIBILITY GUIDELINES - ADAAG CONFORMANCE

ELEVATED	ACCESSIBLE	RAMP ACCESSIBLE	GROUND	TYPES
0	0/0	0/0	1/0	1/0
CHILD CAPACITY	2	MAX FALL HEIGHT	48	

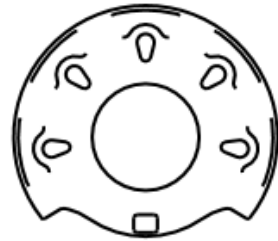
FOR KIDS
AGES
5-12

GENERAL NOTES

This conceptual plan is based on information provided prior to construction. Detailed site information, including the following, should be obtained, evaluated, and utilized in the final project design. Exact site dimensions, topography, existing utilities, soil conditions and drainage solutions.

WARNING: Accessible safety surfacing material is required beneath and around this equipment that has a critical height value (Fall Height) appropriate for the highest accessible part of this equipment. Refer to the CPSC'S Handbook For Public Playground Safety, Section 4: Surfacing.

PC 2478
SPIN
MAX POD



STRUCTURE # FREPC2478
PROJECT # PEI231D68BA
DATE 9/18/2023

Play Environments Design, LLC

MIN. USE ZONE 16' x 16' (4.628m x 4.628m)



BIG RAPIDS - HEMLOCK PARK

TOP VIEW

ADA ACCESSIBILITY GUIDELINES - ADAAG CONFORMANCE

ELEVATED	ACCESSIBLE	RAMP ACCESSIBLE	GROUND	TYPES
4	4/2	0/0	1/1	1/1
CHILD CAPACITY	37	MAX FALL HEIGHT	48	

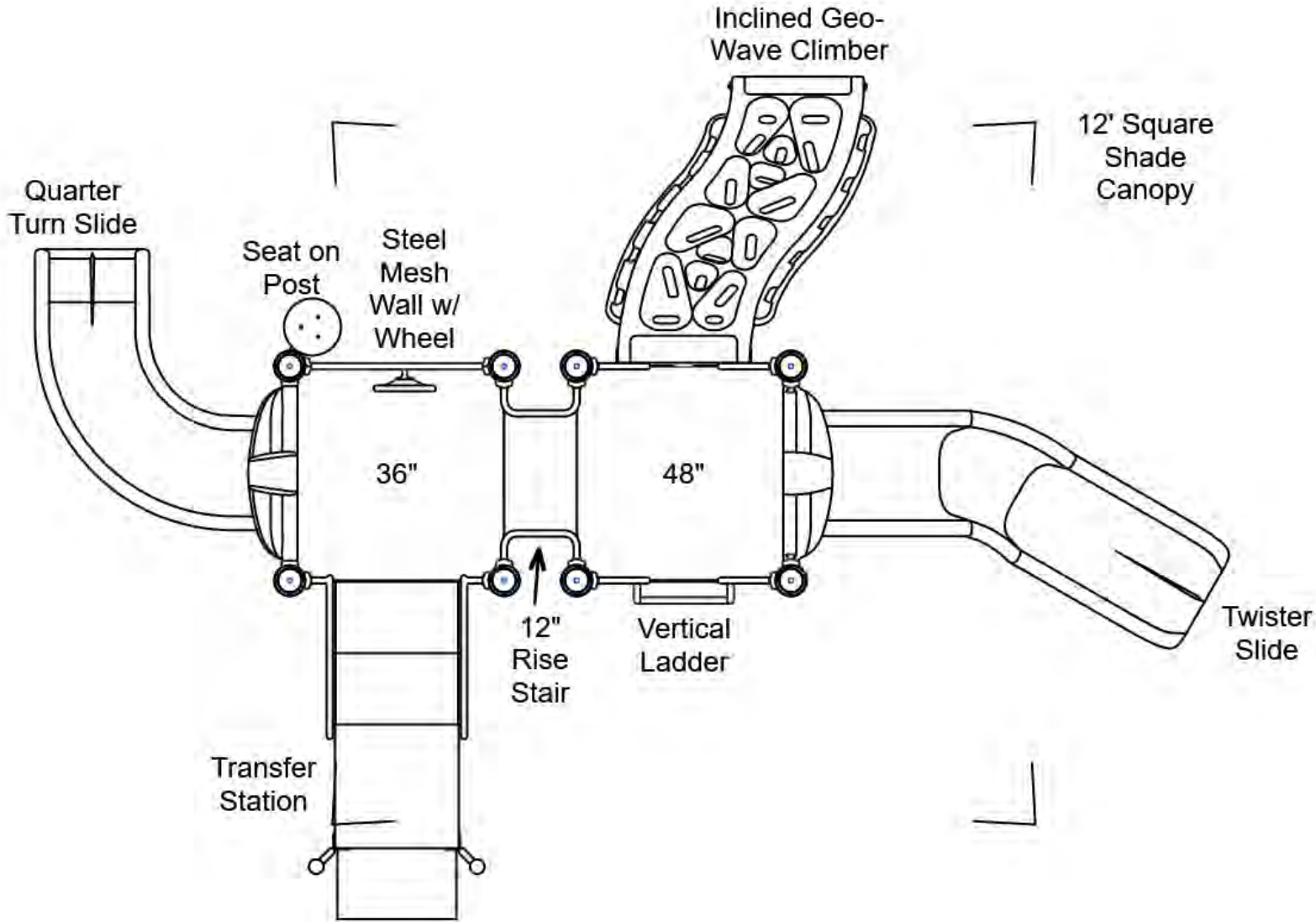
R5

FOR KIDS
AGES
2-5

GENERAL NOTES

This conceptual plan is based on information provided prior to construction. Detailed site information, including the following, should be obtained, evaluated, and utilized in the final project design. Exact site dimensions, topography, existing utilities, soil conditions and drainage solutions.

WARNING: Accessible safety surfacing material is required beneath and around this equipment that has a critical height value (Fall Height) appropriate for the highest accessible part of this equipment. Refer to the CPSC'S Handbook For Public Playground Safety, Section 4: Surfacing.



STRUCTURE # R50CB525A
PROJECT # PE1231D68BA
DATE 9/18/2023

Play Environments Design, LLC

MIN. USE ZONE 33' x 27' (10.032m x 8.153m)



BIG RAPIDS - HEMLOCK PARK

TOP VIEW

ADA ACCESSIBILITY GUIDELINES - ADAAG CONFORMANCE

ELEVATED	ACCESSIBLE	RAMP ACCESSIBLE	GROUND	TYPES
25	23/6	20/6	2/0	1/0
CHILD CAPACITY	353	MAX FALL HEIGHT	84	

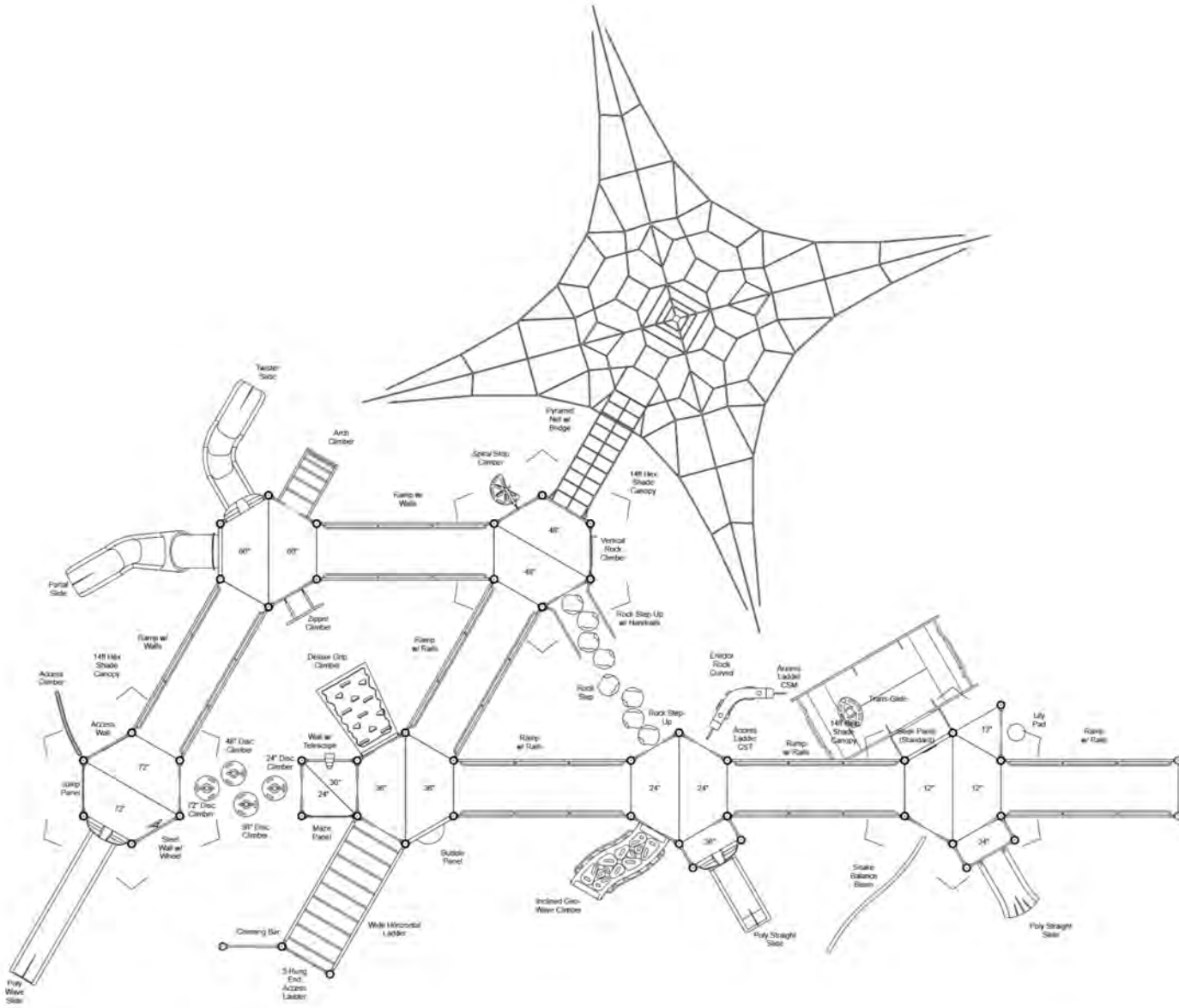
R5

FOR KIDS
AGES
5-12

GENERAL NOTES

This conceptual plan is based on information provided prior to construction. Detailed site information, including the following, should be obtained, evaluated, and utilized in the final project design. Exact site dimensions, topography, existing utilities, soil conditions and drainage solutions.

WARNING: Accessible safety surfacing material is required beneath and around this equipment that has a critical height value (Fall Height) appropriate for the highest accessible part of this equipment. Refer to the CPSC'S Handbook For Public Playground Safety, Section 4: Surfacing.



STRUCTURE # R50D1864A
PROJECT # PEI231D68BA
DATE 9/18/2023

Play Environments Design, LLC
MIN. USE ZONE 86' x 79' (25.937m x 23.814m)



BIG RAPIDS - HEMLOCK PARK

TOP VIEW

ADA ACCESSIBILITY GUIDELINES - ADAAG CONFORMANCE

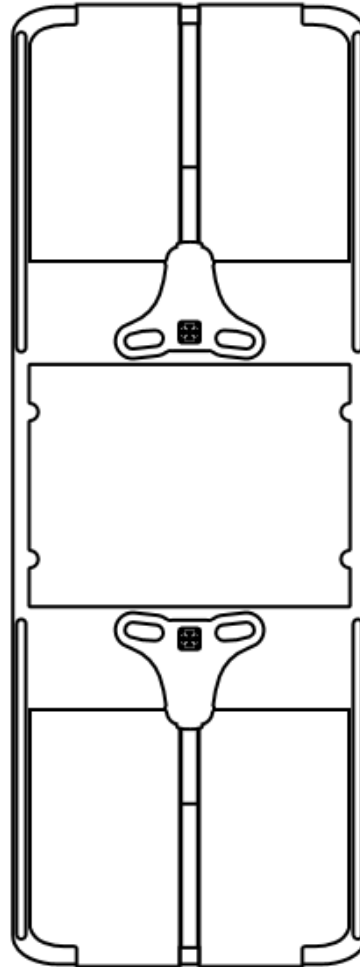
ELEVATED	ACCESSIBLE	RAMP ACCESSIBLE	GROUND	TYPES
0	0/0	0/0	1/0	1/0
CHILD CAPACITY	8	MAX FALL HEIGHT	72	

FOR KIDS
AGES
5-12

GENERAL NOTES

This conceptual plan is based on information provided prior to construction. Detailed site information, including the following, should be obtained, evaluated, and utilized in the final project design. Exact site dimensions, topography, existing utilities, soil conditions and drainage solutions.

WARNING: Accessible safety surfacing material is required beneath and around this equipment that has a critical height value (Fall Height) appropriate for the highest accessible part of this equipment. Refer to the CPSC'S Handbook For Public Playground Safety, Section 4: Surfacing.



PC 4232
SPRING MAX
TURBO
TOTTER

STRUCTURE # FREPC4232
PROJECT # PEI231D68BA
DATE 9/18/2023

Play Environments Design, LLC

MIN. USE ZONE 17' x 24' (4.937m x 7.145m)



BIG RAPIDS - HEMLOCK PARK

TOP VIEW

ADA ACCESSIBILITY GUIDELINES - ADAAG CONFORMANCE

ELEVATED	ACCESSIBLE	RAMP ACCESSIBLE	GROUND	TYPES
0	0/0	0/0	1/0	1/0
CHILD CAPACITY	4	MAX FALL HEIGHT	36	

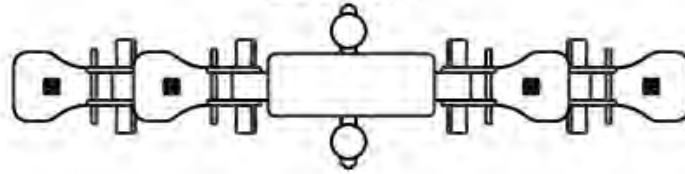
FOR KIDS
AGES
5-12

GENERAL NOTES

This conceptual plan is based on information provided prior to construction. Detailed site information, including the following, should be obtained, evaluated, and utilized in the final project design. Exact site dimensions, topography, existing utilities, soil conditions and drainage solutions.

WARNING: Accessible safety surfacing material is required beneath and around this equipment that has a critical height value (Fall Height) appropriate for the highest accessible part of this equipment. Refer to the CPSC'S Handbook For Public Playground Safety, Section 4: Surfacing.

PC 1920
Spring
Seesaw



STRUCTURE # FREPC2475
PROJECT # PEI231D68BA
DATE 9/18/2023

Play Environments Design, LLC

MIN. USE ZONE 21' x 14' (6.134m x 4.26m)



BIG RAPIDS - HEMLOCK PARK

TOP VIEW

ADA ACCESSIBILITY GUIDELINES - ADAAG CONFORMANCE

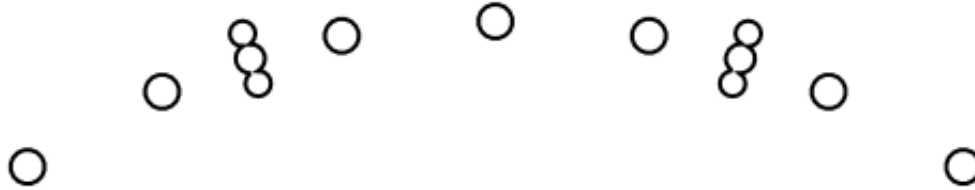
ELEVATED	ACCESSIBLE	RAMP ACCESSIBLE	GROUND	TYPES
0	0/0	0/0	0/0	0/0
CHILD CAPACITY	0	MAX FALL HEIGHT	0	

GENERAL NOTES

This conceptual plan is based on information provided prior to construction. Detailed site information, including the following, should be obtained, evaluated, and utilized in the final project design. Exact site dimensions, topography, existing utilities, soil conditions and drainage solutions.

WARNING: Accessible safety surfacing material is required beneath and around this equipment that has a critical height value (Fall Height) appropriate for the highest accessible part of this equipment. Refer to the CPSC'S Handbook For Public Playground Safety, Section 4: Surfacing.

CCH-IG CONTRABASS CHIMES w/ STEEL POST



STRUCTURE # FREENOTES
PROJECT # PEI231D68BA
DATE 9/18/2023

Play Environments Design, LLC

MIN. USE ZONE 10' x 2' (2.875m x 0.534m)



BIG RAPIDS - HEMLOCK PARK

TOP VIEW

ADA ACCESSIBILITY GUIDELINES - ADAAG CONFORMANCE

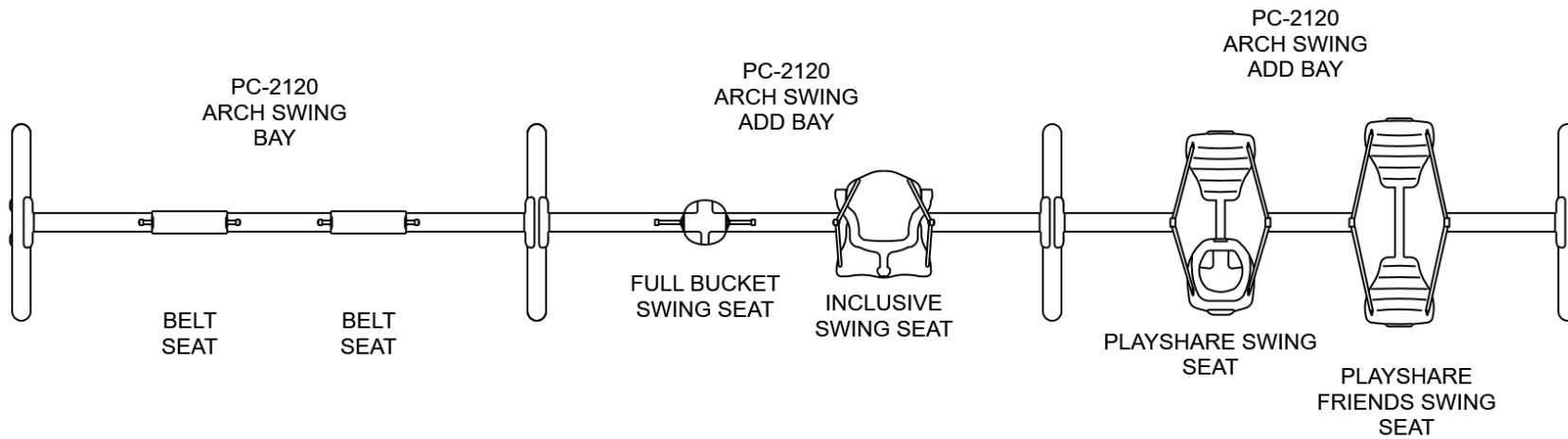
ELEVATED	ACCESSIBLE	RAMP ACCESSIBLE	GROUND	TYPES
0	0/0	0/0	6/0	1/0
CHILD CAPACITY	8	MAX FALL HEIGHT	96	

FOR KIDS
AGES
5-12

GENERAL NOTES

This conceptual plan is based on information provided prior to construction. Detailed site information, including the following, should be obtained, evaluated, and utilized in the final project design. Exact site dimensions, topography, existing utilities, soil conditions and drainage solutions.

WARNING: Accessible safety surfacing material is required beneath and around this equipment that has a critical height value (Fall Height) appropriate for the highest accessible part of this equipment. Refer to the CPSC'S Handbook For Public Playground Safety, Section 4: Surfacing.



STRUCTURE # FREPC2120
PROJECT # PEI231D68BA
DATE 9/18/2023

Play Environments Design, LLC

MIN. USE ZONE 48' x 30' (14.442m x 9.144m)



BIG RAPIDS - HEMLOCK PARK

SITE PLAN

ADA ACCESSIBILITY GUIDELINES - ADAAG CONFORMANCE

ELEVATED	ACCESSIBLE	RAMP ACCESSIBLE	GROUND	TYPES
30	4/8	16/8	19/0	8/0

R5

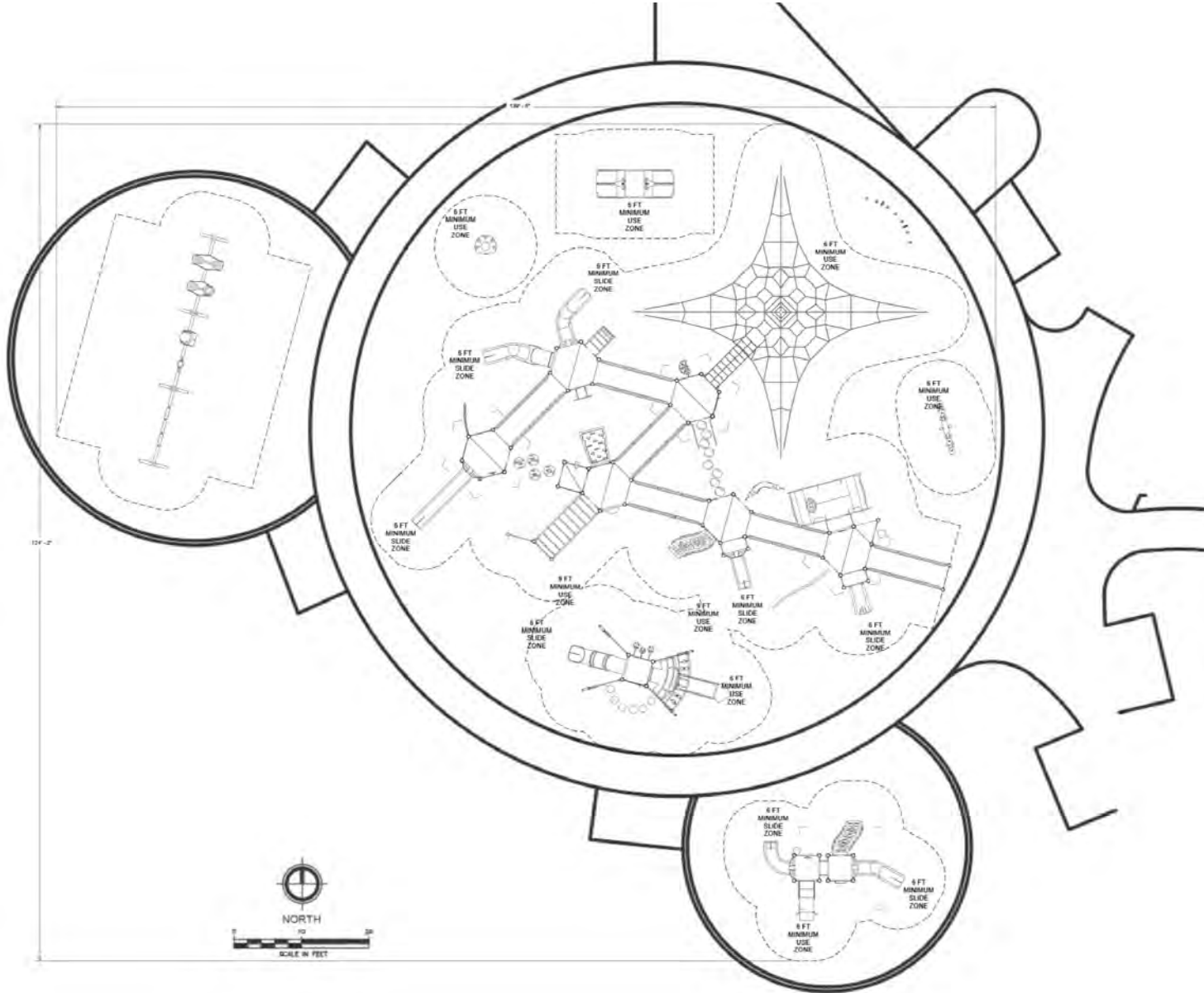
FOR KIDS
AGES
[Mixed]

GENERAL NOTES

This Preliminary Site Plan is based on measurements that were provided in the initial planning phase. All dimensions must be verified prior to the submission of a purchase order. Playcraft Systems will not be held responsible for any discrepancies between actual dimensions and dimensions submitted in the planning phase.

The Minimum Use Zone for a play structure is based on the product design at the time of proposal. Components and structure designs may be subject to change which may affect dimensions. Therefore, before preparing the site, we strongly recommend obtaining final drawings from the factory (available after the order is placed and included in the Assembly Manual).

WARNING: Accessible safety surfacing material is required beneath and around this equipment that has a critical height value (Fall Height) appropriate for the highest accessible part of this equipment. Refer to the CPSC'S Handbook For Public Playground Safety, Section 4: Surfacing.



PROJECT # PEI231D68BA
DATE 9/18/2023

Play Environments Design, LLC
MIN. USE ZONE 140' x 125' (42.49m x 37.846m)



BIG RAPIDS - HEMLOCK PARK
SW VIEW

R5

FOR KIDS
AGES
5-12



STRUCTURE # NF59B1D2A
PROJECT # PEI231D68BA
DATE 9/18/2023

BIG RAPIDS - HEMLOCK PARK
SE VIEW

R5

FOR KIDS
AGES
5-12

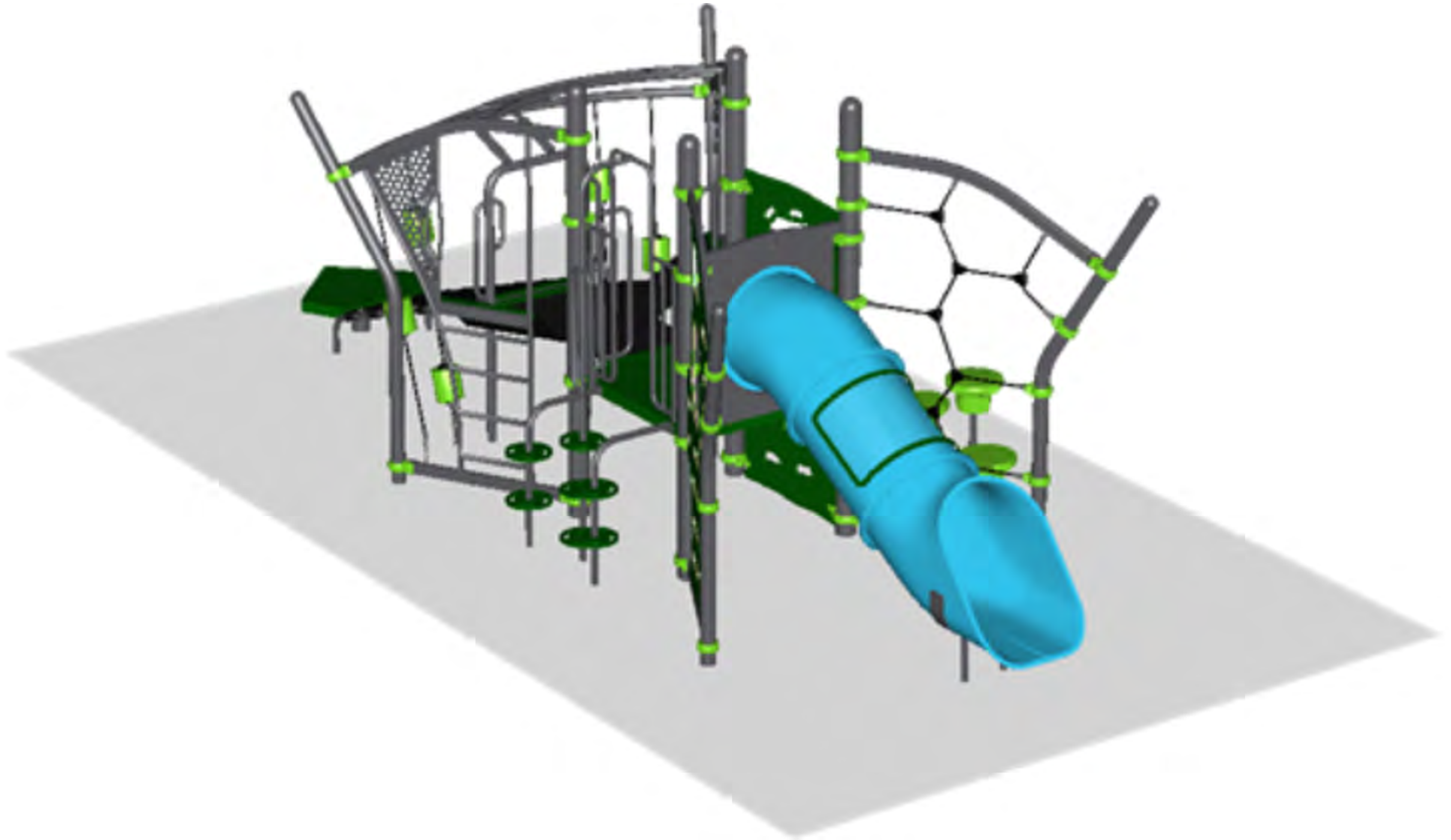


STRUCTURE # NF59B1D2A
PROJECT # PEI231D68BA
DATE 9/18/2023

BIG RAPIDS - HEMLOCK PARK
NE VIEW

R5

FOR KIDS
AGES
5-12

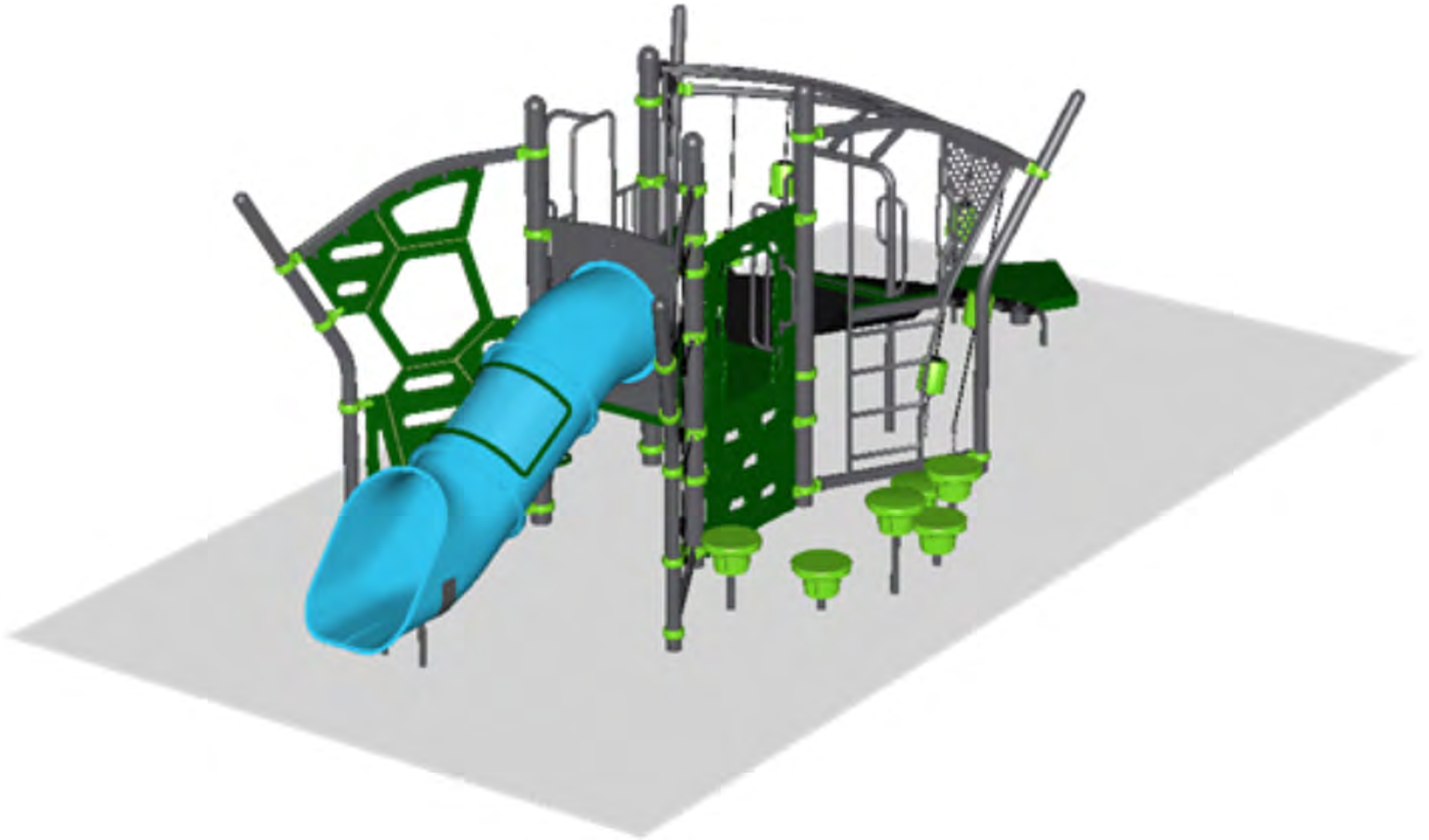


STRUCTURE # NF59B1D2A
PROJECT # PEI231D68BA
DATE 9/18/2023

BIG RAPIDS - HEMLOCK PARK
NW VIEW

R5

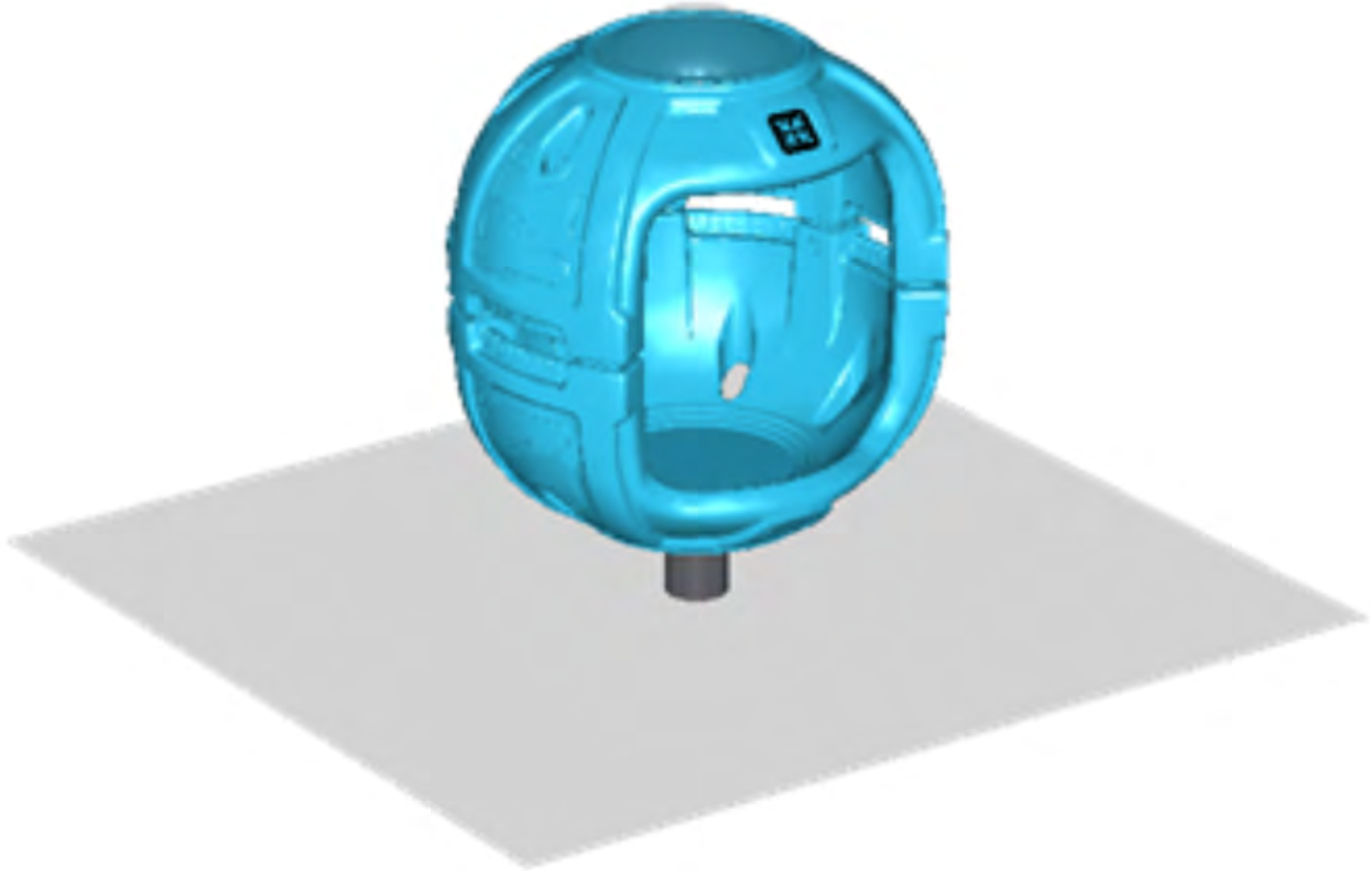
FOR KIDS
AGES
5-12



STRUCTURE # NF59B1D2A
PROJECT # PEI231D68BA
DATE 9/18/2023

BIG RAPIDS - HEMLOCK PARK
SW VIEW

FOR KIDS
AGES
5-12

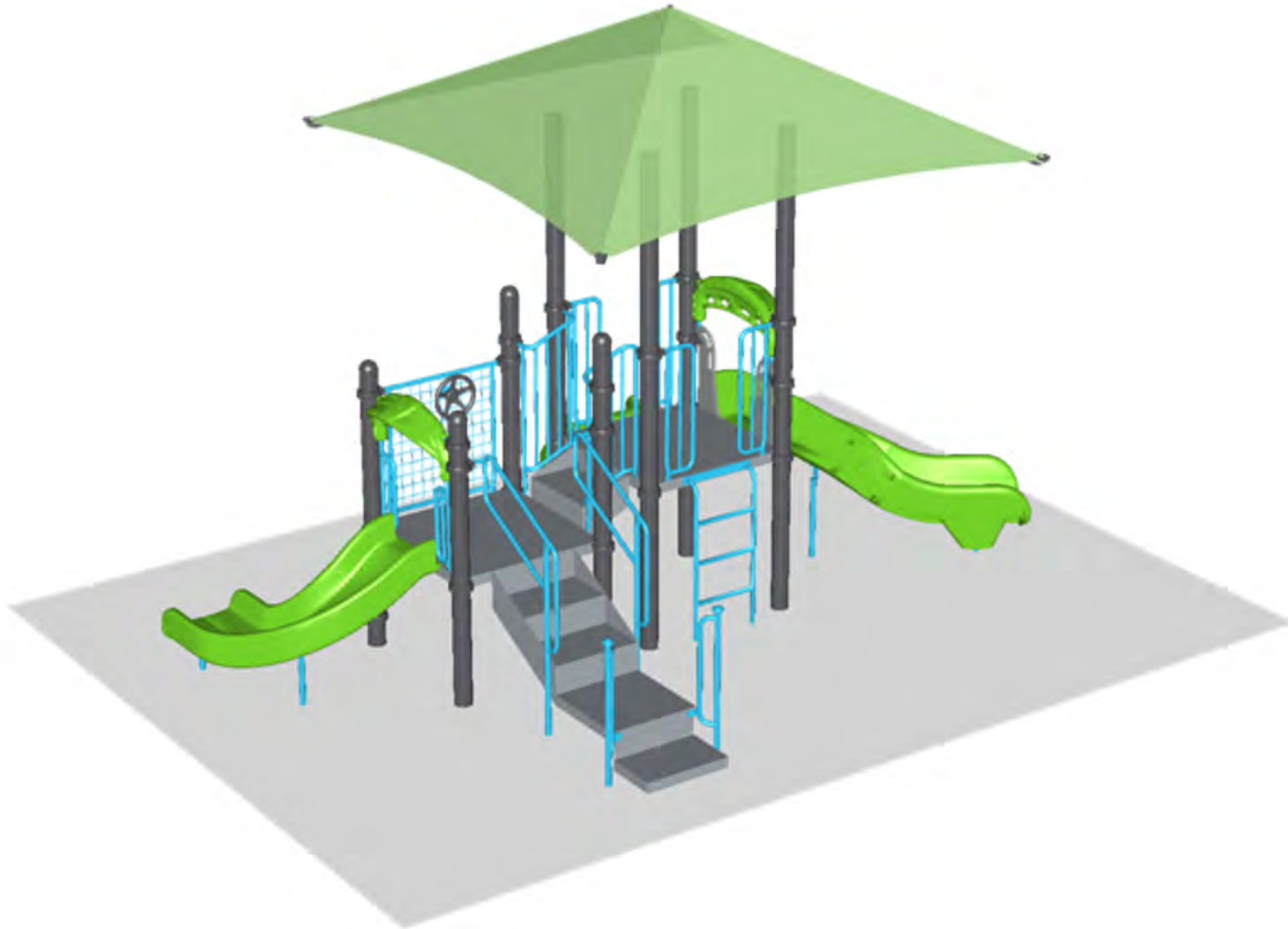


STRUCTURE # FREPC2478
PROJECT # PEI231D68BA
DATE 9/18/2023

BIG RAPIDS - HEMLOCK PARK
SW VIEW

R5

FOR KIDS
AGES
2-5

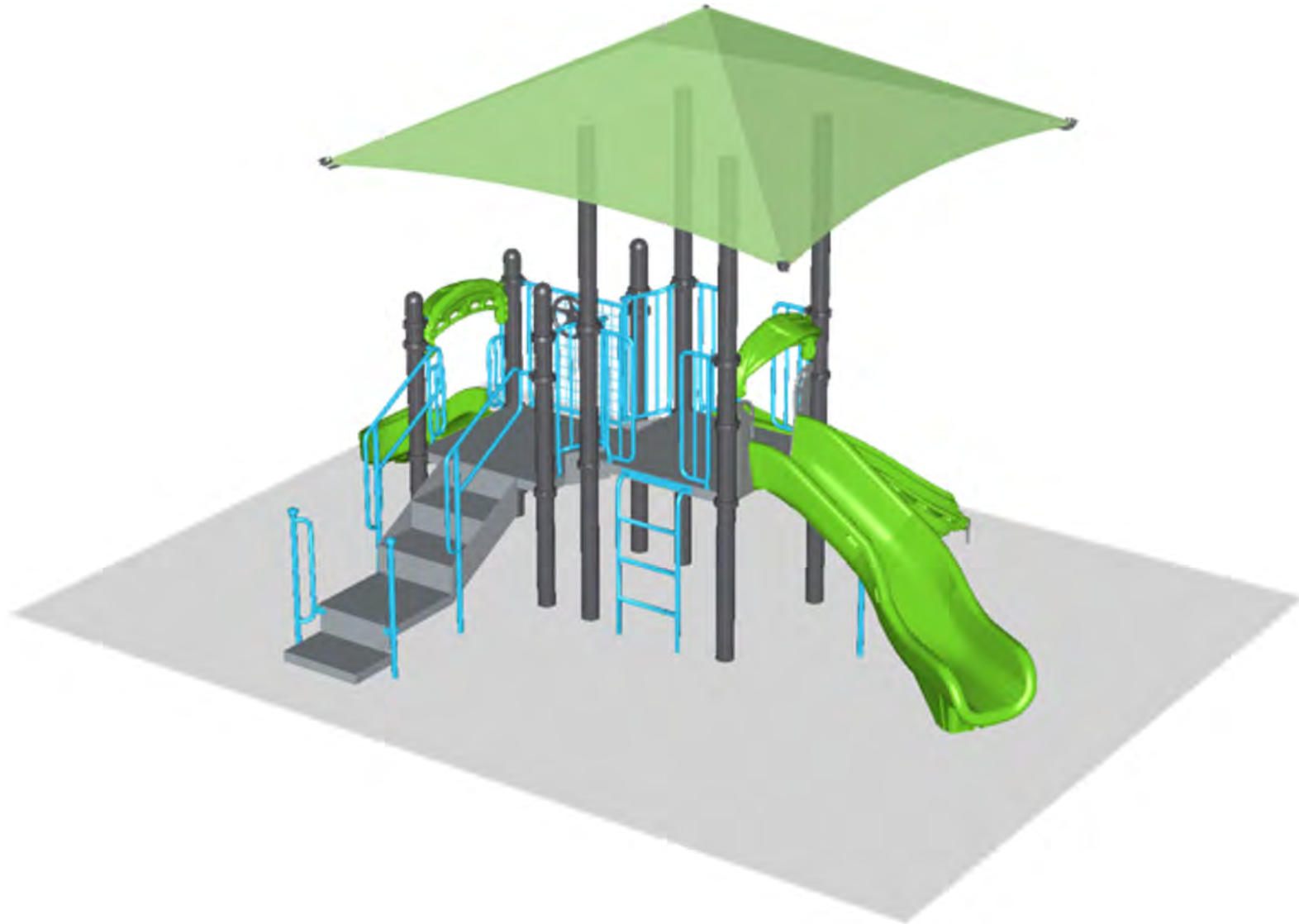


STRUCTURE # R50CB525A
PROJECT # PEI231D68BA
DATE 9/18/2023

BIG RAPIDS - HEMLOCK PARK
SE VIEW

R5

FOR KIDS
AGES
2-5

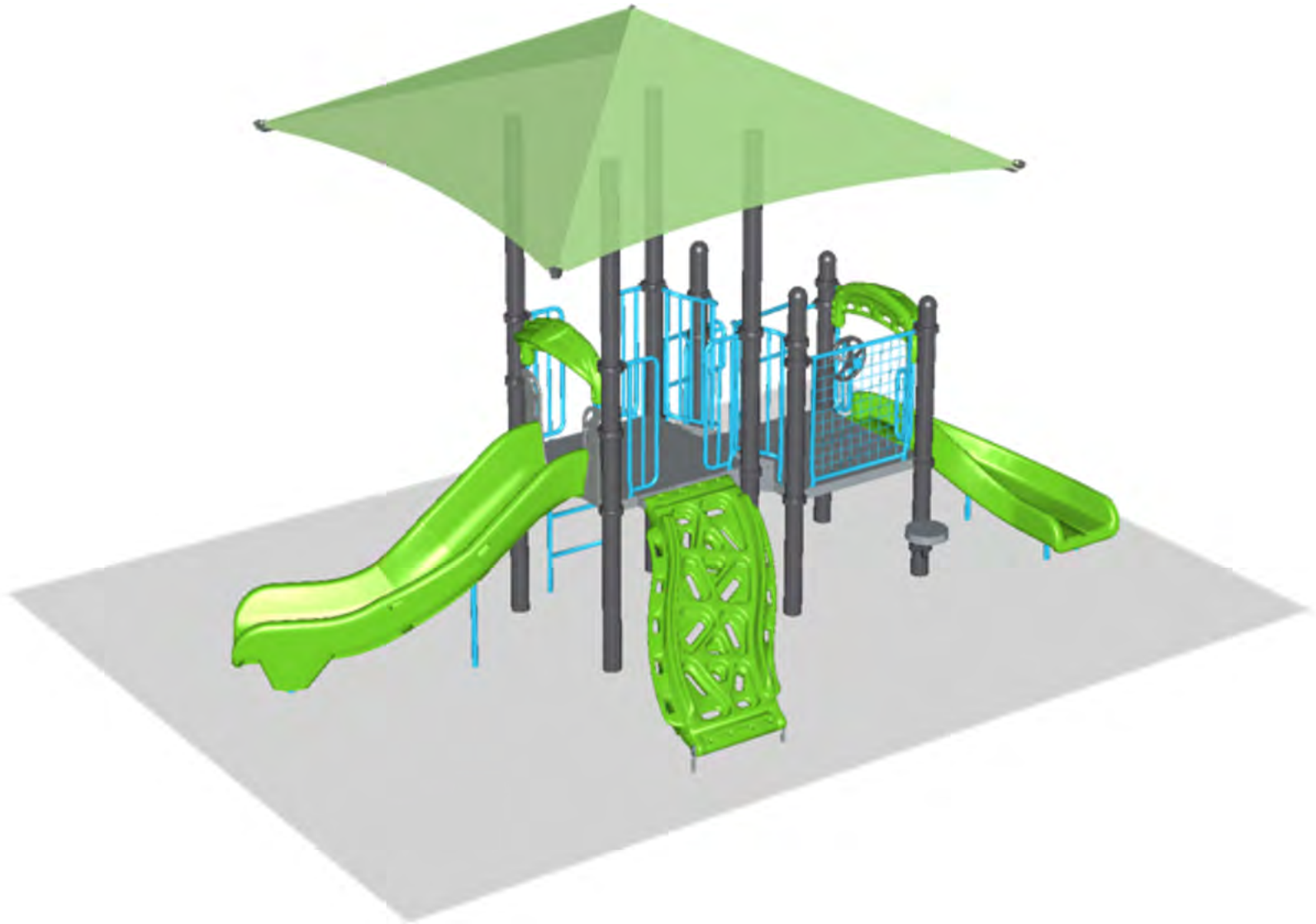


STRUCTURE # R50CB525A
PROJECT # PEI231D68BA
DATE 9/18/2023

BIG RAPIDS - HEMLOCK PARK
NE VIEW

R5

FOR KIDS
AGES
2-5

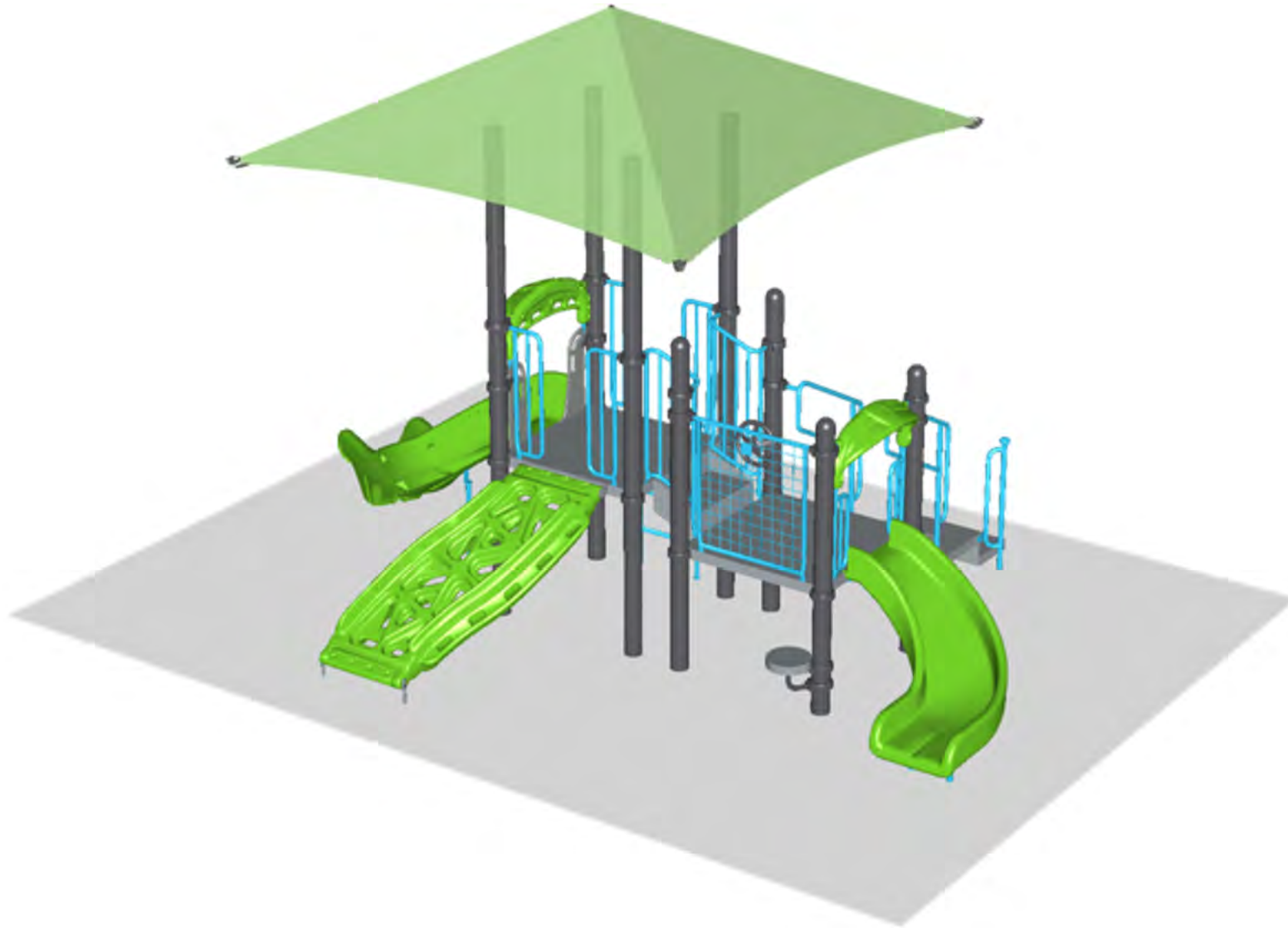


STRUCTURE # R50CB525A
PROJECT # PEI231D68BA
DATE 9/18/2023

BIG RAPIDS - HEMLOCK PARK
NW VIEW

R5

FOR KIDS
AGES
2-5

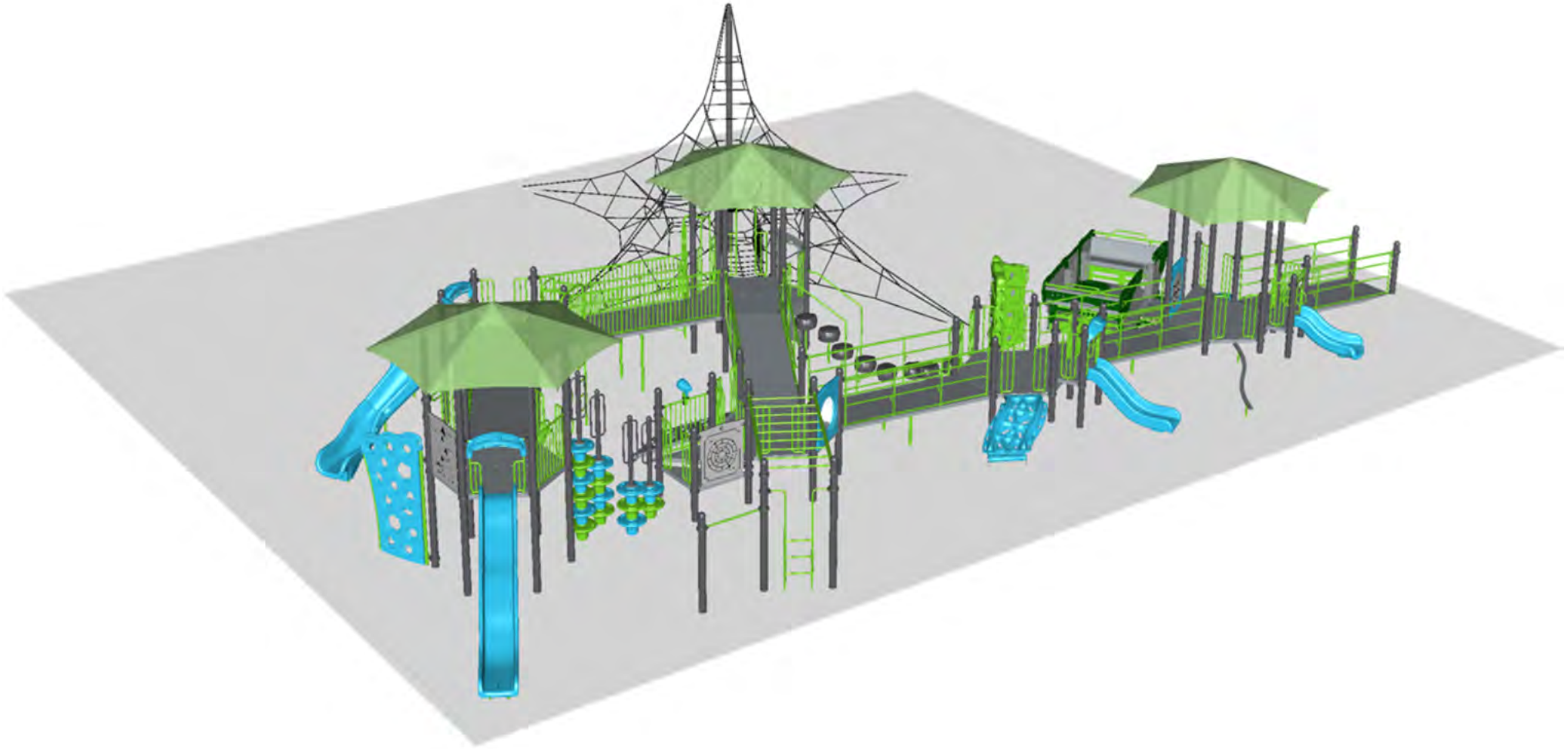


STRUCTURE # R50CB525A
PROJECT # PEI231D68BA
DATE 9/18/2023

BIG RAPIDS - HEMLOCK PARK
SW VIEW

R5

FOR KIDS
AGES
5-12

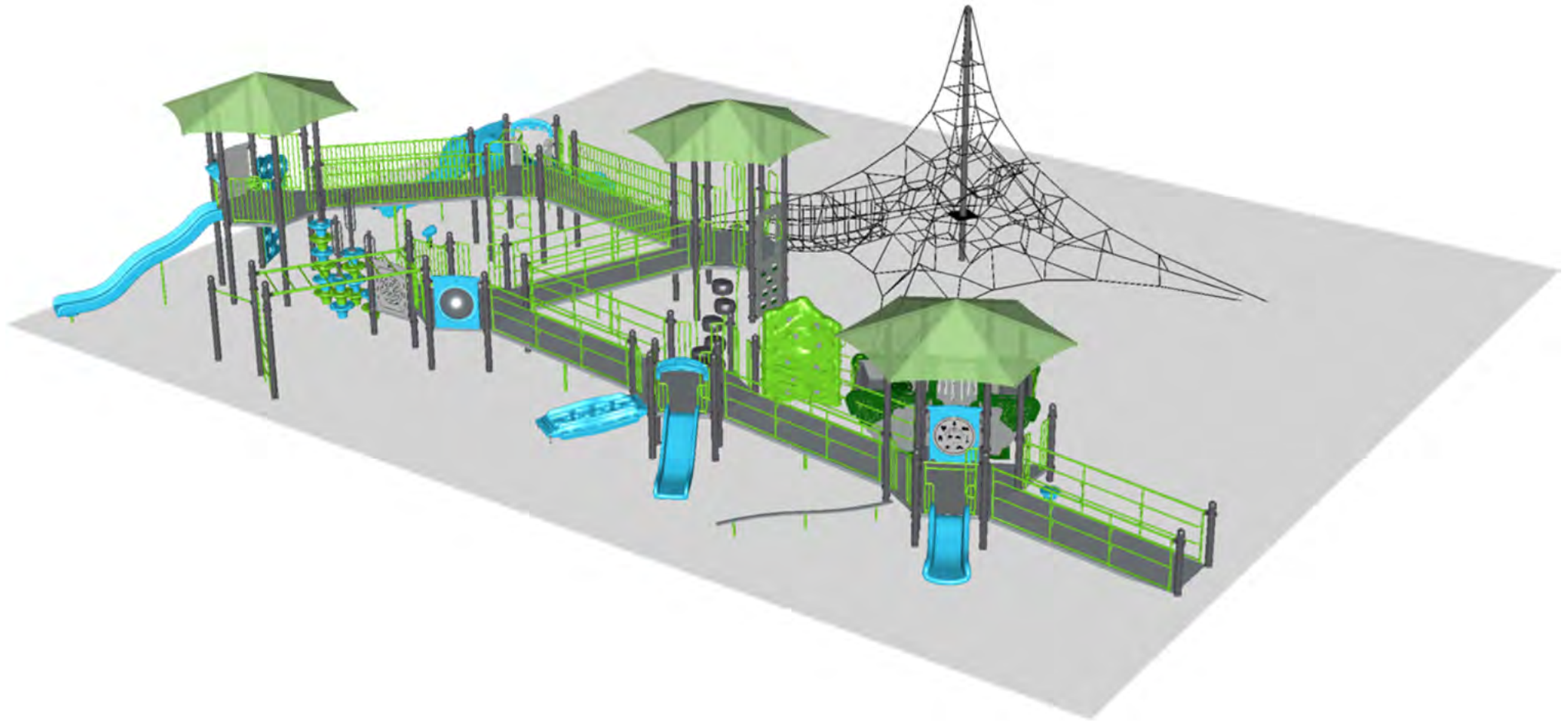


STRUCTURE # R50D1864A
PROJECT # PEI231D68BA
DATE 9/18/2023

BIG RAPIDS - HEMLOCK PARK
SE VIEW

R5

FOR KIDS
AGES
5-12

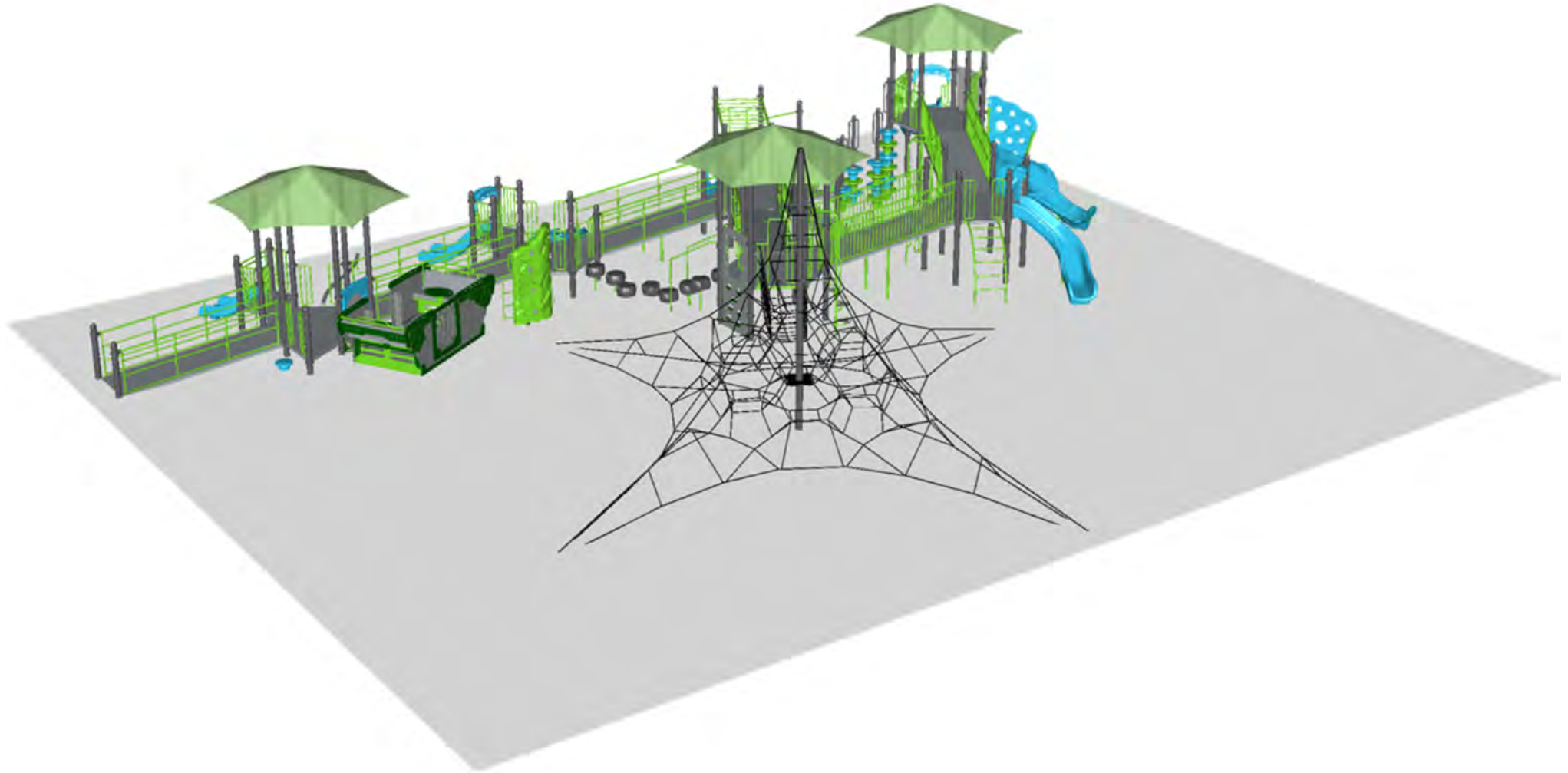


STRUCTURE # R50D1864A
PROJECT # PEI231D68BA
DATE 9/18/2023

BIG RAPIDS - HEMLOCK PARK
NE VIEW

R5

FOR KIDS
AGES
5-12

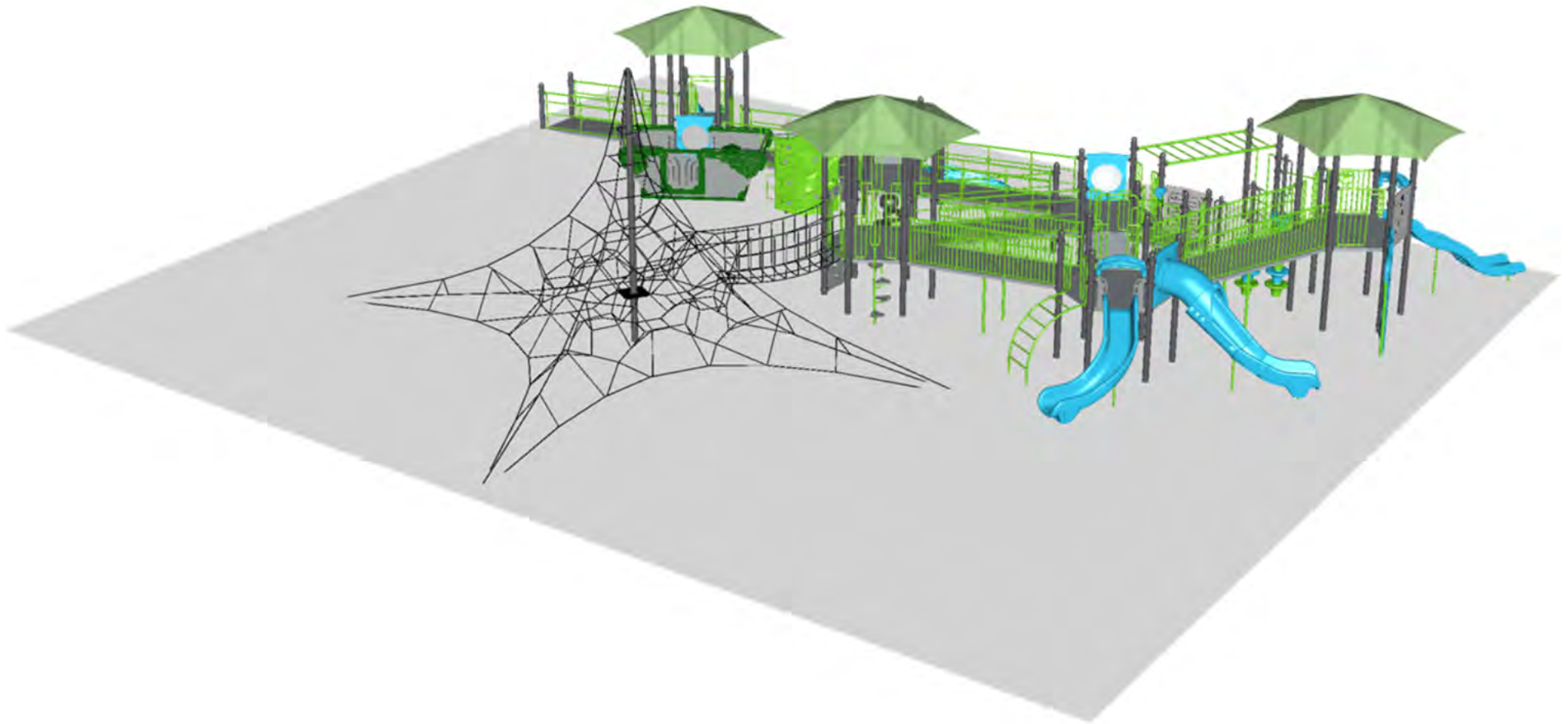


STRUCTURE # R50D1864A
PROJECT # PEI231D68BA
DATE 9/18/2023

BIG RAPIDS - HEMLOCK PARK
NW VIEW

R5

FOR KIDS
AGES
5-12



STRUCTURE # R50D1864A
PROJECT # PEI231D68BA
DATE 9/18/2023

BIG RAPIDS - HEMLOCK PARK
SW VIEW

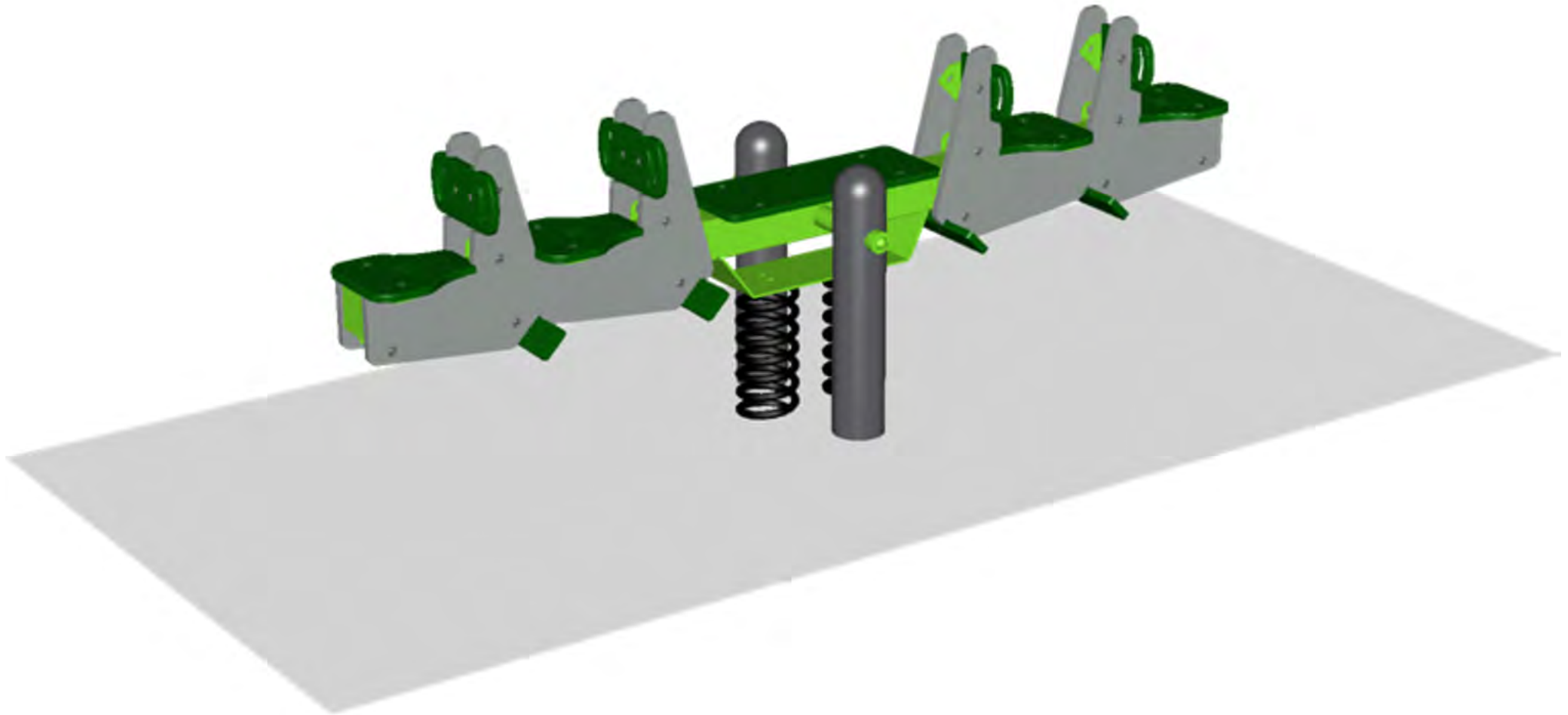
FOR KIDS
AGES
5-12



STRUCTURE # FREPC4232
PROJECT # PEI231D68BA
DATE 9/18/2023

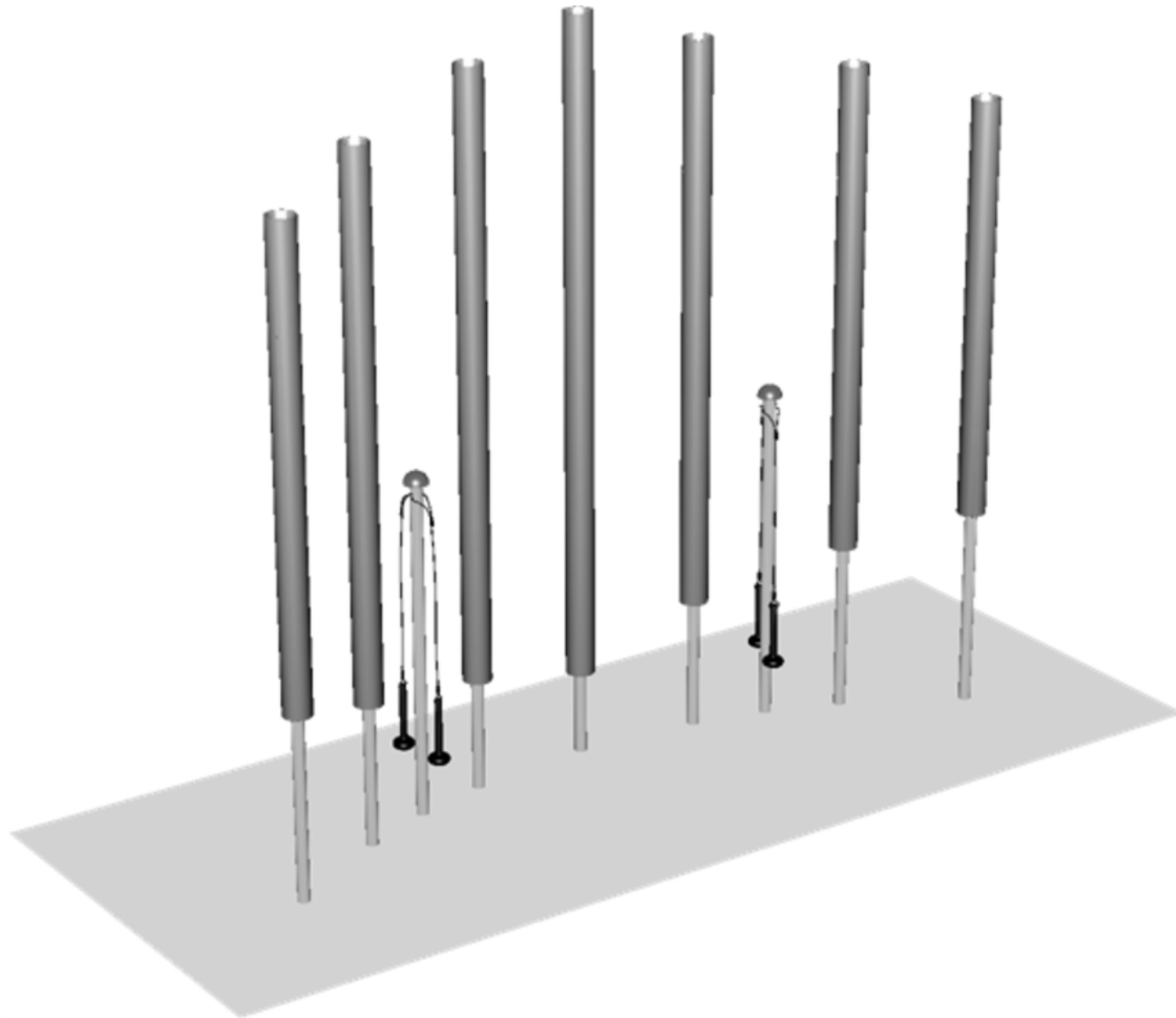
BIG RAPIDS - HEMLOCK PARK
SW VIEW

FOR KIDS
AGES
5-12



STRUCTURE # FREPC2475
PROJECT # PEI231D68BA
DATE 9/18/2023

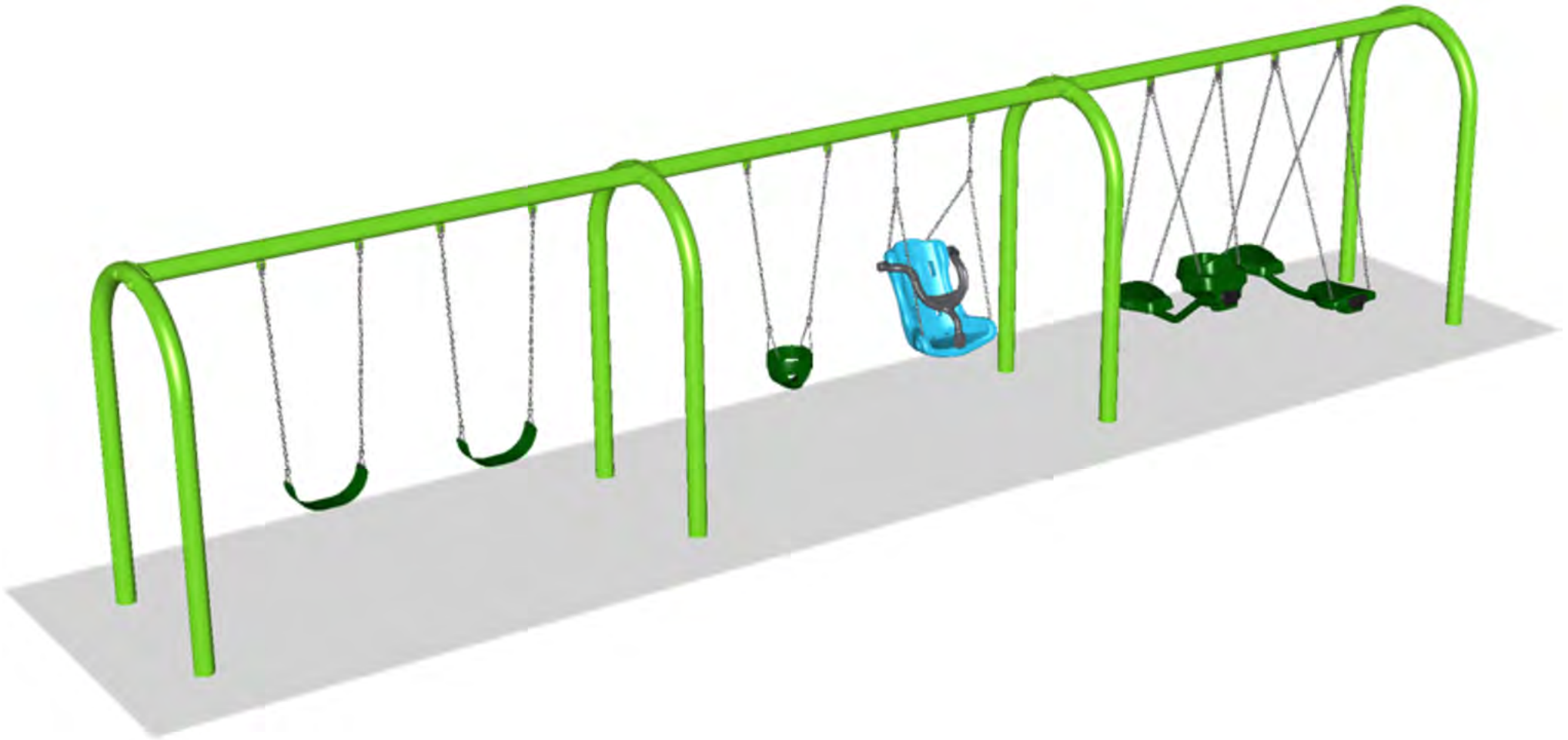
BIG RAPIDS - HEMLOCK PARK
SW VIEW



STRUCTURE # FREENOTES
PROJECT # PEI231D68BA
DATE 9/18/2023

BIG RAPIDS - HEMLOCK PARK
SW VIEW

FOR KIDS
AGES
5-12



STRUCTURE # FREPC2120
PROJECT # PEI231D68BA
DATE 9/18/2023

BIG RAPIDS - HEMLOCK PARK

Project # PEI231D68BA

Date 9/18/2023

Item / Part Number	Description	Qty
[NF59B1D2A]		
HS-1004-R	Collars	23
HS-1004-R35	Collars R35	13
GF-7002	Dome Cap, R5	4
S-1012-R5-12ft	Post, 12ft R5	4
S-1101-R5	Square Deck	1
S-1237-3R5	Climber, Vertical Rock 30-36in	1
S-1243-3	Climber, Disc Pole 30-36in	1
S-1309-2-R5	Half Walls (Pair) R5	1
S-1310-R5	Transition Wall	1
S-1414	Lily Pad Step 12-18in	4
S-1414-30	Lily Pad Step 24in	1
S-1414-6	Lily Pad Step 06in	1
S-1707-3SKY-R5	Slide, Tube 36in (w/ Skylight)	1
S-5103	Geo-Hex Wall	1
S-5104	Hex Net Frame	1
S-5105	Platform Frame Wall	2
S-5207-DL	Belt Bay (Deck)	1
[FREPC2478]		
A2-2478	PC 2478 Spin Max Pod	1
[R50CB525A]		
HS-1004-R	Collars	24
GF-7002	Dome Cap, R5	4
S-1010-R5-10ft	Post, 10ft R5	2
S-1011-R5-11ft	Post, 11ft R5	2
S-1015-R5-15ft	Post, 15ft R5	4
S-1101-R5	Square Deck	2
S-1206-12R5	ADA Stairs, 12in Rise w/ Walls	1
S-1209-24-R5	Transfer Station, 36in-C	1
S-1210-48	Climber, Vertical Ladder 42-48in	1
S-1249-DGH	Climber, Inc. Geo-Wave 42-48in (H, DTG, R)	1
S-1302-R5MT	Steel Wall (Mesh w/ Wheel)	1
S-1303-R5	Single Slide SitDown Hood	1
S-1303-TW-R5	Twister Entry Panel w/ Hood	1
S-1309-2-R5	Half Walls (Pair) R5	2
S-1705-3	Slide, Quarter Turn 36in	1
S-1710-4-R	Slide, Twister 48in (R)	1

BIG RAPIDS - HEMLOCK PARK

Item / Part Number	Description	Qty
S-18021-12R5	Shade Canopy, 12ft Square	1
S-1963-R5	Seat on Post	1
R50D1864A		
HS-1004-R	Collars	130
A2-2410	Balance Beam (Snake)	1
GF-7002	Dome Cap, R5	30
S-1007-R5-07ft	Post, 07ft R5	2
S-1008-R5-08ft	Post, 08ft R5	1
S-1009-R5-09ft	Post, 09ft R5	8
S-1010-R5-10ft	Post, 10ft R5	9
S-1011-R5-11ft	Post, 11ft R5	4
S-1012-R5-12ft	Post, 12ft R5	6
S-1014-R5-14ft	Post, 14ft R5	6
S-1016-R5-16ft	Post, 16ft R5	6
S-1017-R5-17ft	Post, 17ft R5	6
S-11011-13011-R5	Half Square Deck w Walls R5	2
S-1102-R5	Tri-Deck	1
S-1105-R5	Half Deck	2
S-1106-R5	Hex Deck, Half (4 Post)	12
S-1110-R	Filler, 12in	2
S-1208-R-RAIL12	Ramp 144in (Ground w/ Rails, Inc.)	1
S-1208-R-RAIL24	Ramp 144in (06-12in High w/ Rails, Inc.)	1
S-1208-R-RAIL36	Ramp 144in (18-24in High w/ Rails, Inc.)	1
S-1208-R-RAIL48	Ramp 144in (30-36in High w/ Rails, Inc.)	1
S-1208-R-WALL60	Ramp 144in (42-48in High w/ Walls, Inc.)	1
S-1208-R-WALL72	Ramp 144in (54-60in High w/ Walls, Inc.)	1
S-1216-DLX	Climber, Grip Deluxe 30-36in	1
S-1218-5	Climber, Arch 54-60in	1
S-1227-5R5	Climber, Zipper 54-60in	1
S-1233-2-HW	Climber, Disc 18-24in (w/ HW)	1
S-1233-3-MC	Climber, Disc 30-36in	1
S-1233-4-MC	Climber, Disc 42-48in	1
S-1233-6-HW	Climber, Disc 66-72in (w/ HW)	1
S-1234-4R	Climber, Spiral Step 42-48in	1
S-1236-3	Erector Rock, Curved	1
S-1236-CSM-AL	Access Ladder, CSM	1
S-1236-CST-AL	Access Ladder, CST	1
S-1237-4R5	Climber, Vertical Rock 42-48in	1
S-1238-R5PST	Climber, Freeform	1
S-1249-DGH	Climber, Inc. Geo-Wave 18-24in (H, DTG, R)	1

Item / Part Number	Description	Qty
S-1301-1830-S-R5	Wall w/ Telescope	1
S-1301-R5-MT	Wall w/ Wheel	1
S-1303-R5	Single Slide SitDown Hood	2
S-1303-TW-R5	Twister Entry Panel w/ Hood	1
S-1309-2-R5	Half Walls (Pair) R5	12
S-1309-ADA-L-R5	Half Walls ADA (Single, Left)	2
S-1310-R5	Transition Wall	1
S-1314-R5R	Access Wall (Right)	1
S-1403-R5	End Access Ladder (3-Rung)	1
S-1414-6	Lily Pad Step 06in	1
S-1430-R5	Traverse, Horizontal Ladder (Wide)	1
S-1521-R5PNL	Pyramid Net w/ Bridge	1
S-1602-R5	Bubble Panel	1
S-1607-R5	Maze Panel	1
S-1618-R5	Seek Panel (Standard)	1
S-1620-R5	Jump Panel	1
S-1701-2R5V2	Slide, Single 24-30in (Straight)	1
S-1701-3	Slide, Single 36in (Straight)	1
S-1704-6	Slide, Wave 72in (Single)	1
S-1709-5L-L	Slide, Portal 60in (L)	1
S-1710-5-RR	Slide, Twister 60in (R2)	1
S-18026-R5	Shade Canopy, Hex 14ft	3
S-1930-R5	Chinning Bar	1
S-1961-2	Climber, Step-Up 24in (Rock)	1
S-1961-4-HH-R5	Climber, Step-Up 48in (Rock, Hand Rails)	1
S-1961-R	Rock Step	1
S-1975-R5	Trans-Glide	1
FREPC4232		
A2-4232	PC 4232 Spring Max Turbo Totter	1
FREPC2475		
A2-1920	PC 1920 Spring Seesaw	1
FREENOTES		
CCH-IG	Contrabass Chimes w/ Steel Post (IG)	1
FREPC2120		
A2-131410	Inclusive Seat	1
A2-131510	Playshare Seat	1
A2-131510-AA	Playshare Friends Swing Seat	1
A2-2120	PC 2120-8ft Arch Swing Bay (2 Seat)	1
A2-2120-AB	PC 2120-8ft Arch Swing Bay (2 Seat) AB	2
A2-311010	Full Bucket Seat	1



A PlayCore Company

**Bill of Materials
(Continued)**

BIG RAPIDS - HEMLOCK PARK

Item / Part Number	Description	Qty
A2-313010	Belt Seat	2

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes, but is not necessarily limited to, the forms and procedures for modifying the Contract Documents.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 SCHEDULES:

- A. Attached are the following forms:
 - 1. Bulletin.
 - 2. Field Order.
 - 3. Change Order.

END OF SECTION

BULLETIN
Page 1 of 2

CONTRACT FOR:

BULLETIN NO. _____

OWNER:

DATE: _____

DUE DATE: _____

CONTRACTOR:

ENGINEER:

DRAWING REVISION NO.: _____

DRAWING SHEETS ISSUED HERewith: _____

DISTRIBUTION: _____

=====

The items below are being considered as possible changes to the Contract Documents for this Project. CONTRACTOR is requested to submit changes in cost, if any, for each item and indicate whether it is an addition to or deduction from the Contract Price. Include all labor, materials, overhead and profit. After reviewing the effects of those changes in the Work, OWNER may issue a Change Order specifying which changes are to be incorporated in the Work, if any.

This Bulletin is not a Change Order and is not to be deemed authorization to proceed with the changes listed.

Additional work or materials, where proposed, shall meet the requirements of the Contract Documents, except where noted.

CONTRACTOR will be responsible for notifying ENGINEER, in writing, concerning any revision or clarification which causes a change in the Contract Documents, but are not specifically mentioned as a cost item in this Bulletin.

CONTRACTOR shall return three (3) completed and signed copies of the Bulletin to ENGINEER on or before the due date noted above.

Each proposed change has been described briefly with additional information provided concerning detailed changes required for the major trades concerned. Only one total cost figure has been requested for each item on the Bulletin; however, a complete breakdown is required for each item as supporting documentation. This will allow OWNER to more easily evaluate the proposed cost changes. Each Bulletin item is an all-inclusive item and may concern work from several trades or Subcontractors. It is CONTRACTOR's responsibility to ensure that all work for each item has been included in the total cost figure provided to OWNER.

BULLETIN
Page 2 of 2

BULLETIN NO. _____

DATE: _____

SPECIFICATION CHANGES

Item No. 1:

Section _____ - _____

[Paragraph] _____
_____ Add/Deduct \$ _____

Item No. 2:

Section _____ - _____

[Paragraph] _____
_____ Add/Deduct \$ _____

DRAWING CHANGES

Item No. 3:

Sheet(s) _____:

_____ Add/Deduct \$ _____

Item No. 4:

Sheet(s) _____:

_____ Add/Deduct \$ _____

CONTRACTOR:

Signature

Name and Title of Signatory

Date

FIELD ORDER NO.: [Number of Field Order]

Owner:
Engineer:
Contractor:
Project:
Contract Name:

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

Date Issued:

Effective Date of Field
Order:

Contractor is hereby directed to promptly perform the Work described in this Field Order, issued in accordance with Paragraph 11.04 of the General Conditions, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference:

Specification Section(s):

Drawing(s) / Details (s):

Description:

[Description of the change to the Work]

Attachments:

[List documents supporting change]

Issued by Engineer

By: _____

Title: _____

Date: _____

CHANGE ORDER NO.: [Number of Change Order]

Owner: _____ Owner's Project No.: _____
 Engineer: _____ Engineer's Project No.: _____
 Contractor: _____ Contractor's Project No.: _____
 Project: _____
 Contract Name: _____
 Date Issued: _____ Effective Date of Change Order: _____
 The Contract is modified as follows upon execution of this Change Order:

Description:
[Description of the change]

Attachments:
[List documents related to the change]

Change in Contract Price	Change in Contract Times [State Contract Times as either a specific date or a number of days]
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] from previously approved Change Orders No. 1 to No. [Number of previous Change Order] : \$ _____	[Increase] [Decrease] from previously approved Change Orders No.1 to No. [Number of previous Change Order] : Substantial Completion: _____ Ready for final payment: _____
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] this Change Order: \$ _____	[Increase] [Decrease] this Change Order: Substantial Completion: _____ Ready for final payment: _____
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for final payment: _____

Recommended by Engineer (if required)

By: _____
 Title: _____
 Date: _____

Authorized by Contractor

Authorized by Owner

By: _____
 Title: _____
 Date: _____

Approved by Funding Agency (if applicable)

SECTION 01 31 19
PROJECT MEETINGS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED:

- A. The Engineer will schedule and administer the preconstruction conference and periodic progress meetings.
 - 1. Prepare the agenda for the meetings.
 - 2. Distribute written notice of each meeting in advance of meeting date.
 - 3. Make physical arrangements for meeting.
 - 4. Preside at meetings.
 - 5. Record the minutes.
 - 6. Distribute copies of the minutes to meeting attendees and affected parties.
- B. Representatives of Contractor, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.02 PRECONSTRUCTION CONFERENCE:

- A. Schedule: Meeting will be prior to the start of work at a time and place designated by the Engineer.
- B. Attendance:
 - 1. Owner.
 - 2. Engineer.
 - 3. Contractor.
 - 4. Major Subcontractors.
 - 5. Utility companies.
 - 6. Governmental agencies.
 - 7. Contractor's Safety representative.
- C. Agenda:
 - 1. Utility conflicts.
 - 2. Responsibilities
 - 3. General contract terms.
 - 4. Supervision.
 - 5. Schedules and seasonal limitations.
 - 6. Approvals and testing.
 - 7. Clearances and notices.
 - 8. Construction procedures.
 - 9. Payments and estimates.
 - 10. Labor requirements.
 - 11. Safety.

1.03 PROGRESS MEETINGS:

- A. Schedule: Meetings will be scheduled a minimum of once each month at a time and place designated by the Engineer.

B. Attendance:

1. Engineer.
2. Contractor.
3. Subcontractors as pertinent to agenda.
4. Government agencies as pertinent to agenda.
5. Safety representatives.

C. Agenda:

1. Review and approve minutes of previous meeting.
2. Review of work progress since previous meeting.
3. Field observations, problems, conflicts.
4. Problems which impede construction schedule.
5. Review of off-site fabrication and delivery schedules.
6. Corrective measures and procedures to regain projected schedule.
7. Revisions to construction schedule.
8. Proposed work during the succeeding work period.
9. Coordination of schedules.
10. Review of submittal schedules.
11. Review of proposed changes for effect on construction schedule and on completion date.
12. Safety report.
13. Review new business.
14. Establish date for next meeting.

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.01 CONSTRUCTION SCHEDULES:

- A. General:
 - 1. Coordinate with work by others as explained in SECTION 00 72 00 GENERAL CONDITIONS.
 - 2. Contractor shall notify Engineer 72 hours prior to start of the work or prior to a major increase in the work force if these vary from schedule as submitted.
- B. Form of Schedules:
 - 1. Prepare schedules in the form of a horizontal bar chart.
 - 2. Provide a separate horizontal bar for each trade or operation.
 - 3. Provide a horizontal time scale identifying the first workday of each week.
 - 4. The order shall be the chronological beginning of each work item.
 - 5. The row identification shall be each major specification section or subdivision of work with distinct graphic delineation.
- C. Content of Schedules:
 - 1. The construction project schedule shall include as a minimum:
 - a. Project start date.
 - b. Start dates and durations for each major trade group, work tasks or other subdivisions of the work.
 - c. Shop drawings, product data, and sample submittal dates and dates when reviewed copies will be required.
 - d. Equipment and/or material delivery dates, if approved.
 - e. Total project duration and end dates.
- D. Updating:
 - 1. Show all occurring changes of previous submission.
 - 2. Show progress completion dates of each activity.
 - 3. Submit a narrative report, if required by Engineer defining:
 - a. Problem areas: Impact of current and anticipated delay factors.
 - b. Schedule changes: Effect on other contractors.
 - c. Revision description: Effect of change of scope and duration of activities.
- E. Submittal of Schedules:
 - 1. The Contractor shall submit the preliminary detailed construction schedule within fifteen (15) days after notice of award. Engineer will return copy within ten (10) days.
 - 2. An updated schedule shall be submitted on the first workday of each month.
- F. Distribution:
 - 1. The reviewed schedule shall be distributed by Engineer to:
 - a. The job site file.
 - b. Owner.

1.02 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES:

A. General:

1. Where required by specifications, the Contractor shall submit descriptive information which will enable the Engineer to advise the Owner whether the Contractor's proposed materials, equipment, or methods of work are in general conformance to the design concept and in compliance with the drawings and specifications. The information to be submitted shall consist of drawings, specifications, descriptive data, certificates, samples, test results and such other information, all as specifically required in the specifications.

B. Contractor Responsibility:

1. Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall assure that the material, equipment or method of work shall be as described in the submittal. The Contractor shall verify that the material and equipment described in each submittal conform to the requirements of the specifications and drawings. If the information shows deviations from the specifications or drawings, the Contractor shall insure that there is no conflict with other submittals and notify the Engineer in each case where his submittal may affect the work of another Contractor or the Owner. The Contractor shall insure coordination of submittals among the related crafts and subcontractors.
2. The Contractor shall be responsible to check and verify all field measurements, all dimensions on shop and setting drawings and all schedules required for the work of all the various trades.
3. Where content of submitted literature includes data not pertinent to the submittal, Contractor shall clearly indicate which portion of the contents is being submitted for Engineer's review.
4. The Contractor shall stamp each submittal with stamp, initialed and signed, certifying to review of the submittal by the Contractor, verification of field measurements and compliance with Contract Documents.

C. Transmittal Procedure:

1. General:
 - a. Submittals shall be submitted promptly in accordance with dates in proposals, approved schedules and in such sequence that there is no delay in the Work or the work of any other Contractor.
 - b. A unique number, sequentially arranged, shall be noted on the transmittal form accompanying each item's submittal. Original submittal numbers shall have the following format "XXX-Y" where "XXX" is the originally assigned submittal number, and "Y" is a sequential letter assigned for resubmittals, i.e., A, B, or C being the 1st, 2nd and 3rd resubmittals, respectively. Submittal 25-B, for example, is the second resubmittal of submittal 25.
2. Deviation from Contract:
 - a. If the Contractor proposed to provide material or equipment which does not conform to the specifications and drawings, he shall indicate so under "deviations" on the transmittal form accompanying the submittal copies. He shall prepare his reason for a change, including cost differential, and request a change order to cover the deviations.
3. Submittal Completeness:
 - a. Submittals which do not have all the information required to be submitted, including deviations, are not acceptable and will be returned without review.

D. Review Procedure:

1. Submit in PDF (portable document format) electronic format. Hardcopy submittals may be made with prior approval of the Engineer. For samples, submit the number stated in each specifications section.
 2. Unless otherwise specified, within fourteen (14) calendar days after receipt of the submittal, the Engineer shall review and return the submittal to the Contractor. The returned submittal shall indicate one of the following actions:
 - a. If the review indicates that the material, equipment or work method is in general conformance with the design concept, drawings and specifications, submittal copies will be marked "Reviewed, No Exceptions Taken". In this event the Contractor may begin to implement the work method or incorporate the material or equipment covered by the submittal.
 - b. If the review indicates limited corrections are required, submitted copies will be marked "Reviewed, with Corrections Noted". The Contractor may begin implementing the work method by the submittal in accordance with the noted corrections. Where submittal information will be incorporated in O&M data, a corrected copy shall be provided.
 - c. If the review reveals that the submittal is insufficient or contains incorrect data, submitted copies will be marked "Rejected, Resubmit". Except at his own risk, the Contractor shall not undertake work covered by this submittal until it has been revised, resubmitted, and returned marked either "Reviewed, No Exceptions Taken" or "Reviewed, with Corrections Noted".
 - d. If the review indicates that the material, equipment, or work method is not in general conformance with the drawings and specifications, copies of the submittal will be marked "Rejected, Resubmit". Submittals with deviations which have not been identified clearly may be rejected. Except at his own risk, the Contractor shall not undertake the work covered by such submittals until it has been revised, resubmitted and returned marked either "Reviewed, No Exceptions Taken" or "Reviewed, with Corrections Noted".
 - e. If the review indicates that the material or equipment is not from an acceptable manufacturer, as indicated in the specifications, copies of the submittal will be marked "Submit Specific Item". Except at his own risk, the Contractor shall not undertake the work covered by such submittals until it has been revised, resubmitted and returned marked either "Reviewed, No Exceptions Taken" or "Reviewed, with Corrections Noted".
- E. Effect of Review of Contractor's Submittal:
1. Review of drawings, methods of work or information regarding materials or equipment the Contractor proposes to provide shall not relieve the Contractor of his responsibility for errors therein and shall not be regarded as an assumption of risks or liabilities by the Engineer or the Owner, or by an officer or employee thereof, and the Contractor shall have no claim under the Contract on account of the failure, or partial failure, of the method of work, material or equipment so reviewed. A mark of "Reviewed, No Exceptions Taken" or "Reviewed, with Corrections Noted" shall mean that the Owner has no objection to the Contractor, upon his own responsibility, using the plan or method of work proposed, or providing the materials or equipment proposed.
- F. Re-review Costs:
1. Should Engineer be required to review a submittal more than twice because of failure of the submittal to meet the requirements of the Contract Documents, Engineer will record Engineer's time and expenses for performing all additional reviews. The Owner will compensate Engineer for these additional services and deduct the amount from payments to the Contractor.

1.03 OPERATION AND MAINTENANCE DATA:

- A. Requirements:
 - 1. Compile product data on related information appropriate for Owner's operation and maintenance of products furnished.
 - 2. Prepare data in the form of an instructional manual for use by Owner's personnel. Prepare five (5) printed copies of complete sets compiled, bound and indexed. Also provide electronic copy on CD, if available.
 - 3. Submittal of operation and maintenance manuals shall be prior to final payment request.
 - B. Required Submittals:
 - 1. Refer to technical specification sections for required submittals.
- 1.04 RECORD DOCUMENTS:
- A. Requirements:
 - 1. The Contractor shall maintain on the construction site a minimum of one (1) complete set of Contract Documents amended by "RED LINE" or highlight inclusion to reflect the most immediate status methods, materials and locations and routings of construction. Supplementary sketches shall be included, if necessary, to clearly indicate all work as constructed.
 - 2. At conclusion of work, the Contractor shall submit to the Engineer one (1) complete amended record set of these site documents.
 - 3. Submittal shall be prior to final payment.
 - 4. Failure of the Contractor to maintain an up-to-date set of modified drawings on the project site shall be reason to withhold payments.
- 1.05 ATTACHMENTS:
- A. Shop Drawing List

END OF SECTION

Shop Drawing Submittal List & Log

City of Big Rapids Last Update:
 Hemlock Park Improvements
 F&V Project No.: 858220

4/26/2023

Contractor shall submit the below Shop Drawings.

Submittal No:	Specification Number	Specification Title	Description
	01 33 00	Submittals	Construction Schedule
	01 33 00	Submittals	Record Documents
	02 41 00	Demolition	Demolition Schedule
	02 41 00	Demolition	Work Plan
	02 41 00	Demolition	Record Drawings
	03 30 00	Cast-In-Place Concrete	Concrete Mix Designs
	03 30 00	Cast-In-Place Concrete	Reinforcing Steel Schedule
	03 30 00	Cast-In-Place Concrete	Certifications
	03 30 00	Cast-In-Place Concrete	Batch Tickets
	04 57 33	Community Fireplace	Detailed Design Drawing
	04 57 33	Community Fireplace	Gas System Components
	04 57 33	Community Fireplace	Masonry Samples
	04 57 33	Community Fireplace	Contractor Experience
	04 57 33	Community Fireplace	Manufacturer's Written Warranty
	04 57 33	Community Fireplace	Manufacturer's Operation Instructions
	11 68 13	Playground Equipment	Manufacturer's Color Palette
	11 68 13	Playground Equipment	Manufacturer's Literature
	11 68 13	Playground Equipment	Manufacturer's Written Warranty
	26 05 00	Electrical General Provisions	Materials and Equipment
	26 05 00	Electrical General Provisions	Record Drawings
	26 05 00	Electrical General Provisions	List of Sub-Contractors
	26 05 00	Electrical General Provisions	Work Plan and Schedule
	26 05 00	Electrical General Provisions	Operating and Maintenance Instructions
	26 05 19	Electrical Conductors	Voltage and Insulation Test Data
	26 05 26	Grounding and Bonding	Ground Resistance Test
	26 05 53	Electrical Identification	Nameplates & Labels
	26 05 53	Electrical Identification	Wire Markers
	26 05 53	Electrical Identification	Underground Warning Tape
	26 27 26	Wiring Devices	Wall Switches
	26 27 26	Wiring Devices	Receptacles
	26 27 26	Wiring Devices	Cover Plates
	26 27 26	Wiring Devices	Pushbutton and Selector Switches
	26 27 26	Wiring Devices	Timer Switches
	26 27 26	Wiring Devices	Light Dimmers
	26 27 26	Wiring Devices	Aerator Receptacles and Plug
	26 27 26	Wiring Devices	Power Receptacles
	26 27 26	Wiring Devices	Portable Drop Cable Assemblies
	26 27 26	Wiring Devices	Cable Festoon System
	26 27 26	Wiring Devices	Cable Reels
	26 27 26	Wiring Devices	Power Connectors
	26 27 26	Wiring Devices	Timers
	26 27 26	Wiring Devices	Occupancy Sensing Controls
	26 28 13	Fuses	Fuses
	26 28 13	Fuses	Fuse Holders
	33 12 17	Hot Mixed Asphalt Paving - Superpave Mixtures	Job-Mix Formulas
	33 12 17	Hot Mixed Asphalt Paving - Superpave Mixtures	Material Certifications
	32 13 14	Concrete Sidewalk, Sidewalk Ramps and Driveways	Concrete Mix Designs
	32 13 14	Concrete Sidewalk, Sidewalk Ramps and Driveways	Material Certifications
	32 13 14	Concrete Sidewalk, Sidewalk Ramps and Driveways	Batch Tickets
	32 13 14	Concrete Sidewalk, Sidewalk Ramps and Driveways	Concrete Test Specimens
	32 16 13	Concrete Curbs and Gutters	Concrete Mix Designs
	32 16 13	Concrete Curbs and Gutters	Material Certifications
	32 16 13	Concrete Curbs and Gutters	Batch Tickets
	32 16 13	Concrete Curbs and Gutters	Concrete Test Specimens
	32 18 16	Playground Safety Surface	Product Data & Installation Instructions
	32 18 16	Playground Safety Surface	Verification Samples
	32 18 16	Playground Safety Surface	Installer Qualifications
	32 18 16	Playground Safety Surface	Warranty Documents

Shop Drawing Submittal List & Log

City of Big Rapids Last Update:
 Hemlock Park Improvements
 F&V Project No.: 858220

4/26/2023

Contractor shall submit the below Shop Drawings.

Submittal No:	Specification Number	Specification Title	Description
	32 31 13	Chain Link Fences and Gates	Fencing Components
	32 31 13	Chain Link Fences and Gates	Gate Operators
	32 92 19.16	Hydroseeding	Seed Certification
	33 11 00	Watermains	Pipe & Fittings
	33 11 00	Watermains	Mechanically Restrained Joints
	33 11 00	Watermains	Valves & Boxes
	33 11 00	Watermains	Fire Hydrants
	33 11 00	Watermains	Water Services
	33 11 00	Watermains	Tracer Wire & Appurtenances
	33 11 00	Watermains	Individual Valve Structure Build Sheets
	33 11 00	Watermains	Witnesses
	33 31 00	Sanitary Sewers	Individual Manhole Build Sheets
	33 31 00	Sanitary Sewers	Castings
	33 31 00	Sanitary Sewers	Pipe & Fittings
	33 31 00	Sanitary Sewers	Witnesses
	33 32 05	Submersible Duplex Pump Stations	Pump & Motor
	33 32 05	Submersible Duplex Pump Stations	Piping, Fittings & Valves
	33 32 05	Submersible Duplex Pump Stations	Individual Structure Build Sheets
	33 32 05	Submersible Duplex Pump Stations	Access Doors
	33 32 05	Submersible Duplex Pump Stations	Inside Drop
	33 32 05	Submersible Duplex Pump Stations	Pressure Gauges
	33 32 05	Submersible Duplex Pump Stations	Operation & Maintenance Manuals
	33 34 00	Sanitary Force Mains	Pipe & Fittings
	33 34 00	Sanitary Force Mains	Mechanically Restrained Joints
	33 34 00	Sanitary Force Mains	Valves & Boxes
	33 34 00	Sanitary Force Mains	Air Release Valves & Appurtenances
	33 34 00	Sanitary Force Mains	Tracer Wire & Appurtenances
	33 34 00	Sanitary Force Mains	Individual Air Release Valve Structure Build Sheets
	33 34 00	Sanitary Force Mains	Witnesses
	33 41 00	Storm Sewers	Individual Drainage Structure Build Sheets
	33 41 00	Storm Sewers	Castings
	33 41 00	Storm Sewers	Pipe
	33 41 00	Storm Sewers	Geotextile Fabric

SECTION 01 42 13

ABBREVIATIONS

PART 1 - GENERAL

1.01 ABBREVIATIONS:

A. Standards:

AASHTO:	American Association of State Highway Transportation Officials
ACI:	American Concrete Institute
ANSI:	American National Standard Institute
ASA:	American Standard Association
ASTM:	American Society for Testing and Materials
AWS:	American Welding Society
AWWA:	American Water Works Association
CRSI:	Concrete Reinforcing Steel Institute
CSI:	Construction Specifications Institute
EGLE:	Michigan Department of Environment, Great Lakes, and Energy
IDEM:	Indiana Department of Environmental Management
MDPH:	Michigan Department of Public Health
MDNR:	Michigan Department of Natural Resources
MDOT:	Michigan Department of Transportation
NEC:	National Electrical Code
NCPI:	National Clay Pipe Institute
UL:	Underwriters Laboratories Inc.
AISC:	American Institute of Steel Construction
NEMA:	National Electrical Manufacturers Association
NFPA:	National Fire Protection Association

B. Unit Priced Items:

Ft, Lft:	Linear Foot
Ea:	Each
VFt, Vft.:	Vertical Foot
LSum, Lsum:	Lump Sum
Syd, Syd:	Square Yard
Sta:	Station (100 foot)
Cyd, Cyd:	Cubic Yard
SFt, Sft, SqFt:	Square Foot
LB, Lb:	Pound
GAL, Gal:	Gallon

END OF SECTION

SECTION 01 45 00
QUALITY CONTROL

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes the work required for all quality control.

1.02 REFERENCES:

- A. MDOT - Michigan Department of Transportation, "*2020 Standard Specifications for Construction*".
- B. ASTM - American Society of Testing Materials, latest edition.
- C. AASHTO – American Association of State Highway Transportation Officials, latest edition.
- D. AWS – American Welding Society, latest edition.

1.03 QUALITY ASSURANCE:

- A. General:
 - 1. Selection of test specimens will be made by the Engineer.
 - 2. Testing procedure will be in accordance with the current standard specified.
 - 3. Refer to the SECTION requirements for field quality control.

1.04 SUBMITTALS:

- A. Test Specimens: Deliver to the place of inspection and testing.
- B. Certification of Quality by Producer: Deliver to the Engineer.
- C. Certification of Welders: Deliver to the Engineer.

1.05 DELIVERY:

- A. Collect and deliver materials and concrete cylinders to the designated testing laboratory.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Inspection and Testing Agencies:
 - 1. In accordance with the requirements of ASTM E329.
 - 2. Reporting shall be to the Engineer.

PART 3 - EXECUTION

3.01 PERFORMANCE:

- A. Acceptance Tests and Inspection:
 - 1. Aggregates: Certification of quality by producer.
 - 2. Soil density:
 - a. Moisture-density relationships:

- 1) Cohesive (Clays) or Granular (Sands) Soils: ASTM D1557 (Modified Proctor).
 - 2) Granular (Sands) Soils: Michigan Cone Test.
- b. Field density determination according to ASTM standards.
- c. Contractor shall provide access to test location and depth.
3. Asphalt cement: Certification of quality producer.
4. Bituminous mix composition:
 - a. Sample: ASTM D979.B.
 - b. Extraction test: AASHTO T30, AASHTO T168 AND ASTM D2172.
 - c. Frequency: One test within each 500-ton placed.
5. Bituminous pavement density:
 - a. Sample: ASTM D979
 - b. Comparative density tests of in-place material against laboratory specimens of the same material: ASTM D1559 and ASTM D2726.
 - c. Frequency: One test within each 2,500 square yards placed.
6. Brick and Block:
 - a. Buildings:
 - 1) Under 30M: Visual inspection on site.
 - 2) Over 30M: ASTM C216 and ASTM C90
 - b. Manholes and catch basins:
 - 1) Visual inspection on-site
7. Cement: Certification of quality by producer.
8. Concrete:
 - a. Sample: ASTM C172
 - b. Frequency: Once for each 50 cubic yards of each class of concrete placed.
 - c. Perform following from sample:
 - 1) Mold three 6-inch cylinder compressive strength specimens: ASTM: C31
 - 2) Slump test: ASTM C143
 - 3) Air test: ASTM C231
 - 4) Yield test: ASTM C138
 - 5) Strength test: ASTM C139
9. Precast Manholes: Certification of quality by producer.
10. Painting:
 - a. Workmanship: Visual inspection on site.
 - b. Film thickness test: Gauge or yield.
 - c. Frequency: One test within each 100 square feet applied.
11. Pipe:
 - a. Gravity: Laboratory test one-half percent ($\frac{1}{2}\%$) of total item with minimum one piece each size, material and class. Certification of quality by producer acceptable for corrugated metal pipe.
 - b. Pressure: Certification of quality by producer.
12. Steel (reinforcing, structural and miscellaneous): Certification of quality by producer.
13. Welding:
 - a. Certification of welders as follows:
 - 1) Buildings: AWS D1.0 Appendix A.
 - 2) Water Tanks: AWS D1.0 Appendix A.
 - 3) Bridges: MDOT 707.03.D.10.c.
 - b. Visual on-site inspection and nondestructive testing as follows:
 - 1) Buildings: AWS D1.0 Appendix B.
 - 2) Water Tanks: AWWA D100.
 - 3) Bridges: MDOT 707.03.D.10.c.
14. Well soil samples: Sieve analysis ASTM C136

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SUMMARY:

- A. Section includes:
 - 1. This Section includes, but is not necessarily limited to, the furnishing, fabrication and installation of the major items listed below as indicated on the Drawings, as specified herein, and as necessary for the proper and complete performance of the Work.
- B. Temporary Construction Facilities:
 - 1. Vehicular access.
 - 2. Parking.
 - 3. Project cleaning and waste removal.
 - 4. Traffic regulation.
- C. Temporary Controls:
 - 1. Barriers.
 - 2. Security.
 - 3. Water control.
 - 4. Dust control.
- D. Removal of Temporary Utilities, Facilities and Controls.

1.02 VEHICULAR ACCESS:

- A. Coordinate with Engineer to determine access roads from public thoroughfares to serve construction area, of width and load bearing capacity to accommodate unimpeded traffic for construction purposes.
- B. Extend and relocate vehicular access as Work progress requires, provide detours as necessary for unimpeded traffic flow.
- C. Provide unimpeded access for emergency vehicles. Maintain 20 feet wide driveways with turning space between and around combustible materials.
- D. Provide and maintain access to fire hydrants and control valves free of obstructions.
- E. Provide means of removing mud from vehicle wheels before entering streets.
- F. Coordinate with Engineer to determine existing on-site roads for construction traffic.

1.03 PARKING:

- A. Arrange for surface parking areas to accommodate construction personnel.
- B. Do not allow heavy vehicles or construction equipment in parking areas.
- C. Permanent Pavements and Parking Facilities:

1. Prior to Substantial Completion, bases for permanent roads and parking areas may be used for construction traffic.
2. Avoid traffic loading beyond paving design capacity. Tracked vehicles not allowed.
3. Use of permanent parking structures is [permitted] [not permitted].

D. Maintenance:

1. Maintain traffic and parking areas in sound condition [free of excavated material, construction equipment, products, mud, snow, and ice].
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 or specified condition.

E. Removal, Repair:

1. Remove temporary materials and construction before Substantial Completion.
2. Remove underground work and compacted materials to depth of 2 feet; fill and grade site as specified.
3. Repair existing and permanent facilities damaged by use to specified condition.

1.04 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 prior to enclosing spaces.
- C. Collect and remove waste materials, debris and rubbish from site daily and dispose offsite.

1.05 TRAFFIC REGULATION:

A. Signs, Signals and Devices:

1. Traffic Cones and Drums, Flares and Lights: As approved by authority having jurisdiction.

B. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

C. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

D. Haul Routes:

1. Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.

E. Traffic Signs and Signals:

1. Provide signs at approaches to site and on site, at crossroads, detours, parking areas and elsewhere as needed to direct construction and affected public traffic.
2. Relocate as Work progresses to maintain effective traffic control.

F. Removal:

1. Remove equipment and devices when no longer required.
2. Repair damage caused by installation.
3. Remove post settings to depth of 2 feet.

1.06 BARRIERS:

- A. Provide barriers and construction fencing to prevent unauthorized entry to construction areas to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide barricades and walkways required by authorities having jurisdiction for public rights-of-way and for public access to existing building.
- C. Provide protection for plants designated to remain. Replace damaged plants.
- D. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

1.07 SECURITY:

- A. Security Program:
 - 1. Protect Work from theft, vandalism and unauthorized entry.

1.08 WATER CONTROL:

- A. Grade site to drain. Maintain excavations free of water. Provide, operate and maintain pumping equipment.

1.09 DUST CONTROL:

- A. Execute Work by methods to minimize raising dust from construction operations.
- B. Provide Positive means to prevent air-borne dust from dispersing into atmosphere.

1.10 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS:

- A. Remove any temporary utilities, equipment, facilities and materials prior to final inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing and permanent facilities used during construction to original condition.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01 57 13

TEMPORARY EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes the work required to provide and maintain temporary soil erosion and sedimentation control.

1.02 JOB CONDITIONS:

- A. Requirements: Comply with Drawings and permit requirements.
- B. Permit: Contractor shall obtain permit from local enforcing agency.
- C. Time Limitations: MDOT 208.03B.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. MDOT 208.02 and as approved by the regulating agency.
- B. All soil erosion control materials shall be wildlife safe.

PART 3 - EXECUTION

3.01 PERFORMANCE:

- A. General: Abide with all applicable rules and regulations as established by the State of Michigan and the local regulating agency in conjunction with Act 451 of 1994, Natural Resources and Environmental Protection Act, Part 91 as amended, Michigan Soil Erosion and Sedimentation Control (formerly PA 347 of 1972, as amended).
- B. Sediment Removal:
 - 1. Take such steps as are necessary to assure the retention and removal of any sediment which enters a drainage system along the construction route before said system discharges into a stream, pond or lake.
 - 2. If eroded material is allowed to enter a storm sewer system, all catch basins, manholes, pipe and culverts shall be cleaned following construction prior to receipt of final payment. Unless Contractor can document positively to what extent an existing storm sewer system along the construction area was silted in prior to construction, no credit will be given for cleaning the system.
 - 3. Maintain roadways in a passable condition until paving is completed, including any maintenance and dust control.
- C. Construction of Soil Erosion and Sedimentation Control Measures: MDOT 208.03C.
 - 1. Provide and maintain the following temporary soil erosion and sedimentation control measures unless otherwise shown on the Drawings or in the permit:
 - a. Excavated or borrow material stockpile:

- 1) Place silt fence around stockpile in a manner to prevent soil erosion from entering the drainage system or leaving the site.
- b. Trench backfill in place.
 - 1) Place silt fence across trenches, ditches and around inlets to prevent soil erosion from leaving the site or entering the drainage system until:
 - 2) Seed and mulch have been placed in non-paved areas.
 - 3) Aggregate has been placed in bituminous and gravel areas.
- c. Dewatering discharge.
 - 1) Place bales of hay, straw and/or siltation fencing staked in place at point of discharge, adequately anchored.
- d. Grading limits.
 - 1) Place silt fence along down gradient side of all areas disturbed by grading operations.
- e. Catch basins.
 - 1) Provide inlet protection around catch basin and below grates. Remove after turf is established
- f. Culvert inlets.
 - 1) Place stone check dam and silt fence upstream of all culvert inlets.
- g. Drain cleanout.
 - 1) Excavate sediment basin and place stone check dam at downstream end prior to cleanout operation.

D. Maintenance of Soil Erosion and Sedimentation Control Measures: MDOT 208.03C.

E. Removal of Soil Erosion and Sedimentation Control Measures: MDOT 208.03D.

3.02 SCHEDULES:

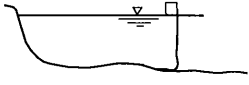
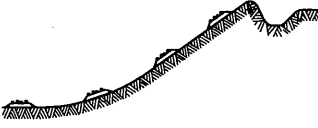

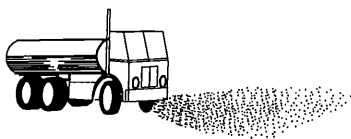

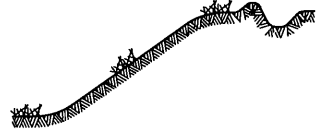
A. MDOT Standard Plan R-96-E (6 sheets)

END OF SECTION

APPLICABLE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES

(COMPREHENSIVE DETAILS ARE LOCATED IN SECTION 6 OF THE SOIL EROSION & SEDIMENTATION CONTROL MANUAL)

- A = SLOPES
- B = STREAMS AND WATERWAYS
- C = SURFACE DRAINAGEWAYS
- D = ENCLOSED DRAINAGE (INLET & OUTFALL CONTROL)
- E = LARGE FLAT SURFACE AREAS
- F = BORROW AND STOCKPILE AREAS
- G = DNRE PERMIT MAY BE REQUIRED

KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
1	 <p>TURBIDITY CURTAIN</p>	A Turbidity Curtain is used when slack water area is necessary to isolate construction activities from the watercourse. The still water area contains the sediments within the construction limits.		•					
2	 <p>GRUBBING OMITTED</p>	Retains existing root mat which assists in stabilizing slopes. Assists in the revegetation process by providing sprout growth. Reduces sheet flow velocities preventing rilling and gulying. Discourages off-road vehicle use.		•			•		
3	 <p>PERMANENT/TEMPORARY SEEDING</p>	Inexpensive but effective erosion control measure to stabilize flat areas and mild slopes. Permits runoff to infiltrate soil, reducing runoff volumes. Proper preparation of the seed bed, fertilizing, mulching and watering is critical to its success.		•	•		•	•	
4	 <p>DUST CONTROL</p>	Dust control can be accomplished by watering, and/or applying calcium chloride. The disturbed areas should be kept to a minimum. PERMANENT/TEMPORARY SEEDING (KEY 3) should be applied as soon as possible.		•			•	•	
5	 <p>SODDING</p>	Provides immediate vegetative cover such as at spillways and ditch bottoms. Proper preparation of the topsoil, placement of the sod, and watering is critical to its success.		•			•	•	
6	 <p>VEGETATED BUFFER STRIPS</p>	Reduces sheet flow velocities preventing rilling and gulying. Assists in the collection of sediments by filtering runoff. Assists in the establishment of a permanent vegetative cover.		•			•		



PREPARED BY
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APPROVED BY: 
ENGINEER OF DELIVERY

APPROVED BY: 
ENGINEER OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

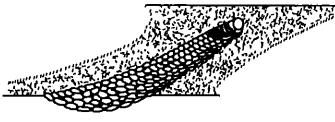
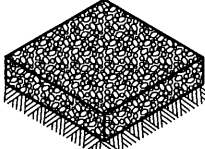


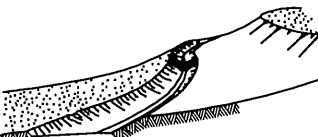


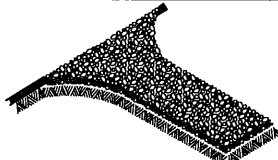
SOIL EROSION & SEDIMENTATION CONTROL MEASURES

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KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
7	 RIPRAP	Used where vegetation cannot be established. Very effective in protecting against high velocity flows. Should be placed over a geotextile liner.	•	•	•	•			•
8	 AGGREGATE COVER	Can be used in any area where a stable condition is needed for construction operations, equipment storage or in heavy traffic areas. Reduces potential soil erosion and fugitive dust by stabilizing raw areas.	•				•	•	
9	 BENCHES	Reduces sheet flow velocities preventing rilling and gulying. Assists in the collection and filtering of sediments. Provides access for stabilizing slopes.	•					•	
10	 DIVERSION DIKE	Assists in the diversion of runoff to a stable outlet or sediment control device. Reduces sheet flow velocities preventing rilling and gulying. Collects and diverts runoff to properly stabilized drainage ways. Works well with INTERCEPTING DITCH (KEY 11)	•				•	•	
11	 INTERCEPTING DITCH	Assists in the diversion of runoff to a stable outlet or sediment control device. Reduces sheet flow velocities preventing rilling and gulying. Works well with DIVERSION DIKE (KEY 10)	•				•	•	
12	 INTERCEPTING DITCH AND DIVERSION DIKE	Assists in the diversion of runoff to a stable outlet or sediment control device. Reduces sheet flow velocities preventing rilling and gulying.	•				•	•	
13	 GRAVEL FILTER BERM	Useful in filtering flow prior to its reentry into a lake, stream or wetland. Works well with SEDIMENT TRAP (KEY 20) and TEMPORARY BYPASS CHANNEL (KEY 35). Not to be used in lieu of a CHECK DAM (KEY 37) in a ditch.	•		•			•	
14	 GRAVEL ACCESS APPROACH	Provides a stable access to roadways minimizing fugitive dust and tracking of materials onto public streets and highways.						•	•

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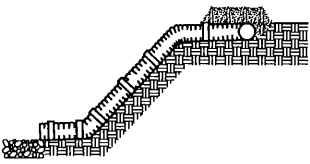

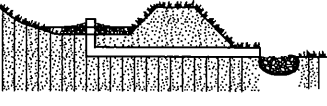
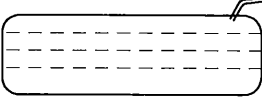
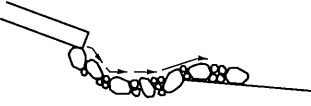
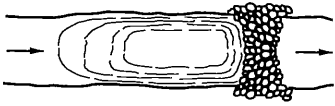
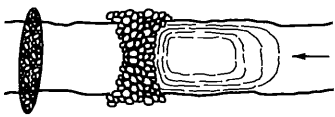
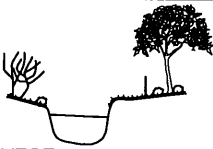
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CONTROL MEASURES**

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KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
15	 SLOPE DRAIN SURFACE	Excellent device for carrying water down slopes without creating an erosive condition. Generally used in conjunction with DIVERSION DIKE (KEY 10), INTERCEPTING DITCH (KEY 11) and INTERCEPTING DITCH AND DIVERSION DIKE (KEY 12) to direct flow to a stable discharge area or SEDIMENT TRAP (KEY 20).		•		•			
16	 TREES, SHRUBS AND PERENNIALS	Trees, shrubs and perennials can provide low maintenance long term erosion protection. These plants may be particularly useful where site aesthetics are important along the roadside slopes.		•				•	
17	 PIPE DROP	Effective way to allow water to drop in elevation very rapidly without causing an erosive condition. Also works as a sediment collector device. May be left in place as a permanent erosion control device.		•		•			
18	 DEWATERING WITH FILTER BAG	It may be necessary to dewater from behind a cofferdam or construction dam to create a dry work site. Discharged water must be pumped to a filter bag. A GRAVEL FILTER BERM (KEY 13) may be placed downslope of the filter bag to provide additional filtration prior to entering any stream or wetland.			•				•
19	 ENERGY DISSIPATORS	A device to prevent the erosive force of water from eroding soils. Used at outlets of culverts, drainage pipes or other conduits to reduce the velocity of the water. Prevents structure scouring and undermining.		•	•	•	•		
20	 SEDIMENT TRAP	Used to intercept concentrated flows and prevent sediments from being transported off site or into a watercourse or wetland. The size of a Sediment Trap is 5 cubic yards or less. Works well when used with CHECK DAM (KEY 37).		•		•	•		
21	 SEDIMENT BASIN	A Sediment Basin is used to trap sediments from an upstream construction site. Requires periodic inspections, repairs, and maintenance. Where practical, sediments should be contained on site. A Sediment Basin should be the last choice of sediment control. The size of a Sediment Basin is greater than 5 cubic yards.			•				•
22	 VEGETATIVE BUFFER AT WATERCOURSE	This practice is used to maintain a vegetative buffer adjacent to a watercourse. When utilized with SILT FENCE (KEY 26) it will, under normal circumstances, prevent sediment from leaving the construction site.		•	•	•		•	•

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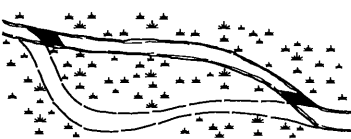
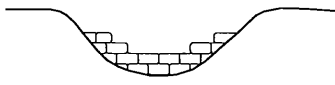
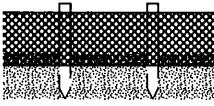
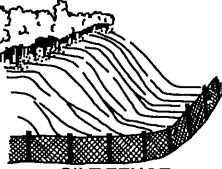

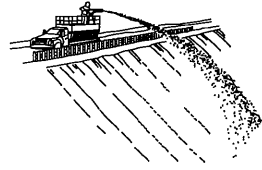
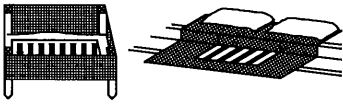
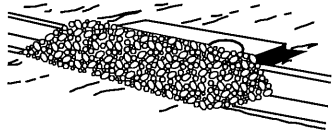
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KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
23	 <p>STREAM RELOCATION</p>	<p>A detail depicting the proper procedures for stream relocation. Maintains same width, depth, and flow velocity as the natural stream. Revegetate banks with PERMANENT/TEMPORARY SEEDING (KEY 3), MULCHING AND MULCH ANCHORING (KEY 28), MULCH BLANKETS AND HIGH VELOCITY MULCH BLANKETS (KEY 33) and woody plants to shade the stream.</p>		•					•
24	 <p>SAND AND STONE BAGS</p>	<p>Sand and stone bags are a useful tool in the prevention of erosion. Can be used to divert water around a construction site by creating a DIVERSION DIKE (KEY 10). Works well for creating a CONSTRUCTION DAM (KEY 36) and temporary culvert end fill.</p>	•	•	•	•	•	•	•
25	 <p>SAND FENCE AND DUNE STABILIZATION</p>	<p>A Sand Fence traps blowing sand by reducing wind velocities. Can be used to prevent sand from blowing onto roads. Must be maintained until sand source is stabilized.</p>	•				•	•	
26	 <p>SILT FENCE</p>	<p>A permeable barrier erected below disturbed areas to capture sediments from sheet flow. Can be used to divert small volumes of water to stable outlets. Ineffective as a filter and should never be placed across streams or ditches where flow is concentrated.</p>	•				•	•	
27	 <p>PLASTIC SHEETS OR GEOTEXTILE COVER</p>	<p>Plastic Sheets can be used to create a liner in temporary channels. Can also be used to create a temporary cover to prevent erosion of stockpiled materials.</p>	•	•	•			•	
28	 <p>MULCHING AND MULCH ANCHORING</p>	<p>Anchored mulch provides erosion protection against rain and wind. Mulch must be used on seeded areas to promote water retention and growth. Should be inspected after every rainstorm and repaired as necessary until vegetation is well established.</p>	•		•		•	•	
29	 <p>INLET PROTECTION FABRIC DROP</p>	<p>Provides settling and filtering of silt laden water prior to its entry into the drainage system. Can be used in median and side ditches where vegetation will be disturbed. Allows for early use of drainage systems prior to project completion.</p>			•		•		
30	 <p>INLET PROTECTION GEOTEXTILE AND STONE</p>	<p>Provides settling and filtering of silt laden water prior to its entry into the drainage system. Should be used in paved areas where drainage structures are existing or proposed. Allows for early use of drainage systems prior to project completion.</p>			•		•		

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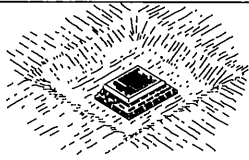


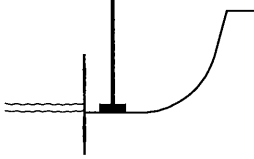

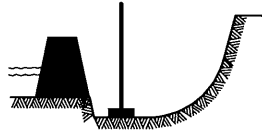

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KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
31	 INLET PROTECTION SEDIMENT TRAP	An Inlet Protection Sediment Trap is a temporary device that can be used in areas where medium flows are anticipated. Effective in trapping small quantities of sediments prior to water entering the drainage system. Can be used in areas such as median and side ditches.			•		•		
32	 SLOPE ROUGHENING AND SCARIFICATION	A simple and economical way to reduce soil erosion by wind and water. Can be accomplished by harrowing with a disk, back blading, or tracking with a dozer perpendicular to the slope.	•				•	•	
33	 MULCH BLANKETS AND HIGH VELOCITY MULCH BLANKETS	Mulch blankets provide an immediate and effective cover over raw erodible slopes affording excellent protection against rain and wind erosion. High velocity mulch blankets work well for stabilizing the bottom of ditches in waterways.	•		•		•	•	
34	 COFFERDAM	Used to create a dry construction area and protect the stream from raw erodible areas. Must be pumped dry or dewatered according to DEWATERING WITH FILTER BAG (KEY 18).		•					•
35	 TEMPORARY BYPASS CHANNEL	Utilized when a dry construction area is needed. Isolates stream flows from raw erodible areas minimizing erosion and subsequent siltation. Can incorporate SEDIMENT BASIN (KEY 21), CHECK DAM (KEY 37), and GRAVEL FILTER BERM (KEY 13) to remove sediments from water. Construction sequence of events may be necessary.			•				•
36	 CONSTRUCTION DAM	Used to create a dry or slack water area for construction. Isolates the stream from raw erodible areas. Can be created out of any non-erodible materials such as SAND AND STONE BAGS (KEY 24), a gravel dike with clay core or plastic liner, steel plates or plywood.		•					•
37	 CHECK DAM	Can be constructed across ditches or any area of concentrated flow. Protects vegetation in early stages of growth. A Check Dam is intended to reduce water velocities and capture sediment. A Check Dam is not a filtering device.	•		•			•	

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NOTES:

THIS STANDARD PLAN WILL SERVE AS A KEY IN THE SELECTION OF THE APPROPRIATE SOIL EROSION AND SEDIMENTATION CONTROL DETAILS. THIS PLAN ALSO PROVIDES THE KEY TO THE NUMBERED EROSION CONTROL ITEMS SPECIFIED ON THE CONSTRUCTION PLANS. REFER TO THE MDT SOIL EROSION & SEDIMENTATION CONTROL MANUAL, SECTION 6 FOR SPECIFIC DETAILS, CONTRACT ITEMS (PAY ITEMS), AND PAY UNITS.

COLLECTED SILT AND SEDIMENT SHALL BE REMOVED PERIODICALLY TO MAINTAIN THE EFFECTIVENESS OF THE SEDIMENT TRAP, SEDIMENT BASIN, AND SILT FENCE. AGGREGATES PLACED IN STREAMS SHOULD CONTAIN A MINIMUM OF FINES.

TEMPORARY EROSION AND SEDIMENTATION CONTROL PROVISIONS SHALL BE COORDINATED WITH THE PERMANENT CONTROL MEASURES TO ASSURE EFFECTIVE CONTROL OF SEDIMENTS DURING CONSTRUCTION OF THE PROJECT.

ALL TEMPORARY EROSION CONTROL DEVICES SHALL BE REMOVED AFTER VEGETATION ESTABLISHMENT OR AT THE DISCRETION OF THE ENGINEER. CARE SHALL BE TAKEN DURING REMOVAL TO MINIMIZE SILTATION IN NEARBY DRAINAGE COURSES.

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SECTION 01 71 23
CONSTRUCTION STAKING

PART 1 - GENERAL

1.01 STAKING:

- A. Construction staking will be furnished by the Owner through the Engineer on the following basis:
 - 1. Gravity sewer: One time staking with line and grade at each structure or appurtenance and at 50 feet upstream from each structure.
 - a. Curb Catch Basins: One time staking with line and grade offset from proposed back of curb location at the center of catch basin location.
 - b. Catch Basins: One time staking with line and grade offset from center of the structure.
 - 2. Water main: One time staking with line at each structure or appurtenance and at 100-foot station intervals, grades provide where appropriate.
 - 3. Underdrains: One time staking with line at 100-foot intervals, grades provide where appropriate.
 - 4. Earthwork - Site grading, parking lots and roadways:
 - a. First staking: Rough grade points on 100-foot grid or on center line at 100-foot station intervals, including slope stakes, where appropriate.
 - b. Second staking: Final grades. If paved, see below.
 - 5. Paving:
 - a. Curb and gutter: One time staking with line and grade at 25-foot intervals for horizontal and vertical curved sections and at 50-foot intervals for straight sections, where appropriate.
 - b. Gravel, bituminous or concrete roadways: One time staking with line and grade at 50-foot intervals on both sides of roadway with cut of fill to finish centerline grade, where appropriate.
 - c. Parking lots: One time staking with line and grade at 50-foot grid point intervals and at grade change points, where appropriate.
 - d. Sidewalk: One time staking with line and grade at 50-foot intervals, where appropriate.
 - 6. Buildings and structures: One time staking with base line and temporary benchmark on site. Any additional corner staking to be approved prior to initial staking request.
- B. Contractor shall request the staking using the attached request form at least five (5) full working days in advance of the initial staking request. The contractor shall provide three (3) full working days' notice for any additional staking requests. It is the Contractor's responsibility to notify F&V of their staking needs in advance and not run out of stakes.

1.02 RESTAKING OR ADDITIONAL STAKING:

- A. If re-staking is required due to factors not related to the Engineer or any additional staking other than previously approved is requested, it shall be performed by the Engineer at the Contractor's expense.
- B. The cost of re-staking or additional staking will be paid to the Engineer by the Owner and deducted from the Contractor's payment.

1.03 SCHEDULES:

- A. REQUEST FOR CONSTRUCTION STAKING (Form).
- B. This form shall be filled out and submitted to the Engineer prior to each staking request.

END OF SECTION

REQUEST FOR CONSTRUCTION STAKING



DATE REQUESTED TO BE ON SITE:	.....	DATE RECEIVED:	.....
CLIENT NAME:	.....	PROJECT NO.:	.....
PROJECT LOCATION:	.....	PM / ENGINEER:	.....
INSPECTOR:	.....	PHONE NUMBER:	.....
CONTRACTOR / FIELD CONTACT	.....	PHONE NUMBER:	.....
PLAN # / REV DATE:	.....	EMAIL:	.....

SANITARY SEWER

STORM SEWER

WATERMAIN

ROAD

CURB & GUTTER

BUILDINGS/FOOTINGS

PARKING/GRADING

SIDEWALKS

REMARKS:

CONTRACTOR SIGNATURE: **DATE:**

TO BE COMPLETED BY ENGINEER / PM

REQUEST RECEIVED BY: **DATE:**
SURVEY MANAGER

START DATE: **ESTIMATED FIELD TIME:** **MET W/ PM (DATE):**

- WITHIN SCOPE**
- EXTRA WORK BEYOND SCOPE**



SECTION 01 74 00

CLEANING AND WASTE MANAGEMENT

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes, but is not necessarily limited to, maintaining all structures and the Site in a standard of cleanliness as indicated on the Drawings, as specified herein and as necessary for the proper and complete performance of the Work.
- B. Related Sections:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to:
 - a. General Conditions, Supplementary Conditions and Sections in DIVISION 01 of these Specifications.
 - b. In addition to standards described in this Section, comply with all requirements for cleaning up as described in various other Sections of these Specifications.

1.02 QUALITY ASSURANCE:

- A. Inspection:
 - 1. Daily and more often if necessary.
 - 2. Conduct inspections to verify that requirements of cleanliness are being met.

1.03 DELIVERY, STORAGE AND HANDLING:

- A. Hazards control:
 - 1. Volatile wastes:
 - a. Store in covered metal containers.
 - b. Remove from premises daily.
 - 2. Prevent accumulation of wastes which create hazardous conditions.
 - 3. Provide adequate ventilation during use of volatile or noxious substances.

1.04 PROJECT CONDITIONS:

- A. Cleaning and disposal:
 - 1. Conduct operations to comply with local ordinances and anti-pollution laws.
 - 2. Not allowed:
 - a. Burning or burying of rubbish or waste materials onsite.
 - b. Disposal of volatile wastes in storm or sanitary sewers: Volatile wastes include, but are not limited to, mineral spirits, oil or paint thinner.
 - c. Disposal of wastes into streams or waterways.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT:

- A. Compatibility:
 - 1. Compatible with the surface being cleaned.
 - 2. Recommended by the Manufacturer of the material being cleaned.
 - 3. As reviewed by Engineer.

PART 3 - EXECUTION

3.01 PROGRESS CLEANING:

A. General:

1. Provide all required personnel, equipment and materials needed to maintain the specified standard of cleanliness.
2. Store materials:
 - a. In an orderly arrangement allowing maximum access.
 - b. To allow unimpeded drainage and traffic.
 - c. Provide for the required protection of materials.
3. Scrap, debris, waste materials and other items not required for construction of the Work.
 - a. Do not allow accumulation.
 - b. Remove from Site at least each week and more often if necessary.
 - c. Provide adequate storage for all materials awaiting removal.
4. Observe all requirements for fire protection and protection of the environment.

B. Site:

1. Daily, and more often if necessary:
 - a. Inspect the Site.
 - b. Pick up all scrap, debris and waste material: remove all such items to the place designated for their storage.
2. Weekly, and more often if necessary:
 - a. Inspect all arrangements of materials stored onsite.
 - b. Re-stack or otherwise service all arrangements to meet the requirements of paragraph 3.01-A-1 above.
3. At all times maintain the Site in a neat and orderly condition which meets the approval of Engineer.
4. Paved surfaces: Keep clean.
5. Dust control:
 - a. Control dust on or near the Work by the application of water, or other approved means.
 - b. If Contractor fails to correct unsatisfactory conditions with 24 hours after due notification:
 - 1) Owner may arrange for such work to be performed by other means.
 - 2) Pay costs.

C. Structures:

1. Weekly, and more often if necessary:
 - a. Inspect the structures.
 - b. Pick up all scrap, debris and waste material: remove all such items to the place designated for their storage.
 - c. Sweep all interior spaces clean:
 - 1) Clean: Free from dust and other material capable of being removed by reasonable diligence using a hand-held broom.
2. Preparation for installation of succeeding material:
 - a. Clean the structures or pertinent portions thereof:
 - 1) To the degree of cleanliness recommended by the Manufacturer of the succeeding material.
 - 2) Using all equipment and materials required to achieve the required cleanliness.

3. After installation of finish floor material:
 - a. Always clean the finish floor daily while work is being performed in the space in which finish materials have been installed.
 - 1) Clean: Free from all foreign material which, in the opinion of Engineer, may be injurious to the finish floor material.
4. Schedule cleaning operations so that dust and other contaminants resulting from cleaning operations will not fall on wet, recently painted surfaces.

3.02 FINAL CLEANING:

- A. Definitions:
 1. Clean: The level of cleanliness generally provided by commercial building maintenance subcontractors using commercial quality building maintenance equipment and materials.
- B. Prior to completion of the Work:
 1. Remove from the Site all tools, surplus materials, equipment, scrap, debris and waste.
 2. Conduct final progress cleaning as described in Article 3.01 above.
- C. Site:
 1. Unless otherwise specifically directed by Engineer:
 - a. Hose down all paved areas onsite and all public sidewalks directly adjacent to the Site.
 - b. Rake clean other surfaces of the grounds.
 2. Remove all resultant debris.
- D. Structures:
 1. Exterior:
 - a. Visually inspect all exterior surfaces.
 - b. Remove all traces of soil, waste material, smudges and other foreign matter.
 - c. Remove all traces of splashed materials from adjacent surfaces.
 - d. If necessary, to achieve a uniform degree of exterior cleanliness, hose down the exterior of the structure.
 - e. In the event of stubborn stains not removable with water, Engineer may require light sandblasting or other cleaning at no additional cost.
 2. Interior:
 - a. Visually inspect all interior surfaces.
 - b. Remove all traces of soil, waste material, smudges and other foreign matter.
 - c. Remove all traces of splashed materials from adjacent surfaces.
 - d. Remove all paint droppings, spots, stains and dirt from finished surfaces using only the specified cleaning materials and equipment.
 3. Glass: Clean all glass inside and outside.
 4. Polished surfaces: To all surfaces requiring the routine application of buffed polish, apply the specified polish as recommended by the Manufacturer of the material being polished.
- E. Timing: Schedule final cleaning as approved by Owner or Owner's representative to enable Owner to accept a completely clean Project.

END OF SECTION

SECTION 01 78 00
CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes, but is not necessarily limited to, the procedures, submittals, responsibilities and requirements for Contract closeout.

1.02 Cleaning:

- A. General:
 - 1. Manufactured products: Manufacturer's instructions.
 - 2. Clean-up during construction: Maintain premises and public properties free from accumulations of waste, debris and rubbish caused by operations.
 - 3. Final clean-up: Remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all surfaces; leave the Work clean and ready for occupancy.
- B. Delinquency:
 - 1. Remedies: Failure to clean-up promptly is defective Work:
 - a. Owner may correct: ARTICLE 14 of SECTION 00 72 00 - GENERAL CONDITIONS.

1.03 WORK RECORD DOCUMENTS:

- A. Maintenance of Documents:
 - 1. Maintain one (1) copy at jobsite in good order of:
 - a. Contract Drawings.
 - b. Specifications.
 - c. Addenda.
 - d. Reviewed shop drawings.
 - e. Change Orders.
 - f. Other Contract modifications.
 - 2. Filing: Work specification format.
 - 3. Accessibility: To Owner and Engineer.
- B. Recording:
 - 1. Keep record documents current.
 - 2. Contract Drawings: Legibly mark to record actual construction:
 - a. Field changes of dimension and detail.
 - b. Changes made by Change Orders and Bulletins.
 - c. Details not on original Contract Drawings.
 - 3. Specifications and Addenda: Legibly mark up each SECTION to record:
 - a. Manufacturer, trade name, catalog number and supplier of products actually installed.
 - b. Changes made by Change Orders and Bulletins.
 - c. Other matters not originally specified.
- C. Submittal:
 - 1. Delivery: To Engineer prior to final payment.

2. Transmittal letter: Contain:
 - a. Date.
 - b. Project title and number.
 - c. Contractor's name and address.
 - d. Title and number of each record document.
 - e. Certification that each document, as submitted, is complete and accurate.

1.04 LUBRICATION AND START-UP:

- A. General:
 1. Manufactured Products: Manufacturer's instructions.
 2. Lubricants: One-year supply manufacturer's recommended.

1.05 TOUCH UP AND REPAIR:

- A. General:
 1. Manufactured Products: Manufacturer's instructions.
 2. Field fabricated products: Appropriate SECTIONS.

1.06 OPERATION AND MAINTENANCE MANUALS:

- A. Submit as required by Contract Documents prior to final payment.

1.07 SUBSTANTIAL COMPLETION:

- A. Procedures and Requirements: Paragraph 15.03 of the General Conditions.

1.08 REMOVAL OF TEMPORARY SOIL EROSION CONTROL MEASURES:

- A. See Section 01 57 13 – Temporary Erosion and Sedimentation Control.

1.09 FINAL PAYMENT:

- A. Procedures and Requirements: See Agreement.
- B. Submit Affidavit and Consent of Surety prior to final payment.
- C. Submit Work record documents, O & M manuals, remove temporary soil erosion control measures or provide Letter of Credit of approved amount to guarantee removal by a later date, and complete all punch list items prior to final payment.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 SCHEDULES:

- A. Attached are the following forms:
 1. Certificate of Substantial Completion.
 2. Affidavit and Consent of Surety.
 3. Letter of Credit Form

END OF SECTION

CERTIFICATE OF SUBSTANTIAL COMPLETION
(on Engineer's Letterhead)

Owner _____

Contractor _____

Contract: _____

Project: _____

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

This [preliminary] [final] Certificate of Substantial Completion applies to:

- All Work The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

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

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.]*

Amendments to Owner's responsibilities:

- None
 As follows:

Amendments to Contractor's responsibilities:

- None
 As follows:

The following documents are attached to and made a part of this Certificate: *[punch list; others]*

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

EXECUTED BY Engineer:

RECEIVED:

RECEIVED:

By: _____
(Authorized Signature)

By: _____
Owner (Authorized Signature)

By: _____
Contractor (Authorized
Signature)

Title: _____

Title: _____

Title: _____

Date: _____

Date: _____

Date: _____

STATE OF MICHIGAN)
) ss
COUNTY OF _____)

AFFIDAVIT

Notice to Contractor: This is a sample copy. Three completed copies of this form or similar form must be submitted to the Engineer before final payment will be recommended.

_____, Contractor

being duly sworn, deposes and says that he entered into an Agreement (Contract) with the _____ of _____ (Owner) on the _____ day of _____ 20_ for the performance of certain Work generally described as follows: _____

Contractor further says that the Work under the terms of the Contract has been completed and all sums due to Contractors, Subcontractors, suppliers and laborers with whom Contractor has contracted for performance under the Contract have been paid in full.

Furthermore, in consideration of final payment under the Contract, Contractor hereby waives and releases any and all claims or rights which Contractor may have in connection with the Contract against Owner or the premises upon which the Contract Work was performed, and agrees to indemnify Owner against any and all such claims or rights which may be asserted by Contractors, Subcontractors, Suppliers or laborers with whom Contractor has contracted for performance under the Contract.

WITNESSES:

Contractor: _____

Signature

Name and Title (Typed or printed in ink)

Subscribed and sworn to before me this ____ day of _____, 20_

Notary Public, _____ County _____

My commission expires: _____

CONSENT OF SURETY

The undersigned, as Surety on the above described Contract, hereby consents to the making of final payment to the Contractor under the Contract.

DATE: _____ SURETY COMPANY: _____

Signature (Attorney-in-fact)

Name and Title (Typed or printed
in ink)

(Attach copy of power of attorney certified to date of consent)

LETTER OF CREDIT FORM

Bank:

[Bank's Name and Address]

Irrevocable Standby Letter of Credit
Bank Reference No. _____
Issued: _____

Beneficiary:

[Owner's Name and Address]

Applicant:

[Contractor's Name and Address]

Project:

[Description of Project and remaining Work to be completed]

Date: _____
Expiration Date: _____ ***[as approved by Owner and Engineer]***
Amount: USD _____ ***[as approved by Owner and Engineer]***
Bank Reference No.: _____

Gentlemen:

We hereby establish our Irrevocable Standby Letter of Credit No. _____ in your favor for the account of **Applicant** up to an aggregate amount of USD _____ available by your draft(s) at sight drawn on **Bank**.

Drafts to be accompanied by the following document(s):

1. Beneficiary's written statement, stating: "**Applicant** has failed to satisfactorily install the **Project**."
2. Copy of Letter of Credit and any amendments.

Partial drawings are permitted.

Draft(s) must be marked "Drawn under **Bank** Irrevocable Standby Letter of Credit No. _____ dated _____."

We hereby agree with you that drafts drawn under and in strict compliance with the terms of this credit will be duly honored by us upon presentation at this office on or before our close of business on **Expiration Date**.

Except as otherwise expressly stated herein, this Letter of Credit is issued subject to the International Standby Practices of the International Chamber of Commerce ("ISP98"). This Letter of Credit shall be deemed to be a contract made under the laws of the State of Michigan and shall, as to matters not governed by ISP98, be governed by and construed in accordance with the laws of the State of Michigan, other than its conflict of laws rules, which would result in the application of the law of any jurisdiction other than the laws of the State of Michigan.

Sincerely,

Bank

Authorized Signature

Printed Name and title

SECTION 02 41 00

DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY OF WORK:

- A. Section includes, but is not necessarily limited to, the demolition of existing pipes, equipment, concrete, asphalt, gravel, and miscellaneous site furnishings as indicated on the Drawings, as specified herein and as necessary for the proper and complete performance of the Work.
- B. Regulatory Requirements:
 - 1. Conform to applicable code for demolition work, safety of structure and dust control.
 - 2. Obtain required permits from authorities.
 - 3. Notify affected utility companies before starting work and comply with their requirements.
 - 4. Do not close or obstruct egress width to exits.
 - 5. Do not disable or disrupt building fire, life safety, or municipal fire systems without 7-day prior written notice to the Owner.
 - 6. Comply with requirements of NFPA 241, "Safeguarding Construction, Alteration, and Demolition Operations".
 - 7. Conform to procedures applicable when discovering hazardous or contaminated materials.

1.02 DEFINITIONS:

- A. Terms:
 - 1. Abandon: Remove an item to the extent that it is not visible and does not interfere with new construction. Portions of the abandoned item may be left in place. No abandoned items shall be left below new footings.
 - 2. Fill and Abandon: Fill existing underground piping with flowable fill, cap pipe ends, and abandon in place.
 - 3. Abandon or Plug (Piping): Cap pipe ends and abandon in place.
 - 4. Demolish: Remove existing items from their present location in the Project area and haul to an area outside of the Project area. Remove utilities serving these items.
 - 5. Relocate: Move existing items from their present location to another location in the Project area. Extend utilities serving the present location to the new location.
 - 6. Remove: Remove existing items from their present location in the Project area and haul to an area outside of the Project area. Remove utilities serving these items.
 - 7. Replace: Remove existing items from their present location in the Project area, haul them to an area outside of the Project area, and furnish and install new items in the same or another location. Extend utilities serving the present location to the new location.
 - 8. Reuse: Move existing items from their present location to another location in the Project area. Extend utilities serving the present location to the new location.

1.03 SUBMITTALS:

- A. Pre-Construction:
 - 1. Demolition Schedule:
 - a. Anticipated demolition start date.
 - b. Coordination of shutoff, capping and abandoning of existing utility services as required.

- c. Proposed demolition sequence.
- d. Demolition completion date.
- 2. Work Plan:
 - a. Proposed receiving location(s) of all materials to be hauled off site.
 - b. Methods and procedures to be utilized to minimize soil erosion for heavy equipment and trucking operations.
 - c. All required State and Local permits.
- B. Post Construction:
 - 1. Record Drawings:
 - a. Documents and witnesses accurately showing actual locations of capped utilities, subsurface obstructions, and other items which will be hidden after proposed construction activities.

1.04 PROTECTION:

- A. Existing Structures:
 - 1. Demolition and disassembly will not be allowed until it is coordinated with Owner's operations.
 - 2. Maintain free and safe passage to and from buildings.
 - 3. Prevent movement or settlement of adjacent structures.
 - 4. Provide and place bracing, shoring and underpinning, and be responsible for safety and support of structures and assume liability for such movement, settlement, damage or injury.
 - 5. Cease operations and notify Owner or Owner's Representative immediately if safety of structure appears to be endangered. Take precautions to properly support structure. Do not resume operations until safe conditions are restored.
 - 6. All active utility mains traversing the project site shall be maintained.
 - 7. Do not close or obstruct any streets, sidewalks, alleys or passageways unless specifically authorized.
- B. Barricades:
 - 1. Provide, erect and maintain barricades, lighting and guard rails as required by applicable regulatory agencies to protect occupants of building and workers.
- C. Coordination with local authorities:
 - 1. Cooperate with local authorities and utility companies whose work affects or will be affected by the demolition operations. Ascertain the rules, regulations and requirements of these authorities that affect the demolition process: notify them of conditions affecting their work. Disconnect or arrange for disconnection of utility services if required.
 - 2. Comply fully with all provisions of the local codes, laws and ordinances applicable to work of this Section.

1.05 SEQUENCING AND SCHEDULING:

- A. Scheduling:
 - 1. Before commencing demolition work notify Owner or Owner's Representative and complete all modifications necessary to bypass the affected structure.

PART 2 - PRODUCTS

2.01 SALVAGED MATERIALS:

- A. Ownership:
 - 1. Owner shall have the option of retaining ownership of any or all existing equipment, materials, and items removed under this Work.
 - 2. Should Owner decide not to retain ownership of certain items removed under the work of this Section, those items shall become property of Contractor and shall be promptly removed from the Project Site.
- B. Delivery: Deliver items which remain property of Owner to a location, or locations, as selected by Owner.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Permits: Obtain all necessary permits and provide a copy to the Owner prior to commencement of work.
- B. Safety: Be responsible for all safety requirements in accordance with the General Conditions.
- C. Convenience: Carry out demolition work to cause as little inconvenience to surrounding areas as possible.

3.02 DEMOLITION:

- A. General:
 - 1. Install all soil erosion and sediment control measures, if any, as indicated on the Drawings prior to any demolition work.
 - 2. Remove all mechanical, electrical, piping, and miscellaneous equipment and appurtenances before commencing structural demolition.
 - 3. It is the Contractor's responsibility to turn off all applicable utilities prior to demolition.
 - 4. Each concrete structure to be abandoned below grade shall have a minimum 6" diameter hole cored through the bottom for every 50ft² of structure surface. Alternatively, the bottom of each tank may be broken up to the subgrade to provide an equivalent area as stated above.
 - 5. The contract price will not be adjusted to repair demolition performed in excess of that required at no cost to Owner.
 - 6. Do not use explosives in the work.
 - 7. It is the Contractor's responsibility to maintain all access drives and roads utilized by construction/demolition traffic. This includes, but is not limited to, periodic street sweeping and repairing (patching/reconstructing) access drives and roads damaged by construction traffic.
- B. Filling and Abandoning Existing Underground Piping:
 - 1. Where identified on the plans, fill the existing pipe completely with flowable fill. Plug both ends of the pipe. Abandon in place.
 - 2. Accurately record actual locations of capped utilities, subsurface obstructions, and other items which will be hidden after construction.
- C. Burning: Do not burn materials on Site.
- D. Stockpiling: On site stockpiles of demolished materials shall be removed from the site within 48 hours.

E. Disposal of materials:

1. Remove contaminated, dangerous and other materials from Site and dispose of in accordance with applicable regulations.
2. Arrange and pay for all required hauling, storage, collection and disposal. Contractor is responsible for any waste characterization that may be required by the waste receiver.

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY:

- A. The work includes all cast-in-place concrete except curb & gutter, sidewalk and sidewalk ramps, and driveways.

1.02 REFERENCES:

- A. ASTM - American Society Testing Materials, latest edition.
- B. ACI - American Concrete Institute, latest edition.
- C. CRSI – Concrete Reinforcing Steel Institute.
- D. MDOT - Michigan Department of Transportation, *“2020 Standard Specifications for Construction”*.

1.03 SUBMITTALS:

- A. Pre-Construction:
 - 1. Concrete Mix Designs:
 - a. Provide a concrete mix design for each mix of concrete prepared by an approved independent testing firm.
 - b. Select proportions according to ACI 301-72, Section 3.8, Method 1 or Method 2.
 - 2. Reinforcing Steel Schedule:
 - a. Drawings showing fabrication dimensions, sizes, and locations for placing the reinforcing steel and accessories.
 - b. Details of reinforcement and accessories shall be in accordance with ACI 315.
 - 3. Certifications:
 - a. Cement.
 - b. Aggregates.
 - c. Admixtures.
 - d. Reinforcement.
- B. Post Construction:
 - 1. Batch Tickets:
 - a. Documentation of mix type and volume with date and time stamp for each load.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Concrete:
 - 1. Cement: ASTM C150 or ASTM C595 (maximum fly ash content shall be 20% by weight). All cement used in exposed concrete shall be of the same brand from the same mill.
 - 2. Coarse aggregates: ASTM C33.
 - 3. Fine aggregate: ASTM C33.
 - 4. Mixing water: Clean, fresh, and potable.

5. Admixtures:
 - a. Air-entraining: ASTM C260.
 - b. Water-reducing, retarding, and accelerating: ASTM C494. Calcium chloride will not be permitted as an admixture.
 - c. Pozzolanic admixtures: ASTM C618, Type F or C, loss on ignition limited to 4 percent (4%).

- B. Reinforcement:
 1. Bars: Deformed, ASTM A615 (S1), Grade 60.
 2. Welded wire fabric: ASTM A185.

- C. Accessories:
 1. Tie wire: Sixteen (16) gauge annealed.
 2. Chairs, bar supports, bolsters, spacers: CRSI, Class C for structural slabs, Class A, for slabs-on-grade.
 3. Form ties: Commercially manufactured, water seal form ties with minimum 1-inch diameter steel or neoprene collar at mid-point for walls subject to hydrostatic pressure.

- D. Premolded Joint Filler:
 1. ASTM D1751, non-extruding, bituminous.

- E. Latex Bonding Agent: W.R. Meadows "Intralok", L&M Construction Chemicals "Everbond", Sonneborn "Soncrete", or equal.

- F. Epoxy Bonding Agent: L&M Construction Chemicals "Permunitite", Sonneborn "Sonobond", Toch "Epotox 350", or equal.

- G. Vapor Barrier: 6 mil clear polyethylene film, below grade application.

- H. "Dry Shake" for Non-Slip Finish: Aluminum oxide type: L&M Construction Chemicals "Grip It", Toch "Toxgrip", Sonneborn "Frictex", or equal.

- I. Curing Compound:
 1. White membrane for paving and curb: ASTM C309, Type 2.
 2. Transparent membrane for floors and structures: ASTM C309, Type 1-D, Class B.

- J. Damp proofing: Apply bituminous mastic spray coating to the exterior of the concrete walls. Apply to thickness specified by the manufacturer. Provide product submittal.

- K. Joint Sealant: Semi-rigid, non-tracking type: W.R. Meadows "Sealtight Gardox", or equal.

- L. Wall Finish: MasterSeal 581 applied according to manufacturer's instruction may be substituted for a grout cleaned finish.

2.02 PROPORTIONING CONCRETE:

- A. Proportions and Materials:
 - Permissible Cement Types: I, IP, I-A, IP-A
 - Minimum Cement Content: 5.5 sacks/cyd. for 3500 psi, 6.0 sacks/cyd. for 4000 psi.
 - Coarse Aggregate: MDOT 6A
 - Sand: MDOT 902.08 and Table 902-4, 2NS
 - Maximum Water-Cement Ratio: 5.0 gal./sack
 - Entrained Air Content: five percent (5%) to eight percent (8%).

Maximum Slump: 3½-inch for floors and slabs on grade, 4 inches otherwise (individual batches may be ± ½ inch as long as the average of all batches is at or below maximum). Minimum Compressive Strength, f_c (28 day) 4000 psi floors and slabs on grade, all other 3500 psi.

- B. Admixtures: Use in accordance with the manufacturer's instructions.
 - C. If the Contractor intends to place concrete by pumping, the mix design shall be prepared in accordance with these specifications and the recommendations of ACI 304.
- 2.03 FABRICATING REINFORCEMENT:
- A. Fabricate in accordance with approved shop drawings and ACI 315.
 - B. Reinforcing splices: Class B unless otherwise shown.

PART 3 - EXECUTION

3.01 PERFORMANCE:

- A. In accordance with the requirements of ACI 301, Chapters 4 through 13, 17 and 18.

3.02 FIELD QUALITY CONTROL:

- A. Field inspection and testing will be performed by a firm appointed and paid for by the OWNER. When additional testing of materials or concrete is necessary because of their failure by test or inspection to meet specification requirements, the cost of additional testing shall be paid for by the Contractor. Additional testing for early form removal shall also be paid for by the Contractor.
- B. Provide access to all portions of the work and any necessary assistance in obtaining and handling samples at the project or other material sources. Three concrete test cylinders will be taken for every 50 cubic yards, or fraction thereof, for each class of concrete place in any one day. One additional cylinder will be taken during cold weather concreting and be cured on the project site under the same conditions as the concrete it represents. One slump test will be taken for each set of cylinders taken.

END OF SECTION

SECTION 04 57 33
COMMUNITY FIREPLACE

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes, but is not necessarily limited to, detailing, furnishing and installation of a 4-sided, natural gas masonry fireplace structure with standing seam copper roof as indicated on the Drawings, as specified herein, and as necessary for the proper and complete performance of the Work.

1.02 SUBMITTALS:

- A. Pre-Construction:
 - 1. Detailed design drawing submittal.
 - 2. Manufacturer's product literature for natural gas system components, including operator mounting diagrams.
 - 3. Masonry samples. Provide manufacturer's standard line of options for selection by OWNER.
 - 4. Submit evidence that contractor or contractors performing work related to this section have at least five years' experience in constructing similar masonry structures. Submit at least 5 representative fireplace project references.
- B. Post Construction:
 - 1. Provide manufacturer's written warranty.
 - 2. Provide manufacturer's operational instructions.

1.03 REFERENCES:

- A. Except as herein specified or as indicated on the Drawings, the work of this section shall comply with the following:
 - 1. ACI 530.1-99/ASCE6-99/TMS 602.00-Specifications for Masonry Structures.

1.04 DESIGN CRITERIA:

- A. Geometry
 - 1. The footprint for the structure at grade shall be nominally 48 inches square.
 - 2. The structure shall have an overall height of approximately 10 feet above grade.
 - 3. Geometry shall be visually consistent with the details presented in the Drawings or otherwise acceptable to the OWNER.
- B. Natural Gas Equipment
 - 1. HPC Fire Inspired 2225 Lyons Road, MiamisBurg, OH 45342 Phone: 937-436-9800
24SSEI-SQBL-NG/120VAC – Square Bowl Insert
#695 NEMA HPC 2 Hr. Timer
#311 Estop-3HPC – Emergency Stop
Lava Rock – 1-2"
FPL18/24AWO(Arizona Weathered Oak Log Set
Custom Made Safety Screens (Powder Coated) x 4 – doors shall be lockable with a standard padlock
 - 2. Provide a metal junction box on the lower exterior of the masonry for mounting of accessories – coordinate size with supplier.

3. Provide 15 amp electrical service with GFCI breaker from existing restroom building.
4. Provide venting with stainless steel screens per insert manufacturers recommendations
5. Provide master gas shut of with keyed lock.
6. Custom Made Safety Screens (Powder Coated) x 4 – doors shall be lockable with a standard padlock

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Concrete Foundation: See section 03 30 00.

B. Mortar:

1. Mortar for clay brick shall be cement mortar, Type N, unless approved otherwise.
2. Mortar cement shall conform to ASTM C 1329 with the following restrictions:
 - 1) The allowance percentage of restricted materials shall not exceed those shown below:
 - i. Chloride salts – 0.06%; carbolic acids – 0.25%; sugars and glycols – 1.0%; lignin and derivatives or stearates – 1.0%; clay (except fireclay) – 5.0%.
 - 2) The deleterious materials listed below shall not be allowed:
 - i. Epoxy resins and derivatives; phenols; asbestos fiber; fireclays.
3. Proportion specification requirements for mortar cement mortar
 - 1) One (1) Part Mortar Cement; Type S or N.
 - 2) 2-1/4 to 3 Parts Masonry Sand (ASTM C144).
4. Aggregate for mortar shall be washed, and conform to ASTM C 144, with the following exception:
 - 1) If the aggregate fails to meet the gradation requirements of ASTM C 144 because of excess fines, then either of the following procedures will be allowed:
 - 2) Blend the aggregate with coarser fractions until it meets the gradation criteria.
 - 3) If the aggregate exceeds the gradation limits specified in Paragraphs 4.1 and 402 of ASTM C 144, but is within the modified gradation limits listed below, then the aggregate may be used provided that the mortar conforms to the “Property Specifications” of ASTM C 270, for aggregate ratio, water retention and compressive strength, as listed in the table for “Cement Lime Mortars.”
5. Color:
 - 1) Mortar for Brick: not required.

C. Brick:

1. Belden Brick & Supply or equal.

D. Masonry Reinforcement and Metal Accessories

1. Provide materials as required by detailed fireplace design from one of the follow manufacturers or approved equal:

Heckman Building Products
4015 W. Carroll Avenue
Chicago, IL 60624

Hohmann & Barnard Inc.
30 Rasons Court
Hauppauge, NY 11788-0270

Masonry Reinforcing Corp. of America
400 Roundtree Road
Charlotte, NC 28224

- E. Pipe:
 - 1. Interior and exterior pipe and fittings shall be size and material as specified by fireplace designer that conforms with the Michigan Plumbing Code for the intended purpose.
- F. Roof, Flue and Cap
 - 1. Roof shall be standing seam copper with the approximate geometry illustrated in the Drawings. Provide underlayment as required to support the roofing.
 - 2. Provide metal flue and cap as required for a complete installation.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Concrete Foundation: See section 03 30 00.
- B. Masonry: Per ACI 530.1-99/ASCE 6-99/TMS 602-99.
- C. Pipe: All interior and exterior pipe and fittings shall be installed by a plumber licensed in the State of Michigan.
- D. Fireplace Equipment: Install in accordance with manufacturer's recommendations.

3.02 STARTUP AND TESTING

- A. Upon completion, the CONTRACTOR shall demonstrate system operation, including the following:
 - 1. Use on demand capability and timer deactivation.
 - 2. OWNER override controls.
 - 3. Removal and replacement of mesh fire screens.
 - 4. Adequacy of flue and cap for protecting burner unit from water intrusion.

END OF SECTION

SECTION 10 73 97

SPLASH PAD

PART 1 GENERAL

1.0 GENERAL SCOPE

A. Section Includes:

1. Under this item, the Contractor shall furnish all labor, materials, equipment and perform all operations necessary for the completion of the work as shown on the drawings. This includes all excavation, concrete footings, sand backfill, hardware, fittings, nozzles, piping, wiring, and accessories, including the controller, and finishes as required, in accordance with the drawings, specifications and directions of the Owner's Representative;

B. Related Sections:

1. Section 01 50 00 Construction Facilities and Temporary Controls:
2. Section 31 20 00 Earthwork
3. Section 31 23 33 Trenching, Excavating, Backfilling, and Compacting: Excavation for equipment footings and backfilling at equipment footings.
4. Section 32 13 14 Concrete Sidewalk and Sidewalk Ramps: Concrete for footings and slab.
5. Section 33 11 00 Water Service: Water supply lines to fountain.
6. Section 33 41 00 Storm Sewers

1.1 SYSTEM DESCRIPTION

A. Design Requirements:

1. The installation shall be as indicated on the drawings, and in accordance with the manufacturer's recommendation as reviewed and approved by the owner. The installation shall be accomplished by skilled work personnel.

1.2 SUBMITTALS

A. Product Submittals:

1. Contractor shall submit 6 copies for approval before beginning work.
2. Submit manufacturer's product data for aquatic play features and system components including vault, activator(s), pipes, fittings and valves.
3. Submit drawings to indicate layout of aquatic play area components and location of anchors and footings. Clearly indicate, to scale the spatial relationship of each piece of equipment to each other and to other existing or proposed features including adjacent surfaces or vegetation. Indicate to a scale the limits of spray zones and non-encroachment areas to clearly demonstrate conformance with specified standards.
4. Submit shop drawings of the aquatic play features including spray nozzles and colors, for approval.

B. Closeout Submittals:

1. All aquatic play features are to carry a minimum warranty of two (2) year on all workmanship and materials. Submit warranty to Owner.
2. Provide maintenance and winterizing data.

1.3 QUALITY ASSURANCE

- A. It shall be the obligation of the Contractor to insure that all criteria are satisfied and the burden of proof of conformance shall rest with the contractor. The Engineer shall require complete calculation, past performance records, and if required, inspection trips of similar facilities to substantiate conformance with these criteria. The Engineer shall be the sole judge of conformance and the Contractor is cautioned that he will be required to Bid and provide a finished product meeting all stated criteria. It is recommended that the contractor or project manager follow an inspection and approval process, as provided by manufacturer.
- B. Manufacturer's Qualifications:
 - 1. Manufacturer shall have a minimum 10 years' experience in the manufacture of aquatic play features and components. The person(s) responsible for installation shall have supervised/installed a minimum of 3 (three) installations in the State of Michigan unless otherwise approved by ENGINEER.
 - 2. Manufacturer shall provide independent and accredited certification that it applies an environmental management system which meets the requirements of ISO 14001:2004 in its design, manufacturing, sales, marketing and servicing of recreational aquatic products and accessories.
 - 3. Manufacturer shall provide independent and accredited certification that it applies a quality management system which meets the requirements of ISO 9001:2008 in its design, manufacturing, sales, marketing and servicing of recreational aquatic products and accessories.
 - 2. The person(s) responsible for installation shall be on-site performing such service.
 - 3. Licensed plumbers and electricians shall be used as required by local codes.
- C. Storage, Delivery and Handling:
 - 1. All aquatic play products and associated equipment must be properly wrapped and secured in place while in transport to the project site. Care shall be observed during offloading and handling to prevent excessive stress and abrasions.
 - 2. At the site, the play products and associated equipment are to be stored in safe areas, out of the way of traffic and other construction activities, until the actual time of installation. If required, safety barricades or other like precautions must be taken for the protection of public and adjacent property.
 - 3. Protective wrapping on the aquatic play features must be left in place until construction work for the splashpad is complete.
 - 4. Inspect all items for abraded surfaces and other unacceptable deliver conditions. Return damaged or non-conforming items to manufacturer for replacement.
 - 5.

1.4 SITE CONDITIONS

- B. Substrate Requirements:
 - 1. Do not place concrete on muddy or frozen substrate.
 - 2. Remove mud, dirt, and ice from formwork surfaces.
- C. Existing Conditions:
 - 1. Locate underground utility systems and other below grade site improvements in area of surface and footing excavations.
 - 2. Call MISSDIG System for underground utility locations 72 hours in advance of excavation, removing soil materials and boring post holes.
- D. Sequencing:

1. Order materials and start fabrication of fixtures and components after approval of shop drawings by the Owner's Representative.

PART 2 PRODUCTS

2.0 MANUFACTURER:

- A. Aquatic play features, urban water features, and water management systems shall be Vortex® named designs and model numbers or approved equal, as manufactured Vortex Aquatic Structures International, Corporate Headquarters 7800 Trans Canada, Pointe-Claire, Quebec, Canada, H9R 1C6, Phone: 1.877.586.7839. Local contact is Vortex Aquatic Structures International, USA Office, 3500 South Dupont Highway, Suite EP-101, Dover, DE 19901, Phone: 1.704.280.09271
- B. For products specified by naming only one product and manufacturer, there will be no substitutions unless the substitution is approved as an equal or better, 2 weeks prior to bid opening.
- C. All equipment shall be installed in accordance with the installation specifications. The contractor shall use due care when installing the features. Protective wrapping shall be left intact throughout the installation and be removed only upon completion. Structures shall be installed in accurate locations, square, centered, plumbed, and at the required elevation relative to final grade on footings as per the layout.
- D. All phases of the installation shall be inspected by the owner, or an authorized representative of the owner, up to and including the final inspection as laid out in the Waterplay Project Inspection Checklist.

2.1 PRODUCT CONSTRUCTION: Aquatic Play Features, Urban Water Features, Slide Activity Centers

- A. All aquatic play structural posts installed above ground shall be manufactured from 304/304L stainless steel. The anchoring system shall be manufactured from 304/304L stainless steel.
- B. Aquatic play features are to meet ADA compliance for handicap accessibility and meet or exceed current ASTM playground safety standards.
- C. All hardware and anchoring systems shall be 316 stainless steel. All play products and ground spray systems shall include an integrated anchoring and leveling system facilitating installation and a flush surface finish. Exposed and accessible hardware shall be tamper resistant, requiring a special tool for removal to deter vandalism and theft. Aquatic play features will be supplied with all necessary anchoring hardware and installation templates to accommodate site work.
- D. All accessible edges shall be machined to a rounded finish. All welds shall be watertight, buffed smooth or polished to a non-visible finish and factory pressure tested. Accessible nozzles and spray heads shall be recessed to ensure a completely safe play environment with no pinch points, head entrapments or protrusion hazards. All products shall be designed in accordance with ASTM F1487, ASTM F-2461 and CSA Z614-98 regulations for public playgrounds.
- E. All aquatic play features shall have fittings that allow for winter close off.

- F. All aquatic play features of below grade design shall address winterization and allow for draining of water and freeze protection.
- G. Flumes shall be manufactured of fiberglass from a closed mold form.

2.2 NOZZLES

- A. Shall be manufactured from lead free brass, UHMWPE or Polyurethane and shall use tamper resistant tools for installation and removal. PVC, Nylon, and Delrin™, shall not be utilized. All grade level play products are to be furnished with appropriate winterization caps.

2.3 COATINGS

- A. Shall be a polyester smooth glossy heat-cured powder coat that is UV and chemical resistant and suitable for public spaces.

2.4 ELECTRICAL

- A. All electronic operating systems shall be manufactured by Vortex Aquatic Structures International, Corporate Headquarters 7800 Trans Canada, Pointe-Claire, Quebec, Canada.
- B. All electrical control panels shall be UL approved specifically for aquatic play area operations and must bear UL certification logos as follows. Industrial Control Panel (NITW). The control panel nameplate shall include the marking INDUSTRIAL CONTROL PANEL FOR PERMENANTLY INSTALLED FOUNTAIN or FOUNTAIN CONTROL PANEL.
- C. All activation mechanisms shall be made accessible only with use of manufacturer supplied tamper resistant, stainless steel security hardware.
- D. All wiring to be specified by the manufacturer of the aquatic play features.
- E. The actuating device shall be encapsulated within a powder coated aluminum casing with a 316 stainless steel button, and be UV, moisture, graffiti, and impact resistant.
- F. All control system materials are to be of industrial grade quality and controller enclosures shall be rated @ NEMA 4.
- G. All Waterplay® components shall be grounded using bare #6 AWG wire and an approved ground lug in the 3/8" hole provided in the base plates. Consult local electrical inspector for local codes and final inspection.
- H. Electrical connection shall be National Pipe Thread (NPT) coupler to be located near the bottom of the component. Conduit shall run up inside of tubular section to activation sensor chamber. The conduit shall be welded via 1/4" fillet weld to the component and be completely watertight.
- I. Activator wire type shall be #18, 3 conductor SJOW with a diameter of 0.31 in. Each activator requires 1 full, uninterrupted run of wire through a 1" conduit to the controller location, and 1 additional ground wire, #14 AWG.
- J. All wire connections must be watertight.
- K. All Activators that do not utilize water, shall provide a National Pipe Thread (NPT) coupler located near the bottom of tubular section for drainage. It shall be A304L stainless steel, or aluminum 6061 and affixed to the support column with a watertight fillet weld.

2.5 WATER DISTRIBUTION AND MANAGEMENT SYSTEM:

- A. main pipe and fitting shall be ductile iron class 52 meeting the requirements of SP 33 1 00 – Watermain.
- B. The distribution laterals and fittings are to be schedule 80 PVC or greater. Ensure that a proper slope is consistently applied to all piping to ensure positive gravity-assisted drainage of the entire system. Ensure all fittings are secured to close openings (off season) to protect

from water entry of water back into the piping system. (See nozzles section.)

- C. Drainage lines shall be PVC ASTM D3034 – SDR 35 unless otherwise posted by local code.
- D. Solenoids valves (different possible combinations of sizes) shall be constructed of PVC or Brass with or without ball valve, all with water resistant solenoid, all rated up to 150 PSI. There shall be one (1) solenoid valve installed on each of the water distribution ports for the Play Products. They shall be a normally closed 24 VAC 50/60 cycle solenoid actuated globe/angle pattern design. The valve body and bonnet shall be constructed of PVC with stainless steel fasteners. The valve shall have a manual override capability (manual open/close control). It shall house a fully encapsulated, one-piece solenoid. Each Solenoid valve shall have in integrated flow control adjustment valve stem for fine tuning of spray effects.

2.6 ACCESSORIES:

- A. All hardware, fittings and fastenings shall be as indicated on the shop drawings and may be required to complete the installation. Anchor fasteners to be stainless steel.
- A. Lag bolts shall be stainless steel with flat type vandal-proof head in size indicated on plans. Anchors shall be stainless steel in size required. (tamper proof hardware shall be stainless steel, complete with owner supplied hardware security tools).

2.7 FEATURE SPECIFICATIONS:

See drawings sheets C5 & C6.

PART 3 EXECUTION

3.1 ACCEPTABLE INSTALLERS

- A. Acceptable Installers:
 - 1. A Vortex Certified Installer or an installer with previous experience with this manufacturer on at least (5) similar installations is required.
 - 2. The installation shall be accomplished by skilled work personnel. The installation of all water pipe and fittings, and the installation of all electrical wiring and conduit, shall be under the direct full-time supervision of a licensed corresponding trade, as approved by the owner.

3.2 PERFORMANCE

- A. Verification of Conditions:
 - 1. Examine all fixtures and components and verify that equipment is undamaged and ready for field assembly.
 - 2. Return damaged and non-conforming products to the manufacturer.
 - 3. Identify location of underground utility lines on surface.
- B. Protection:
 - 1. Protect adjacent facilities, plants, trees, ground covers, grass, paved surfaces, and other site improvements from damage during assembly and installation.
- C. Layout and Excavation:
 - 1. Lay out aquatic play features, components and supply and drain lines within pool areas.
 - 2. Excavation for Foundation: All excavation shall be cut accurately to required lines and

dimensions for work on drawings, and shall be large enough to provide adequate clearance for the proper execution of the work within them.

- E. Concrete Placement and Cast in Place Footings:
 - 1. Obtain approval from Owner's Representative prior to pouring concrete.
 - 2. Inspection: When the excavation has been carried to the required depth as shown on the drawings, the Contractor shall do no more work until after the inspection by the Engineer, who shall order the foundation work to proceed, or further excavation as the conditions indicate, and no other work shall be done until the excavation has been approved by the Engineer.

- F. Installation
 - 1. Aquatic play features shall be installed in accordance with the manufacturer's specification, and approved by the owner. The contractor shall use extreme care when installing aquatic play features. All wrappings are to be left intact through installation and then to be removed upon completion.
 - 2. Entire assemblies shall be installed in accurate location, square and plumb, and in required location to surrounding finished grade, on footings, as shown on the plans.

3.3 COMPLETION

- A. Testing: All aquatic play feature lead lines shall be water pressure tested as directed by local codes and the manufacturer's recommendations before backfilling and pouring of concrete slabs. The contractor is to ensure all water supply lines are free of debris, and flushed of any foreign material, prior to the hook-up of any aquatic play features, and the contractor shall have inspected the entire system (including all electronic systems) in the presence of the Owners Representative. The contractor is to ensure all nozzles are adjusted and secured to the owner's satisfaction. The contractor is to test all drainage systems of the aquatic play features. Refer to the Installation manual for a full description of related tasks prior to completion.

- B. Upon construction completion of a Vortex Recirculation water management system, the manufacturer shall provide start up and training services by a Vortex Technician.

3.4 SCHEDULES

- A. Vortex Proposal "Version A – 31528"
- B. Vortex Splash Pad drawing dated June 9, 2023
- C. Vortex Splash Pad Quote Dated May 24, 2023

END OF SECTION



Hemlock Park Splashpad - Big Rapids
Version A - 31528



Water
moves
us



We understand how every drop, stream, and splash shapes the world around us. By harnessing the transformative power of water, Vortex creates play experiences for children to develop, communities to flourish, and businesses to thrive. We exist to leave an impact—one that lasts long after families are dried off.



8,000

Projects
worldwide

50

Countries
served

100+

Awards
& honors

Why choose Vortex?

Our diverse expertise

To foster a rich understanding of your unique needs, our design team draws its talent from many disciplines. Engineers, creative designers, childhood development specialists, and water choreography experts tackle new projects from all exciting angles. Our multidisciplinary approach oversees countless variables including water management, accessibility, and (most importantly) play.

Our superior quality

Every Vortex project is engineered on-site to ensure the highest quality and safety standards. We use stainless and galvanized steel sourced from North America and are vertically integrated for maximum quality control. Manufactured and tested in our Montreal headquarters, products are designed to last and require little maintenance.

Our boots on the ground

We put a lot of stock into local representation. Every collaboration begins by getting to know the families you're servicing and thinking creatively about how we can help them grow. We ensure that no matter where you're situated, our customer service and expert guidance come equipped with an intuitive understanding of what sets your facility apart.



All 3D renders shown are for illustration purposes only. Actual colors, textures and finishes may differ from renders.



Hemlock Park Splashpad - Big Rapids
Version A - 31528

Splashpad[®]
View 1



All 3D renders shown are for illustration purposes only. Actual colors, textures and finishes may differ from renders.



Hemlock Park Splashpad - Big Rapids
Version A - 31528

Splashpad[®]
View 2





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Hemlock Park Splashpad - Big Rapids
Version A - 31528

Splashpad
View 3





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Hemlock Park Splashpad - Big Rapids
Version A - 31528

Splashpad
View 4



All 3D renders shown are for illustration purposes only. Actual colors, textures and finishes may differ from renders.











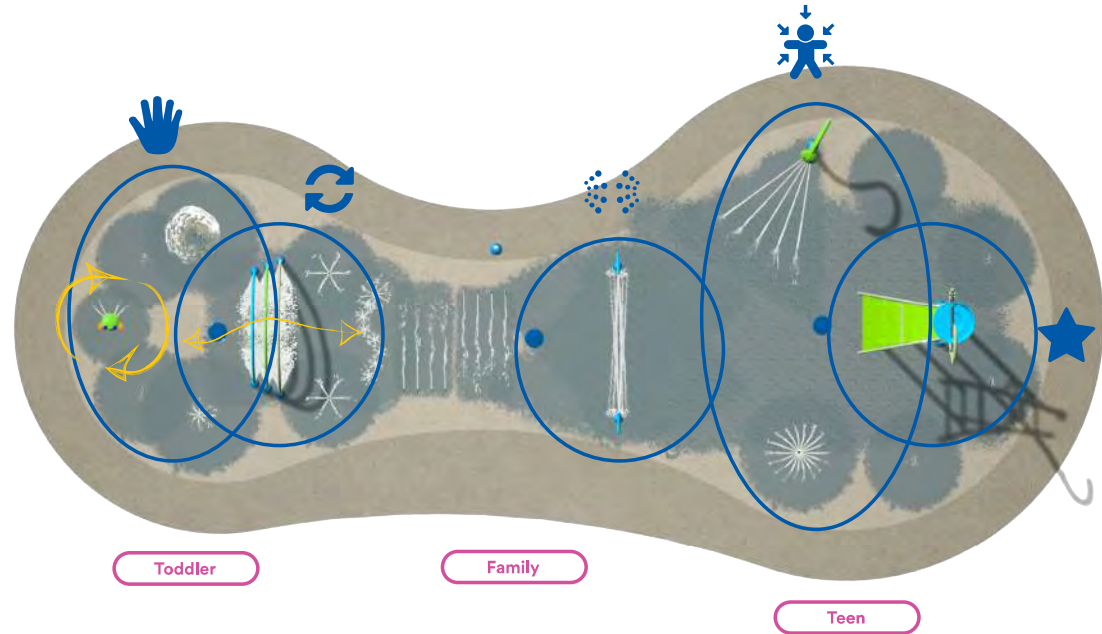
Hemlock Park Splashpad - Big Rapids
Version A - 31528

Splashpad
View 5

Aquatic play may feel spontaneous, but it actually requires lots of planning. We design every play experience to keep families engaged, boost dwell times, and increase return visits.

To build lasting memories among moms, dads, and little ones of all abilities, we carefully consider how to integrate products that cater to everything from the location's footprint and capacity to its demographics and theming objectives.

-  **Sensory**
Stimulates & develops multiple sense experiences
-  **Spray**
Encourages teamwork & competition
-  **Tactile**
Promotes discovery of water textures
-  **Iconic**
Features interactive fun & serves as a social gathering place
-  **Circuit**
Encourages physical development
-  **Flow**
Develops discovery & learning
-  **Kinetic**
Features interactive fun & encourages movement
-  **Misty**
Cloud-like experience gives refreshing thrills



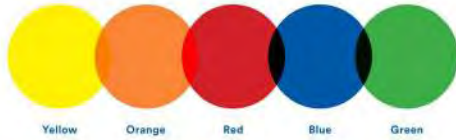
Vortex Colors

Steel and Fiberglass (excluding waterslides)

* An additional fee will apply on fiberglass waterslide applications.



SeeFlow™



Orbs



Accessories

Available in Vortex Blue (as shown)



Superwave



Supersplash













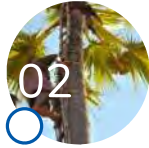







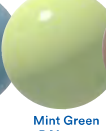
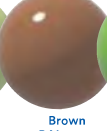
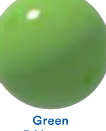






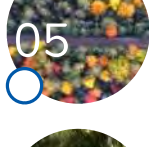
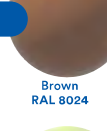









Twinsplash



Mark this circle if selecting the color palette shown in the renders **OR** Choose from the following Color Palettes by marking the corresponding circle:

Fill in RAL colors for custom palette: **Pale Green - Sky Blue - Green - Sparkle**

	01					
	02					
	03					
	04					
	05					
	06					

	01					
	02					
	03					
	04					
	05					
	06					



Urban 1

- Red RAL 3000
- White RAL 9003
- Navy Blue RAL 5003
- Sparkle RAL 90080



Urban 2

- Fuchsia RAL 4006
- Navy Blue RAL 5003
- Sky Blue RAL 5012
- Sparkle RAL 90080



Urban 3

- Orange RAL 2011
- Mint Green RAL 6019
- Beige RAL 1015
- Sparkle RAL 90080



Urban 4

- White RAL 9003
- Navy Blue RAL 5003
- Mint Green RAL 6019
- Saffron RAL 1017



Urban 5

- Pastel Blue RAL 5024
- Sky Blue RAL 5012
- Orange RAL 2011
- Sparkle RAL 90080



Urban 6

- Coral Green RAL 6027
- Blue RAL 5017
- White RAL 9003
- Grey RAL 7040



Vibrant 1

- Orange RAL 2011
- Saffron RAL 1017
- Yellow RAL 1023
- Sky Blue RAL 5012



Vibrant 2

- Fuchsia RAL 4006
- Sky Blue RAL 5012
- Orange RAL 2011
- Yellow RAL 1023
- Green RAL 6018



Vibrant 3

- Red RAL 3000
- Yellow RAL 1023
- Blue RAL 5017
- White RAL 9003



Vibrant 4

- Pastel Blue RAL 5024
- Green RAL 6018
- Orange RAL 2011
- Yellow RAL 1023
- Sparkle RAL 90080



Vibrant 5

- Yellow RAL 1023
- Green RAL 6018
- Coral Green RAL 6027
- Red RAL 3000



Vibrant 6

- Pale Green RAL 6021
- Mint Green RAL 6019
- Saffron RAL 1017
- Orange RAL 2011
- Red RAL 3000

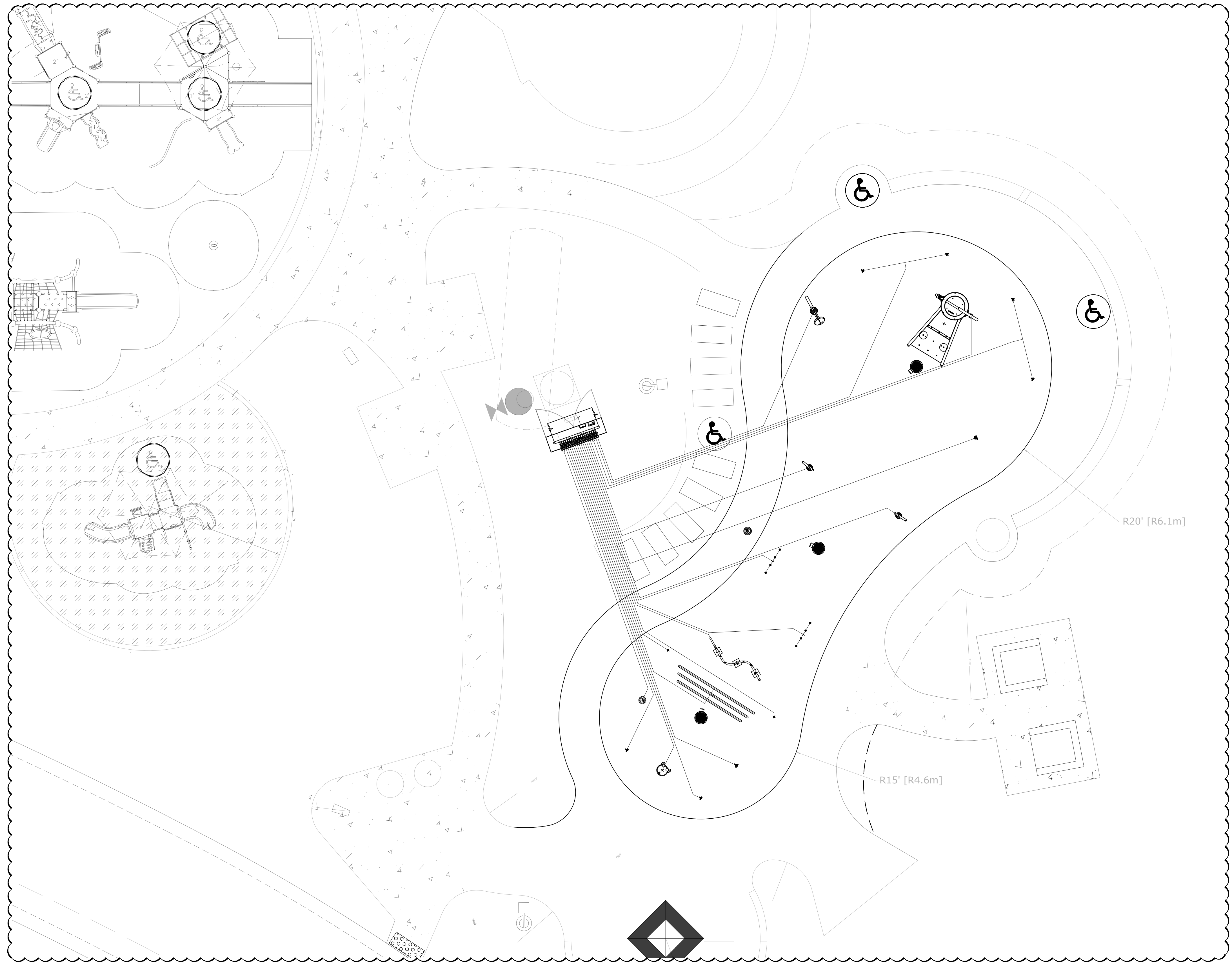


vortex-intl.com

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Hemlock Park Splashpad



Project Location

Big Rapids, MI

Project Number

31528

Version

VA

Date	Revision Description	No.	By
09/June/2023	Re-Issued for Approval	02	OD
02/June/2023	Re-Issued for Approval	01	OD
12/May/2023	Issued for Approval	00	MS

Date	Revision Description	No.	By
09/June/2023	Re-Issued for Approval	02	OD
02/June/2023	Re-Issued for Approval	01	OD
12/May/2023	Issued for Approval	00	MS

Drawing Title

Site Layout

Drawn by

OD

Verified by

MAB

Scale

1/8"=1'-0"

Date

09/June/2023

Page #

A-001

1 SITE LAYOUT
 A-001

Abbreviations	Drawing #	Drawing Name	Rev#
A Architectural	A-001	Site Layout	02
P Plumbing & Electrical Layout	PE-001	Plumbing & Electrical Layout	02

01 02



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Hemlock Park Splashpad

Project Location
Big Rapids, MI

Project Number
31528

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Date	Revision Description	No.	By
09/June/2023	Re-Issued for Approval	02	OD
02/June/2023	Re-Issued for Approval	01	OD
12/May/2023	Issued for Approval	00	MS

Drawing Title
Plumbing & Eectrical Layout

Drawn by
OD

Verified by
MAB

Scale
3/16"=1'-0"

Date
09/June/2023

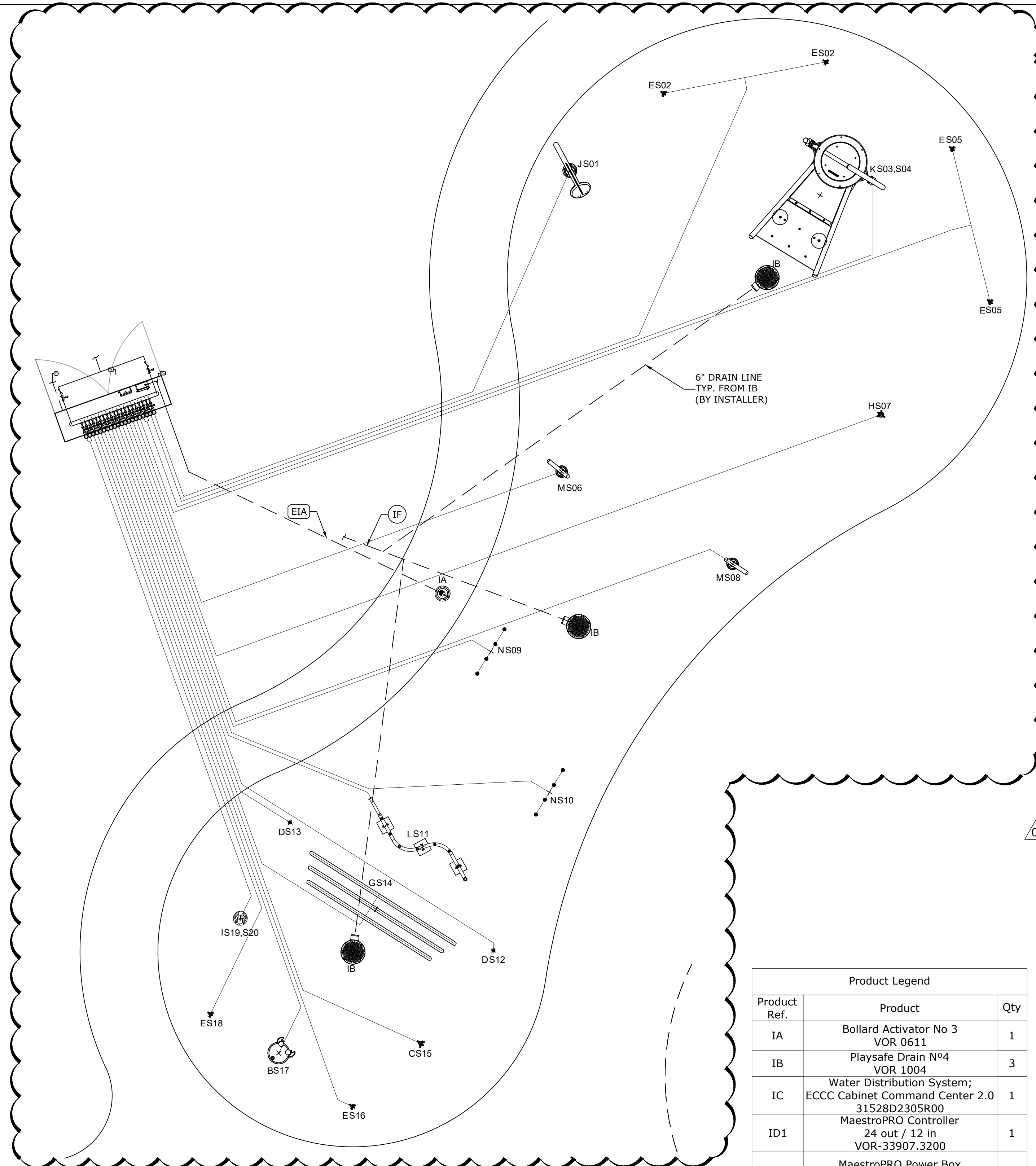
Page #
PE-001

Feature Connection Table							
Manifold Output Ref.	Solenoid Valve	Feature Ref.	Feature	Qty	Line Size	Gpm	Output (ID1)
S01	1" Std	J	Snake N°2 VOR 7214	1	1"	6.5	1
S02	1" Std	E	Jet Stream N°1 VOR 7512	2	1"	5	2
S03	1" Std	K	Super Splash N° 2 VOR 130	1	2"	31.5	3
S04	1" Std						4
S05	1" Std	E	Jet Stream N°1 VOR 7512	2	1"	5	5
S06	1" Std	M	Tube N°1 VOR 220	1	1"	5	6
S07	1" Std	H	Side Winder VOR 7518	1	1"	6.5	7
S08	1" Std	M	Tube N°1 VOR 220	1	1"	5	8
S09	1" Std	N	Water Tunnel N°2 VOR 309	1	1 1/2"	12	9
S10	1" Std	N	Water Tunnel N°2 VOR 309	1	1 1/2"	12	10
S11	1" Std	L	Team Spray N°1 VOR 7640	1	1 1/2"	17.5	11
S12	1" Std	D	Geyser VOR 301	1	1"	7	12
S13	1" Std	D	Geyser VOR 301	1	1"	7	13
S14	1" Std	G	Rainbow N°2 VOR 0548	1	1 1/2"	22.5	14
S15	1" Std	C	Fountain Spray N°1 VOR 7513	1	1"	5	15
S16	1" Std	E	Jet Stream N°1 VOR 7512	1	1"	2.5	16
S17	1" Std	B	Crab N°1 VOR 7208	1	1"	4	17
S18	1" Std	E	Jet Stream N°1 VOR 7512	1	1"	2.5	18
S19	1" Std	I	Silhouette N°1 VOR 7772	1	2"	32.5	19
S20	1" Std						20

Electrical Line Connections Power					
Product Code	From	To	# Conductors	Gauge/Type	Note
PA	Main Power Line (by Other)	ID2 120VAC	3	TBD (by Other)	120V, 1 Phase, 60Hz, 10Amps Breaker Recommended ± 5% Voltage Drop is Acceptable

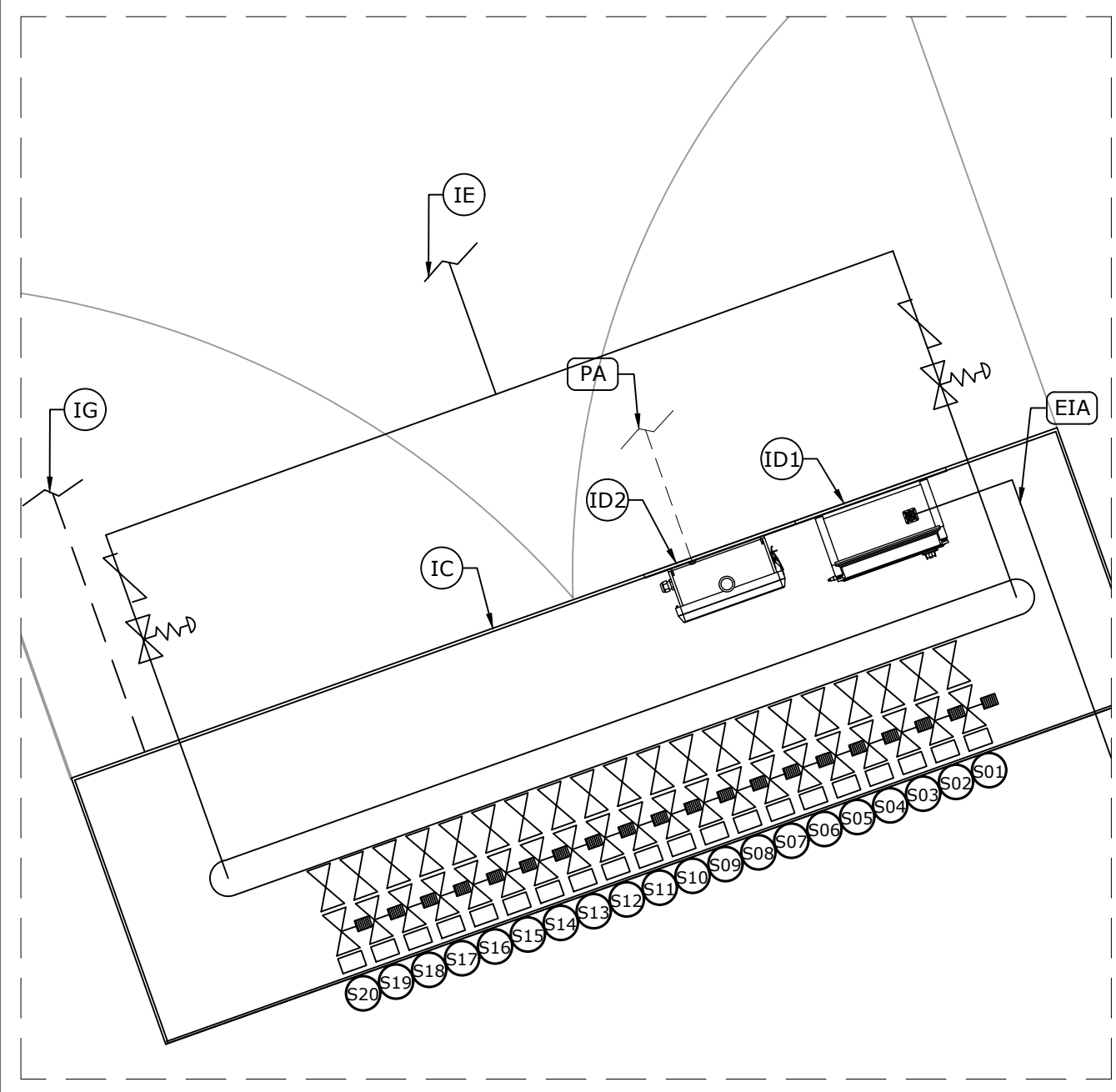
Electrical Line Connections Controller Inputs					
Product Code	From	To	# Conductors	Gauge/Type	Note
EIA	ID1-Input 1	IA1	5	22	Activator No.3, 24 VDC, Max 345 mA, 246' (75m) Long Cable (by Vortex)

Product Legend		
Product Ref.	Product	Qty
IA	Bollard Activator No 3 VOR 0611	1
IB	Playsafe Drain N°4 VOR 1004	3
IC	Water Distribution System; ECCC Cabinet Command Center 2.0 31528D2305R00	1
ID1	MaestroPRO Controller 24 out / 12 in VOR-33907.3200	1
ID2	MaestroPRO Power Box VOR-33907.3200	1
IE	3" City Water Line (by Installer)	1
IF	6" Drain line To Municipal Drain (by Installer)	1
IG	4" TYP Drain Line With Strainer Connected to Drainage System. Ensure P-Trap is Below Frost Line to Prevent Freezing. (by Installer)	1
⌘V→	2" Pressure Regulator (by Vortex)	2
↙	2" Pressure Regulator (by Vortex)	2
⌘	1" Solenoid Valve with Ball Valve & Union (by Vortex)	20



- 1 PIPING**
- WDS CONFIGURATION ARE SCHEMATIC AND MAY BE MOVED OR ADJUSTED ON SITE BY VORTEX CERTIFIED INSTALLER TO ADJUST FOR SITE CONDITIONS
 - ANY REQUIRED WATER METER ON THE CITY WATER MAIN SHALL BE PROVIDED BY INSTALLER. PRESSURE REGULATOR AND BACKFLOW PREVENTER WILL BE PROVIDED BY VORTEX.
 - ALL PIPE LINES TO FEATURES TO HAVE A 1% MINIMUM RECOMMENDED SLOPE FOR PROPER WINTERIZATION.
 - ALL LINE SIZING (FEATURE CONNECTION TABLE) ASSUMES A MAXIMUM DISTANCE OF 100 FEET BETWEEN THE WATER DISTRIBUTION MANIFOLD AND THE FURTHEST PLAY PRODUCT. DISTANCES ABOVE 100 FEET MAY REQUIRE AN INCREASE IN LINE SIZING. PLEASE CONTACT VORTEX.
 - QUANTITY AND LOCATION OF DRAINS BASED ON MAXIMUM FLOW FOR THE INDICATED PIPE DIAMETER AT 1% SLOPE. MODIFICATIONS MAY BE REQUIRED DUE TO SPECIFIC SITE CONDITIONS AND LOCAL CODE.
 - PRESSURE LINES ARE RECOMMENDED TO BE SCHEDULE 80 PVC OR PEX, AND NON-PRESSURE LINES TO BE SCHEDULE 40, UNLESS OTHERWISE REQUESTED BY LOCAL CODE.
 - DRAINAGE LINES ARE RECOMMENDED TO BE SDR 35, UNLESS OTHERWISE REQUESTED BY LOCAL CODE.
 - PIPING SHOULD BE INSPECTED AFTER TRANSPORTATION FOR CUTS, SCRATCHES, GOUGES OR SPLITS; DAMAGED SECTIONS MUST BE DISCARDED OR CUT OUT.
 - PIPE SHALL BE INSTALLED BELOW THE FROST LEVEL NOT LESS THAN 12" (ASTM F-645) UNLESS OTHERWISE REQUESTED BY LOCAL CODE.
 - PIPE INSTALLATION MINIMUM COVER SHOULD BE EVALUATED ACCORDING TO ASTM D-2774, UNLESS OTHERWISE REQUESTED BY LOCAL CODE.
 - SPECIAL CONSIDERATIONS SHOULD BE TAKEN FOR THERMAL CONDITIONS, EXPANSION AND CONTRACTIONS DUE TO TEMPERATURE SHOULD BE EVALUATED BEFORE THE INSTALLATION BY THE CONTRACTOR.
 - VALVE NUMBER 1 IS LOCATED TO THE LEFT OF THE MANIFOLD FACING THE SOLENOID.
 - MINIMUM 50 PSI REQUIRED AT THE INLET OF THE BACKFLOW PREVENTER AND PRESSURE REGULATING DEVICE.
 - MAXIMUM FLOW CAPACITY OF MANIFOLD IS 144 GPM.
 - TOTAL FLOW OF FEATURE IS 189 GPM.
 - FACORY MAXIMUM SEQUENCING FLOW IS 100 GPM ACTUAL FLOW MAY VARY DUE TO SITE CONDITIONS.

- 2 ELECTRICAL**
- WIRING FROM THE CONTROLLER TO EACH ACTIVATOR SHALL BE #22 AWG. A TOTAL OF FIVE (5) CONDUCTORS PER ACTIVATOR. CABLE LENGTH UP TO 246' (75m), PROVIDED BY VORTEX.
 - ALL CONNECTIONS TO THE CONTROLLER AND OTHER VORTEX ELECTRICAL PANEL SHALL BE PERFORMED USING AN APPROVED NEMA 4X CONNECTOR.
 - WIRE FROM MAIN POWER TO VORTEX PANEL TO BE DETERMINED BY OTHERS RESPECTING THE LOCAL CODE.
 - MAINTAIN A MINIMUM CLEARANCE ZONE OF 36" IN FRONT OF ELECTRICAL PANEL, UNLESS OTHERWISE REQUESTED BY LOCAL CODE.
 - USE #8 BARE COPPER BONDING WIRE BETWEEN FEATURES TO A GROUNDING ROD IN THE SOIL, TIED INTO REBAR GRID, OR AS PER LOCAL CODE. SPRAYLINKS FEATURE DO NOT REQUIRE BONDING.
 - AS PER ELECTRICAL CONSTRUCTION AND SAFETY CODES: CONTROLLER CONTROLLER AND ANY OTHER ELECTRICAL ENCLOSURES MUST BE HARD-WIRED TO A GROUND FAULT CIRCUIT INTERRUPTER (GFCI) FROM THE INPUT POWER SOURCE.
 - ALL ELECTRICAL WORK SHOULD BE PERFORMED BY A LICENCE ELECTRICIAN IN ACCORDANCE TO LOCAL ELECTRICAL CONSTRUCTION AND SAFETY CODES.
 - THE MAESTROPRO CONTROL PANEL IS POWERED THROUGH A MAESTROPRO POWER BOX.
 - THE POWER CABLE TO MAESTROPRO POWER BOX IS SUPPLIED BY INSTALLER.
 - THE MAESTROPRO CONTROL PANEL INTEGRATES 24 DIGITAL OUTPUTS WITH 24 VAC AND 12 DIGITAL INPUTS.
 - FOR REMOTE ACCESS ABILITY, A HARD CONNECTION TO AN EXISTING NETWORK IS REQUIRED USING A CAT 5 CABLE OR A CELLULAR NANO-SIM CARD WITH DATA-PLAN.



1 PLUMBING & ELECTRICAL LAYOUT
Scale: 3/4"=1'-0"

1 PLUMBING & ELECTRICAL LAYOUT
PE-001

WATER LINE	—————
DRAIN LINE	-----
ELECTRICAL LINE	-----

QUOTE



Account Name: Big Rapids, MI
 Project Name: Hemlock Park Splashpad - Big Rapids
 Project ID: 31528
 Bill To Name: Big Rapids, MI
 Bill To Address: Big Rapids, MI
 USA

Created Date: 5/24/2023 12:50 PM
 Quote Number: QUO-18607-H7Y7H0
 Quote Name: Hemlock Park Splashpad - Big Rapids
 VA
 Prepared By: Angie Monroe
 Email: amonroe@vortex-intl.com
 Incoterm:

VOR	Product No.	Product Name	Description	QTY
1- Play Products				
0611	104379-304L	ACTIVATOR N°3 (SW, PC)		1
7208	104142-304L	CRAB N°1 (SW,PC)		1
7513	103778-304L	FOUNTAIN SPRAY N°1 (EM)		1
0301	103711-304L	Geyser N°1 (EM)		2
7512	101126-304L	JET STREAM N°1 (EM)		6
0548	102944-304L	Rainbow N°2 (SW,PC)		1
7518	102679-304L	Side Winder (EM)		1
7772	100565-304L	Silhouette N°1 (SW,PC)		1
7214	102638-304L	SNAKE N°2 (SW,PC)		1
0130	100385-304L	SuperSplash N°2 (SW,PC)		1
7640	102347-304L	TEAM SPRAY 01		1
0220	102260-304L	Tube N°1 (SW,PC)		2
0309	100127-304L	WATER TUNNEL N°2 (EM)		2
2- Water Management System and Controls				
2- Water Distribution System 'WDS'				
		Custom WDS	2Water Distribution System Serial Number: 31528D2305R00 ECCC 2.0 Cabinet Command Center - Flow-Through Double 2" Inlet With Pressure Regulator; Backflow Preventer Installed Controller Installed in Equipment 0 Additional Output 1 Activation Device 10x 1" PVC Solenoid Valve Line w/ Ball-Valve 10x 1" PVC Solenoid Valve Line w/ Ball-Valve 1x MaestroPRO, Splashpad, 24 out / 12 in 120V 1x AT&T LTE Cell Module	1
4- Drains				
1004	103080-304L	Playsafe Drain N°4	Playsafe Drain N°4	3

QUOTE



6- Services				
13080	13080	Stamped Drawings Fee		1
14010	14010	Installation Fees		1
7- Installation Kits				
	101143-304L	INSTALLATION KIT #SAFESWAP NO1		8
	103335	M12 CONNECTION WIRE, 5-PIN, STRAIGHT CONNECTOR_75M LG_22AWG		1
	103534-304	INSTALLATION KIT FOR GROUND EQUIPEMENT		44
Safeswap N°2	103543-304L	Installation Kit Safeswap N°2		8
	102313	TOOL KIT #0 :		1
	102314	TOOL KIT #1 :SECURITY BITS (ALL)		1
	100308	TOOL KIT #28:RIV-VOZZLE TOOL		1
	102301-304L	TOOL KIT #3 : 2 PIN KEY		1
	102306-304L	TOOL KIT #18: ANGLE IRON BARS (RAINBOW-3 ARCHES)		1
	100309-304L	TOOL KIT #38 : ANGLE IRON BARSSUP. SPLASH ANCH STUD		1
	102305-304L	TOOL KIT #123: POD SPRAY KEY		1
	100307	TOOL KIT #2 :NOZZLE TOOL		1
9- Transport				
19030	19030	Freight Fee		1
19020	19020	Embed Freight Fee		1
18020	18020	Packaging Fee		1

Additional Information

Provided by Vortex USA Certified Installers:

- Set all safe-swap anchors, ground sprays, features, and Water Management to elevations given by GC/City
- Bolt and flow adjustments for all features & elevation.
- Pipe all features with schedule 80 PVC or PEX to water/sewer (final hook ups by GC)
- Wire from activation bollards to controller
- Provide a 95% compacted sand base to leave a 6" reveal for concrete pad
- Startup training for staff, once complete

Provided by General Contractor/City:

- Site restoration. Topsoil and seed disturbed areas.
- All utilities brought to pad by and ALL final connections made by GC/City
- Need 2" dedicated water feed line brought to pad after city provided back flow preventer and/or water meter is installed to have 55psi for system to function properly.
- Electricity brought to pad - Final connections made by GC
- 6" schedule 35 or 40 sewer drain line brought to pad.
- Site excavation- remove 16"-18" from finish grade
- 6" Concrete for splashpad area - 2% slope to drain
 - o 3/8 Rebar – 18" on center – Bonded
 - 4" Concrete spray-free zone
 - o Minimum 5' buffer zone with wire mesh pitched slope to drain and all poured together with 6" spray zone
- ALL Permits - ALL Inspections by GC/City
- City's Electrician to install bonding loop to features, as shown in construction documents and on concrete Rebar. (Pull permit and call for inspection)

Total Summary

Customer Signature:

**Enquire about our cooperative purchasing programs.
Thank you for doing business with us!
Pricing is valid for a period of 45 days.**

Products:	135,911.00
Services:	95,300.00
Transport:	5,200.00
Subtotal:	236,411.00
Total:	236,411.00
Currency:	US Dollar
Incoterm:	

Terms & Conditions

Products Payment Terms: Product \$100K-\$250K: 30% deposit at PO, 50% @Ship, 20% Net 45

Services Payment Terms: Progressive Payments, NET 30

Freight Charges

Please note: freight charge is an estimate and is subject to change without notice. Vortex reserves the right to adjust the freight charge quoted above. Should embed equipment be required ahead of scheduled delivery date, additional freight charges will apply.

Installation Charges

Please note: Installation fees are an estimate at the time of quoting and is subject to change without notice. Vortex reserves the right to adjust the installation fees quoted above.

Purchase Contract Terms & Conditions of Sales

The following terms and conditions (the "Terms and Conditions") form part of the Purchase Contract (the "Purchase Contract") between yourself (the "Customer, and Vortex Aquatic Structures International and/or Vortex USA Inc. ("Vortex"). The Customer's acceptance and understanding of these Terms and Conditions and all other supporting documentation provided as part of this package is evidenced by signing of the Purchase Contract.

Payment Terms

Unless otherwise specified in the Purchase Contract, payment by the Customer of the purchase price specified in the Purchase Contract (with all applicable taxes, the "Purchase Price") shall be on the following terms: 100% of the Purchase Price to be paid prior to Vortex commencing production on the Customer's order. Any overdue balances are subject to interest charges of 1.5% per month.

Unless otherwise specifically stated, all sales taxes or any other personal property taxes, use taxes, duties, excises, levies or tariffs imposed by any government authority and incurred by Vortex through performance of the Purchase Contract will be the Customer's responsibility. Without limiting the generality foregoing, applicable taxes will be applied to all taxable goods and services included in the Purchase Contract as amended from time to time. Customers are advised to consult with their financial and tax advisors to obtain further information regarding taxes applicable to their purchase.

Vortex maintains a no return policy and asks all Customers to determine feature and color selection carefully. If a Customer cancels an order after production has commenced, Vortex reserves the right to charge (and the Customer agrees to pay) a 40% re-stocking fee.

Cheque, Wire Transfer, Irrevocable Letter of Credit or Credit Card (note: an administrative fee of 3.5% may apply to payments made via Credit Card) are considered acceptable payment methods.

Except where title to the products contained in the Customer's order is explicitly transferred by Vortex to the Customer and the Purchase Price is paid in full, title to and right to possession of such products shall remain with Vortex until the Purchase Price and all sums due or become due from the Customer are fully paid.

Should the goods comprising the Customer's order be connected to the ground or real property or buildings because of foundations or mechanical parts, then this connection is to be considered as transitory in nature until payment in full of the Purchase Price.

Unless otherwise agreed, projects where Vortex is supplying goods without installation, the risk of loss of the goods shall pass to the Customer when the goods are delivered to the Customer or its agent or to a carrier for delivery to the Customer or its agent, whichever event shall first occur. In the event of where Vortex is supplying and installing goods, risk of loss of the goods shall pass to the Customer upon completion of the project.

Lead Times & Logistics

Vortex' standard lead times are up to 3-4 weeks for embeds, up to 6-8 weeks for Play Products, up to 10 weeks for Water Recirculation Equipment, up to 16 weeks for Elevations and up to 16 weeks for Waterslides. The lead times areas contingent upon receipt of signed Purchase Contract, approved drawings, and all applicable color selections. Expected timing for order completion and shipment will be communicated to the Customer at the time the Purchase Contract is signed by the Customer and acknowledged by Vortex.

Vortex reserves the right to refuse a Customer's delivery date change request if a delivery date confirmation has been previously confirmed/communicated to the Customer. All fees related to the delivery will be the sole responsibility of the Customer and will be borne by them. Storage fees will be charged if the Customer is unable or unwilling to receive the product as per the dates communicated by Vortex. The storage fees are payable before release of the shipment.

All products will be packaged to mitigate damage during shipment. All shipments must be inspected upon delivery and any damage, errors or omissions must be reported to Vortex at support@vortex-intl.com and the transport company within 24 hours of receipt of goods. Vortex reserves the right to amend and modify the transportation costs based on the Customer's request.

Service & Support

QUOTE



Digital versions of operations and maintenance manuals will be provided at the later of either the delivery of the products or completion of the project installation. Vortex is not responsible for coordination the installation project unless otherwise specified in the Contract. The Customer is responsible for coordinating installation schedules with Vortex to ensure that the site is ready for Vortex' products and services. Vortex reserves the right to charge the Customer and the Customer agrees to pay for any additional time or idle time on site and all additional expenses incurred as a result of the site not being ready for the planned services.

Vortex reserves the right to cancel supervision, installation start-up and commissioning services if Vortex deems the site unsafe or not ready. The Customer is responsible for ensuring a safe working environment for any Vortex or contracted service technicians. Vortex reserves the right to bill the Customer for (and the Customer agrees to pay) any additional time on site as well as any additional expenses incurred as a result of waiting to rectify an unsafe work condition.

Exclusions

Unless otherwise specified, the following is excluded from Vortex' purchase agreement price and responsibility: project management, project coordination, loading and unloading, onsite storage, installation services, permits and permit fees, local, state and or health department codes and approvals, OSHA documentation, onsite electrical work, electrical connections, onsite plumbing work and plumbing connections, bonding payment, geotechnical survey work, excavation & removal of materials, concrete surfacing, slab design and concrete footings.

General Terms & Conditions

The Customer has reviewed local codes and standards and has accepted the design and product specifications, including custom-designed features by signing the Purchase Contract. For orders including water recirculating equipment, the Customer is responsible for ensuring the accepted system meets local standards and codes and that all appropriate approvals are obtained, unless otherwise noted. Any design changes requested after signing the Purchase Contract will be subject to additional fees.

The Customer agrees to pay on demand all expenses reasonably incurred by Vortex in efforts to collect the amounts owing under the Purchase Contract. The Customer shall pay reasonable legal costs (fees and disbursements), including fees incurred in both trial and appellate courts or fees incurred without suit and all court costs.

Confidentiality: The design details and specifications of the products included in the Customer's order, including without limitation, fabrication drawings, samples, sketches, photographs, foundation drawings, approval drawings, shipping lists, manuals and any other technical details (collectively, the "Confidential Information") supplied are the property of Vortex and are confidential. The Customer shall not, without prior written consent of Vortex, use the Confidential Information except in connection with the installation and operation of the goods supplied or disclose such Confidential Information to third parties unless compelled by law.

Limitation of Liability: The aggregate liability of Vortex, its affiliates, and their respective employees, directors, officers, agents and contractors for any claim, whether in contract, tort (including negligence) or otherwise, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery, installation, resale, repair, replacement or use of any product will in no case exceed the actual portion of the Purchase Price paid by the Customer for the Purchase Contract. In no event will the Vortex be liable for special, indirect, or consequential damages. The limitation of liability contained herein shall survive the termination or expiration of the Purchase Contract.

Vortex is not responsible for any damages to the Customer's environment and or landscaping as a result of its products. All modifications and alterations made to Vortex's products will automatically void and null all warranties. Vortex may refuse to accept any order for any reason without incurring any liability from the Customer. No Change to this Agreement will be enforceable unless the Customer has a signed a Vortex Change Order request.

Pricing is valid for a period of 45 days.

QUOTE



X

Name

Title

Construction Agreement

The Owner and the Contractor agree as follows:

Engagement of the Contractor by Owner

Owner hereby contracts with the Contractor to provide the labor, services, and/or materials to perform the construction work described in the statement of work appended hereto and made a part hereof by reference, upon that certain real property and more commonly known as (hereinafter "Subject Property"), as more particularly set forth in hereof.

Scope of Work

Contractor will furnish all specifications, labor, equipment, materials, sales taxes, transportation, supervision, coordination, and communication in a workmanlike manner for the work described in the statement of work attached hereto, which is made a part hereof by reference.

Contract, Drawings and Specifications

The work upon the Subject Property will be in accordance with drawings and specifications provided by Contractor, which drawings and specifications are hereby made a part of this Agreement. This Agreement and the drawings hereby are intended to supplement each other. In case of conflict, however, the statement of work shall control the drawings, and the provisions of this Construction Agreement shall control both.

Time for Commencement Work

Owner will have the jobsite ready for commencement of the work to be performed by the Contractor specified herein above and will give Contractor written notice to commence work. Contractor will commence work after such notice or within of receipt of all necessary governmental approvals and permits, whichever date shall last occur.

Guarantees of Timely Completion

Time is of the essence in the Contractor's performance of the Work and is a basic consideration of this Agreement. Accordingly, Contractor guarantees that the following event (the "Guaranteed Events") shall occur no later than the date specified (the "Guaranteed Completion Dates"), except if Contractor can show that a Force Majeure Event has occurred as set forth in Section 6 herein.

Force Majeure Event

Owner and Contractor are aware of the ongoing pandemic known as COVID-19, and acknowledge that delays, additional costs, or both may occur as a result and are not the responsibility of the Contractor. If Contractor is delayed at any time in the commencement or progress of the Work, or if Contractor's work is made more costly, by any cause or condition arising directly or indirectly from COVID-19, Contractor shall be entitled to an equitable adjustment of the Contract Time and Contract Sum. Such causes may include but are not limited to labor shortages or unavailability of workers, supply chain disruption, inability of personnel to work due to federal, state or local executive orders, subcontractor delays or increased costs, unusual delays in deliveries, delayed inspections or permit approvals, material or equipment cost increases or delays, import delays, and other similar causes beyond Contractor's reasonable control.

Neither Party shall be considered to be in default in performance of any obligation hereunder if failure of performance shall be due to a Force Majeure Event. For the purposes of this Agreement, the term, "Force Majeure Event", shall mean any cause beyond the control of the Party affected, including, but not limited to, flood, earthquake, storm, fire, lightning, epidemic, war, riot, civil disturbance, labor disturbance (except as excluded herein), sabotage, other "Acts of God", and restraint by court order or public authority, which by exercise of due foresight such Party could not reasonably have been expected to avoid, and which by exercise of due diligence it is unable to overcome. Notwithstanding anything to the contrary, the term Force Majeure Event shall not be deemed to include (a) any labor disturbance affecting either Contractor or any Subcontractor (except Subcontractors that have been selected by Owner), to the extent that such labor disturbance involves direct employees of Contractor or any Subcontractor who are performing Work on the Project, except for a national strike in the United States, (b) the climate for the geographic area of the Project, (c) the occurrence of any manpower or material shortages or (d) any delay, default or failure (direct or indirect) in obtaining materials, or any Subcontractor or worker performing any Work or any other delay, default or failure (financial or otherwise) of a Subcontractor, vendor or supplier. Neither Party shall, however, be relieved of liability for failure of performance if such failure is due to causes arising out of its own acts, omissions or negligence or to removable or remediable causes that it fails to remove or remedy with reasonable dispatch. The Party claiming a Force Majeure Event shall give the other Party prompt written notice of the Force Majeure Event.

Building Permits, Charges and Exactions

Owner will provide and pay for all necessary building permits. Contractor shall not be responsible for any bonds, assessments, hookup charges, fees, taxes for any utilities, public agencies, or governments other than herein provided.

Labor and Material

Contractor shall pay all valid charges for labor and material incurred by Contractor and used in the work hereinabove specified.

Contract Price and Payment Thereof

For all services performed by Contractor on this Project, the Owner will pay Contractor the total price in accordance with the schedule of value appended hereto in the proposal.

No Payment in the Event of Default

Owner shall have no obligation to make any payment to Contractor at any time when one of the reasons exist which allow Owner to terminate the Contract for cause as provided in Section "Termination for Default by Contractor" of this Agreement.

Construction Financing

If payment of the contract price is to be made by Owner through a construction lender, Owner hereby represents, affirms, and covenants that the construction loan fund is sufficient to pay the contract price and that Owner shall take all acts necessary to expedite timely payment from the construction lender. Owner hereby irrevocably authorizes the construction lender to make payment of the contract price directly to The Contractor.

Extra Work & Deviations from Original Contract Work

Should Owner, construction lender if any, or any public or governmental agency or inspector direct any deletion from, modification of, or addition to the work as hereinabove specified, the costs of such deletion(s), modification(s), or addition(s) shall be added to or deducted from the contract price, as hereinabove defined, as the circumstances dictate. Any and all deletions from, modifications of, or additions to the scope of work prescribed by this Construction Agreement together with the adjustment to contract price shall be made or otherwise memorialized in a writing signed by Owner and Contractor prior to any obligation in kind or character on the part of the Contractor to recognize, honor, or adhere to such changes.

Allowances

If the contract price, as hereinabove defined, includes allowances of any kind, and the cost of performing the work covered by an allowance is either greater or less than the allowance, then this Construction Agreement shall be increased or decreased accordingly. Unless otherwise requested by Owner in writing, Contractor shall use its judgment in accomplishing work covered by an allowance. If Owner requests that work covered by an allowance be accomplished by the Contractor in such a way that the cost will exceed the allowance, Contractor will be obligated to comply with Owner's request only upon payment by Owner of the additional costs in advance.

Insurance, Bonds and Indemnity

Contractor shall maintain at its cost the following minimum insurance and coverage throughout the term of the Agreement:

1. Comprehensive General Liability or Commercial General Liability: The limits of the liability shall not be less than:
 - a. Comprehensive General Liability: \$1,000,000 combined single limit bodily/property damage per occurrence or;
 - b. Commercial General Liability: Each occurrence limit \$1,000,000; Personal & Advertising injury limit \$1,000,000; Products completed operations aggregate limit \$1,000,000; General aggregate limit \$2,000,000
2. Workers' Compensation: Liability limits to cover statutory requirements and maintain limits of employer's liability; bodily injury by accident \$1,000,000 each accident; injury by disease \$1,000,000 policy limit; bodily injury by disease \$1,000,000 each employee.
3. Commercial Auto Coverage: Auto liability limits of \$1,000,000 each accident combined bodily injury and property damage liability insurance, including but not limited to, owned autos, hired or non-hired autos.

Contractor agrees to indemnify and hold harmless Owner from any and all claims, loss, or expense of every kind whatsoever which may arise from Contractor's negligent acts or omissions or breach of its obligations hereunder.

If required by the Owner, the Contractor shall maintain builder's risk property insurance respecting the Property in an amount equal to the full insurable value thereof and the risk of casualty loss or damage to the Property shall be borne by Contractor.

Performance/Payment Bond

If required by the Owner, a Performance Bond and a Payment Bond in a form satisfactory to the Owner shall be furnished in the full amount of the price of the Contract Agreement as set forth herein. If the Owner requires such Bonds after this Agreement, the cost thereof shall be paid by Owner as a change to the Contract Agreement, otherwise it shall be included in the Contract Agreement.

Warranties

Contractor warrants, that for a period of one (1) year commencing on the earlier of Final Completion of all the Work ("Primary Warranty Period"), under this Agreement be, in a good and workmanlike manner, and in strict conformity with the terms and conditions of this Agreement, the Design Documents, all applicable Permits, all applicable Laws, and prudent construction practices; and (ii) all materials shall be free of defects and deficiencies, free from any encumbrances or liens and shall be in strict conformity with the terms and conditions of this Agreement.

Remedy

If the warranty set forth in Section 16 is breached within the Primary Warranty Period, Contractor shall correct the defective workmanship and/or material, as the case may be, on an expedited basis, at no cost to Owner and at Contractor's sole cost. Owner shall provide Contractor with full and free access to the work sites to perform its warranty obligations under this Agreement.

Termination for Convenience by Owner

If Owner fails to perform any material terms of this Agreement and/or pay to Contractor any undisputed payment as required hereunder and such failure continues for thirty (30) Days after Notice has been given to Owner by Contractor, the Contractor may terminate this Agreement immediately. In the event of such a termination by Contractor. The Contractor may institute legal proceedings to recover all costs incurred until the date of termination and any and all damages as permitted by law. Owner acknowledges that Contractor would suffer damages including the loss of profit which Contractor would otherwise have realized upon full performance of this Construction Agreement. It is therefore agreed that in such event Owner will pay Contractor as liquidated damages a sum equal to thirty percent (30%) of the contract price as herein-above defined.

Termination for Default by Owner

The Owner may terminate this Agreement for the Contractor's default by delivering written notice in advance of termination. The Contractor shall be in default under this Agreement upon the occurrence of any of the following events ("Contractor Events of Default"):

- (a) Failure by Contractor to perform fully any material provision of this Agreement, including, without limitation, Contractor's failure to supply sufficient qualified personnel or to perform the Work in accordance with the Guaranteed Completion Dates.
- (b) Contractor contravenes any applicable Law, applicable Permit, ordinance, ruling, regulation or orders of any governmental authority or court which materially impacts the ability of Contractor to perform the Work in accordance with this Agreement.
- (c) Contractor becomes insolvent, or generally does not pay its debts as they become due, or admits in writing its inability to pay its debts, or makes an assignment for the benefit of creditors or insolvency, receivership, reorganization or bankruptcy proceedings are commenced by Contractor; and
- (d) Insolvency, receivership, reorganization or bankruptcy proceedings are commenced against Contractor, and such proceedings are not terminated, stayed or dismissed within sixty (60) Days after the commencement thereof.

Owner shall give Notice of any Contractor Events of Default to Contractor. If (A) any of the defaults described in clauses (a) and (b) in Section 19 is not cured within thirty (30) Days, (B) corrective action is not commenced within ten (10) Days of receipt of Notice from Owner with respect to nonmonetary defaults which cannot be cured within thirty (30) Days, and such corrective action completed within a reasonable period of time to be mutually agreed upon by Owner and Contractor within ten (10) Business Days after receipt of Notice from Owner or, absent such mutual agreement, completed within the time period proposed by Owner, or (C) upon the occurrence of a default described in clause (d) or (e), then Owner may terminate this Agreement and take possession of all equipment, materials and supplies and complete the Work as Owner deems expedient. The total cost of completing the Work shall be charged to Contractor. Contractor shall pay to Owner the total cost to complete the Work within sixty (60) Days following receipt of Owner's demand for such payment. The remedies set forth in this section shall not be exclusive and Owner shall have the right to pursue any other remedies under this Agreement or at law or in equity. Such termination shall not affect Contractor's representations or warranties.

Termination for Default by Contractor

If Owner fails to perform any material terms of this Agreement and/or pay to Contractor any undisputed payment as required hereunder and such failure continues for thirty (30) Days after Notice has been given to Owner by Contractor, the Contractor may terminate this Agreement immediately. In the event of such a termination by Contractor. The Contractor may institute legal proceedings to recover all costs incurred until the date of termination and any and all damages as permitted by law. Owner acknowledges that Contractor would suffer damages including the loss of profit which Contractor would otherwise have realized upon full performance of this Construction Agreement. It is therefore agreed that in such event Owner will pay Contractor as liquidated damages a sum equal to thirty percent (30%) of the contract price as herein-above defined.

Delay

Contractor shall be not be liable to Owner or any person, corporation, partnership, or other legal entity claiming by, though, or under Owner for any delays in completion of this Construction Agreement regardless of the cause, source, or nature of such delay.

Concealed Conditions

If Contractor should encounter concealed conditions that were not reasonably anticipated by Contractor at the time of execution of this Construction Agreement, Contractor shall bring the existence and nature of such concealed conditions to the attention of Owner. If such concealed conditions prevent, preclude, or obstruct performance by Contractor of the work herein prescribed, or burden the scope of work as herein defined by requiring additional work by Contractor to address, correct, and/or rectify such concealed defects, then the scope of work and contract price as hereinabove defined shall be adjusted in accordance with account for all courses of action necessary to address, correct, and/or rectify such concealed conditions.

Hazardous Conditions and Materials

Owner hereby warrants that all required inspections have been performed to ascertain the existence of or presence upon the Subject Property of any hazardous conditions or materials, including without limitation asbestos and radon gas, and Owner further hereby agrees to indemnify and hold Contractor harmless from any and all liability for the same.

Additional Warranties Provided by Law

Contractor shall be obligated to, and Owner shall have the benefit of, all warranties provided by law.

Clean Up

It shall be Contractors responsibility at regular and appropriate intervals as well as upon completion of the work herein prescribed to clean up the jobsite as described in the scope of work.

Attorney's Fees

In the event that any proceedings of a judicial or quasi-judicial nature are instituted by any party to this Construction Agreement to secure performance of any of the obligations herein set forth, the prevailing party in such a proceeding shall be entitled to recover, in addition to all other relief provided by law, its reasonable attorney's fees.

Governing Law

This Construction Agreement shall in all respects be governed by and construed in accordance with the law of the State. Should any provision of this Construction Agreement become void or voidable by decision of any court or act of any legislative or quasi-legislative body or entity, then such provision shall be regarded as automatically amended to comply with such decision or act in a manner most favorable to Contractor

Completeness of Agreement

This Construction Agreement comprises the sole, exclusive, and totality covenants, and stipulations to which the parties agree. None of the terms, conditions, conversations, comments, representations, negotiations, statements, or other communications not specifically provided for herein shall be deemed to have survived execution.

QUOTE



Modification

With respect to all matters not governed by hereof, this Construction Agreement may not be modified except by separate written instrument executed by Owner and Contractor.

Effective Date

This Construction Agreement shall become effective, binding, and enforceable as against all parties upon the last date of execution by any such party.

Initial Here

Statement of Work Details

Project Information

Opportunity Name	
Opening Date	
SOW Type	
Receive Shipment by Sub Contractor	
Number of Mobilizations	

Splashpad Information

Square Feet	
Quantity of Embeds	
Quantity of LEDs	
Quantity of Activators	
Quantity of Drains	
Water Journey	

System Information

WQMS Type	
Electrical Input	
Controller	
# 1.5" Lines (Manifold)	
# 2" Lines (Manifold)	
# 4" Lines (Manifold)	

Specified Distances

Splashpad Perimeter	Specified distance	
Distance to WMS		The "Specified Distance" is the assumed distance between the Water Management System and the perimeter of the splashpad. If the actual distance exceeds what is specified, additional material cost will be charged to Client.

Distance to Sewer		The "Specified Distance" is the assumed distance between the sewer connection and the perimeter of the splashpad. If the actual distance exceeds what is specified, additional material cost will be charged to Client.
Distance to Water Line		The "Specified Distance" is the assumed distance between the Water supply line and the perimeter of the splashpad. If the actual distance exceeds what is specified, additional material cost will be charged to Client.
Distance to Electrical Panel		The "Specified Distance" is the assumed distance between the main electrical panel feeding the splashpad and the Vortex Control Panel. If the actual distance exceeds what is specified, additional material cost will be charged to Client.
Distance to Storm (if Rainwater Diverter included)		The "Specified Distance" is the assumed distance between the Rainwater Diverter and the storm drainage connection. If the actual distance exceeds what is specified, additional material cost will be charged to Client

Permits Included

Building Permit		If Yes, Vortex is responsible for the Building Permit submittals and paying the associated fees. Any changes to the design needed to obtain the permit will be charged to the customer.
Plumbing Permit		If Yes, Vortex is responsible for the Plumbing Permit submittals and paying associated fees. Any changes to the design needed to obtain the permit will be charged to the customer.
Sewer Permit		If Yes, Vortex is responsible for the Sewer Permit submittals and paying the associated fees. Any changes to the design needed to obtain the permit will be charged to the customer.
Electrical Permit		If Yes, Vortex is responsible for the Electrical Permit submittals and paying the associated fees. Any changes to the design needed to obtain the permit will be charged to the customer.
Health Permit		If Yes, Vortex is responsible for the Health Department submittals and paying the associated fees. Any changes to the design needed to obtain the permit will be charged to the customer.

Plumbing Information Included

Pressure Lines		If Yes, Vortex is responsible for: <ul style="list-style-type: none"> • Il plumbing connections as necessary for the splashpad operation • Supply and install PVC SCH80 piping for all pressured lines from manifold to features locations. • Supply and install all suction lines for WQMS system if applicable. • Complete pressure test of all pressured lines.
Non-Pressure Lines		If yes, Vortex is responsible for supply and installation of drain lines for splashpad and drain pit as required
Backflow Preventer		If yes, Vortex is responsible for supply and installation of Pressure regulatorbackflow preventer. supply and installation
Pressure Regulator		If yes, Vortex is responsible for supply and installation of Ppressure regulator. supply and installation

Inspections Included

Pressure Test		If yes, Vortex is responsible for coordinating with the relevant authorities for the inspections.
Bonding/Rebar		If yes, Vortex is responsible for coordinating with the relevant authorities for the inspections.
Electrical		If yes, Vortex is responsible for coordinating with the relevant authorities for the inspections.
Plumbing		If yes, Vortex is responsible for coordinating with the relevant authorities for the inspections.
Compaction Test		If yes, Vortex is responsible for coordinating with the relevant authorities for the inspections.

Sewer		If yes, Vortex is responsible for coordinating with the relevant authorities for the inspections.
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Concrete Scope Included

Form, Place, Finish		<p>If yes, Vortex is responsible for:</p> <ul style="list-style-type: none"> • 6" thick concrete slab for splashpad area with 4000 psi concrete mix, #3 reinforcing bars @ 12" c/c both directions and thickened edges on concrete work as needed Form, place and finish concrete slab of splashpad area as per final design • Form, place and finish all concrete slabs and collars necessary to support and secure components as system requires (Vault, dome, debris trap, water containment system) • Expansion joints or saw cuts every 10' for the concrete slab • Established grade of 2% slope to center drain and 1-2% slope back to drain pit. • 6" thick concrete slab for mechanical room with 4000 psi concrete mix, #3 reinforcing bars @ 12" c/c both directions and thickened edges on concrete work as needed (If building provided by Vortex) • Supply drain pit for WMS (Cabinet, Vault, Domepack) • Form and place drain pit for mechanical room (If building provided by Vortex) • Medium broom finish on all exposed accessible concrete
Seat wall		<p>If yes, Vortex is responsible for:</p> <ul style="list-style-type: none"> • Form, place and finish concrete seat wall if applicable to the dimensions of the plans with 4000 psi concrete mix and #3 reinforcing bars @ 12" c/c both directions
Painted Concrete		If yes, Vortex is responsible for the supply and application of painted concrete.
Colored Concrete		If yes, Vortex is responsible for the supply of colored concrete. Customer to note that pricing is dependent on colors selected. A change of color might result in additional charges to customer
Soft Surfacing		If yes, Vortex is responsible for the supply and application of soft surfacing.

Excavation and Backfill Scope Included

Splashpad Area		<p>If yes, Vortex is responsible for:</p> <ul style="list-style-type: none"> • Excavation of topsoil at a maximum of 6" below grade, proof compact sub-grade for the splashpad area • Backfill and compaction of all excavated areas • Excavation and backfill of trenches for pipelines as required • Excavation and backfill for water containment system and debris trap, as per design
Mechanical Room		If yes, Vortex is responsible for excavation and proof-compact mechanical room area (If building provided by Vortex)
Tank and Debris Trap		If yes, Vortex is responsible for excavation and backfill for water containment system and debris trap, as per design.
Haul-off Excavated Soil		If yes, Vortex is responsible for hauling off unused excavated soil

Electrical Scope Included

Power to Vortex Panel		If yes, Vortex is responsible for making final connections for electrical (Power supply brought to mechanical room or cabinet by owner).
Power to WQMS		If yes, Vortex is responsible for making final connections for electrical (Power supply brought to mechanical room or cabinet by owner)
Bonding of Vortex Equipment		If yes, Vortex is responsible for bonding of Supply and install bonding for all features and pump equipment.
Not Included		Breakers needed in the electric panels are the responsibility of the Client

Vortex Equipment Installation Included

Anchors		If yes, Vortex is responsible for the installation of all safeswap anchors, ground sprays and piping to final grade
Play Features		• If yes, Vortex is responsible for the installation of features.

QUOTE



Water Journey		<p>If yes, Vortex is responsible for:</p> <ul style="list-style-type: none"> • Supply and place 3000 psi concrete mix with reinforcing bars 4 x #3 and #3 ties @ 12" c/c for each pilaster (Ø18" at specified depth) • Supply and place all plumbing connection as necessary for the Water Journey operation • Supply and place all electrical connections as necessary for Water Journey operation • Installation of the water journey and caulking of pre-cast slabs
Water System		<p>If yes, Vortex is responsible for:</p> <ul style="list-style-type: none"> • Installation and connection of the manifold in mechanical room or water distribution system • Installation of WQMS/WDS system as required

Other Included Services

Trash Bin		If yes, Vortex is responsible for providing trash bins the construction area.
Temporary Fence		If yes, Vortex is responsible for supply and installation of temporary fences around the splashpad construction area.
Supply Chemicals		If yes, Vortex is responsible for the supply of necessary chemicals required for the startup and commissioning of the system.
Filter Sand		If yes, Vortex is responsible for the supply of necessary filter sand for the startup and commissioning of the system
Hose Bib		If yes, Vortex is responsible for the provision and installation of the hose bib.
Secure Storage		If yes, Vortex is responsible for the onsite secure storage of Vortex equipment.
Restroom		If yes, Vortex is responsible for the provision of temporary on-site restrooms for the duration of the construction
Electrical Breakers		If yes, Vortex is responsible for supply and installation of all electrical breakers need for Vortex equipment. Client to ensure main electrical panel has capacity and space needed for the breakers.
Landscape Repairs		If yes, Vortex is responsible for the repair Repair of any damages to the surrounding landscape
Install Supervision		If yes, Vortex is responsible for supervising the installation. Please review the Vortex Installation scope of work.
Elevations Install		If yes, Vortex is responsible for the installation of the elevations.
Waterslide Install		<p>If yes, Vortex is responsible for:</p> <ul style="list-style-type: none"> • Installation of steel columns, support arms and brackets. • Installation of towers, stairs, and canopy. • Installation of fiber glass slide

Special Notes and Requirements

Inclusions General Items

- Participation to pre-construction, project updates and safety meetings as required (Via Teams/Zoom video conference calls or audio calls)
- The installation work includes a maximum of 2 on-site mobilizations for the completion of project
- Unloading of Vortex equipment, provided only if the site is ready for installation when the products are shipped
- Site layout based on provided Datums for the splashpad area and mechanical room, tank and debris trap if applicable
- Clean-up of the area occupied by Vortex during the construction

Customer's Responsibility & Exclusions from Vortex' Scope of Work

- All necessary permits for the required work unless specified otherwise
- All inspection fees (Rebar, plumbing, electrical, sewer, compaction) unless specified otherwise
- Geotechnical soil reports and materials/compaction testing
- Customer needs to ensure that all footings shall rest on Homogeneous layer of undisturbed soil or engineered backfill with a minimum allowable bearing capacity of 100 KPA (2000 PSF) and maximum differential settlement of 19 mm (0.75"). All organic material shall be removed. (applicable for Waterslide installation)
- Site survey and location of reference points (Datum) and elevation
- Grading plans, Erosion and control plans, Storm water management plans and landscaping plans
- Sewer or water tap fees, if required
- Water or electrical meter fees, if required
- Additional requirements set forth by the local health department and/or code enforcement not previously agreed upon as of the date of this estimate
- Additional electrical requirements if the existing power supply system is not sufficient to handle the electrical requirements
- Additional plumbing requirements if the existing water supply, waste water line and/or storm drain is not sufficient or within the parameters established
- Installation of anchors (applicable for Waterslide installation)
- Installation of Concrete Footings (applicable for Waterslide installation)
- Grouting under columns and steel structure. (applicable for Waterslide installation)
- Water supply piping, including brackets required to support water pipes to the structure. (applicable for Waterslide installation)
- Engineering & sizing of water recirculation system. (applicable for Waterslide installation)

- Laydown area and adequate access to work areas shall be provided to Vortex installers.
- Demolition of any existing concrete, pass, parking areas, features or structures
- Tracking pads and/or access roads to the construction site
- Removal and handling of contaminated/stained or unsuitable soil, or buried obstructions
- Final landscaping (grading, seeding, sod, shrubs, silt socks, etc.)
- Dry play park products purchase and installation
- Benches, tables and shades purchase and installation
- Drain pit form and place in customer supplied mechanical room

Other clauses that may incur additional expenses to be borne by the client:

- Any location or relocation of underground utilities and/or irrigation piping is the responsibility of the owner or its agent. If any utilities encountered and not identified by the local utility providers requires relocation or modification, it is the responsibility of the owner or its agent and no cost shall be borne by Vortex for such work.
- SUB-SURFACE CONDITIONS: Owner shall absorb all costs incurred from unknown conditions such as rock removal, poor digging conditions or poor soil bearing capacity, less than 3000 PSF or a water table higher than 10 ft below finished grade. If material is so large or so large or cumbersome that it cannot be removed with a mini excavator, then that part of excavation that requires other methods of removal or remediation such as, but not limited to, shoring, pneumatic jack hammer, backhoe, hydraulic rock breaker, or dynamite, will be billed on a time and material basis.
- It is assumed that the site does not necessitate the use of a concrete pump truck. If concrete pump truck is needed, Owner shall absorb all associated costs.
- Installation and construction to occur during normal daytime business hours, not including holidays. It is assumed that there is no restrictions on workdays and work hours.
- This contract includes a definite number of mobilizations (see inclusions), any mobilization beyond the contracted amount mentioned herein is subject to a \$3,500.00 fee for each remobilization thereafter. If for any reason, external factors (other than weather), cause the suspension of work, Vortex USA Inc. may be entitled to additional time and cost associated with demobilization and remobilization, mileage, labor and travel time.
- Vortex USA Inc. maintains comprehensive insurance coverage. This coverage is available upon written request. Any insurance coverage required for specific projects above Cicero's norm is not included in this proposal.
- A Performance and Payment Bond is not included in the price of this contract unless specifically included in the quote. This cost would be determined if bond is a requirement and price or design adjusted accordingly. Bond typically costs 5% of the total project.

QUOTE



Signature

Printed Name

Title

Date

SECTION 11 68 13
PLAYGROUND EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes, but is not necessarily limited to, the furnishing, installing and relocating playground equipment structures as indicated on the Drawings, as specified herein, and as necessary for the proper and complete performance of the Work.

1.02 SUBMITTALS:

- A. Pre-Construction:
 - 1. New Equipment:
 - a. Manufacturer's literature showing dimensional, aesthetic information and installation instructions.
 - b. Manufacturer's color palette.
- B. Post Construction: Manufacturer's written warranty.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Equipment
 - 1. GameTime – Sinclair Recreation 176 E. Lakewood Blvd, Holland, MI 49424
Phone: (800)-444-4954
 - 2. Provide specified materials or approved equal. ENGINEER shall have sole discretion with respect to determining equals in terms of aesthetics, performance, and longevity.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Install and relocate all equipment in accordance with manufacturer's instructions and recommendations.

3.02 SCHEDULES:

- A. GameTime - Sinclair Recreation Proposal

END OF SECTION



Intellectual property of GameTime's PlayCare Company. The rendering is intended as an informational and may not reflect exact site conditions.

Rendered in Custom Palette



Hemlock Park
Playground - Option Two Rev. A





GameTime
A PLAYCORE COMPANY
www.gametime.com

Hemlock Park
Playground - Option Two Rev. A

SINCLAIR
RECREATION, LLC
www.sinclair-rec.com



GameTime
 A SINCLAIR COMPANY
 www.gametime.com

Hemlock Park
 Playground - Option Two Rev. A

SINCLAIR
 RECREATION, LLC
 www.sinclair-rec.com

Intellectual property of GameTime, a PlayCity Company. The use shown is rendering is for informational and may not reflect exact site conditions.



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GameTime
PLAYCITY
www.gametime.com

Hemlock Park
Playground - Option Two Rev. A

SINCLAIR
RECREATION, LLC
www.sinclair-rec.com



Rendered in Custom Painter



Hemlock Park
Playground - Option Two Rev. A





Hemlock Park
Playground - Option Two Rev. A





Rendered in Custom Palette



Hemlock Park
Playground - Option Two Rev. A





Rendered in Custom Palette

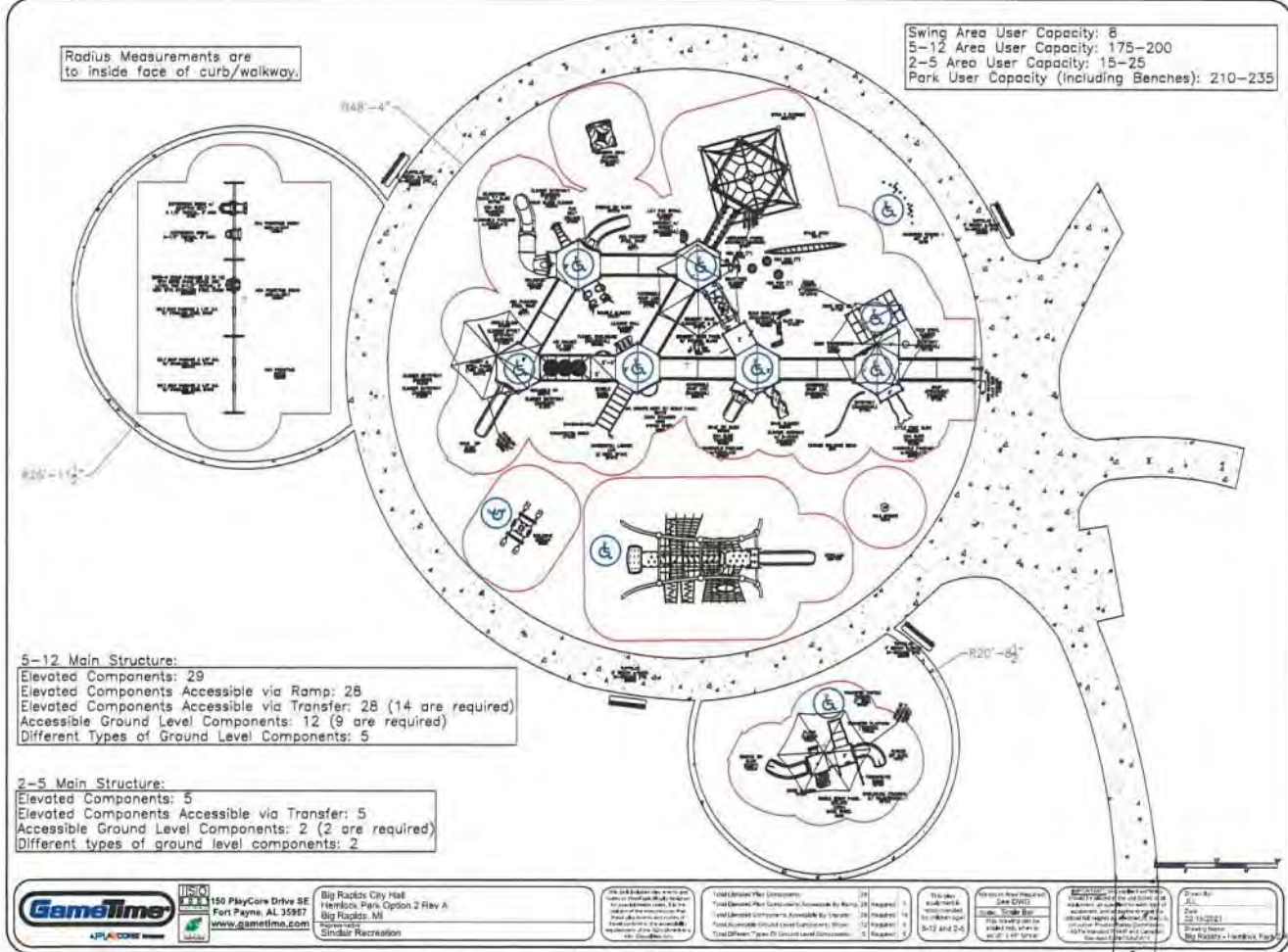


Hemlock Park
Playground - Option Two Rev. A



Radius Measurements are to inside face of curb/walkway.

Swing Area User Capacity: 8
 5-12 Area User Capacity: 175-200
 2-5 Area User Capacity: 15-25
 Park User Capacity (including Benches): 210-235



5-12 Main Structure:
 Elevated Components: 29
 Elevated Components Accessible via Ramp: 28
 Elevated Components Accessible via Transfer: 28 (14 are required)
 Accessible Ground Level Components: 12 (9 are required)
 Different Types of Ground Level Components: 5

2-5 Main Structure:
 Elevated Components: 5
 Elevated Components Accessible via Transfer: 5
 Accessible Ground Level Components: 2 (2 are required)
 Different types of ground level components: 2



150 PlayCore Drive SE
 Fort Payne, AL 35967
 www.gametime.com

Big Rocks City Hall
 Hemlock Park Option 2 Rev A
 Big Rocks, MI
 Similar Recreation

Total Number of Components:	29
Total Number of Components Accessible by Ramp:	28
Total Number of Components Accessible by Transfer:	28
Total Number of Ground Level Components:	12
Total Number of Ground Level Components Accessible:	9

Total Number of Components:	5
Total Number of Components Accessible by Transfer:	5
Total Number of Ground Level Components:	2
Total Number of Ground Level Components Accessible:	2

Site Plan
 Date: 05/14/2013
 Drawn by: Big Rocks - Hemlock, Park



GameTime c/o Sinclair Recreation
 176 E Lakewood Blvd
 Holland, MI 49424
 Ph: 800-444-4954
 Fax: 616-392-8634

02/27/2023
 Quote #
 104034-01-04

Hemlock Park Renovations - Option 2 Revision A

BIG RAPIDS CITY HALL
 Attn: Heather Bowman
 226 N MICHIGAN AVE
 BIG RAPIDS, MI 49307-1489
 Phone: 231-592-4018

Ship to Zip 49307

Quantity	Part #	Description
1	RDU	GameTime - Custom Ramped Structure for 5-12 Year Olds
		(1) 564 -- Curved Balance Beam
		(1) 3959 -- 3-in-A-Row 20" Sensor
		(1) 4958 -- Hypno Wheel
		(1) 4962 -- Echo Chamber
		(1) 6510 -- Space Arch
		(3) 16465 -- Slide Transfer (Ada)
		(1) 16700 -- Ada49"Sq Punch Steel Deck
		(1) 16701 -- Ada 49"Tri Punch Steel Dk
		(2) 16717 -- 147" Ada Ramp Link
		(3) 32022 -- Hex Pod Step (1')
		(1) 6267SP -- VistaStar 2 (Hybrid)
		(1) 80078 -- 6"Stepped Platform
		(3) 80192 -- Sunblox Umbrella Canopy
		(3) 80687 -- Handhold/Kick Plate Pkg
		(1) 81473 -- Horiz Ladder Link 98"
		(1) 81666 -- Fun Seat
		(1) 81688 -- Therapeutic Rings Attch
		(6) 90005 -- Two Piece Hex Deck, Ada Ramp Access
		(1) 90176 -- Ada Crow'S Nest W/ Gizmo
		(1) 90188 -- Calabazo Panel
		(1) 90226 -- Decorative Panel Thunderring,Above Dk
		(1) 90251 -- 3' Leaning Wall Climber
		(2) 90264 -- 6' Upright, Alum
		(1) 90265 -- 7' Upright, Alum
		(5) 90266 -- 8' Upright, Alum
		(2) 90267 -- 9' Upright, Alum
		(7) 90268 -- 10' Upright, Alum
		(4) 90269 -- 11' Upright, Alum
		(3) 90270 -- 12' Upright, Alum
		(1) 90295 -- 3'-6"/4' Wavy Tree Climber



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Hemlock Park Renovations - Option 2 Revision A

Quantity	Part #	Description	Unit Price	Amount
	(1)	90305 -- Climber Archway W/Socket & Guardrail		
	(1)	90317 -- Toad Stool Climber		
	(1)	90337 -- 4'-0"/5'-0" Double Climber		
	(1)	90472 -- Count & Spell Pnl (2 Color), Above Dk		
	(1)	90484 -- Rung Encl Telescope & Gr, Above Dk		
	(1)	90492 -- Funnel Enclosure W/Guardrail		
	(1)	90503 -- 2'-6"/3' Single Wave Zip Slide		
	(1)	90506 -- 6' Single Wave Zip Slide		
	(1)	90530 -- 2 1/2'-6" Little Foot Slide W/Enclosu		
	(1)	90545 -- 4' Wave Climber		
	(1)	90546 -- Climber Archway W/D-Ring & Barrier		
	(1)	90574 -- Scramble Up (5'-6" & 6'-0")		
	(1)	90578 -- Swerve Slide		
	(1)	90598 -- Hour Glass Climber		
	(1)	90631 -- Bubble Panel (Above)		
	(1)	90674 -- Std Access Ramp Link 3 Dk Gr		
	(1)	90676 -- Std Access Ramp Link Gr 2'-6" & 3'		
	(1)	90768 -- 6' Wildertube Quick 'L' Reverse		
	(1)	153655 -- 30 Deg Elbow Sec 30" Dia		
	(1)	153844 -- 90 Deg Elbow Sec 30" Dia		
	(1)	160682 -- Tube Support 81 13/16"Lg		
	(1)	203582 -- Tube Entrance Section		
	(1)	205962 -- Straight Section		
	(1)	205963 -- Curved Left Section		
	(1)	206179 -- Exit Section		
	(1)	207772 -- Wilder Tube Section		
	(1)	208853 -- Footbuck 28 3/8"Lg		
	(1)	208857 -- Hdw-Wildertube Quick "S"		
	(2)	91146 -- Entryway - Guardrail		
	(1)	91186 -- 1' 0" Ramp Attach-Timbers (3 Dk Span)		
	(1)	91198 -- 3' 6"-4' Acc Ramp Link-Timb 3 Dk Spa		
	(3)	91208 -- Climber Entryway - Guardrail		
	(5)	91209 -- Climber Entryway - Barrier		
	(1)	91250 -- 4'0" - 4'6" Lily Pad Spiral Climber		
	(1)	91303 -- Cliff Wall Climber		



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02/27/2023
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Hemlock Park Renovations - Option 2 Revision A

Quantity	Part #	Description	Unit Price	Amount
		(1) 91334 -- Climber Offset Entryway (Barrier)		
		(1) 91365 -- Sensory Wave Panel w/ stained glass		
		(1) 91378 -- PS S Wave Up & On LNK (4'-4'6")		
		(2) 91457 -- Sensory Wave Entryway		
		(1) 91509 -- Air Walker		
		(1) 91649 -- Circle Climb 5'-0"-6'-0"		
		(1) 91697 -- VistaRope Hybrid Archway (Barrier)		
		(1) 91728 -- Rock with Me (Freestanding)		
		(6) G90262 -- 4' Upright, Galv		
		(3) G90265 -- 7' Upright, Galv		
		(5) G90266 -- 8' Upright, Galv		
		(6) G90267 -- 9' Upright, Galv		
		(2) G90268 -- 10' Upright, Galv		
		(1) G90269 -- 11' Upright, Galv		
		(4) G90270 -- 12' Upright, Galv		
		(1) G90271 -- 13' Upright, Galv		
RDU		GameTime - Custom PrimeTime Structure for 2-5 Year Olds		
		(1) 4959 -- Maze Wheel		
		(1) 12023 -- 3 1/2" Uprt Ass'Y Alum 8'		
		(2) 12024 -- 3 1/2" Uprt Ass'Y Alum 9'		
		(5) 12025 -- 3 1/2" Uprt Ass'Y Alum 10'		
		(1) 12704 -- Therapeutic Ring Attach		
		(1) 12964 -- Single Gizmo Panel		
		(2) 18200 -- 36" Sq Punched Deck P/T 1.3125		
		(1) 18787 -- Umbrella Canopy		
		(1) 19104 -- Ridge Climber		
		(1) 19121 -- Curved Zip Slide		
		(1) 19363 -- 3'-6"/4'-0" Zip Swerve Slide Right		
		(1) 19407 -- Transfer System (Timbers) 1' Rise		
		(1) 19632 -- Transfer Platform (Timbers) 3'		
		(1) 19637 -- Plank Climber 4'		
		(1) 19704 -- Timbers Enclosure W/ Thunderring (Abov		
		(1) H12026 -- 11' Heavy Wall Upright		
3249		GameTime - Harmonic Chimes (set of 7)		
6246		GameTime - Solo Spinner		



GameTime c/o Sinclair Recreation
176 E Lakewood Blvd
Holland, MI 49424
Ph: 800-444-4954
Fax: 616-392-8634

02/27/2023
Quote #
104034-01-04

Hemlock Park Renovations - Option 2 Revision A

Quantity	Part #	Description
	6249	GameTime - Sensory Cove Climber - Square
	6299	GameTime - Inclusive Seesaw
4	28009	GT-Site - 6' P/S Bench W/Back Inground
	6257SP	GameTime - GT Splash
	RDU	GameTime - 3 Bay Swing Set with Various Seats
		(1) 5128 -- Expression Swing 3 1/2" X 8'
		(1) 5165 -- Expression Swing w Adaptive Seat 3 1/2
		(1) 12583 -- Ada Primetime Swing Frame, 3 1/2" Od
		(2) 12584 -- Ada Primetime Swing Aab, 3 1/2" Od
		(1) SS8558 -- 3 1/2" Zero-G Chair (5-12)-Stainless
		(3) SS8910 -- Belt Seat 3 1/2" /8' W/Clevis

SECTION 26 00 00

ELECTRICAL GENERAL PROVISIONS

PART 1 - GENERAL

1.01 SUMMARY:

A. Section includes:

1. This Section includes, but is not necessarily limited to the general provisions for all electrical work, as indicated on the Drawings, as specified herein, and as necessary for the proper and complete performance of the Work.

1.02 REFERENCES:

A. Applicable Standards and Codes:

1. Institute of Electrical and Electronic Engineers (IEEE).
2. Underwriters Laboratories, Inc. (UL).
3. National Electrical Manufacturers Association (NEMA).
4. National Electrical Code (NEC).
5. American Society for Testing and Materials (ASTM).
6. American National Standards Institute (ANSI).
7. National Board of Fire Underwriters (NBFU).
8. National Fire Protection Association (FPA).
9. National Electrical Contractors "Standard of Installation" (NECA)
10. Joint Industrial Council (JIC).
11. Code of Federal Regulations (CFR). Title 29 Labor, Subpart S-Electrical.

- ###### B. Where quantities, sizes, or other requirements shown on the Drawings or specified herein exceed the requirements of the above standards and codes, the Drawings and Specifications shall govern.

1.03 SUBMITTALS:

A. Pre-Construction:

1. Submit materials and equipment for review to Owner or Owner's Representative as required in each SECTION. Each sheet of descriptive literature submitted shall be clearly marked to identify the material or equipment and shall show the specification paragraph for which the equipment applies.
 - a. Submit schematics and connection diagrams for all electrical equipment. A manufacturer's standard connection diagram or schematic showing more than one scheme of connection will not be accepted unless it is clearly marked to show the intended connections.
 - b. Submittals showing more than the particular item under consideration shall have the pertinent description paragraph for which the equipment applies circled, or "high-lighted" with a marker intended for that purpose.
2. Provide records of insulation test [megohm check] on buried conductors in conduit.
3. After award of the contract and prior to starting any work the Contractor shall submit to the Owner or Owner's Representative:
 - a. List of Sub-Contractors scheduled and planned for utilization on the project.
 - b. Detailed work plan outlining methods, anticipated downtime and procedures to accomplish the intent and purpose of the Contract.
 - c. Work schedule detailing dates of principle events and completion date.

- B. Post Construction:
 - 1. Prepare and maintain Record Drawings current with work completed. Show all changes to underground and other hidden work. Submit to Owner or Owner's Representative on completion of project.
 - 2. Operating and Maintenance Instructions:
 - a. Upon completion of all Work and tests, instruct the Owner in the operation and maintenance of all components.

1.04 CLEARANCES:

- A. Equipment:
 - 1. Maintain clearances from electric panels, and other electrical installations as required by NEC and CFR.
 - 2. Maintain working clearances around electrical equipment as required for proper maintenance and operation.

1.05 IDENTIFICATIONS:

- A. Provide identification signs on all equipment, switches, breakers, and panels. Provide a type written circuit identification schedule in each distribution or branch circuit load center under glass or plastic. Each circuit shall be identified by load.
- B. Provide Arc Flash Labels Warning Labels on all meter socket enclosures, switchboards, panelboards, industrial control panels, and motor control centers in accordance with NEC 110.16.
- C. Provide Field Marking Labels on all meter socket enclosures, switchboards, panelboards, industrial control panels, and motor control centers in accordance with NEC 110.24. Field Marking shall include, but not be limited to, the maximum available fault current, the date the fault current calculation was performed and name of contractor performing the available fault current calculation.

1.06 CODES AND STANDARDS:

- A. These specifications are minimum requirements and shall govern except where made more stringent by other sections of this specification or local, state, or federal laws or regulations. In the event of conflict between these specifications and applicable codes and regulations, the codes and regulations shall govern.

1.07 ELECTRIC SERVICE APPLICATIONS:

- A. Electrical service is existing to be reused.

1.08 PERMITS, INSPECTIONS AND UTILITY CONNECTIONS:

- A. Obtain all necessary permits and pay all fees in connection with all permits, inspections, and approval by the proper authorities in local jurisdiction of such work. Final inspection by the OWNER will not occur until necessary certificates of satisfactory inspection are received.

1.09 DRAWINGS:

- A. Drawings and Specifications are provided for assistance to the CONTRACTOR and are diagrammatic only to indicate the general arrangement and location of circuits, outlets, etc. Exact locations will be determined by field conditions. Deviations from the arrangement indicated to meet actual conditions shall be made with no expense to the OWNER. Throughout the progress of construction, the CONTRACTOR shall keep a set of detailed field record drawings, including the exact location of concealed work and underground utilities. This requirement does not authorize any deviations from the Contract Drawings without prior approval from the OWNER. The field record information shall be marked in a legible manner on prints of the Drawings. At the completion of work, the field record information shall be delivered by the CONTRACTOR to the OWNER.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. All electrical equipment and material shall be furnished new and shall be accepted, or certified, or listed or labeled or otherwise determined to be safe by a nationally recognized testing laboratory [NRTL].
 - 1. Commonly accepted NRTL's are Underwriters Laboratory, Inc. (UL) and Factory Mutual, Inc. FM.
 - 2. Equipment or material accepted certified, listed or labeled by an accepted NRTL shall be used in preference to equipment or material that does not have that acceptance.
- B. Substitutions for materials and equipment listed herein must be of equal standards, quality and desired operation, or superior. There will be no approval or consideration for approval of equipment or material submittals for substitution prior to Award of the Contract.
- C. All packaged equipment shall be completely factory wired prior to delivery to the job site. Connection to and bonding of this equipment is required under this section of the specifications.
 - 1. Check all prewired controls before energizing to verify that all internal wiring is properly coordinated to the voltage to be applied.

2.02 SHOP/FACTORY/FINISHING:

- A. Provide baked enamel finishes on exposed surfaces.
- B. Provide galvanized finishes for damp or wet locations.
- C. Touch up or refinish damaged paint.

2.03 SURGE ARRESTOR:

- A. Provide UL listed and labeled, NEMA 4 Enclosed, 240 volt, 1-phase, surge arrestor and install where shown on drawings.
- B. Manufacturers: Square D SDSA 1175 or ENGINEER approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Provide and install all equipment as specified, required or implied in this specification except as noted. This requirement shall include all labor, materials, and incidentals in a manner consistent with good practice necessary to a complete operable installation.
- B. Cooperation with other trades shall be implemented by the CONTRACTOR by his reference to the Civil and Structural Drawings and Specifications for work by other trades and to be carried on simultaneously or sequentially with the electrical work. This requirement is to facilitate construction to proceed with no harm to the OWNER due to the absence of cooperation. All other Drawings and Specifications shall become part of the Electrical Specifications as they relate to electrical work.
- C. Verify equipment dimensions to insure dimensional compatibility.
- D. All excavation, backfilling, and concrete work shall conform to the applicable Sections of these Specifications.
- E. The CONTRACTOR is responsible for connecting wiring and circuitry to all equipment furnished by others and the CONTRACTOR which requires electrical power or control.
- F. The CONTRACTOR shall demonstrate to the satisfaction of the OWNER at final inspection that the wiring is complete and free from open circuits, short circuits between circuits or ground and that systems operate satisfactorily. The entire electrical installation shall be demonstrated to operate in accordance with the specifications. The CONTRACTOR shall test feeders and panels to verify no ground faults exist and submit certified test data to the OWNER prior to final inspection. This test shall be made with no devices connected to prevent damage to equipment, and resistance shall be greater than one megohm.

3.02 TEST AND OPERATION:

- A. Equipment:
 - 1. Test and operate in accordance with manufacturer's recommendations.

3.03 CLEANING:

- A. Prior to acceptance of the work of this Section, thoroughly clean all related areas in accordance with Section 01 74 00 – Cleaning and Waste Management.

END OF SECTION

SECTION 26 05 19

LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.01 SUMMARY:

A. Section includes:

1. This Section includes, but is not necessarily limited to, the furnishing and installation of low voltage electrical power conductors and cables as indicated on the Drawings, as specified herein, and as necessary for the proper and complete performance of the Work.

1.01 SUBMITTALS:

A. Pre-Construction:

1. Wire
 - a. Manufacturers literature
 - b. ASTM certifications for each type and size
2. Fiber Optic Cable
 - a. Manufacturers literature
3. Portable Cord
 - a. Manufacturers literature
 - b. UL Listing

B. Post Construction:

1. None

1.02 DELIVERY, STORAGE, AND HANDLING:

- A. Cable shall be on original reels or in boxes and shall be new and unused.
- B. Store cables in dry protected area and protect cable ends in accordance with manufacturer's recommendations.

1.03 DELIVERY, STORAGE, AND HANDLING:

- A. Cable shall be on original reels or in boxes and shall be new and unused.
- B. Store cables in dry protected area and protect cable ends in accordance with manufacturer's recommendations.

PART 2 - PRODUCTS

2.01 LOW VOLTAGE, LIGHTING AND POWER CONDUCTORS:

- A. Conductors provided on 120/240, 120/208 and 277/480 volt building power and lighting systems to be stranded per ASTM B-8 soft drawn copper.
- B. Insulation system shall be type THHN/THWN rated 600V as defined and listed in Article 310 of NEC.

C. Minimum size conductor utilized shall be #14 AWG for control circuits and #12 AWG for power and lighting circuits.

D. Color code conductor insulation as follows:

Line Voltage	- Black
Grounding Conductor	- Green
Neutral	- White
Control	- Red
DC Circuits	- Blue
Voltage from External Source	- Yellow

Color shall be integral with the insulation compound applied by cable manufacturer.

2.02 INSTRUMENTATION CABLES:

- A. Instrumentation conductors shall be stranded copper conductors minimum size #18/2 AWG.
- B. Instrumentation conductors shall be paired and each pair twisted, and 100% shielded.
- C. Instrumentation cables to have minimum 300 volt insulation on each conductor and have a jacket overall.

PART 3 - EXECUTION

3.01 LOW VOLTAGE LIGHTING AND POWER CABLES:

- A. Install only after completion of work which might cause damage to wires or conduit.
- B. Clean out or replace conduit in which dirt, water, concrete, or other foreign matter has been allowed to accumulate, before installing wiring.
- C. Identify each end of each conductor by wire marking tape or sleeve. Mark on outer cover giving voltage, type, size and circuit number.
- D. Splices:
 - 1. No wire splices allowed in entire length of conduit or raceway.
 - 2. Make splices in electrical enclosures.
 - 3. Splice Insulation: Equal to original factory insulation. Underground splices shall be epoxy type. Water proof where below grade.
 - 4. Splicing Copper to Aluminum: Use aluminum-copper connections; approved as suitable for the purpose.
- E. Termination of Conductors:
 - 1. Insulated type compression or mechanical lugs.
 - 2. At distribution equipment containing aluminum bus bars; use aluminum copper lugs rated and approved for the application.
- F. Provide separate conduit for each type of circuit power and controls.
- G. Conductors terminating at outlets shall be left not less than 8 inches long within outlet box.

3.02 INSTRUMENTATION CABLE:

- A. Install only after completion of work which might cause damage to wires or conduit.
 - B. Clean out or replace conduit in which dirt, water, concrete, or other foreign matter has been allowed to accumulate, before installing wiring.
 - C. Splices: No wire splices allowed in entire length of conduit or raceway.
 - D. Provide separate conduit for instrumentation circuits.
 - E. Mark on outer cover the control loop number at each end and each conductor the wire number by wire marking tape or sleeve.
- 3.03 GROUPING OF CABLES:
- A. Lace or plastic band groups of feeder conductors at distribution centers, pullboxes, wireways.
- 3.04 WIRE PULLING:
- A. Use wire pulling lubricant for pulling No. 4 AWG and larger wire. Do not pull cables through conduit with more than allowable bends specified in NEC 345-11. Only approved pulling compound that is suitable for type of wire insulation is allowed.
- 3.05 CLEANING:
- A. Prior to acceptance of the work of this Section, thoroughly clean all related areas in accordance with Section 01 74 00 – Cleaning and Waste Management.

END OF SECTION

SECTION 26 05 26
GROUNDING AND BONDING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Work of this Section includes equipment for an effective grounding system.

1.02 SUBMITTALS:

- A. Submit under provisions of DIVISION 1
- B. Certified ground resistance tests on each ground rod and the complete service system consisting of multiple rods and grounding conductor.
- C. Ground resistance tests on total systems.

1.03 STANDARDS

- A. IEEE Standard 142.
- B. NEC Article 250.

PART 2 - PRODUCTS

2.01 GROUNDING ELECTRODE

- A. Grounding electrode to be ground rods.
- B. Ground rods shall be bonded copper type steel core with thick copper covering inseparable bonded together 3/4" diameter X 10 ft length minimum. Ground rod couplings are to be used extend ground rod length longer than 15'-0" or as required per the drawings.

2.02 GROUNDING CONNECTIONS

- A. To be thermoweld when concealed or where required by ENGINEER.
- B. To be mechanical where exposed to view.
- C. Where the grounding conductor penetrates a concrete surface use a 5/8 inch solid copperweld rod or a thermoweld anti siphon water stop.

2.03 GROUNDING ELECTRODE CONDUCTOR

- A. Grounding electrode conductor is to be as shown and sized in accordance with Table 250-66 of NEC.

2.04 EQUIPMENT GROUNDING CONDUCTORS

- A. Equipment grounding conductors shall be copper sized in accordance with Table 250-122 of NEC.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Ground resistance tests of each ground rod shall be made and results signed as correct by the CONTRACTOR.
- B. Provide grounding with ground rods of length required to achieve specified ground resistance of 25 ohms or less (per ground rod). Use three rods driven in triangle formation and connected in parallel. Provide ground rods at location shown (multiple rods may be required to achieve specified resistance).
- C. Bond the non-current carrying parts of all electrical equipment installed under this contract including metallic raceways, raceway supports, motors, equipment enclosures, and metallic cable sheaths by means of bare copper cable or copper strap to the station grounding system or as shown.
- D. All power, lighting over 120 volts and receptacle circuit conduits shall include a ground conductor sized per the NEC. Attach grounding conductors to equipment by means of approved copper alloy solderless grounding lugs or clamps which shall be secured to the equipment and the grounding point by means of hexhead cap screws or machine bolts after the contact surfaces have been cleaned to bright metal.
- E. Ground conductors run in conduit with circuit conductors are to be securely connected inside the junction boxes or enclosures. Splices in ground conductors shall be made by the "Cadweld" process by Erico products, Inc., Continental Industries "Thermoweld", or equal.
- F. Support ground straps at intervals not exceeding two (2) feet by means of round head bronze machine screws and approved type anchors.
- G. Electrical grounding system in well houses are to be grounded to the metallic well casing.
- H. All circuits in non-metallic raceways shall include a ground conductor sized per the NEC or as shown. Attach grounding conductors to equipment by means of hexhead cap screws or machine bolts after the contact surfaces have been cleaned to bright metal. Ground conductors terminating at the motor control centers, switchgear to be terminated at the ground bus.
- 1. Bond grounding electrode to water pipe main, building foundation steel and all other locations identified and as required by the NEC Article 250.
- J. Signal and Communications: For telephone, alarms, and communication systems, provide a #4 AWG minimum green insulated copper conductor in raceway from the grounding electrode system to each terminal cabinet or central equipment location.
- K. Metal Poles Supporting Outdoor Lighting Fixtures: Ground pole to a grounding electrode as indicated in addition to separate equipment grounding conductor run with supply branch circuit.
- L. Ground Rods: Locate a minimum of one-rod length from each other and at least the same distance from any other grounding electrode. Interconnect ground rods with bare conductors buried at least 24 inches below grade. Connect bare-cable ground conductors to ground rods by means of exothermic welds except as otherwise indicated. Make these connections without damaging the copper coating or exposing the steel. Drive rods until tops are 6 inches below finished floor or final grade except as otherwise indicated.

- M. Bond interior metal piping systems and metal air ducts to equipment ground conductors of pumps, fans, and electric heaters.
- N. Exothermic Welded Connections: Use for connections to structural steel and for underground connections. Install at connections to ground rods and plate electrodes. Comply with manufacturer's written recommendations. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.

END OF SECTION

SECTION 26 05 33

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY:

A. Section includes:

1. This Section includes, but is not necessarily limited to, the furnishing and installation of conduit, tubing, surface raceways, wireways, outlet boxes, pull and function, boxes and handholes as indicated on the Drawings, as specified herein, and as necessary for the proper and complete performance of the Work.

1.02 REFERENCES:

A. American National Standards Institute:

1. ANSI C80.1 – Rigid Steel Conduit, Zinc Coated.
2. ANSI C80.3 – Specification for Electrical Metallic Tubing, Zinc Coated.

B. National Electrical Manufacturers Association:

1. NEMA 250 – Enclosures for Electrical Equipment (1000 Volts Maximum).
2. NEMA FB 1 – Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
3. NEMA OS 1 – Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
4. NEMA OS 2 – Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.
5. NEMA RN 1 – Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
6. NEMA TC 2 – Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
7. NEMA TC 3 – PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.03 DESIGN REQUIREMENTS:

- ###### A. Minimum Raceway Size: 1/2 inch unless otherwise specified.

1.04 SUBMITTALS:

A. Pre-Construction:

1. Flexible metal conduit.
 - a. Manufacturer and product data for each product.
2. Liquidtight flexible metal conduit.
 - a. Manufacturer and product data for each product.
3. Nonmetallic conduit.
 - a. Manufacturer and product data for each product.
4. Flexible nonmetallic conduit.
 - a. Manufacturer and product data for each product.
5. Nonmetallic tubing.
 - a. Manufacturer and product data for each product.
6. Raceway fittings.
 - a. Manufacturer and product data for each product.
7. Conduit bodies.
 - a. Manufacturer and product data for each product.
8. Surface raceway.
 - a. Manufacturer and product data for each product.

- 9. Wireway.
 - a. Manufacturer and product data for each product.
- 10. Pull and junction boxes.
 - a. Manufacturer and product data for each product.
- 11. Handholes.
 - a. Manufacturer and product data for each product.
- B. Post Construction:
 - 1. Record drawings
 - a. Record actual routing of all conduits. Record actual locations and mounting heights of outlet, pull, and junction boxes.

1.05 DELIVERY, STORAGE, AND HANDLING:

- A. Product Requirements: Product storage and handling requirements.
- B. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- C. Protect PVC conduit from sunlight.

PART 2 - PRODUCTS

2.01 METAL CONDUIT:

- A. Manufacturers:
 - 1. Carlon Electrical Products, Thomas & Betts, Walker Systems, Wiremold, or ENGINEER approved equal.
- B. Rigid Steel Conduit: ANSI C80.1.
- C. Fittings and Conduit Bodies: Material to match conduit.

2.02 LIQUIDTIGHT FLEXIBLE METAL CONDUIT:

- A. Manufacturers:
 - 1. Carlon Electrical Products, Thomas & Betts, Walker Systems, Wiremold, or ENGINEER approved equal.
- B. Product Description: Interlocked [steel construction with PVC jacket.
- C. Fittings: NEMA FB 1.

2.03 NONMETALLIC CONDUIT:

- A. Manufacturers:
 - 1. Carlon Electrical Products, Thomas & Betts, Walker Systems, Wiremold, or ENGINEER approved equal.
- B. Product Description: NEMA TC 2; Schedule 40 PVC.
- C. Fittings and Conduit Bodies: NEMA TC 3.

D. Product Description: Schedule 80 Polyethylene, coilable.

2.04 OUTLET BOXES:

- A. Sheet Metal Outlet Boxes: NEMA OW 1, galvanized steel and EMT.
 - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 1/2-inch male fixture studs where required.
 - 2. Concrete Ceiling Boxes: Concrete type.
- B. Nonmetallic Outlet Boxes: NEMA OS 2.
- C. Wall Plates for Finished Areas: As specified in Section 26 27 26.
- D. Wall Plates for Unfinished Areas: Furnish gasketed cover.
- E. Manufacturers:
 - 1. Carlon Electrical Products, Thomas & Betts, Walker Systems, Wiremold, or ENGINEER approved equal.

2.05 PULL AND JUNCTION BOXES:

- A. Manufacturers:
 - 1. Carlon Electrical Products, Thomas & Betts, Walker Systems, Wiremold, or ENGINEER approved equal.
- B. Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- C. Hinged Enclosures: As specified in Section 26 27 16.
- D. Surface Mounted Cast Metal Box: NEMA 250, Type 4; flat-flanged, surface mounted junction box:
 - 1. Material: Galvanized cast iron.
 - 2. Cover: Furnish with ground flange, neoprene gasket, and stainless-steel cover screws.

PART 3 - EXECUTION

3.01 EXAMINATION:

- A. Verify outlet locations and routing and termination locations of raceway prior to rough-in.

3.02 EXISTING WORK:

- A. Remove exposed abandoned raceway, including abandoned raceway above accessible ceiling finishes. Cut raceway flush with walls and floors, plug conduit and patch surfaces.
- B. Remove concealed abandoned raceway to its source.
- C. Disconnect abandoned outlets and remove devices. Remove abandoned outlets when raceway is abandoned and removed. Install blank cover for abandoned outlets not removed.

- D. Maintain access to existing boxes and other installations remaining active and requiring access. Modify installation or provide access panel.
- E. Extend existing raceway and box installations using materials and methods [compatible with existing electrical installations, or as specified.
- F. Clean and repair existing raceway and boxes to remain or to be reinstalled.

3.03 SYSTEM DESCRIPTION:

- A. Raceway and boxes located as indicated on Drawings, and at other locations required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway to complete wiring system.
- B. Underground More than 5 feet from Foundation Wall: Provide rigid steel conduit riser to locations above grade. Provide cast metal boxes or nonmetallic handhole.
- C. In or Under Slab or Grade: Provide rigid non-metallic schedule 40.
- D. Outdoor Locations, Above Grade provide rigid metal.
- E. Indoor exposed locations provide rigid metal.
- F. Provide malleable aluminum conduit bodies and steel junction and pull boxes with NEMA rating according to area of classification.

3.04 INSTALLATION – GENERAL:

- A. Perform Work in accordance with the NEC and State of Michigan Electrical Code.
- B. Ground and bond raceway and boxes in accordance with NEC.
- C. Fasten raceway and box supports to structure.
- D. Identify all raceway and boxes.
- E. Arrange raceway and boxes to maintain headroom and present neat appearance.

3.05 INSTALLATION – RACEWAY:

- A. Raceway routing is shown in approximate locations unless dimensioned. Route to complete wiring system.
- B. Arrange raceway supports to prevent misalignment during wiring installation.
- C. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- D. Group related raceway; support using conduit rack.
- E. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports.

- F. Do not attach raceway to ceiling support wires or other piping systems.
- G. Construct wireway supports from steel channel.
- H. Route exposed raceway parallel and perpendicular to walls.
- I. Route raceway installed above accessible ceilings parallel and perpendicular to walls.
- J. Route conduit in and under slab from point-to-point.
- K. Maximum size conduit in slab above grade: 1/2 inch.
- L. Maintain 6-inch clearance minimum between raceway and piping for maintenance purposes.
- M. Maintain 12-inch clearance between raceway and surfaces with temperatures exceeding 104 degrees F.
- N. Cut conduit square using saw or pipe cutter; de-burr cut ends.
- O. Bring conduit to shoulder of fittings; fasten securely.
- P. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for minimum 20 minutes.
- Q. Install conduit hubs to fasten conduit to sheet metal boxes in damp and wet locations.
- R. Install no more than equivalent of three 90-degree bends between boxes. Install conduit bodies to make sharp changes in direction, as around beams.
- S. Avoid moisture traps; install junction box with drain fitting at low points in conduit system in damp, wet or in-ground concrete vault locations.
- T. Install fittings to accommodate expansion and deflection on outdoor PVC conduits. where raceway crosses, control and expansion joints.
- U. Install suitable pull string or cord in each empty raceway except sleeves and nipples.
- V. Install suitable caps to protect installed conduit against entrance of dirt and moisture.
- W. Surface Raceway: Install flat-head screws, clips, and straps to fasten raceway channel to surfaces; mount plumb and level. Install insulating bushings and inserts at connections to outlets and corner fittings.
- X. Close ends and unused openings in wireway.

3.06 INSTALLATION – BOXES:

- A. Orient boxes to accommodate wiring devices.
- B. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- C. In accessible ceiling areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.
- D. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- E. Do not install flush mounting box back-to-back in walls; install with minimum 6 inches separation. Install with minimum 24 inches separation in acoustic rated walls.
- F. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- G. Install stamped steel bridges to fasten flush mounting outlet box between studs.
- H. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- I. Install adjustable steel channel fasteners for hung ceiling outlet box.
- J. Do not fasten boxes to ceiling support wires or other piping systems.
- K. Support boxes independently of conduit.
- L. Install gang box where more than one device is mounted together. Do not use sectional box.
- M. Install gang box with plaster ring for single device outlets.

3.07 INTERFACE WITH OTHER PRODUCTS:

- A. Install conduit to preserve fire resistance rating of partitions and other elements.
- B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket.
- C. Locate outlet boxes to allow luminaires positioned as indicated on Drawings.
- D. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

3.08 CLEANING:

- A. Prior to acceptance of the work of this Section, thoroughly clean all related areas in accordance with Section 01 74 00 – Cleaning and Waste Management.

END OF SECTION

SECTION 26 05 53

ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes electrical identification of electrical materials, equipment and installations. It includes requirements for electrical identification components including but not limited to the following:
 - 1. Buried electrical line warnings.
 - 2. Identification labeling for raceways, cables and conductors.
 - 3. Operational instruction signs.
 - 4. Warning and caution signs.
 - 5. Equipment labels and signs.
 - 6. Spare future conduits.
- B. Refer to other Division 26 sections for additional specific electrical identification associated with specific items.

1.02 SUBMITTALS

- A. Product Data: For each electrical identification product required on the project.

1.03 QUALITY ASSURANCE

- A. Comply with ANSIC2.
- B. Comply with NFPA 70.
- C. Comply with ANSI A13.1 and NFPA 70 for color-coding.

PART 2 - PRODUCTS

2.01 CABLE LABELS

- A. Comply with ANSI A13.1, Table 3, for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.
- B. Vinyl or vinyl-cloth, self-adhesive, wraparound, cable/conductor markers with preprinted numbers and letters.
- C. Color: Black letters on white field.
- D. Label Information: Indicate voltage and if applicable service.

2.02 NAMEPLATES AND SIGNS

- A. Safety Signs: Comply with 29 CFR, Chapter XVII, Part 1910.145.
- B. Engraved Plastic Nameplates and Signs: Engraving stock, melamine plastic laminate, minimum 1/16 inch thick for signs up to 20 sq. in, or 8 inches in length; and 1/8 inch thick for larger sizes.

- C. Color: Black letters on white face except for emergency systems listed in NFPA 70, Article 700, or as directed by the owner.
- D. Nameplates shall be punched or drilled for mechanical fasteners.
- E. Exterior, Metal-Backed, Butyrate Signs: Weather-resistant, non-fading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for the application. 1/4-inch grommets in corners for mounting.
- F. Fasteners for Nameplates and Signs: Self-tapping, stainless steel screws or No. 10/32 stainless-steel machine screws with nuts and flat and lock washers.

2.03 UNDERGROUND LABELS

- A. Underground line marking tape: permanent, bright-colored, continuous printed, plastic tape compounded for direct-burial service not less than 6 inches wide by 4 mils thick. Printed legend indicative of general type of underground line below.

2.04 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Self-Adhesive Tape: Electronic Label Maker, imprinted, pressure-sensitive, abrasion-resistant plastic tape.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Identification Materials and Devices: Install at locations for most convenient viewing without interference with operation and maintenance of equipment, in accordance with manufacturer's written instructions and requirements of NEC.
- B. Lettering, Colors, and Graphics: Coordinate names, abbreviations, colors, and other designations with corresponding specified or indicated. Install numbers, lettering and colors as approved in submittals and as required by code.
- C. Identify high-voltage feeder conduits (over 600V) by words "DANGER-HIGH VOLTAGE KEEP OUT" in black letters 2 inches tall, stenciled at 10-foot intervals over painted orange background.
- D. Sequence of Work: If identification is applied to surfaces that require finish, install identification after completing finish work.
- E. Self-Adhesive Identification Products: Clean surfaces before applying.
- F. Install nameplates and labels parallel to equipment lines.
- G. Identify junction, pull and connection boxes: Code-required caution sign for boxes shall be pressure-sensitive, self-adhesive label indicating system voltage in black, preprinted on orange background. Install on outside of box cover. Also label box covers with identity of contained circuits. Use pressure-sensitive plastic labels at exposed locations and similar labels or plasticized card stock tags at concealed boxes.

- H. All surface and flush mounted wiring devices (light switches, receptacles, etc.) shall have the power circuit identified, in permanent marker or pen, on the back (inside) of the device cover plate.
- I. Underground electrical line identification: During trench backfilling, for exterior underground power, signal and communication lines, install continuous underground plastic line marker, located 12 inches directly above conduit. Where multiple lines installed in a common trench or concrete envelope, do not exceed an overall width of 16 inches: install a single line marker.
- J. Labeling Legend: List panel and circuit number or equivalent in a legible manner.
- K. Color-Coding of Secondary Phase Conductors: Refer to section 16120.
- L. Wiring for control systems shall be color-coded in accordance with wiring diagrams furnished with the equipment.
- M. Tag or label conductors as follows:
 - 1. Future connections: Conductors indicated to be for future connection or connection under another contract with identification indicating source and circuit numbers.
 - 2. Multiple circuits: Where multiple branch circuits or control wiring or communications/signal conductors are present in the same box or enclosure (except for three-circuit, four-wire home runs), label each conductor or cable. Provide legend indicating source, voltage, circuit number, and phase for branch circuit wiring. Phase and voltage of branch circuit wiring may be indicated by means of coded color of conductor insulation. Use consistent letter/number conductor designations throughout on wire/cable marking tapes.
 - 3. Motor Leads: Provide label on each end of conductor including motor starter number and motor starter terminal number.
 - 4. Motor Control Center Control Circuits: Provide labels on each end of conductor including motor starter number and motor starter terminal number for all field control circuits.
 - 5. Instrument Control Panel Circuits: Provide labels on each end of conductor with the same naming convention as that located in the source control panel. Provide a label suffix corresponding with the instrument control panel circuit originates from.
- N. Factory apply color the entire length of conductors, except the following field-applied, color-coding methods may be used instead of factory-coded wire for sizes larger than No. 10 AWG:
- O. Colored, pressure-sensitive plastic tape in half-lapped turns for a distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Use 1-inch wide tape in colors specified. Adjust tape bands to avoid obscuring cable identification markings.
- P. Warnings, Cautions, and Instructions: Install to ensure safe operation and maintenance of electrical systems and of items to which they connect. Install engraved plastic-laminated instruction signs with approved legend where instructions are needed for system or equipment operation. Install metal-backed butyrate signs for outdoor items.
- Q. All electrical and controls equipment that is normally maintained or inspected while energized shall be provided with an Arc Flash Hazard Warning Label per NEC code requirements.

- R. Emergency Operation: Install engraved laminated signs with white legend on red background with minimum 3/8 inch high lettering for emergency instructions on power transfer, load shedding, and other emergency operations.
- S. Switch Identification Labels: Self-Adhesive Tape. Install on each switch when there are more than two switches under one faceplate or if switches are used to control exhaust fans or other equipment. Unless otherwise indicated, provide a single line of text with 16-inch high black lettering on clear background. Label shall indicate load controlled.
- T. Apply circuit/control/item designation labels of engraved plastic laminate for disconnect switches, breakers, pushbuttons, pilot lights, motor control centers and similar items for power distribution and control components above, except panelboards and alarm/signal components, where labeling is specified elsewhere. For panelboards, provide framed, typed circuit schedules with explicit description and identification of items controlled by each individual breaker.
- U. Furnish and install a sign at the service entrance equipment indicating type and locations of on-site emergency power sources. Sign shall be 8x10-inch minimum size mounted on the face on the switchboard.
- V. Provide suitable permanent means of labeling spare conduits. Provide legible means of identifying the location of where each conduit originates. Provide the same identification at each end.
- W. Equipment Identification Labels: Engraved plastic laminate. Install on each unit of equipment, including central or master unit of each system. This includes power, lighting, communication, signal, and alarm systems, unless units are specified with their own self-explanatory identification. Unless otherwise indicated, provide a single line of text with 1/2 inch high lettering on 1-1/2 inch high label; where two lines of text are required, use labels 2 inches high. Use white lettering on black field. Apply labels for each unit of the following categories (not all categories may be required on the project) of equipment using mechanical fasteners:
1. Panelboards, electrical cabinets, and enclosures. Include series rated labeling if required.
 2. Access doors and panels for concealed electrical items.
 3. Electrical switchgear and switchboards. Include series rated labeling if required.
 4. Emergency system boxes and enclosures.
 5. Motor-control centers.
 6. Disconnect switches.
 7. Enclosed circuit breakers.
 8. Instrumentation enclosures
 9. Motor starters.
 10. Push-button stations.
 11. Contactors.
 12. Remote-controlled switches.
 13. Control devices.
 14. Transformers.
 15. Variable frequency drives.
 16. Power generating units.
 17. Timers/time clocks.

END OF SECTION

SECTION 26 27 26

WIRING DEVICES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Wiring devices including but not limited to receptacles, power receptacles, disconnect type welding receptacles, light switches, wall plates, cover plates, Isolated Ground receptacles, GFCI receptacles, pushbuttons, selector switches and surge suppression receptacles.

1.02 RELATED SECTIONS

- A. SECTION 26 05 34 — Electrical Boxes
- B. SECTION 40 95 10 — Process Control Panels

1.03 SUBMITTALS

- A. Submit under provision of DIVISION 1.
- B. Product data of all types of items supplied.
- C. Submit sample cover plates to OWNER for approval prior to installation.

PART 2 - PRODUCTS

2.01 WALL SWITCHES

- A. 120/277 Volt Switches (not interfaced with energy management system): Premium Industrial Specification grade, toggle handle, with totally enclosed case, rated 20 ampere, tungsten, 60 Hertz. Switches to be Hubbell # 1221 or equal by Leviton, Cooper Wiring, or GE. Provide matching 2 pole, 3 way and 4 way switches.
- B. Explosion-proof 120/277 Volt Switches: Factory sealed with pre-wired pigtail leads, rated 20 ampere, front-operating rocker arm handle, switch enclosed in separate sealing chamber, internal ground screw, 1-pole, 3-way and 4-way.
- C. Low voltage switches (interfaced with energy management system): Refer to Section 16142 — Lighting Control Equipment.
- D. Switch and Pilot Light: Toggle action type with red handle, integral long-life neon pilot light, rated at 20 ampere, 120 volts.
- E. Color:
 - 1. Ivory switches in Administration and Maintenance Building.
 - 2. Black switches in process and outdoor locations.

2.02 RECEPTACLES

- A. Duplex receptacles shall be industrial grade, full gang size, polarized, duplex, parallel blade, rated at 15 amperes, 120 volts, conform to NEMA 5-15R and Federal Specification W-C-596. Receptacles shall be Hubbell 5262/5362CR or equal by Leviton or GE.

- B. Duplex receptacles shall be industrial grade, full gang size polarized, duplex, parallel blades, grounding type, rated at 20 ampere, 120V conforming to NEMA (5 - 20R). Receptacles shall be Hubbell 5362/5362CR or equal by Leviton or GE.
- C. Standard single receptacle shall be specification grade, full gang size polarized, parallel blades, grounding type, rated at 2-pole, 3 wire 20 ampere, 240V conforming to NEMA (6 - 20R). Receptacles shall be Hubbell 5461 or equal by Leviton, Cooper.
- D. Twist-lock style single receptacle shall be specification grade, full gang size polarized, duplex, locking blades, isolated grounding type, rated at 2-pole, 3 wire, 30 ampere, 250V conforming to NEMA (L6-30R). Receptacles shall be Hubbell IG2620 or equal by Leviton, Cooper
- E. Isolated Ground Duplex Receptacles: Duplex receptacles shall be 2-pole, 3-wire nylon grounding receptacles complying with current Federal Specification W-C-596F and U.L. Listed 498, isolated ground, NEMA 5-20R configuration. Receptacle shall have triangle symbol to denote the isolated ground configuration. Receptacles shall be orange if connected to normal power circuits. Receptacles shall be Hubbell #IG-2182 or equal by Cooper Wiring Premium Industrial Specification Grade and wall plate #80703-IG, with a limited ten-year warranty.
- F. Ground fault receptacle shall be UL 493, 498 listed Class A with 5 milli ampere sensitivity 20 ampere, 120 VAC, grounded, NEMA 5-20R. Receptacle shall have test and reset buttons integral with receptacle. Receptacles shall be Hubbell GF5262 or equal by Leviton or GE.
- G. Explosion-proof receptacles shall be rated for use in Class I, Division I, Group D locations. Receptacles shall be rated for 20 amperes at 120 volts, "dead front" type, malleable iron construction with hinged spring door. Receptacles shall be Appleton Type CPS or equal by Cooper Crouse-Hinds.
- H. Weatherproof receptacles shall be ground fault type duplex receptacles with weatherproof covers, which allow for complete coverage of receptacle during use. Receptacles shall be Hubbell WP26MP or approved equal.
- 1. Plug-in strip to be single receptacles grounding, located on surface raceway, 10 inches on centers as shown on the drawings. Plug-in strips shall be by Wiremold and comply with UL 5, "Surface Metal Raceways and Fittings".
- J. Color:
 - 1. Ivory receptacles in Administration and Maintenance Building.
 - 2. Black receptacles in process and outdoor locations.

2.03 COVER PLATES

- A. Provide for standard switches and receptacles for main level areas unless noted otherwise. Cover plates to be brushed stainless steel 302.
- B. Provide weatherproof rated gray switch cover plates for light switches located outdoors. Plate type based on a Hubbell HBL1795 or equal.
- C. Provide weatherproof rated gray receptacle cover plates for receptacles located outdoors. Plate type based on a Hubbell HBL5222 or equal.

2.04 FUSED SWITCHES

- A. Fused switch unit shall be for 120VAC, single-phase fans associated with unit heaters, cabinet heaters, etc.
- B. Switch shall be integral with a standard two-gang stamp steel junction box cover with integral fuse holder and fuse cover. Switch shall be rated for 120VAC, 15A. Switch unit type shall be Busman type SSY or approved equal.

2.05 PUSHBUTTON AND SELECTOR SWITCHES

- A. Refer to Specification Section 40 95 13 for specification requirements related to push buttons, selector switches, and pilot lights.

2.06 SURGE SUPPRESSION RECEPTACLE

- A. Shall be 1-pole, 2-wire nylon grounding receptacles complying with U.L. Listed 1449 & 498, NEMA 5-20R configuration. Shall come equipped with power-on indicator light, which indicates power is available and the surge suppression is functioning properly.
- B. Receptacles shall be Hubbell # HBL5360SA or equal by Cooper Wiring Premium Industrial Specification Grade and wall plate #SPJ26, with a limited ten-year warranty.

2.07 LINE VOLTAGE THERMOSTATS

- A. Thermostats controlling heaters and cooling fans shall be heavy duty line voltage rated 16 amps at 120V for pilot duty sized for the contactor coil load, adjustable range 45 degrees to 85 degrees F with adjustable dead band range of 0 -3degrees.
- B. Single pole, double throw suitable for operating as a two-stage cooling thermostat energizing the electric cooling load on rising temperatures.
- C. The thermostat shall be as a minimum NEMA 4 rated A19/A28 by Johnson Controls, or equal by Chromalox, or Honeywell. Thermostats in hazardous environments shall be rated NEMA7/9.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Mount wall switches 42 inches to bottom above finished floor, unless noted otherwise.
- B. Mount line voltage thermostats 60" to bottom above the finish floor in flush wall boxes, unless noted otherwise.
- C. Coordinate switch-mounting location with architectural detail.
- D. Mount receptacles 16" to bottom above finished floor or as noted on the drawings, unless noted otherwise.
- E. Install cover plates on all wiring devices.
- F. The outdoor units to be enclosed in cast aluminum boxes with cast aluminum, weatherproof cover plates.

- G. Where more than one wall switch is installed in the same location, set under one cover plate.
- H. Provide permanent barriers between adjacent switches on 240-volt service.
- 1. Install in accordance with Drawings, submittals, and manufacturers recommendations.

END OF SECTION

SECTION 26 28 13

FUSES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work of this Section includes fuses and fuse holders.

1.02 SUBMITTALS:

- A. Submit under provision of Division 1.
- B. Product data.

PART 2 - PRODUCTS

2.01 GENERAL

- A. All fuses shall be UL listed, current limiting type, with high interrupting capacity
- B. All fuse contact surfaces shall be plated.
- C. Fuses shall be selected to provide a fully selective system.
- D. Coordinate fuse type with fuse holder.

2.02 MANUFACTURERS

- A. Fuses shall be Littelfuse, Mersen, or Bussman.

2.03 TRANSFORMER PROTECTION FUSES

- A. Low Voltage (600 VAC or less):
 - 1. Above 600A: Provide Class L fuses for low voltage transformers rated above 600A.
 - 2. 600A or less: Provide Class RK5, time delay type fuses for low voltage transformers rated 600A or less.
 - 3. All fuses shall have 200,000 amperes RMS interrupting rating.
- B. Control Circuit (600 VAC or less): Provide Class CC for control circuit transformers rated 600 VAC or less. Fuses shall have 200,000 amperes RMS interrupting rating.

2.04 MOTOR PROTECTION FUSES

- A. Low Voltage (600 VAC or less): Provide time delay type, Class RK-5 (if more current limitation is required, provide Class RK-1 or Class J) fuses for short-circuit protection of low voltage motors and motor controllers. Fuses shall have 200,000 amperes RMS interrupting rating.

2.05 MAIN, FEEDER, AND BRANCH CIRCUIT FUSES

- A. Circuits 0 through 600 amps shall be protected by current-limiting, dual-element, time-delay fuses. All fuses shall have separate overload and short-circuit elements. Fuses shall incorporate a spring activated thermal overload. The fuses shall hold 500% of rated current for a minimum of 10 seconds (30A, 250V Class RK1 case size may be a minimum of 8 seconds at 500% of rated current) with an interrupting rating of 200,000 amps RMS symmetrical, and be listed by a nationally recognized testing laboratory. Peak let-through currents and 12 t let-through energies shall not exceed the values established for Class RK1, CF or J fuses.
- B. Circuits 601 through 6000 amps shall be protected by current-limiting, time-delay fuses. Fuses shall be time-delay and shall hold 500% of rated current for a minimum of 4 seconds, clear 20 times rated current in .01 seconds or less, with an interrupting rating of 200,000 amps RMS symmetrical, and be listed by a nationally recognized testing laboratory. Peak let-through currents and 12 t let-through energies shall not exceed the values established for Class L fuses.

2.06 FUSE HOLDERS

- A. Wire connectors shall be (screw type - for copper wire with or without terminals) (pressure plate type - recommended where vibration is a factor) (box type - most durable and versatile, for stranded or solid wire).
- B. Fuse block insulators shall be (molded thermosetting phenolic) (molded polycarbonate) type. All insulators shall meet voltage clearance and creepage requirements of UL for general industrial control equipment.
- C. Fuse clips shall have standard clips, spring reinforced with rejection feature for Class R fuses or as required for fuse class.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Fuses to be properly mounted or bolted into their fuse holder so as to maintain proper continuity.
- B. Fuses and fuse holders shall be sized according to the NEC.
- C. Coordination with other protective devices shall be accomplished by using proper time-current curves.
- D. Coordinate with other components to provide making rated short-circuit rating of protected equipment, 10,000 amps minimum.

END OF SECTION

SECTION 26 60 05

FLOAT CONTROLS FOR SPASH PAD PUMP STATION

PART 1 - GENERAL

1.01 SUMMARY:

A. Section includes:

1. This Section includes, but is not necessarily limited to, the furnishing and installation of a float controlled Duplex Splash Pad Control System as indicated on the Drawings, as specified herein, and as necessary for the proper and complete performance of the Work.

1.02 CONTROL SEQUENCE:

A. Operational Sequence:

1. When water level rises to elevation at "Pump On", float switch is activated and starts the lead pump.
2. With pump operating, pump chamber water level lowers to "Pump Off" setting and the lead pump stops.
3. If the liquid level rises to the level of the "lag pump ON" float switch, then the lag pump relay energizes which in turn energizes the lag pump.
4. The lead pump and the lag pump are determined by the position of the manual selector switch.
5. If water level continues to rise, an alarm shall activate at "High Water Alarm".
6. Motor winding over-temp will de-activate the motor starter switches and activate a "Motor Overtemperature Alarm" (each pump).
7. Moisture in the pump seal chamber shall activate a "Seal Failure Alarm" (each pump).
8. When the irrigation time clock is turned on and the irrigation time clock calls for water the lead pump shall turn on and supply irrigation water to the irrigation system. When the off float level is reached the lead pump shall turn off.

B. Alarm System:

1. Local alarms: Individual alarm lights in the station control enclosure shall be energized by the following:
 - a. High wet well water level.
 - b. Pump seal failure.
 - c. Pump overtemp.
2. Station alarms: The exterior station alarm light shall be energized by the following:
 - a. High wet well level.
 - b. Pump overtemp.

1.03 SUBMITTALS:

A. Pre-Construction:

1. Submersible Probe Controls:
 - a. Manufacturer and product data for each product including but not limited to:
 - 1) Float switches.
 - 2) All equipment and electrical enclosures.
 - b. Schematic Drawings and Wiring Diagrams using quality control manufacturers standards with ladder diagram type, numbered logic rungs, numbered wires and

terminations, contact references by type and line, detailed bill of material and equipment layout showing all components for the following:

- c. Pump control systems.
- d. Equipment enclosures.
- e. Lift station control circuitry.

B. Post Construction:

1. Operations & Maintenance Manual:

- a. Four hard copies and one .pdf copy.
- b. At project substantial completion, the materials provided shall be changed to reflect as constructed conditions and compiled into an Operations & Maintenance Manual.

PART 2 - PRODUCTS

2.01 UL LISTED CONTROL PANEL:

- A. Splash Pad Pump Station Control Panel shall be UL-698A listed as an assembly.
- B. The Splash Pad Control Panel, Load Center, Lighting Contactors, and Irrigation Time Clock shall all be installed in the Splash Pad Utilities Enclosure as shown on sheet E501. The Splash Pad Utilities Enclosure is not required to be UL listed as an assembly, only each individual component shall be required to be UL listed.
- C. Provide control panels with components listed on drawings and as specified.

2.02 RELAYS:

- A. Control:
 - 1. Plug-in type with tubular terminals and socket base.
 - a. Minimum contact rating 10 ampere at 120-volt A.C.
 - b. IDEC, Square D, Potter Brumfield or equal.

2.03 FLOAT SWITCHES:

- A. Hermetically sealed mechanical tilt type, rated at a minimum of 13 ampere at 120-volt A.C, with 40-foot suspension cable.
- B. SPST contact.
- C. Corrosion resistant poly-propylene float, leakproof, shockproof, and corrosion resistant to sewage.
- D. Provide sufficient cable to reach control panel without splice.
- E. Design based on Gems/Warrick MBLU40W and MYEL40W. Equal features and product by Connery or SJE acceptable.

2.04 SEAL FAILURE RELAYS:

- A. Provided by pump supplier, installed by Control Panel Manufacturer.

2.05 CONTROLS FOR LIFT STATIONS:

- A. Each pump shall be equipped with manual reset overload protection, circuit breaker, relays, HOA switches, and magnetic motor starters.
- B. Pump alternation shall be manual.
- C. Splash Pad Pump Station Control Panel shall housed in a NEMA 1 painted steel enclosure. Splash Pad Utilities Enclosure shall be NEMA 4X 304 stainless steel.
 - 1. Furnish equipment as indicated on shown on drawings.

2.06 ACCESSORIES FOR CONTROL PANELS:

- A. Nameplates: Minimum 1-inch x 2-inch white plastic with engraved black lettering.
- B. Motor Nameplate: Obtain loose pump motor nameplate from pump supplier and affix to control panel interior adjacent to controls for each pump with screws.
- C. Pilot and Alarm Lights: 120-volt transformer type, push to test, 60 Hertz, with plastic lens and color matched rings; furnish special tools for lamp replacement, if required.
- D. Selector switches and push buttons: Rated not less than 120-volt, 20 amperes, with maintained or momentary contacts as required. Provide legend plates as shown on drawings.

2.07 IRRIGATION TIME CLOCK:

- A. Shall be 7 day digital programmable time switch with 28 events in NEMA 1 enclosure.
- B. 120 vac power supply with (1) 20 amp, 120 volt SPST contact.
- C. Design based on Intermatic ET1705C or approved equal.

2.08 CIRCUIT BREAKER LIGHTING PANELBOARD:

- A. General:
 - 1. Lighting panelboard LPA shall be UL listed, with circuit quantities as shown on plans, NEMA 1 enclosure or 120/240 volt, 1 phase NEMA 1 enclosure and shown on plans.
 - 2. Lighting panelboard shall be wall/surface mounted dead front, dead rear type. All sections of the panelboard shall align so that the back of the complete structure may be placed flush against a wall.
 - 3. Construction shall allow maintenance of incoming line terminations, main device connections and all main bus bolted connections to be performed from front.
 - 4. The feeder or branch devices shall be removable from the front with the necessary device line and load connections front accessible.
 - 5. The main horizontal bus bars shall be mounted on glass polyester insulators with all three phases arranged in the same vertical plane. The main bus shall be non-tapered and have a capacity of 100 AMPS and shall be aluminum and rated and braced for short circuit current of 11,000 minimum RMS symmetrical amperes. Bus joints shall be tin plated.
 - 6. Vertical sections shall be completely factory assembled with aluminum bus, wired and tested before delivery, and shall bear UL labels. Individual vertical sections shall be designed for bolting together at installation site.

7. Lighting panelboard design and construction shall meet NEC and NEMA standards.
 8. Lighting panelboard shall consist of main circuit breaker and distribution circuit breakers as shown on the Drawings.
 9. All exterior and interior steel surfaces at the lighting panelboard shall be properly cleaned and finished grey hard dried enamel over a rust inhibiting coating.
 10. A ground bus shall be furnished firmly secured to each vertical section and shall extend the entire length of the panelboard.
 11. Provide arc flash label in accordance with NEC 110.16.
- B. Manufacturer: Lighting panelboard shall be manufactured by Square D, Eaton, ABB, GE or equal.

2.09 LIGHTING CONTACTORS:

- A. Shall be NEMA 1 Enclosed with Hand Off Auto switches as shown on the drawings.
- B. 120 vac coil with (6) 30 amp, 120 volt SPST contacts
- C. Design based on Square D Type L contactors or equal.

2.10 PHOTO CELL:

- A. Shall be NEMA 3R minimum with NEMA twist style connection.
- B. 120 vac power supply with (1) 30 amp, 120 volt SPST contacts
- C. Design based Intermatic or Equal.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Proposed Grinder Pump Stations:
 1. Work shall be in accordance with contract drawings, approved shop drawings and manufacturer's recommendations.
 2. Connect to electrical service as shown on drawings.

END OF SECTION

SECTION 31 20 00

EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes earthwork for foundations, floor slabs, miscellaneous exterior concrete, concrete and asphalt pavements, yard piping and rough site grading.

1.02 REFERENCES:

- A. MDOT - Michigan Department of Transportation, "*2020 Standard Specifications for Construction*".
- B. ASTM - American Society of Testing Materials, latest edition.

1.03 DEFINITIONS:

- A. Maximum Density: Maximum unit weight per volume for an established material.
- B. Optimum Moisture: Percentage of water at maximum density.
- C. Borrow: Material required for earthwork construction in excess of the quantity of suitable material available from required excavation grading or cutting. Borrow may be necessary even though not shown on the plans.
- D. Suitable Excavated Material: Mineral (inorganic) soil free of cinders, refuse, sod boulders, rocks, pavement soft or plastic clays, vegetable or other organic material capable of being compacted as specified. Moisture content has bearing on the suitability of materials to be used.
- E. Granular Material: Coarse grained materials having no cohesion, which derive their resistance to displacement from internal stability.
- F. Cohesive Material: Fine grained material which produces resistance to displacement by mutual attraction between particles. Clays are cohesive.
- G. Rough Grade: Earth grade before placing structure or landscaping.
- H. Subgrade: Earth grade upon which a pavement structure is to be placed.
- I. Rock Excavation: Boulders or rock weighing 4,000 pounds (approximately one cubic yard) or more and all solid or ledge rock, slate, shale, sandstone and other hard materials that require continuous use of pneumatic tools, heavy rippers or continuous drilling and blasting for removal. Pavements are not included.
- J. Proof Rolling: Applying test loads over the rough grade or subgrade surface by means of a heavy pneumatic tire roller or other approved means, to locate and permit timely correction of deficiencies likely to adversely affect performance of the pavement structure.

1.04 JOB CONDITIONS:

- A. If, during progress of the work, testing indicates that materials do not meet specified requirements, remove defective work and replace at no cost.
- B. Protect and preserve all public and private property including existing vegetation, landscape features, monuments within, along and adjacent to the work area.
- C. Moisture content has bearing on the suitability of material to be used.
 - 1. The moisture content of a material may be such that its use will require extensive manipulation to achieve required compaction.
 - 2. It is the Contractor's responsibility to determine the economics of using or disposing and replacing of such materials.
 - 3. Materials determined by the Contractor to be uneconomical for use may be disposed on-site in areas approved by the Engineer and shall be replaced with other material at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Fill:
 - 1. Granular Material shall be MDOT 902.07, Table 902-3, Class III limited to 1.0-inch maximum size.
 - 2. Select Granular Material shall be MDOT 902.07, Table 902-3, Class II or IIA limited to 1.0-inch maximum size.
 - 3. Suitable Excavated Material: ARTICLE 1.03 DEFINITIONS.
 - 4. Clay Liner Material: Unified Classification CL, CH, ML, MH.
- B. Topsoil: Surface soils containing organic matters and productive of plant life.
- C. Pipe Bedding: Compact granular material.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Clearing and Grubbing: MDOT Sections 201 and 202.
 - 1. Remove trees and shrubs as required, unless otherwise indicated.
 - 2. Grub out all stumps and roots:
 - a. To a minimum depth of 4 feet below finished grade within roadways.
 - b. To a minimum depth of 2 feet below finished grade in other locations.
 - 3. Remove all debris from site resulting from clearing and grubbing.
- B. Remove topsoil from all areas of new construction and stockpile on site in designated areas.
- C. Utilities:
 - 1. Before starting excavation, establish location and extent of underground utilities in work area.
 - 2. Notify utility companies to remove and relocate lines which are in conflict with the proposed utility.
- D. Protect Plantings and other features to remain as part of final landscaping.

3.02 EXCAVATION:

- A. Excavate as required for construction of the work. Utilize or dispose of excavated materials as required.
 - 1. Protect excavation by shoring, bracing, sheet piling or other methods as required.
 - 2. Remove unsuitable material to firm underlying soils beneath footings, pipelines, floor slabs, paved areas and walks.
- B. Preparation of Subgrade:
 - 1. Compact top 12 inches of subgrade under footings, slabs, pavement structure areas and walks to ninety-five percent (95%) maximum density unless otherwise specified.
 - 2. Compact top 12 inches under landscaped areas to eighty-five percent (85%) maximum density.
- C. Utilities:
 - 1. Maintain, reroute or extend existing utility lines to remain in excavation area, as required.
 - 2. Protect utility services uncovered by excavation.
 - 3. Cap off, plug or seal discontinued utility services and remove from site within excavated areas.

3.03 FILL:

- A. Under Exterior Slabs: Place select granular material in layers maximum 9 inches deep compacted to ninety-five percent (95%) maximum density.
- B. Under Roadways and within a 1 on 1 influence of the roadway edges: Place granular material in layers maximum 9.0 inches deep compacted to ninety-five percent (95%) maximum density.
- C. Under Foundations: Place select granular material in layers maximum 9.0 inches deep compacted to ninety-five percent (95%) maximum density.
- D. Landscape Areas: Place suitable excavated material or granular material in layers maximum 12 inches deep compacted to eighty-five percent (85%) maximum density.

3.04 ROUGH GRADING:

- A. Rough grade to levels, profiles, contours and elevations required for finished grades and surface treatment.
- B. Maintain the following rough grades:
 - 1. Sidewalk: 4 inches below finished grade.
 - 2. Floor slabs, exterior slabs and sidewalk at driveways: 6 inches below finished grade.
 - 3. Pavement surfaces: As shown on drawings.
 - 4. Landscape areas: 4 inches below finished grade to receive topsoil.

3.05 PROOF ROLL SUBGRADE SURFACE:

- A. Perform two complete passes over area to receive pavement structure.

- B. Correct deficiencies identified during proof rolling:
 - 1. Fill depressions with compacted material similar to subgrade soil.
 - 2. Undercut areas not providing satisfactory support for pavement structure:
 - a. Fill with compact granular material.
 - b. Place geotextile fabric when soil below undercut will not satisfactorily support construction equipment.

3.06 DEWATERING:

- A. Provide dry excavations until structures have been placed and fill is complete.
- B. Provide and maintain slopes, crowns, ditches and ponds to ensure satisfactory surface drainage at all times.
 - 1. Construct ditches and other drainage facilities necessary to remove ponded water as soon as practical to provide dry work areas for progression of the work.
 - 2. Interruption of surface drainage or underdrainage: Provide temporary drainage facilities until permanent drainage work complete.

3.07 COMPACTION:

- A. Place and compact all required materials and provide proper control of moisture content of the material and other details necessary to obtain satisfactory results.
 - 1. Remove materials that cannot be compacted with manipulation and moisture control.
 - 2. Replace with suitable excavated material or granular material at no additional cost.
- B. Correct any deficiencies resulting from insufficient or improper compaction. Retest if required.
- C. Provide equipment and personnel for access to test locations.
- D. Testing will be by ENGINEER or OWNER approved independent laboratory.

3.08 SURPLUS MATERIALS:

- A. Surplus excavated or unsuitable excavated material shall become the property of the Contractor.
- B. Dispose of surplus or unsuitable materials off-site.

END OF SECTION

SECTION 31 23 19

DEWATERING

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes the work required for all temporary dewatering.

1.02 JOB CONDITIONS:

- A. Private Wells and Property:
 - 1. Contractor shall be responsible for all damage and interruption resulting from temporary dewatering operations.
 - 2. Contractor shall provide temporary service and limit interruption to 4 hours.
- B. Discharge Disposal:
 - 1. To Owner's systems: Permission required.
 - 2. Surface erosion control: Provide.
- C. Scheduling clean-up: Promptly following utility installation.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. General: Adequate for purposes intended.

PART 3 - EXECUTION

3.01 PERFORMANCE:

- A. General: Provide and maintain dry working conditions until utility is completed.
- B. Prevent hydraulic stressing of structures as required.
- C. Place sufficient observation wells to adequately monitor the water during all dewatering procedures so as not to affect the structural integrity of existing buildings.
- D. The Contractor shall be responsible for temporary service of an individual water supply where these supplies are cut off due to lowering of the water table during construction. The Contractor shall not lower the water table unnecessarily.
- E. Provide internal dewatering where bulkheads are to be removed.
- F. Plug and abandon dewatering wells per requirements of the State of Michigan Water Well Construction and Pump Installation Code. The plugging of water wells is regulated under the authority of Part 127, Act 368 PA 1978.

END OF SECTION

SECTION 31 23 33

TRENCHING, EXCAVATING, BACKFILLING AND COMPACTING

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes the work required for trenching, excavating and backfilling, special pipe foundations and special work below grade.

1.02 DEFINITIONS:

- A. Maximum Density: Maximum dry weight in pounds per cubic foot of a specific material.
- B. Optimum Moisture: Percentage of water at maximum density.
- C. Rock Excavation: Includes all boulders or rock weighing 4,000 pounds (approximately one cubic yard) or more and all solid or ledge rock, slate, shale, sandstone and other hard materials that require continuous use of pneumatic tools, heavy rippers or continuous drilling and blasting for removal. Pavements are not included.
- D. Suitable Excavated Material: Mineral (inorganic) soil free of cinders, refuse, sod, boulders, rocks, pavement, soft or plastic clays, vegetable or other organic material, and capable of being compacted as specified. Moisture content has bearing on the suitability of materials to be used.
- E. Granular Material: Coarse grained materials having no cohesion, which derives its resistance to displacement from internal stability.
- F. Cohesive Material: Fine grained material which derives its resistance to displacement by manual attraction between particles of the mass, involving forces of molecular origin (i.e. Clays are considered cohesive).
- G. Grade Terminology: In accordance with the detail.

1.03 REFERENCES:

- A. MDOT - Michigan Department of Transportation, *"2020 Standard Specifications for Construction"*.
- B. ASTM - American Society of Testing Materials, latest edition.

1.04 JOB CONDITIONS:

- A. Obtain and comply with construction permits from agencies having jurisdiction over the work.
- B. Scheduling: Clean up promptly following utility installation backfilling.
- C. Dust Control: Broom or apply dust palliatives as needed.

- D. Driveway Closing: Eight (8) hour maximum with prior notification to resident. Maintain emergency access to all properties during construction.
- E. Signs, mailboxes and other movable surface features:
 - 1. Witness location prior to removal. Relocate to accessible location and maintain during construction.
 - 2. Upon completion of construction, replace to original position and condition.
 - 3. Replace regulatory traffic control signs immediately after utilities are placed and backfilled.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Trench Backfill:
 - 1. Trench backfill shall not contain frozen soil.
 - 2. Granular Material shall be MDOT 902.07, Table 902-3, Class III limited to 1.0-inch maximum size.
 - 3. Select Granular Material shall be MDOT 902.07, Table 902-3, Class II or IIA limited to 1.0-inch maximum size.
 - 4. Concrete Grade 3000 per MDOT Section 1004.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Clearing and Grubbing:
 - 1. Save and protect all trees and vegetation not identified to be removed.
 - 2. Repair or replace trees, shrubs and other vegetation damaged by CONTRACTOR's operation at no additional charge.
- B. Conflicting Underground Facilities:
 - 1. Before starting work, establish location and extent of existing underground facilities in work area.
 - 2. Establish potential conflict areas prior to construction.
 - 3. Excavate and expose existing underground facilities presenting potential conflict to determine their exact location and elevation.
 - 4. Advise Engineer of conflicts and obtain instructions on how to proceed.
 - 5. Make adjustments in proposed utility location at no additional cost.
 - 6. Make arrangements with owner of existing underground facilities for relocation, if necessary.
 - 7. Schedule work accordingly.

3.02 EXCAVATION:

- A. General:
 - 1. Dispose of surplus and unsuitable excavated material.
 - 2. Remove, salvage and stockpile topsoil.
 - 3. Unsuitable material encountered in subgrade or below payment line: obtain instruction on how to proceed.
- B. Trenches:
 - 1. Depth: Provide a uniform and continuous bearing and support for proposed utility on solid and undisturbed or compact granular material.

2. Minimum Width: Allow space for jointing and bedding. Meet requirements of AWWA C600 or C605, as applicable, for water main.
 3. Maximum Width: The following limitations shall apply at utility crown:
 - a. 6 inch through 10-inch diameter: 30 inches.
 - b. 12 inch through 30-inch diameter: Outside diameter plus 24 inches.
 - c. 30 inch and over diameter: Outside diameter plus 36 inches.
 - d. Elliptical: Outside pipe width plus 36 inches.
- C. Blasting:
1. Not allowed unless otherwise indicated.
 2. If allowed, obtain and comply with required permits.
 3. If allowed, perform only during hours approved by Owner.
- D. Length of Open Trench shall be 200 feet maximum.
- E. Damage to Existing Underground Utilities:
1. Report all damage to Engineer and utility owner.
 2. Repair to utility owner's standard.

3.03 BACKFILLING:

- A. Pipe bedding area: Compact granular material to ninety percent (90%) of maximum density according to the Modified Proctor Method or to ninety-five percent (95%) of maximum density using the Michigan Cone Test.
- B. Trench Backfill Area:
1. Under permanent pavement, shoulder areas and areas within a one on one slope from the shoulder edge:
 - a. Compact granular material in 9.0-inch layers to ninety percent (90%) of maximum density according to the Modified Proctor Method or to ninety-five percent (95%) of maximum density using the Michigan Cone Test.
 2. Under nonpermanent pavement: Same as permanent pavement.
 3. Under unimproved right-of-way areas: Compact suitable excavated material to eighty-five percent (85%) of maximum density.
 4. Under landscaped and unimproved areas: Compact suitable excavated material to eighty percent (80%) of maximum density.
 5. Under undercut existing structure: Place concrete.
- C. Structures:
1. Density requirements: Same as Trenches.
 2. Concrete structure: Place backfill only after seventy-five percent (75%) of concrete design strength has been reached.

3.04 TRENCH UNDERCUTTING AND BACKFILL:

- A. Excavation: Perform to Owner or Owner's Representative instructions.
- B. Backfill: Provide with granular material compacted in place.

3.05 COMPACTION, TESTING AND INSPECTION:

- A. Surplus excavated and unsuitable excavated material shall become the property of the CONTRACTOR.

- B. Dispose of surplus excavated or unsuitable excavated materials off-site.
- C. Performance and test equipment will be provided by Owner or Owner's Representative approved independent laboratory.
- D. Moisture - Density relationships:
 - 1. Cohesive (clays) soils: ASTM D 1557 (Modified Proctor).
 - 2. Granular (sands) soils: Michigan Cone Test.
- E. Field Density: ASTM D-2922 (Nuclear).
- F. Furnish equipment and personnel to provide access to test location and depth. Density tests will be performed at various levels, during or after backfilling operation.
- G. Correct any deficiencies resulting from insufficient or improper compaction. Retesting of density in areas of failed tests shall be performed by Owner or Owner's Representative at the Contractor's expense.

END OF SECTION

SECTION 31 41 00

SHORING

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes the work required for all temporary support of trench excavations and excavation enclosures.

1.02 JOB CONDITIONS:

- A. Interrupted Utility Service - Stand-by service: Provide to utility standards prior to shoring installation.
- B. Installing and Removing by Jetting is prohibited.
- C. Scheduling clean-up: Promptly following utility installation.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. General: Used or new, wood or steel.
- B. Pipe Laying Box Dimensions: Provide adequate working room and control of trench width to meet utility bedding requirements.
- C. Sheeting: Provide straight, uniform sections with interlock that is continuous the full length of the sheet.

PART 3 - EXECUTION

3.01 PERFORMANCE:

- A. Installation and Removal:
 - 1. General: Protect adjacent property, work and workmen.
 - 2. Pipe laying box:
 - a. Permitted where safety of workmen is sole consideration.
 - b. Prevent dislocation of utility and bedding when moving.
 - 3. Voids left by removal: Fill and compact as specified elsewhere.
 - 4. Shore, sheet pile and brace excavations as required to maintain them secure, remove shoring as the backfilling progresses, but only when banks are safe against cave-ins or collapse. Where shoring or underpinning furnishes permanent or temporary support, extreme care shall be taken to ensure that no settlement or collapse will occur. Conform to MIOSHA safety rules and regulations.
- B. Temporary Shoring Left in Place: Cut off minimum 2 feet below established surface grade.

END OF SECTION

SECTION 32 12 17

HOT MIXED ASPHALT PAVING – SUPERPAVE MIXTURES

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes construction of new hot mixed asphalt (HMA) pavements and reconstruction of existing pavements with hot mixed asphalt pavement and related work.
- B. Definitions:
 - 1. Pavement structure: Any combination of subbase, aggregate base, base course, leveling course and surface course, including shoulders, placed on subgrade.
 - 2. Permanent pavement: All improved pavement surfaces above the quality of treated or untreated gravel.
 - 3. Subgrade: That portion of the earth grade upon which the pavement structure is to be placed.
 - 4. Subbase: The layer of specified material of designed thickness placed on the subgrade as a part of the pavement structure.
 - 5. HMA Pavement Courses:
 - a. Base course: The layer of specified or selected material of designed thickness placed on a subbase or a subgrade to support leveling and surface courses.
 - b. Leveling course: Layer of specified material placed on the base course in preparation for the surface course.
 - c. Surface course: The top layer of a pavement structure.
 - d. Additionally, The Top and Leveling courses are defined as the mixture layers within 4-inches of the surface; the base course is defined as all layers below 4 inches of the surface. For mixture layers which fall within the 4-inch threshold, the following rule should apply:
 - 1) If less than 25% of a mixture layer is within 4 inches of the surface, the mixture layer should be considered to be a base course
 - 6. Bond Coat: Asphalt emulsion used to enhance the adhesion between HMA courses.
 - 7. Maximum Specific Gravity of Asphalt (Gmm): The ratio of the weight in air of a unit volume of an un-compacted asphalt mixture to the weight of an equal volume of gas free distilled water at a given standard temperature.
 - 8. Maximum density (soils): Maximum unit weight of soil material according to Modified Proctor Method ASTM D1557.
 - 9. Density Control Target: Target density of an HMA mixture determined by multiplying the Gmm times the density of water (62.4lb/ft³).

1.02 REFERENCES:

- A. MDOT - Michigan Department of Transportation, "2020 Standard Specifications for Construction".
- B. ASTM - American Society of Testing Materials, latest edition.
- C. MTM – Michigan Test Methods, latest edition.

1.03 SUBMITTALS:

- A. Pre-Construction:

1. Job-mix formulas (JMF):
 - a. Provide a job-mix formula (JMF) for each HMA mix prepared by independent lab or approved by MDOT submittals two weeks prior to paving. The job-mix formula shall include, at a minimum, the Gmm, Gmb, Gb, Gse, Gsb and parameters listed in Tables 1 & 2 of this specification.
2. Material Certifications:
 - a. Provide certifications of quality by producer for the following:
 - 1) Aggregates.
 - 2) Asphalt cement.
 - 3) Prime coat.
 - 4) Bond coat.
 - 5) Pavement marking materials.

1.04 JOB CONDITIONS:

- A. Seasonal Limitations:
 1. Removal of permanent pavement: Unless otherwise specified, execute during the period from March 15 to October 15.
 2. Restoration of permanent pavement: MDOT 501.03.I.1
- B. Clean up promptly following pavement installation.
- C. Maintenance of Temporary Surfaces: Maintain temporary surfaces until permanent pavement installation is completed.
- D. Driveway Closing: Twenty-four (24) hour maximum. Provide proper notice to property owner.
- E. Allow access to the hot mixed asphalt plant for verification of mix proportions, aggregate gradations and temperatures.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Subbase: Granular material Class II, MDOT 902.07, Table 902-3.
- B. Aggregate Base: Aggregate 22A, MDOT 302.02 and 902.05.
- C. Aggregate Surface:
 1. Use Aggregate 22A when the aggregate surface will receive a hot mixed asphalt surface at a later date. MDOT 306.02 and 902.05.
 2. Use Aggregate 23A when the aggregate surface will not receive a hot mixed asphalt surface. MDOT 306.02 and 902.05.
- D. Maintenance Gravel:
 1. Aggregate 21A, 21AA, 22A, 23A.
 2. Salvaged aggregate or HMA millings if approved by the Owner or Owner's representative.
- E. Hot Mix Asphalt (HMA) Leveling Course:
 1. MDOT 501.02, HMA, 4EL.
 2. MDOT 904.03, Asphalt binder 58-28.

- F. Hot Mix Asphalt (HMA) Surface Course:
 1. MDOT 501.02, HMA, 4EL.
 2. MDOT 904.03, Asphalt binder 58-28.
 3. Aggregate Wear Index (AWI) 220.
- G. Bond Coat: Asphalt material SS-1h. MDOT 501.02 and 904.03.C.
- H. Pavement Marking: MDOT 920.01.

2.02 MIXTURES:

- A. Furnish hot mixed asphalt mixture designed using Superpave mixture design methods.
- B. Reclaimed Asphalt Pavement (RAP) may be substituted for a portion of the new material required to produce the HMA mixture. Greater than 27% RAP binder by weight (MDOT Tier 3) is not allowed.
- C. *For all EL, and EML base course mixtures:* If greater than 17% RAP binder by weight (Tier 2) of the total binder is proposed for the mixture the selected binder grade shall be adjusted to compensate for the stiffness of the asphalt binder in the RAP. The Contractor shall supply blending chart and RAP test data used to determine the binder selection.
- D. All leveling and surfaces courses and all other mixtures used for base courses not specified above shall use the binder grade specified without adjustments if greater than 17% RAP binder by weight (Tier 2) is used.
- E. The following Table 1, Table 2, and Table 3 shall be used to determine the mix design criteria and volumetric properties of the specified mixture.

Table 1: Superpave Mix Design Criteria

Design Parameter	Mix Number			
	5	4	3	2
Percent of maximum specific gravity (%G _{mm}) at the design number of gyrations (N _d)	96.0% ^(a)			
%G _{mm} at the initial number of gyrations (N _i)	See Table 3			
%G _{mm} at the maximum number of gyrations (N _m)	≤98.0%			
Voids in mineral aggregate (VMA) min % at N _d (based on aggregate bulk specific gravity (G _{sb}))	15.00	14.00	13.00	12.00
Voids filled with asphalt (VFA) at N _d	See Table 2 ^(b)			
Fines to effective asphalt binder ratio (P _{No200} /P _{be})	0.6–1.2			
Tensile strength ratio (TSR)	80% min			
<p>(a) Unless noted otherwise on the plans, design all mixtures to 96.0% of maximum specific gravity (%G_{mm}) at the design number of gyrations (N_d). During field production, increase percent of maximum specific gravity (%G_{mm}) at the design number of gyrations (N_d) to 97.0%. Use liquid asphalt cement for regression of mixes unless otherwise noted on plans.</p> <p>(b) For regressed mixtures the maximum criteria limits do not apply.</p>				

Table 2: VFA Minimum and Maximum Criteria

Estimated Traffic (million ESAL)	Mix Type	Top and Leveling Courses	Base Course
≤0.3	EL	70–80%	70–80%
>0.3 – ≤3.0	EML	65–78%	65–78%
>3.0 – ≤30	EMH	65–78% ^(a)	65–75%
>30 – ≤100	EH	65–78% ^(a)	65–75%

ESAL = equivalent single-axle load
 (a) The specified VFA range for mix Number 5 is 73–76%.

Table 3: Superpave Gyrotory Compactor (SGC) Compaction Criteria

Estimated Traffic (million ESAL)	Mix Type	Number of Gyration ^(a)			
		%Gmm at (N _i)	N _i	N _d	N _m
≤0.3	EL	≤91.5%	7	50	75
>0.3 – ≤3.0	EML	≤90.5%	7	75	115
>3.0 – ≤30	EMH	≤89.0%	8	100	160
>30 – ≤100	EH	≤89.0%	9	125	205

ESAL = equivalent single-axle load
 (a) Compact mix specimens fabricated in the Superpave gyrotory compactor (SGC) to N_d. Use height data provided by the SGC to calculate volumetric properties at N_i. Compact mix specimens at optimum P_b (percent asphalt binder content) to verify N_m for mix design specimens only.

- F. The following Table 4 and Table 5 shall be used to determine the aggregate properties of the specified mixture.

Table 4: Superpave Final Aggregate Blend Gradation Requirements

Standard Sieve	Mix Number				
	5	4	3	3	2
			Leveling Course	Base Course	
% Passing Criteria (Control Points)					
1½ inch	—	—	—	—	100
1 inch	—	—	100	100	90–100
¾ inch	—	100	90–100	90–100	≤90
½ inch	100	90–100	≤90	≤90	—
⅜ inch	90–100	≤90	—	—	—
No. 4	≤90	—	—	—	—
No. 8	47–67	39–58	35–52	23–52	19–45
No. 16	—	—	—	—	—
No. 30	—	—	—	—	—
No. 50	—	—	—	—	—
No. 100	—	—	—	—	—
No. 200	2.0–10.0	2.0–10.0	2.0–8.0	2.0–8.0	1.0–7.0

Table 5: Superpave Final Aggregate Blend Physical Requirements

Est. Traffic (million ESAL)	Mix Type	Minimum Criteria						Maximum Criteria					
		% Crushed ^(a)		Fine Aggregate Angularity		% Sand Equivalent		LA Abrasion % Loss ^(b)		% Soft Particles ^(c)		% Flat and Elongated Particles ^(d)	
		Course(s)						Course(s)					
		Top and Leveling	Base	Top and Leveling	Base	Top and Leveling	Base	Top and Leveling	Base	Top and Leveling	Base	Top and Leveling	Base
<0.3	EL	55 / —	—	—	—	40	40	45	45	10	10	—	—
≥0.3 – <3	EML	75 / —	50 / —	43	40	40	40	35	40	5	5	10	10
≥3 – <30	EMH	90 / 85	80 / 75	45	40	45	45	35	35	3	4.5	10	10
≥30 – <100	EH	100 / 100	95 / 90	45	45	50	50	35	35	3	4.5	10	10

ESAL = equivalent single-axle load

(a) XX / YY denotes that XX% of the coarse aggregate has one fractured face and YY% has at least two fractured faces.

(b) If a blend of different aggregate sources, the abrasion value applies to each source.

(c) Soft particles maximum is the sum of the shale, siltstone, ochre, coal, clay-ironstone, and particles that are structurally weak or non-durable in service.

(d) Maximum by mass with a 1:5 aspect ratio.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Removal: Remove all existing pavement structure required, as shown on the drawings.
 - 1. Pavement remnant limit: Remove pavement, curb, gutter, curb and gutter, sidewalk or similar structures to existing joint, where dimension is less than 3 feet.
 - 2. Provide saw cut joint full depth at removal limit.
 - 3. Butt joint: Provide on overlay projects where new pavement meets existing pavement. MDOT 501.03.C.3.
 - 4. Restore existing permanent pavement disturbed by construction equipment at no additional cost.

- B. Dispose of all material removed during the construction.

- C. Crushing and shaping: MDOT 305.

- D. Cold-milling existing HMA surface: MDOT 501.

- E. Subgrade:
 - 1. Obtain approval prior to placing the subbase or aggregate base course.
 - 2. Construct to the required line, grade and cross section. MDOT 205.03.N.
 - a. Tolerance if subbase is required: Trim within 1 inch of design grade.
 - b. Tolerance if subbase is not required: Trim within ¾ inch of design grade.
 - 3. Compaction:
 - a. Compact to not less than ninety percent (90%) of the maximum density according to the Modified Proctor Method ASTM D1557.
 - b. Compact to not less than ninety-five percent (95%) of the maximum density using the Michigan Cone Test.

- F. Excavation: Conform to MDOT 205.03.G.

- G. Embankment: Conform to MDOT 205.03.H and 205.03.I.

3.02 PERFORMANCE:

- A. Subbase:
 - 1. Thickness: Conform to design cross section.
 - 2. Construction method:
 - a. Place in equal layers not exceeding 15 inches loose measure.
 - b. Spread evenly and compact to not less than ninety-five percent (95%) maximum density according to Michigan Sand Cone Test.
 - 3. Tolerance: Construct sub-base to plan grade within a tolerance of ± 0.5 inch.
- B. Aggregate Base:
 - 1. Thickness: Conform to design cross section.
 - 2. Construction Method: MDOT 302.03.
 - 3. Tolerances:
 - a. Curbed streets: Shape the aggregate base course to the design grade and cross section within a tolerance of $\pm \frac{1}{4}$ inch.
 - b. Other: Shape within a tolerance of $\pm \frac{1}{2}$ inch of the design grade and cross section.
 - c. Check and correct grades and cross section prior to HMA placement if traffic use is allowed.
- C. Aggregate Surface:
 - 1. Thickness: Provide 8 inches compacted in place in two (2) equal courses, unless otherwise specified.
 - 2. Construction Method: MDOT 306.03.
- D. Shoulder (aggregate):
 - 1. Thickness: Provide 4 inches of compacted aggregate shoulder on an aggregate base, unless otherwise noted.
 - 2. Construction Method: MDOT 307.03.
- E. Shoulder (other than aggregate):
 - 1. Thickness: Provide 4 inches of compacted soil or topsoil on an aggregate base, unless otherwise noted.
- F. Hot Mixed Asphalt Base:
 - 1. Construction Methods: Conform placement of the hot mixed asphalt base mixture not exceeding lifts of 3 inches in accordance with MDOT 501.03.
 - 2. Tolerances:
 - a. Curbed streets: Shape the hot mixed asphalt base course to the design grade and cross section, within a tolerance of $\pm \frac{3}{8}$ inch.
 - b. Other: Unless otherwise specified, shape within $\pm \frac{3}{4}$ inch of the design grade and cross section.
- G. Bond Coat:
 - 1. Construction Method: MDOT 501.03.D.
 - 2. Application Rate: Provide 0.15 gallon per square yard.
- H. Hot Mixed Asphalt Leveling and Surface:
 - 1. Cutting: Saw vertically in straight lines parallel or perpendicular to pavement centerline.
 - 2. Thickness: Do not place hot mixed asphalt surface course mixture in lifts exceeding 2 inches unless otherwise approved. Provide design thickness.
 - 3. Construction Methods:

- a. Paving: Conform method of paving to MDOT 501.03.
 - b. Prior to placement of hot mixed asphalt surface, verify crowns and grades of roadway for positive drainage. Any deficiencies in grade or crown shall be corrected prior to placement of surface course.
 - 4. Tolerances: Hot mixed asphalt surface on streets with new curbs shall have a finish elevation of ¼ inch above curb.
 - 5. Asphalt Yield: The design asphalt yield has been based on 110 lbs./syd per inch of thickness. Construction asphalt yield in excess of 15% of the plan yield shall not be paid.
- I. Hot Mixed Asphalt Drive Approach:
 - 1. Preparation: Construct drive approach on prepared subgrade or embankment as required to meet plan grades.
 - 2. Aggregate Base: Provide 8-inches of Aggregate 22A compacted in place.
 - 3. HMA Mixture: Provide 3-inches of HMA, 4EL.
 - J. Hot Mixed Asphalt Patching:
 - 1. Preparation: Saw cut vertically in straight lines parallel or perpendicular to pavement centerlines. Minimum dimension of area to be patched shall be 2 feet for placement and compaction of materials.
 - 2. Aggregate Base: Provide a minimum of 6 inches of Aggregate 22A compacted in place.
 - 3. HMA Mixture: Match existing pavement thickness (minimum 3 inches).

3.03 STRUCTURE COVER ADJUSTMENT:

- A. Construction Method: MDOT 403.03.C.
 - 1. Adjust structure castings to finish grade or to a maximum of ¼ inch below finish grade of all manholes, catch basins and valve boxes.
 - a. Set grades of castings and valve boxes from street grades with castings tilted where necessary to meet proposed street grades and crown.
 - b. All castings, when adjusted to finish grade, shall be placed in a bed of hot mixed asphalt mix placed in entire area disturbed for casting adjustment. Mixture shall be compacted in place.
 - 2. Adjust castings to finish grade after the leveling course is complete.
 - a. Castings shall be kept below grade or flush with the proposed sand subgrade so as not to conflict with grading operations or conflict with placement of leveling course.
 - b. HMA removed from area for casting adjustment shall be saw cut square around the casting.
 - 3. Adjustment of new structures will not be a pay item.

3.04 PAVEMENT MARKINGS

- A. Construction Method: MDOT 811.03
- B. Contractor shall layout all proposed markings in accordance with the MMUTCD and MDOT Standards and as shown on the Drawings prior to placement for Owner or Owner's representative review.

3.05 TESTING AND INSPECTION:

- A. Observation: By the designated authorized representative.

- B. Aggregates:
 - 1. Sampling and Analysis: Michigan Testing Methods, Series 100.
 - 2. Exception: Provide certification of approved stockpiled material.
- C. Hot Mixed Asphalt Pavement Density:
 - 1. Density acceptance of HMA mixtures will be measured with a nuclear density gauge using the Gmm from the approved Job-Mix Formula for the density control target. The required in place density of the HMA mixture shall be 92.0-96.0% of the density control target.
 - 2. The Contractor is responsible for determining Quality Control Density and establishing a rolling pattern that will achieve the required in place density.
- D. Hot Mixed Asphalt Mix Composition:
 - 1. Sampling:
 - a. Acceptance sampling shall include a minimum of two samples per mix type for each day of production with no less than three samples for each mix type per project.
 - b. Method of sampling per MDOT Standard Specifications for Construction requirements.
 - 2. Extraction: ASTM D2172
 - 3. Sieve Analysis: ASTM C117 and ASTM C136
 - 4. Tolerance: Acceptance tolerances for HMA parameters are detailed in the following Table.

Table 3: Uniformity Tolerance Limits for HMA Mixtures

PARAMETER	Surface & Leveling Course	Base Course
	Range	Range
Binder Content	+ 0.50	+ 0.50
% Passing #8 and Larger Sieves	+ 8.0	+ 9.0
% Passing #30 Sieve	+ 6.0	+ 9.0
% Passing #200 Sieve	+ 2.0	+ 3.0
1. The mixture shall be proportioned to test as closely as possible to the Job-Mix-Formula. 2. The crushed particle content of the aggregate shall not be more than 10 percentage points above or below the crush particle content listed in the approved JMF.		

- 5. Acceptance: If for any one mixture, two consecutive aggregate gradations on one sieve, or binder contents exceed the uniformity tolerance or do not meet the minimum requirements for crushed particle content the mixture will be rejected.

END OF SECTION

SECTION 32 13 14

CONCRETE SIDEWALK, SIDEWALK RAMPS AND DRIVEWAYS

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes work required for concrete sidewalks, sidewalk ramps driveways.
- B. Definitions:
 - 1. Pavement Structure: The combination of the base, subbase and bituminous or concrete surface placed on the subgrade. Pavement includes gravel, bituminous and concrete surfaced streets and driveways.
 - 2. Subgrade: The portion of the earth grade on which the concrete sidewalk is to be placed.
 - 3. Subbase: The layer of specified material of designed thickness placed on the subgrade as a part of the pavement structure.

1.02 REFERENCES:

- A. MDOT - Michigan Department of Transportation, "*2020 Standard Specifications for Construction*".
- B. ASTM - American Society of Testing Materials, latest edition.
- C. ADAAG – Americans with Disabilities Act Accessibility Guidelines.
- D. PROWAG – Public Rights-of-Way Accessibility Guidelines

1.03 SUBMITTALS:

- A. Pre-Construction:
 - 1. Concrete Mix Designs:
 - a. Provide a concrete mix design for each mix of concrete meeting the requirements of MDOT Division 10, prepared by independent lab, two weeks prior to paving. Contractor may submit concrete mix designs previously approved by MDOT.
 - 2. Material Certifications:
 - a. Provide certifications of quality by producer for the following:
 - 1) Cement.
 - 2) Aggregates.
 - 3) Admixtures.
 - 4) Curing Compound.
 - 5) Steel Reinforcement.
 - 6) Pavement marking materials.
 - 3. Batch Tickets:
 - a. In accordance with MDOT 1001.03.A.4.
- B. Post-Construction:
 - 1. Concrete Test Specimens:
 - a. Contractor shall deliver acceptance cylinders to the place of inspection and testing.

1.04 JOB CONDITIONS:

- A. General Limitations: Concrete shall not be placed between November 1 and April 1 without approval of the Owner. Concrete shall not be placed when air temperature in the shade is less than 40° F and falling. Concrete shall not be placed if portions of the base, subbase, or subgrade layers are frozen, or if the grade exhibits poor stability from excessive moisture levels. Chemicals shall not be added to reduce the freezing point. Any deviation from the above, when authorized, will require protection from freezing until the concrete has attained a compressive strength of at least 1,000 psi (1,000 psi strength will typically be attained after 2 days of curing). Concrete damaged by frost action shall be removed and replaced.
- B. Clean-up promptly following sidewalk installation.
- C. Maintenance of Temporary Surfaces: Maintain temporary surfaces until permanent sidewalk installation is completed.
- D. Driveway Closing: 24 hours maximum for removal and replacement of concrete plus additional 96 hours (4 days) for curing. Prior to replacement, the removed portion of the driveway shall be brought up to its proposed grade with gravel and/or bituminous.
- E. Protect areas under construction with lighted barricades and reflectorized fencing in accordance with applicable MDOT, MIOSHA and ASHA regulations.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Subbase: Granular material MDOT Class II, MDOT 902.07, Table 902-3.
- B. Concrete:
 - 1. Sidewalk and Sidewalk Ramps:
 - a. Use Concrete Grade 3500 per MDOT Section 1004 modified to 100% limestone aggregate.
 - 2. Driveways:
 - a. Use Concrete Grade 3500 per MDOT Section 1004.
- C. Joint Filler: MDOT Section 914.
- D. Forms: Rigid in accordance with MDOT 803.03.B, except at curved sections which shall utilize a bendable material to provide a uniform radius, supported at adequate intervals.
- E. Aggregate Base: Aggregate 22A, MDOT 302.02 and 902.05.
- F. Bituminous Patching: MDOT Bituminous Mix 13A, unless otherwise specified.
- G. Bituminous Bond Coat: Asphalt material SS-1h. MDOT 501.02 and 904.03.C.
- H. Detectable Warning Surfaces:
 - 1. Cast ductile iron plate with anchor lugs.
 - 2. Slip resistant textured surface.
 - 3. Color and finish: Black asphalt dip.
 - 4. Provide minimum 5-foot width with 2 – 30" plates.
 - 5. Meet ADAAG.

6. Manufacturer: East Jordan Iron Works or Neenah Foundry Company.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Removal: Remove or saw cut at the existing joint in area of removal. Remove adjacent pavement structure necessary to place forms.
- B. Removal of subgrade material to maintain existing sidewalk elevation and meet specified concrete thickness shall be included in the cost of the sidewalk.
- C. Disposal of all removed material shall be performed by Contractor. Always keep all equipment and removed material off private property.
- D. For sidewalk crossing bituminous drives: Saw cut existing bituminous and use as forms.
- E. For sidewalk crossing concrete drives: Remove or saw cut at the existing joint.
- F. Cut and protect tree roots.
- G. Excavation: Form subgrade by trenching, excavating or filling to the required elevation.
- H. If unsuitable material exists below subgrade, remove unsuitable material. If unsuitable material is removed, place a minimum 4-inch sand subbase to elevation required for bottom of concrete. In fill areas, the subbase shall be at least 1 foot wider than the sidewalk width.
- I. Compact subbase to 95% maximum density.
- J. Scheduling: Maximum time between removal and replacement of existing sidewalk or excavation and placement of sidewalk shall be 7 days.
- K. Contractor shall notify Owner or Owner's representative of plans to pour concrete a minimum of 24-hours in advance the concrete pour. The Contractor shall provide a minimum of 2 hours between forming and pouring to allow for review. Failure to provide notice will be considered cause to reject the work.

3.02 PERFORMANCE:

- A. Sidewalk and Sidewalk Ramp Requirements:
 - 1. All sidewalks shall be a minimum of 5 feet in width, with the grade of ¼ inch per foot from the property towards the street, unless otherwise directed.
 - 2. All sidewalks shall be a minimum of 4 inches thick except through driveways where they shall be a minimum of 6 inches thick for residential and 8 inches thick, with WW mesh reinforcement, for commercial / industrial. Sidewalks shall continue through commercial driveways.
 - 3. Sidewalk ramps shall have a uniform grade except as necessary for short grade changes and shall be in conformance with the Draft PROWAG, ADAAG and these specifications. Detectable warning surfaces shall be provided, unless otherwise directed.
 - 4. Sidewalk ramps shall be 6-inch thick.
 - 5. Detectable warning surfaces:
 - a. Provide for tactile and visual warning that contrast visually with adjacent walking surfaces, either light-on-dark or dark-on-light.

- b. Provide cast ductile iron detectable warning plates embedded into newly cast concrete. Provide same width as sidewalk, minimum. Install in accordance with manufacturer's recommendations, ADAAG and these specifications. Surface applied products will not be allowed. Do not construct detectable warnings by forming or stamping in newly cast concrete.
 - c. Provide detectable warning plates on sidewalk ramps at intersections and where the sidewalk crosses commercial driveways with curbed Detail M openings and commercial driveways that are stop-controlled.
- B. Driveway Requirements:
 - 1. Residential Driveways: 6 inches thick.
 - 2. Commercial and Industrial Driveways: 8 inches thick.
- C. Structure Adjustment: Any utility structures in the sidewalk or ramp not conforming to the finished grade shall be adjusted to grade. Conform to MDOT 403.03.C.
- D. Concrete Mixing and Delivery: Transit mix concrete conforming to MDOT 1001.03.E.
- E. Placing and Finishing Concrete:
 - 1. Place concrete on a moist base in one (1) lift to the specified depth. The concrete shall be thoroughly spaded along the faces of the forms before finishing operations are started. The concrete shall be struck off to the required grade and cross section.
 - 2. All edges and joints shall be slightly broomed transversely to roughen the surface after the concrete has received a float finish. The sidewalk ramps shall be textured with a coarse broom transversely to the ramp slope.
- F. Curing and Protection:
 - 1. Concrete shall be cured and protected as specified under MDOT Section 602.03.M and 602.03.T except that pedestrian traffic may be allowed after 48 hours if authorized. Curing compound shall be applied immediately following finishing operations.
- G. Joints:
 - 1. Joints shall be constructed to true line with their faces perpendicular to the surface of the sidewalk and shall not vary more than $\frac{1}{4}$ inch from their designated position. Transverse joints shall be constructed at right angles to centerline of the sidewalk and longitudinal joints shall be constructed parallel to the centerline unless otherwise required. When sidewalk is constructed in partial width, transverse joints shall be placed in line with like joints in the existing sidewalk.
 - 2. The concrete at the faces of all joints shall be thoroughly spaded or vibrated and compacted to fill all voids and the surface shall be finished smooth and substantially true to grade.
 - 3. One-half ($\frac{1}{2}$) inch transverse expansion joints shall be placed in line with all expansion joints in abutting curb, gutter or combination curb and gutter. When sidewalk does not abut such pavement, $\frac{1}{2}$ inch transverse expansion joints shall be placed at intervals not exceeding 40 feet and at all transitions between 4 inch and 6-inch sidewalk. Expansion joint filler shall extend the full depth of the joint with the top slightly below the finished sidewalk surface. The filler shall be supported temporarily until concrete is poured against it.
 - 4. One-half ($\frac{1}{2}$) inch longitudinal expansion joints shall be placed between the sidewalk and the back of abutting parallel curb or gutter, between the sidewalk and buildings, or other rigid structures.
 - 5. One-half ($\frac{1}{2}$) inch expansion joints shall be placed between sidewalk approaches and the back of curb and gutter, or the edge of pavement, including bituminous driveways.

6. Contraction joints shall be placed at 5-foot intervals. They shall divide sidewalk into areas not more than 36 square feet nor less than 16 square feet. Contraction joints will be produced by slab division forms extending to the full depth of concrete or by cutting joints in the concrete after floating to a depth of not less than $\frac{1}{4}$ the thickness of the concrete. The cut joints shall not be less than 1/8-inch or more than $\frac{1}{4}$ inch in width and shall be finished smooth and substantially true to line.

H. Backfilling and bituminous patching:

1. After concrete has gained sufficient strength (70% of design), all rails, forms, stakes and supports shall be removed in a manner as not to injure finished concrete and all exposed edges of the concrete shall be backfilled, compacted and leveled immediately.
2. In areas where the sidewalk crosses bituminous drives, saw cut existing bituminous. Bituminous patching shall be placed and compacted.

I. Bituminous Patching:

1. Place minimum 4 inches of aggregate base 22A and compact to ninety-five percent (95%) of maximum density.
2. Place minimum 2 inches of MDOT Bituminous Mix 13A.

J. Concrete curb and gutter: Owner's Standard.

1. Match existing curb and gutter.
2. Construction methods: MDOT 802.03.

3.03 TESTING AND INSPECTION:

A. Observation: By designated authorized representative.

1. Inspection of forms is required prior to pouring concrete.

B. Acceptance Testing:

1. If initial testing indicates failed or nonconformance to specification, additional testing shall be paid by Contractor. Replace nonconforming material at no additional cost.

3.04 TREE ROOT CUTTING:

A. The following information shall be used as a guide when trimming tree roots:

1. Excavate as shallow as possible in the area adjacent to the tree root.
2. Make clean cuts with a saw or sharp chisel. Do not bury jagged or torn roots.
3. Do not allow the exposed root ends to dry out. If exposed for more than a day, they can dry out. Cover all exposed roots with soil at the end of the day.
4. Avoid cutting roots larger than 3.5 inches.

3.05 TREE ROOT BARRIER:

A. Install tree root barrier along the sidewalk adjacent to trees to reduce future damage by tree roots. Installation shall be in accordance with manufacturer's recommendations.

B. Install in 4-inch wide trench (with roots removed) adjacent to the sidewalk between the sidewalk and tree to a minimum depth of 30 inches. Secure with pins. Backfill carefully to avoid dislodging the barrier and compact firmly.

C. Manufacturer: Typar Biobarrier or approved equal.

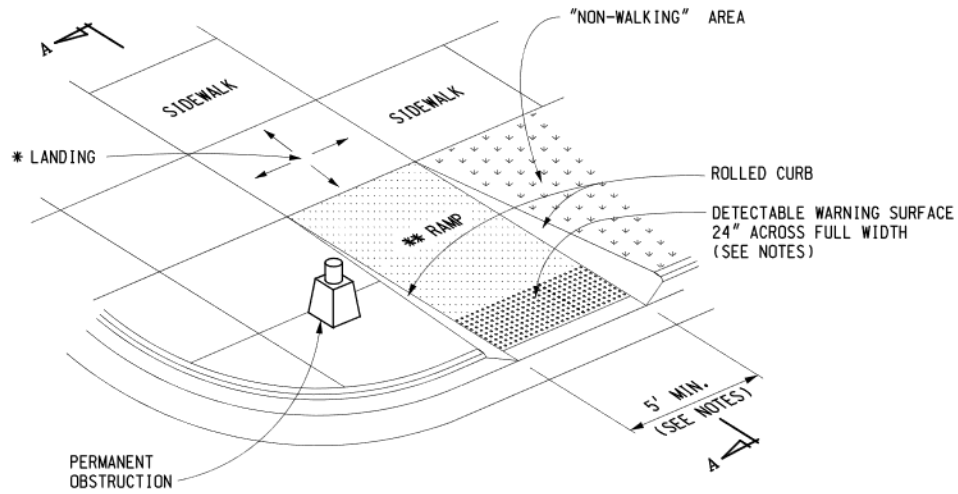
3.06 SCHEDULES (See Details attached)

- A. MDOT Standard Plan R-28-J SIDEWALK RAMP AND DETECTABLE WARNING DETAILS (7 sheets).
- B. MDOT Standard Plan R-29-I DRIVEWAY OPENINGS AND APPROACHES, AND CONCRETE SIDEWALK (4 sheets).

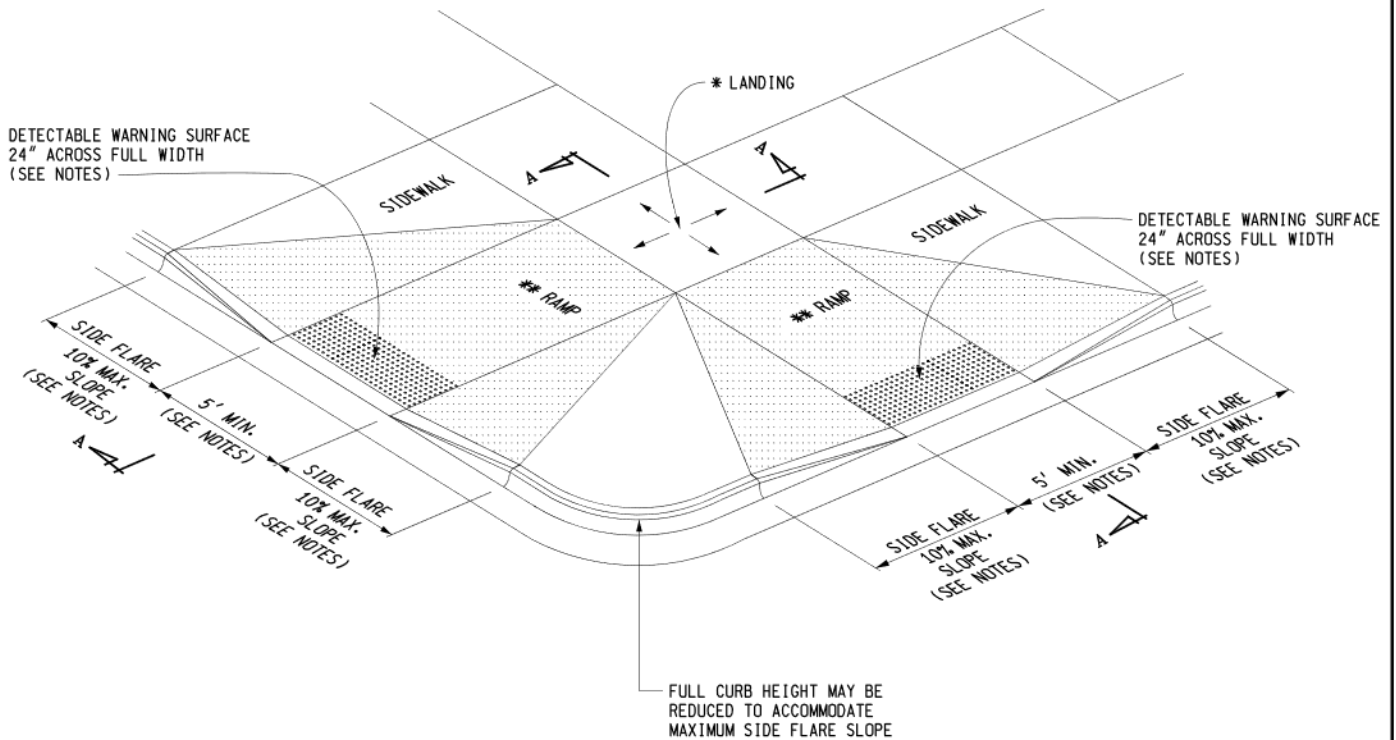
END OF SECTION

* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%, RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



CURB RAMP TYPE R
(ROLLED SIDES)



CURB RAMP TYPE F
(FLARED SIDES, TWO RAMPS SHOWN)



PREPARED BY
DESIGN DIVISION

DRAWN BY: B.L.T.

CHECKED BY: W.K.P.

DEPARTMENT DIRECTOR
Paul C. Ajegba

APPROVED BY: Gregg Brunner, P.E. Gregg Brunner
Oct 14 2021 12:32 PM
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: Bradley C. Wierzbicki Bradley C. Wierzbicki
Oct 14 2021 11:01 AM
DIRECTOR, BUREAU OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

**CURB RAMP AND
DETECTABLE WARNING DETAILS**

4-7-2022
F.H.W.A. APPROVAL

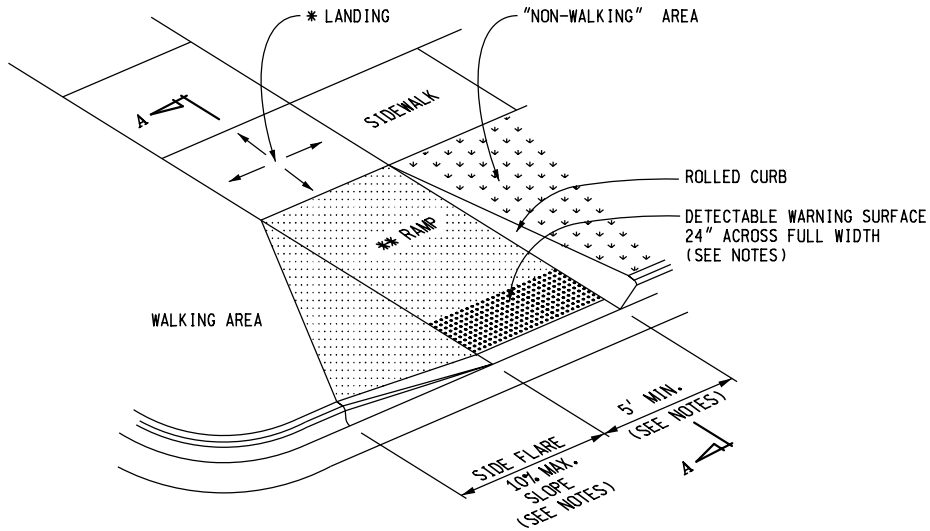
5-8-2020
PLAN DATE

R-28-J

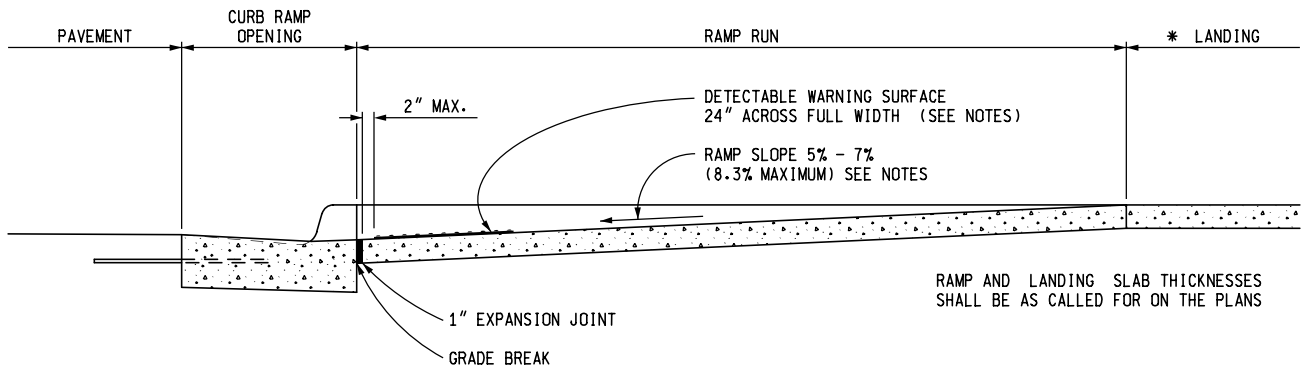
SHEET
1 OF 7

* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%, RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



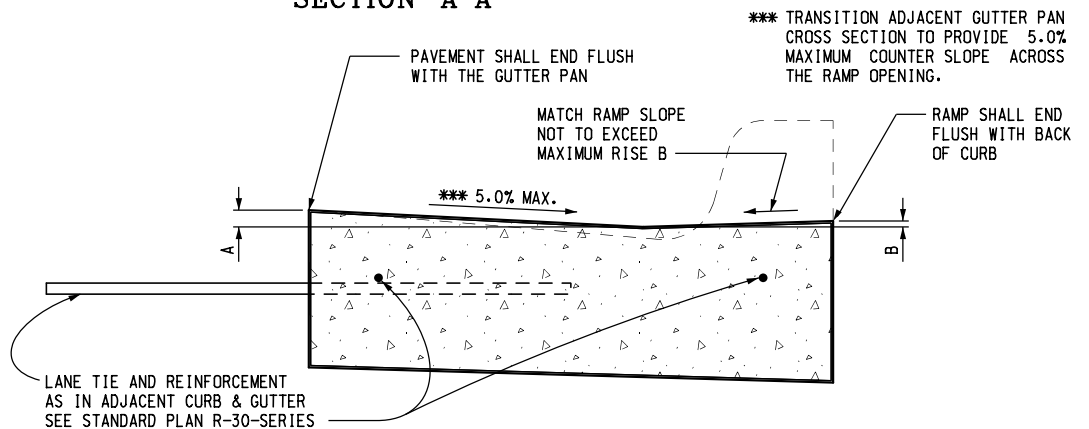
CURB RAMP TYPE RF
(ROLLED / FLARED SIDES)



SECTION A-A

CURB TYPE	MAXIMUM RISE (INCHES)	
	A	B
B1	3/4	1
B2	3/4	1
B3	3/4	1
D1	3/4	1
D2	3/4	1
D3	3/4	1
C1	1/2	1/2
C2	1/2	1/2
C3	3/4	1/2
C4	3/4	1/2
C5	1	1/2
C6	1	1/2
F1	1/2	1/2
F2	1/2	1/2
F3	3/4	1/2
F4	3/4	1/2
F5	1	1/2
F6	1	1/2

FOR CURB TYPES SEE STANDARD PLAN R-30-SERIES



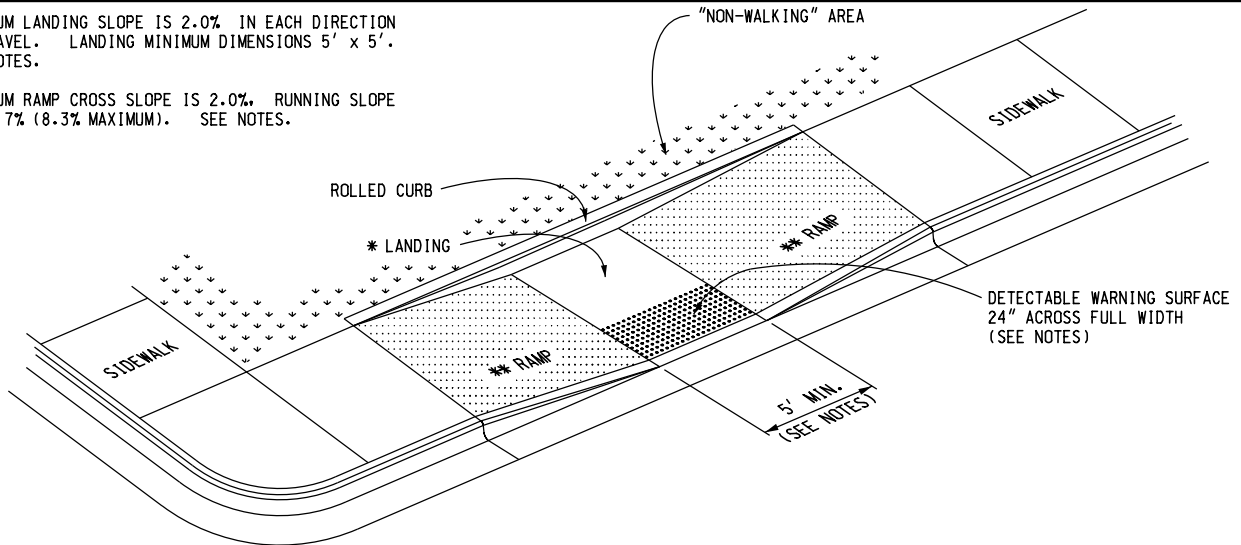
SECTION THROUGH CURB RAMP OPENING
(TYPICAL ALL RAMP TYPES)

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
**CURB RAMP AND
DETECTABLE WARNING DETAILS**

4-7-2022 F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 2 OF 7
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* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

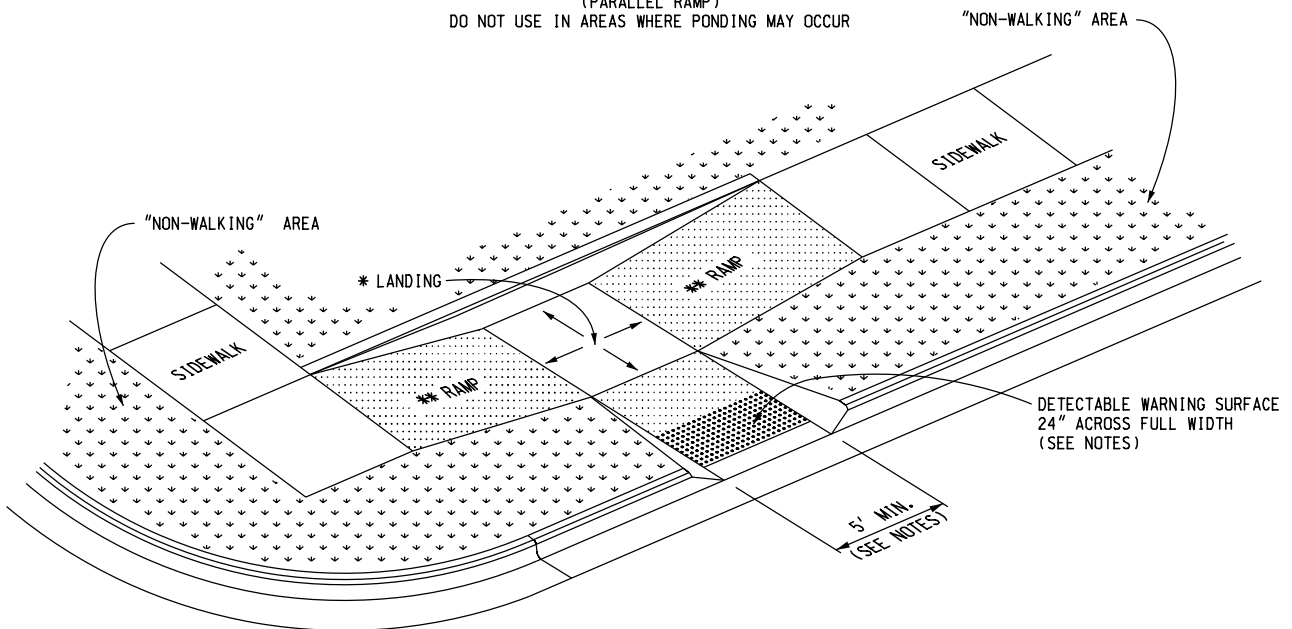
** MAXIMUM RAMP CROSS SLOPE IS 2.0%, RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



CURB RAMP TYPE P

(PARALLEL RAMP)

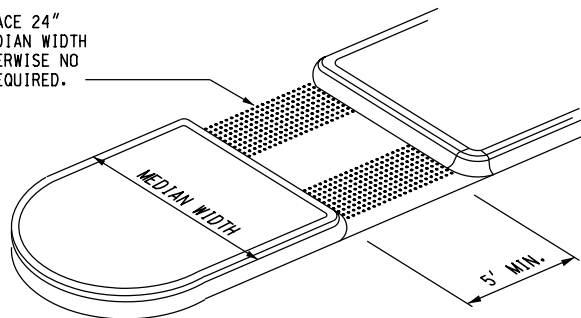
DO NOT USE IN AREAS WHERE PONDING MAY OCCUR



CURB RAMP TYPE C

(COMBINATION RAMP)

DETECTABLE WARNING SURFACE 24\"/>



CURB RAMP TYPE M

(MEDIAN ISLAND)

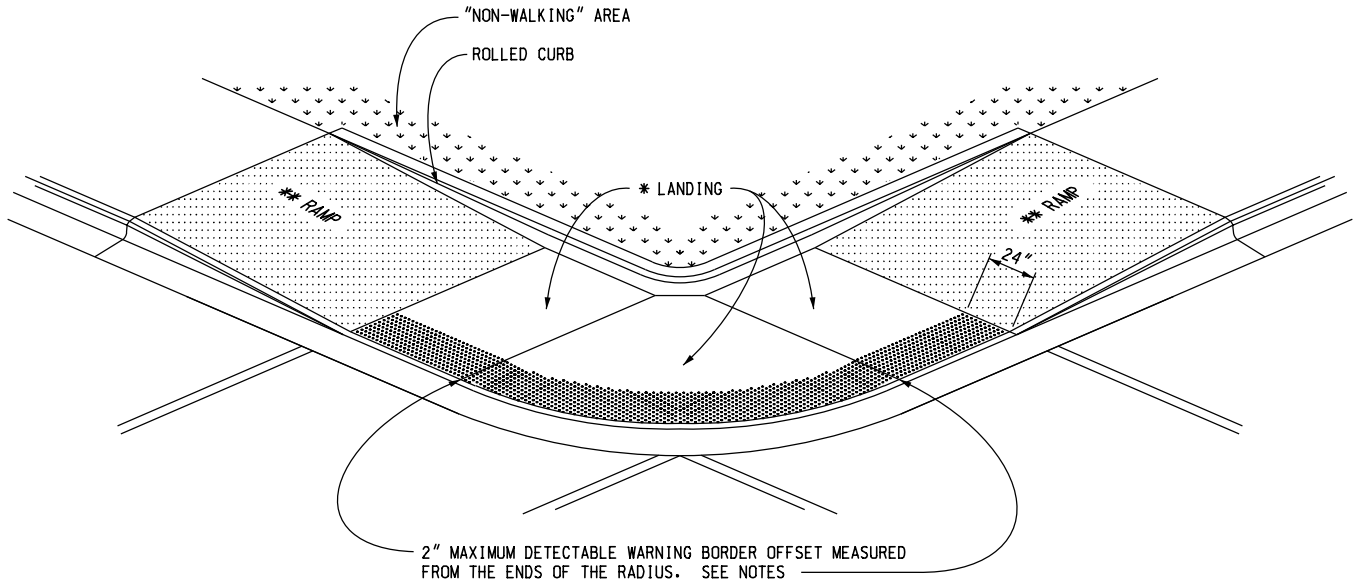
MICHIGAN DEPARTMENT OF TRANSPORTATION
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**CURB RAMP AND
DETECTABLE WARNING DETAILS**

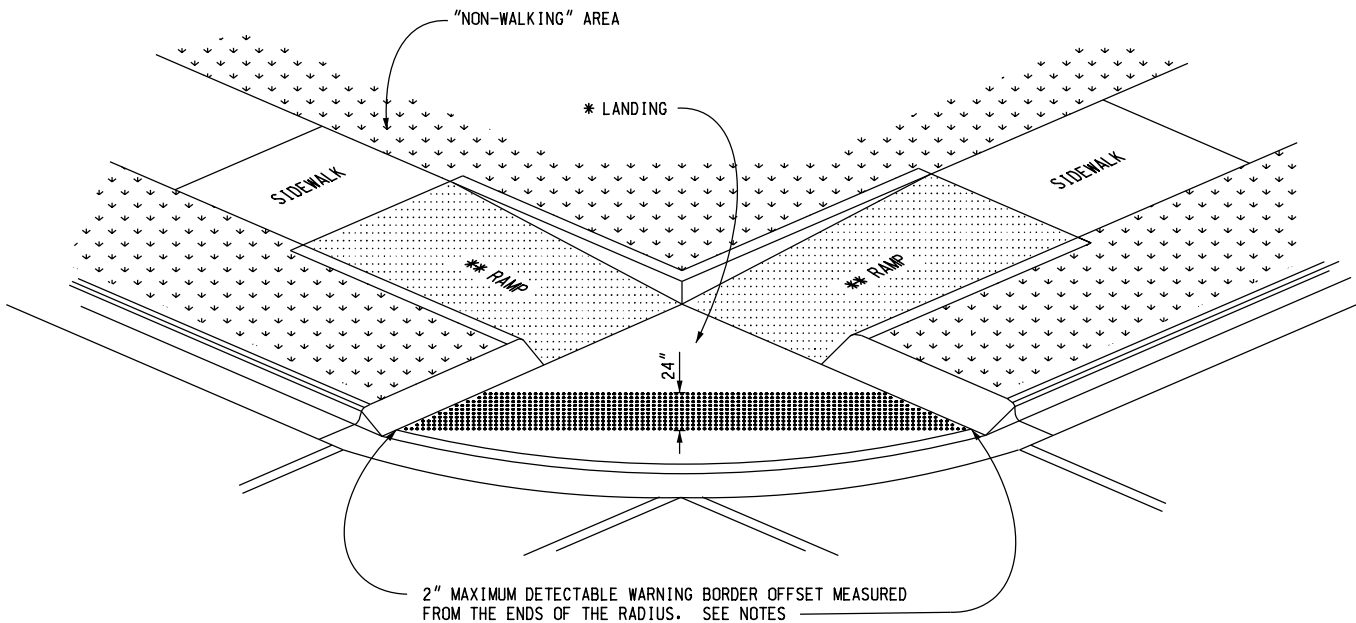
4-7-2022 F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 3 OF 7
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* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%, RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



(RADIAL DETECTABLE WARNING SHOWN)



(TANGENT DETECTABLE WARNING SHOWN)

CURB RAMP TYPE D

(DEPRESSED CORNER)

USE ONLY WHEN INDEPENDENT DIRECTIONAL RAMPS CAN NOT BE CONSTRUCTED FOR EACH CROSSING DIRECTION

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

CURB RAMP AND DETECTABLE WARNING DETAILS

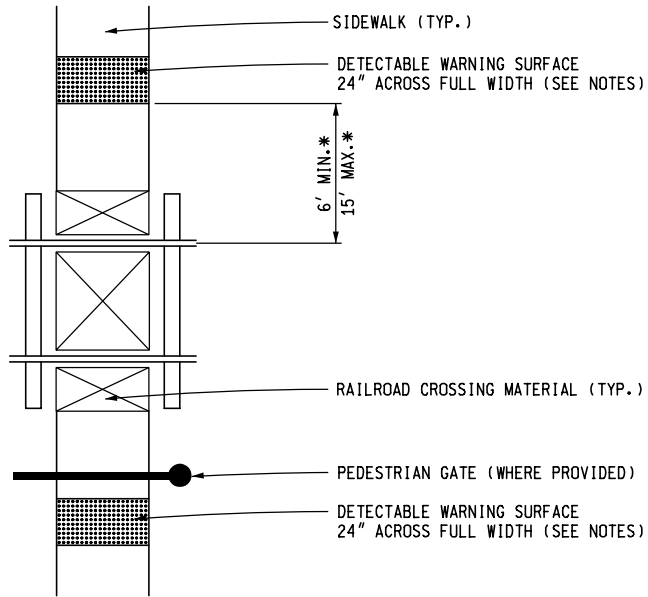
4-7-2022
F.H.W.A. APPROVAL

5-8-2020
PLAN DATE

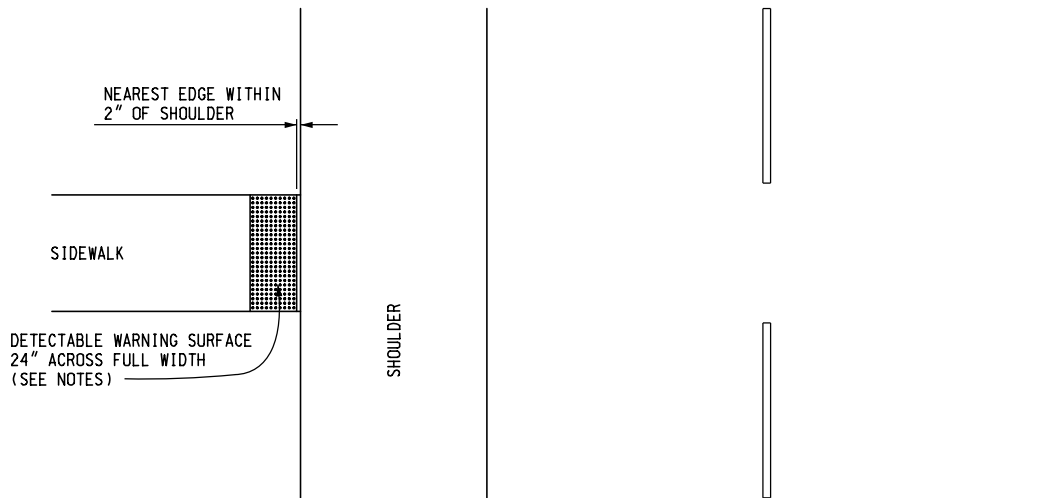
R-28-J

SHEET
4 OF 7

* THE DETECTABLE WARNING SURFACE SHALL BE LOCATED SO THAT THE EDGE NEAREST THE RAIL CROSSING IS 6' MINIMUM AND 15' MAXIMUM FROM THE CENTERLINE OF THE NEAREST RAIL. DO NOT PLACE DETECTABLE WARNING ON RAILROAD CROSSING MATERIAL.




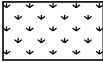



DETECTABLE WARNING AT RAILROAD CROSSING

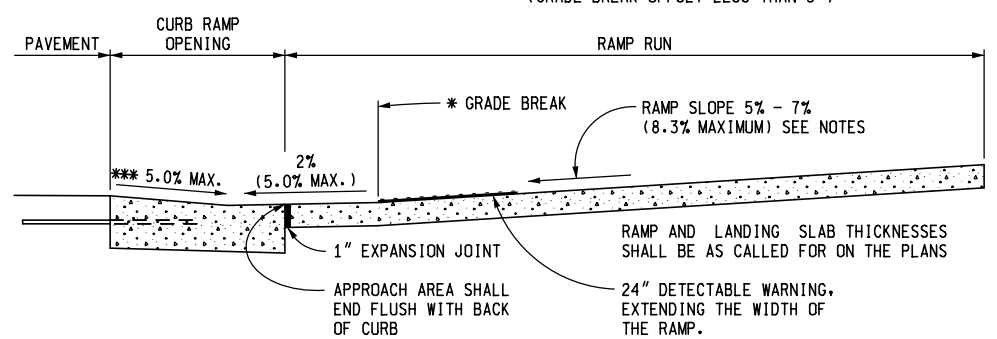
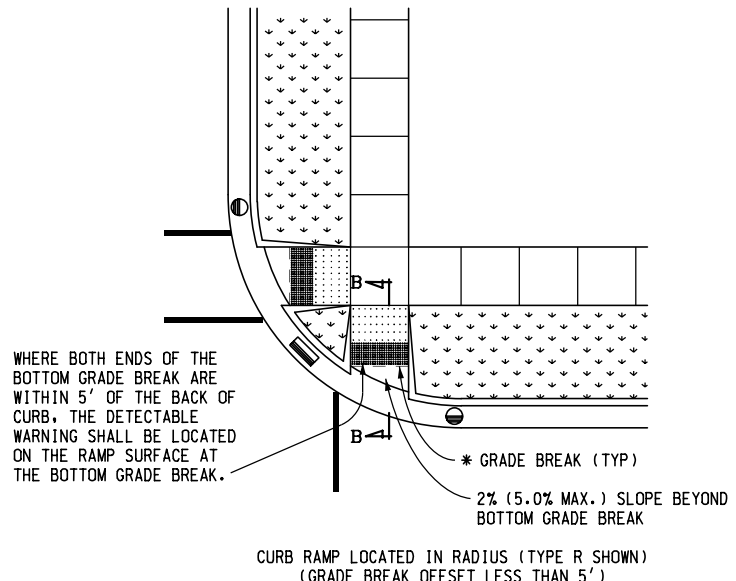
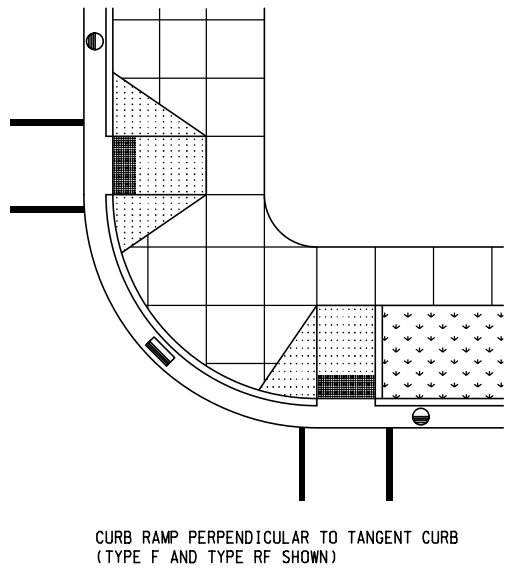
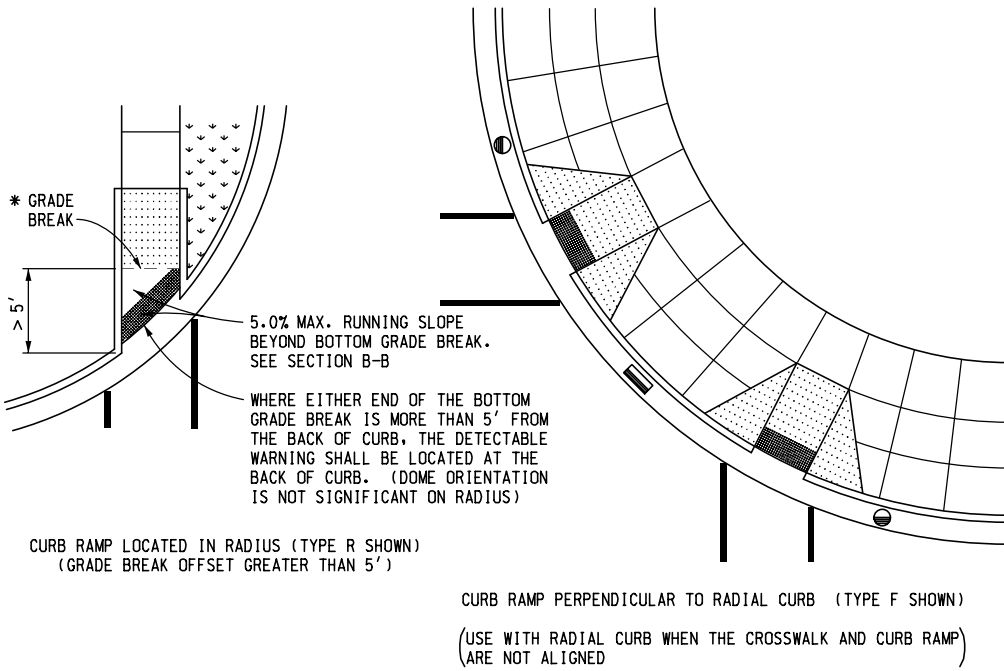


DETECTABLE WARNING AT FLUSH SHOULDER OR ROADWAY

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR		
CURB RAMP AND DETECTABLE WARNING DETAILS		
4-7-2022 F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J
		SHEET 5 OF 7

LEGEND

	SLOPED SURFACE
	DETECTABLE WARNING
	"NON-WALKING" AREA
	CROSSWALK MARKING
	PREFERRED LOCATION OF DRAINAGE INLET (TYP.)
	ALTERNATE LOCATION OF DRAINAGE INLET (TYP.)



* GRADE BREAKS AT THE TOP AND BOTTOM OF CURB RAMPS SHALL BE PERPENDICULAR TO THE DIRECTION OF TRAVEL.

*** TRANSITION ADJACENT GUTTER PAN CROSS SECTION TO PROVIDE 5.0% MAXIMUM COUNTER SLOPE ACROSS THE RAMP OPENING.

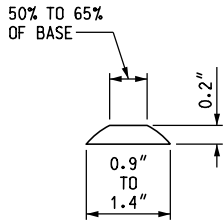
SEE SHEET 2 FOR CURB RAMP OPENING DETAILS.

**SECTION B-B
CURB RAMP ORIENTATION**

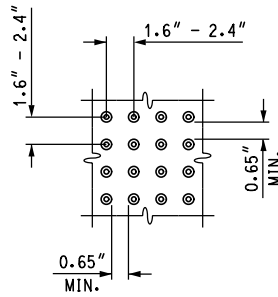
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

**CURB RAMP AND
DETECTABLE WARNING DETAILS**

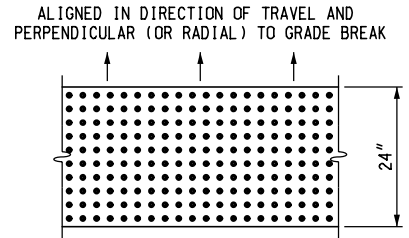
4-7-2022 F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 6 OF 7
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DOMES SECTION



DOMES SPACING



DOMES ALIGNMENT

DETECTABLE WARNING DETAILS

NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS IN THE PUBLIC RIGHT OF WAY.

CURB RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPS SHALL ALSO BE PROVIDED AT MARKED AND/OR SIGNALIZED MID-BLOCK CROSSINGS.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE RUNNING SLOPE.

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP. WHERE CONDITIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

WHEN 5' MINIMUM WIDTHS ARE NOT PRACTICABLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4' AND LANDINGS TO NOT LESS THAN 4' x 4'.

CURB RAMPS WITH A RUNNING SLOPE $\leq 5\%$ DO NOT REQUIRE A TOP LANDING. HOWEVER, ANY CONTINUOUS SIDEWALK OR PEDESTRIAN ROUTE CROSSING THROUGH OR INTERSECTING THE CURB RAMP MUST INDEPENDENTLY MAINTAIN A CROSS SLOPE NOT GREATER THAN 2% PERPENDICULAR TO ITS OWN DIRECTION(S) OF TRAVEL.

DETECTABLE WARNING SURFACE COVERAGE IS 24" MINIMUM IN THE DIRECTION OF RAMP/PATH TRAVEL AND THE FULL WIDTH OF THE RAMP/PATH OPENING EXCLUDING CURBED OR FLARED CURB TRANSITION AREAS. A BORDER OFFSET NOT GREATER THAN 2" MEASURED ALONG THE EDGES OF THE DETECTABLE WARNING IS ALLOWABLE. FOR RADIAL CURB THE OFFSET IS MEASURED FROM THE ENDS OF THE RADIUS.

FOR NEW ROADWAY CONSTRUCTION, THE RAMP CROSS SLOPE MAY NOT EXCEED 2.0%. FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE MAY BE TRANSITIONED TO MEET AN EXISTING ROADWAY GRADE. THE CROSS SLOPE TRANSITION SHALL BE APPLIED UNIFORMLY OVER THE FULL LENGTH OF THE RAMP.

THE MAXIMUM RUNNING SLOPE OF 8.3% IS RELATIVE TO A FLAT (0%) REFERENCE. HOWEVER, IT SHALL NOT REQUIRE ANY RAMP OR SERIES OF RAMPS TO EXCEED 15 FEET IN LENGTH NOT INCLUDING LANDINGS OR TRANSITIONS.

DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS. THE LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER THE LOCATION OF THE DRAINAGE STRUCTURE. WHERE EXISTING DRAINAGE STRUCTURES ARE LOCATED IN THE RAMP PATH OF TRAVEL, USE A MANUFACTURER'S ADA COMPLIANT GRATE. OPENINGS SHALL NOT BE GREATER THAN 1/2". ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

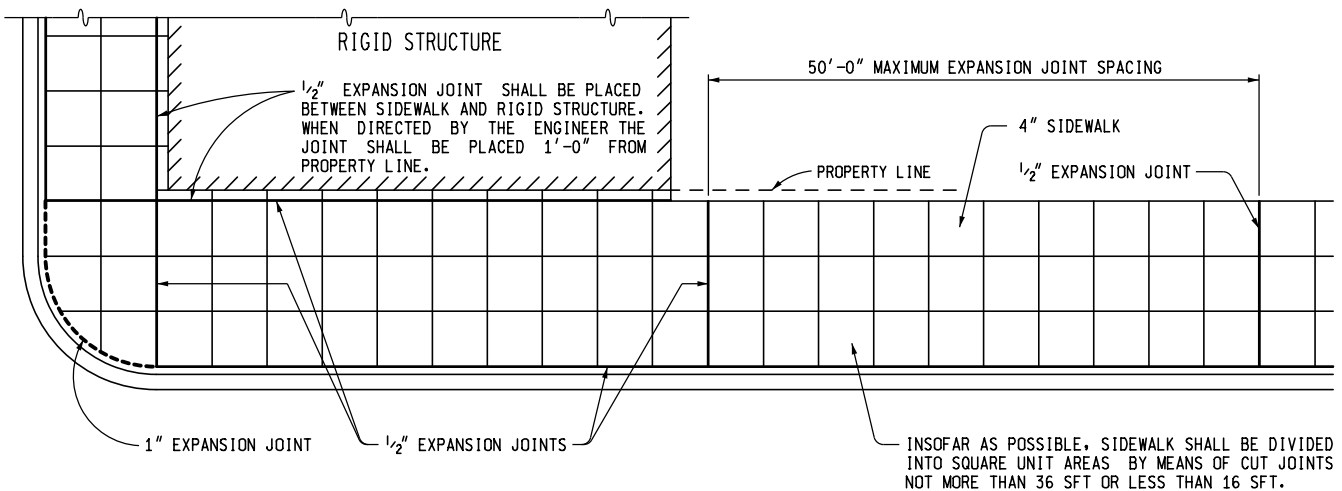
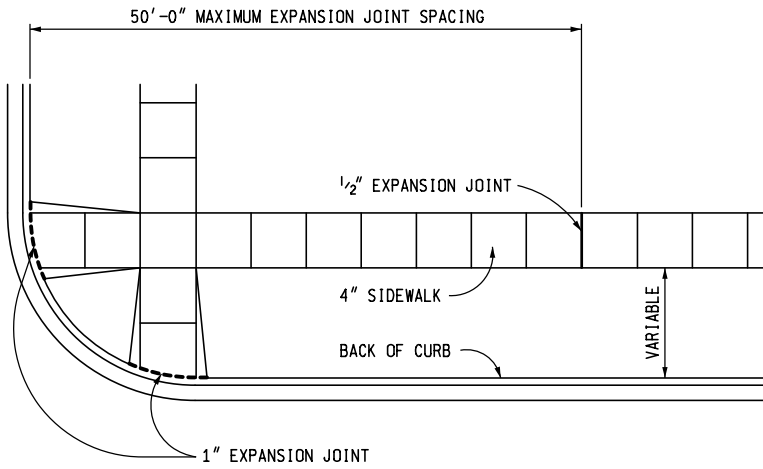
FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED CIRCULATION PATH LATERALLY CROSSES THE CURB RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPAVED SURFACE OR PERMANENT FIXED OBJECTS. WHERE THEY ARE NOT REQUIRED, FLARED SIDES CAN BE CONSIDERED IN ORDER TO AVOID SHARP CURB RETURNS AT RAMP OPENINGS.

DETECTABLE WARNING PLATES MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR HEAVING.

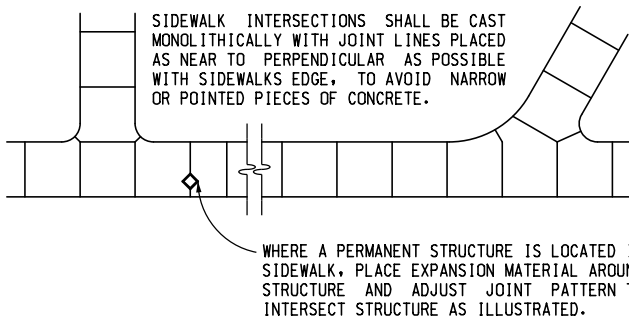
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

**CURB RAMP AND
DETECTABLE WARNING DETAILS**

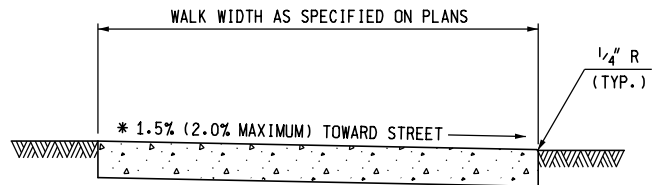
4-7-2022 F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 7 OF 7
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LOCATION OF JOINTS IN CONCRETE SIDEWALK



TYPICAL SIDEWALK JOINT LAYOUTS



4" CONCRETE SIDEWALK



PREPARED BY
DESIGN DIVISION

DRAWN BY: B.L.T.

CHECKED BY: W.K.P.

DEPARTMENT DIRECTOR
Kirk T. Stuedle

APPROVED BY: *Randy V. Puffel*
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: *Neil A. Van Pelt*
DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

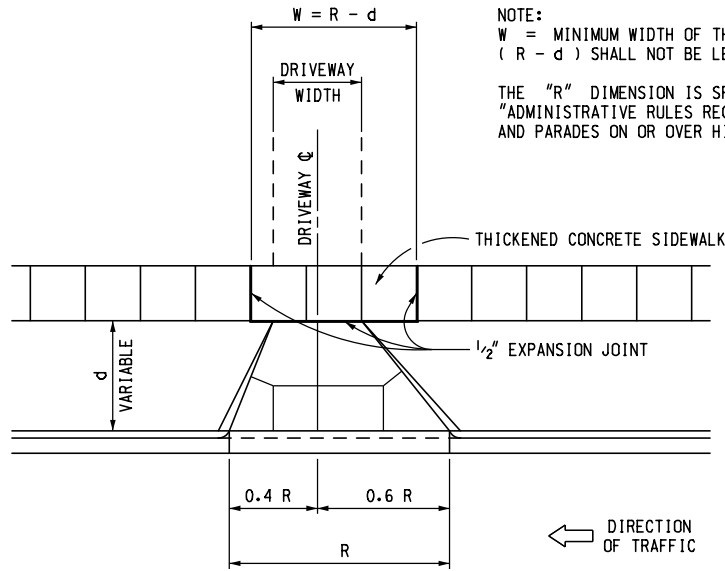
**DRIVEWAY OPENINGS
& APPROACHES,
AND CONCRETE SIDEWALK**

9-30-2014
F.H.W.A. APPROVAL

7-1-2014
PLAN DATE

R-29-I

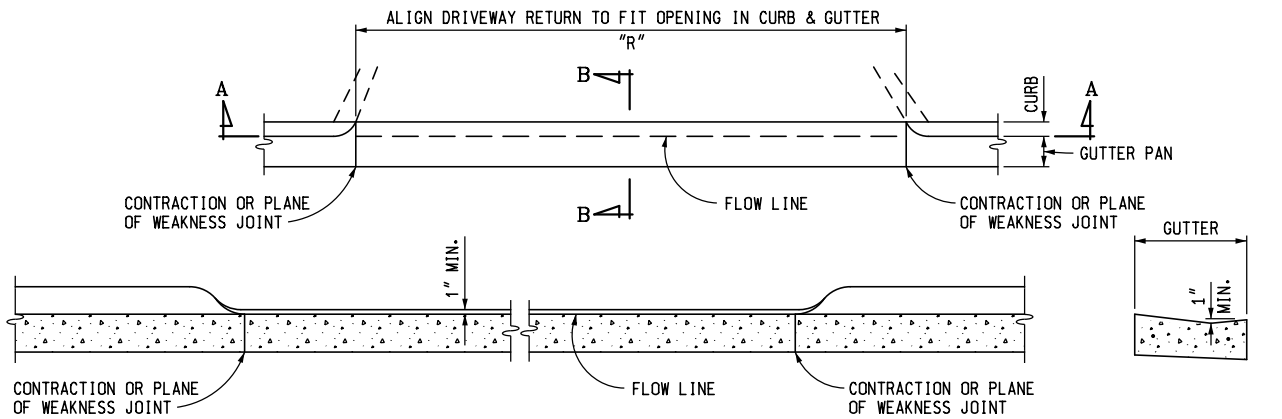
SHEET
1 OF 4



NOTE:
 W = MINIMUM WIDTH OF THICKENED CONCRETE SIDEWALK.
 (R - d) SHALL NOT BE LESS THAN DRIVEWAY WIDTH.

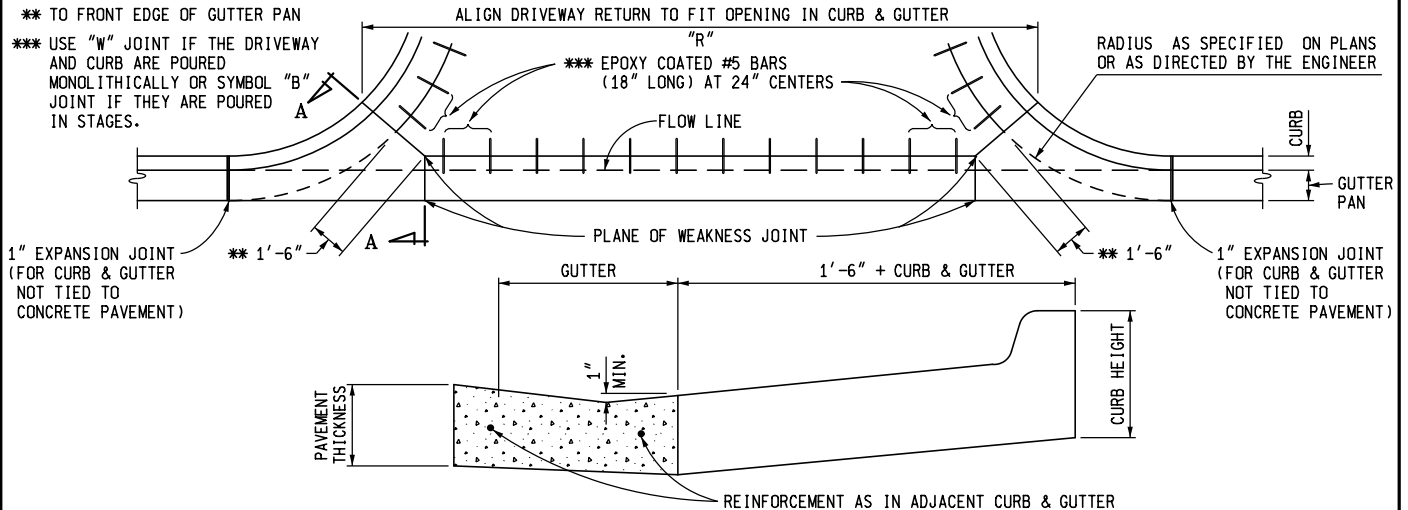
THE "R" DIMENSION IS SPECIFIED IN THE PUBLICATION
 "ADMINISTRATIVE RULES REGULATING DRIVEWAYS, BANNERS
 AND PARADES ON OR OVER HIGHWAYS".

CONCRETE DRIVEWAY OPENING LAYOUT



SECTION A - A
 CONCRETE DRIVEWAY OPENING, DETAIL L

SECTION B - B



SECTION A - A
 CONCRETE DRIVEWAY OPENING, DETAIL M

NOTE:
 FOR ROADWAYS WITH CONCRETE PAVEMENTS, LONGITUDINAL LANE TIES WILL
 BE CONTINUOUS THROUGH THE DRIVEWAY OPENING AND THE SPACING OF THE
 #5 BARS IN CONCRETE DRIVEWAYS SHALL BE ADJUSTED TO AVOID CONFLICT
 WITH THE LONGITUDINAL LANE TIES.

MICHIGAN DEPARTMENT OF TRANSPORTATION
 BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

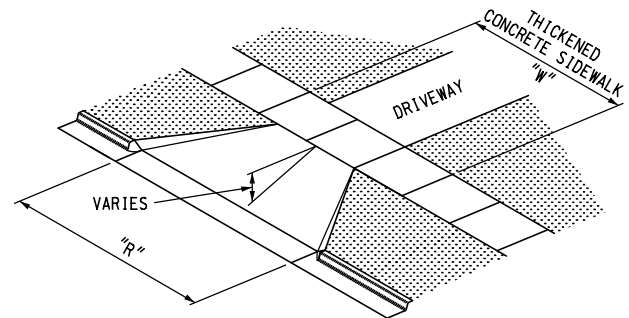
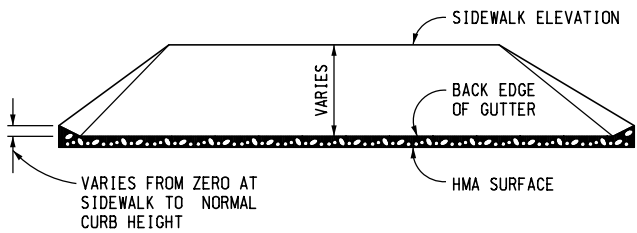
**DRIVEWAY OPENINGS
 & APPROACHES,
 AND CONCRETE SIDEWALK**

9-30-2014
 F.H.W.A. APPROVAL

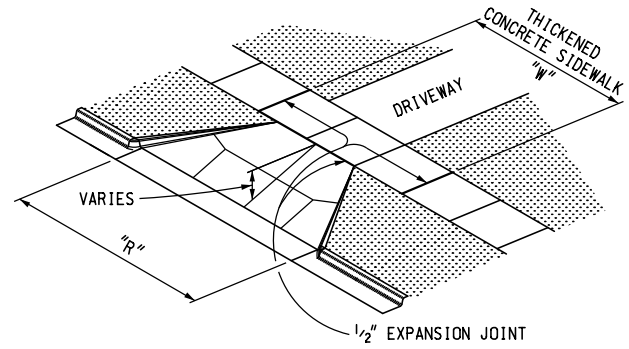
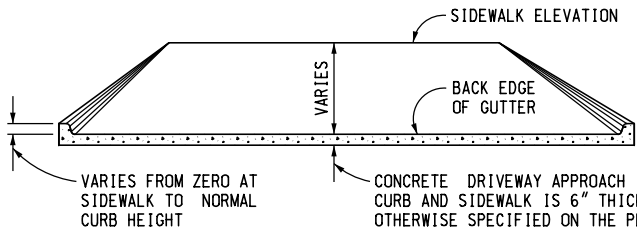
7-1-2014
 PLAN DATE

R-29-I

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 2 OF 4

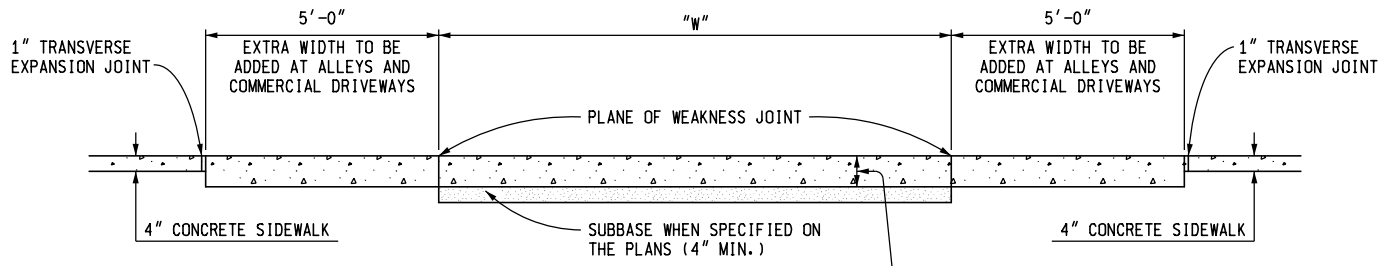


HMA DRIVEWAY APPROACH
(TO BE USED WITH DETAIL L)



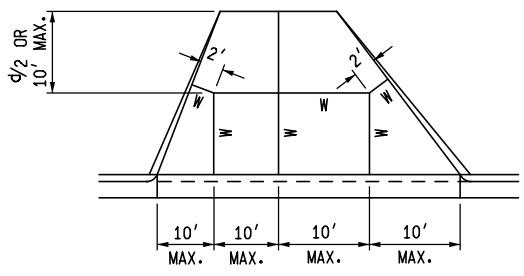
NOTES:
MONOLITHIC CURB IS INCLUDED IN THE CONCRETE DRIVEWAY APPROACH QUANTITY.
REINFORCEMENT IS NOT REQUIRED UNLESS SPECIFIED ON THE PLANS. WHEN REINFORCEMENT IS SPECIFIED, SEE CHART ON THIS SHEET.

CONCRETE DRIVEWAY APPROACH
(TO BE USED WITH DETAIL L OR M)



WHEN CONCRETE DRIVEWAY APPROACH IS SPECIFIED, THE THICKENED CONCRETE SIDEWALK THICKNESS IS EQUAL TO THE THICKNESS OF THE CONCRETE DRIVEWAY APPROACH. WHEN HMA DRIVEWAY APPROACH IS SPECIFIED, THE THICKENED CONCRETE SIDEWALK THICKNESS IS 6" MIN.

THICKENED CONCRETE SIDEWALK



ADJUST DRIVEWAY JOINTS AS NEEDED TO ALIGN WITH ANY COINCIDING TRANSVERSE PAVEMENT JOINTS,
JOINT LAYOUT IS AS INDICATED OR AS DIRECTED BY THE ENGINEER.

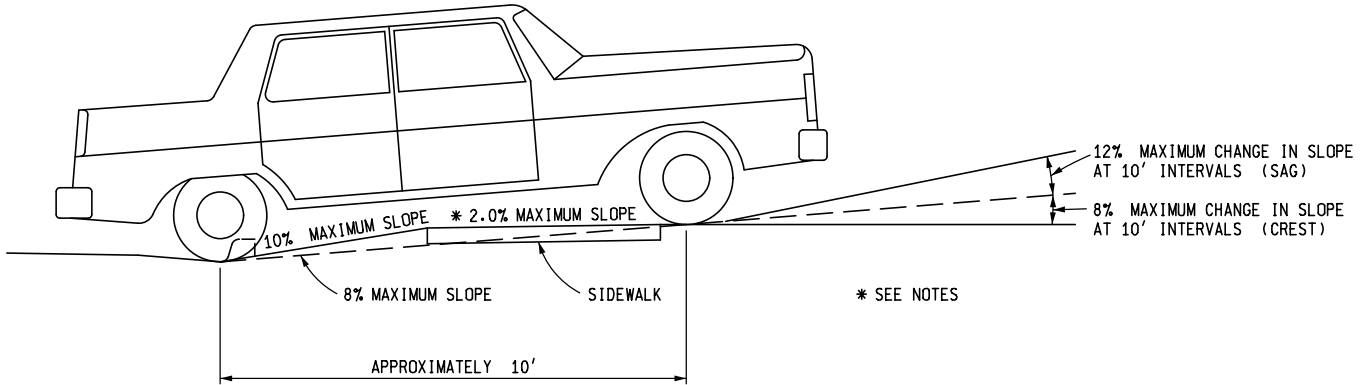
INTERMEDIATE DRIVEWAY JOINT DETAILS

REINFORCEMENT FOR CONCRETE DRIVEWAYS

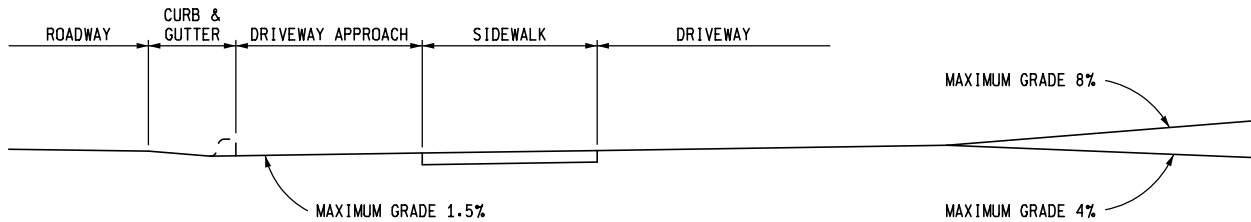
CONCRETE DRIVEWAY THICKNESS	WIRE SIZE (6" x 6" MESH)	AVERAGE WEIGHT (LBS/100 SFT)
LESS THAN 8"	W1.4	21
	W2.9	42
8" OR GREATER	USE WIRE FABRIC REINFORCEMENT SPECIFIED ON STANDARD PLAN R-37-SERIES	

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

DRIVEWAY OPENINGS & APPROACHES, AND CONCRETE SIDEWALK



LOW VOLUME COMMERCIAL OR RESIDENTIAL DRIVEWAY SLOPES



COMMERCIAL DRIVEWAY PROFILE FOR MAJOR TRAFFIC GENERATORS

NOTES:

FOR DRIVEWAY DESIGN REFER ALSO TO "ADMINISTRATIVE RULES REGULATING DRIVEWAYS, BANNERS, AND PARADES ON OR OVER HIGHWAYS" AND GEOMETRIC DESIGN G-680-SERIES, COMMERCIAL DRIVEWAYS.

FOR CURB AND GUTTER DETAILS, SEE STANDARD PLAN R-30-SERIES.

TRANSVERSE SIDEWALK SLOPES ARE TYPICALLY 1.5% (2.0% MAXIMUM). IN ORDER TO MEET SITE CONDITIONS, IF THE TRANSVERSE SLOPE IS REQUIRED TO BE LESS THAN 1.5%, LONGITUDINAL DRAINAGE MUST BE PROVIDED.

WHEN SETTING GRADES FOR COMMERCIAL DRIVES, THE TYPES OF VEHICLES USING THE DRIVE SHOULD BE CONSIDERED.

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR DRIVEWAY OPENINGS & APPROACHES, AND CONCRETE SIDEWALK		
9-30-2014 F.H.W.A. APPROVAL	7-1-2014 PLAN DATE	R-29-I
		SHEET 4 OF 4

SECTION 32 16 13

CONCRETE CURBS & GUTTERS

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes work required for concrete curbs and gutters.

1.02 REFERENCES:

- A. MDOT – Michigan Department of Transportation, “*2020 Standard Specifications for Construction*”.
- B. ASTM – American Society of Testing Materials, latest edition.

1.03 SUBMITTALS:

A. Pre-Construction:

- 1. Concrete Mix Designs:
 - a. Provide a concrete mix design submittals for each mix of concrete meeting the requirements of MDOT Division 10, prepared by independent lab, two weeks prior to paving. Contractor may submit concrete mix designs previously approved by MDOT.
- 2. Material Certifications:
 - a. Provide certifications of quality by producer for the following:
 - 1) Cement.
 - 2) Aggregates.
 - 3) Admixtures.
 - 4) Curing Compound.
 - 5) Steel Reinforcement.
 - 6) Pavement marking materials.
- 3. Batch Tickets:
 - a. In accordance with MDOT 1001.03.A.4.

B. Post-Construction:

- 1. Concrete Test Specimens:
 - a. Contractor shall deliver acceptance cylinders to the place of inspection and testing.

1.04 JOB CONDITIONS:

A. Weather and Temperature Limitations:

- 1. Protect the concrete from being damaged by rain.
- 2. Protect the concrete from freezing until it has attained a minimum compressive strength of 1,000 psi.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Concrete:

- 1. Use Concrete Grade 3500 per MDOT Section 1004.

- B. Steel Reinforcement: MDOT Section 905, epoxy coated.
- C. Joint Filler: MDOT Section 914.
- D. Curing Compound: MDOT Section 903.06, white membrane curing compound.
- E. Chemical Admixtures: MDOT Section 903.
 - 1. Use of calcium chloride is not allowed.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Removal: Remove all existing pavement structure required, as shown on the drawings. MDOT 204.03.A.2.
- B. Dispose of all material removed during construction.
- C. Subgrade: Prepare base per MDOT 602.03.B.
 - 1. Obtain approval prior to placing sub-base and forms.
 - 2. Construct to the required line, grade and cross-section per MDOT 205.03.N.
 - 3. Compaction: Compact to not less than ninety-five percent (95%) of the maximum density using the Michigan Cone Test.
- D. Contractor shall notify Owner or Owner's representative of plans to pour concrete a minimum of 24-hours in advance the concrete pour. The Contractor shall provide a minimum of 2 hours between forming and pouring to allow for review. Failure to provide notice will be considered cause to reject the work.

3.02 PERFORMANCE:

- A. Subbase:
 - 1. Thickness: Conform to design cross section.
 - 2. Construction to the required line, grade and cross section.
 - 3. Compaction: Compact to not less than ninety-five percent (95%) of the maximum density using the Michigan Cone Test.
- B. Concrete Curb and Gutter:
 - 1. Place concrete on moist base.
 - 2. Construct curbing mechanically using slip forms or place with fixed forms including face forms.
 - 3. Epoxy coated steel reinforcement:
 - a. Place in accordance with Owner's standard and per the drawings.
 - b. Reinforcement shall be spliced by lapping at least 10 inches and securing with two (2) ties per splice.
 - c. Lane ties, where required, shall be placed in the correct position and spaced in accordance with the drawings.
 - d. At locations where proposed concrete abuts existing concrete, two #4 epoxy coated steel reinforcing bars shall be epoxy anchored into the existing concrete.
 - 4. Concrete shall be consolidated during placement using a spade or vibration.
 - 5. Finishing:
 - a. Round all exposed edges to a radius of approximately ¼ inch including transverse joints.
 - b. Do not add water to the concrete surface to aid finishing.

- c. Apply broom finish.
- 6. After removing forms and before applying curing compound, repair all honeycombed areas or voids with Type R-2 mortar. Excessive voids or honeycomb will require removal and replacement.
- 7. Joints:
 - a. Contraction joints shall be spaced evenly on 10-foot centers.
 - b. Expansion joints shall be full depth and located as follows:
 - 1) 10 foot each side of curb castings
 - 2) At the spring points of curb radius
 - 3) Every 250 feet
- 8. Curing and Protection: Concrete shall be cured and protected as specified under MDOT Section 602.03.M and 602.03.T. Curing compound shall be applied immediately following finishing operations.

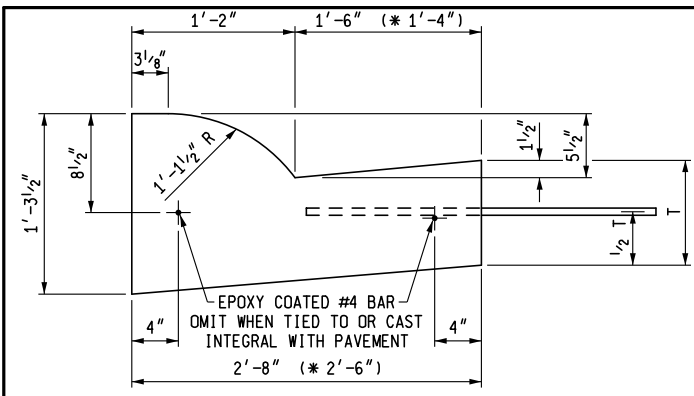
3.03 STRUCTURE COVER ADJUSTMENT:

- A. MDOT 403.03.C:
 - 1. Adjust structure cover to finish grade with top of curb and pavement edge set to the proposed grade.
 - 2. Tilt casting towards back of curb a maximum of 1 inch and transition gutter line of concrete curb to gutter line of casting.
 - 3. Set casting in a bed of concrete or mortar prior to pouring curb.
 - 4. Concrete or mortar bed inside of casting shall be troweled smooth and shall be free of voids.

3.04 TESTING AND INSPECTION:

- A. Observation: By designated authorized representative.
- B. Acceptance Testing:
 - 1. If initial testing indicates failed or nonconformance to specification, perform additional test. If further testing verifies nonconformance, additional testing shall be paid by Contractor. Replace nonconforming material at no additional cost to Owner.
- C. Tolerance: Gutter and top of curb shall be finished within 3/16 inch in 10 feet when checked with a 10-foot straight edge.

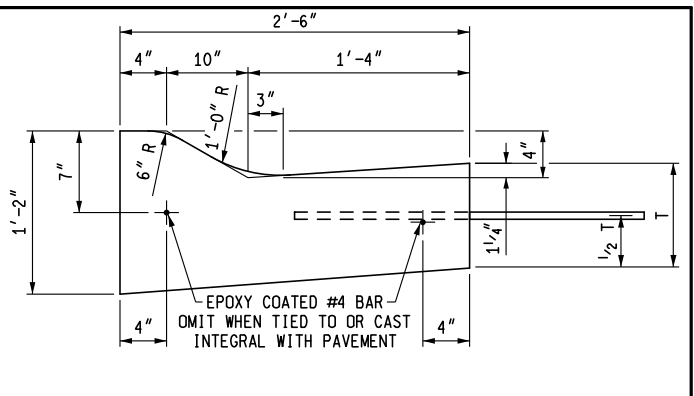
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(* GUTTER PAN WIDTH MAY BE REDUCED WHEN APPROVED BY THE ENGINEER)

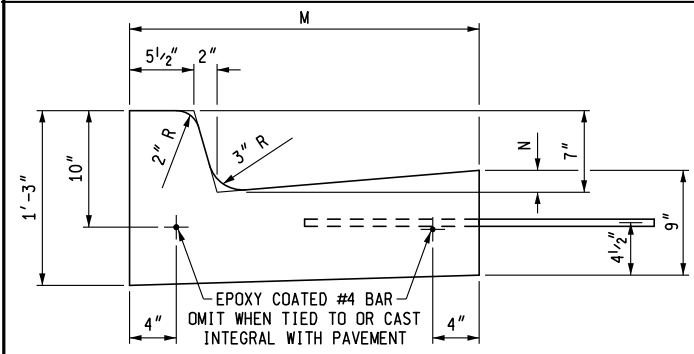
DETAIL	DIMENSION	LANE TIES	CONCRETE CYD / LFT	CONCRETE CYD / LFT
	T			
B1	9"	AS SHOWN	0.0900	(* 0.0855)
B2	9"	OMITTED	0.0900	(* 0.0855)
B3	10"	AS SHOWN	0.0941	(* 0.0894)

B



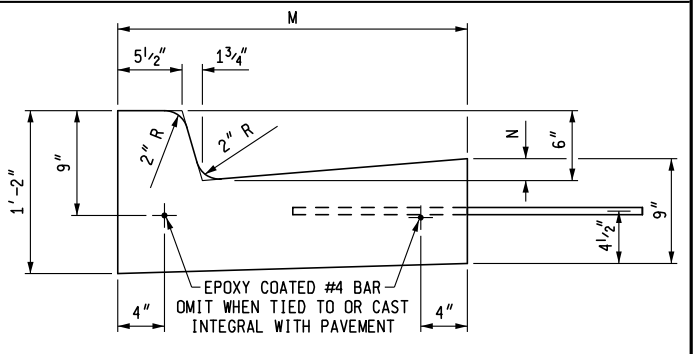
DETAIL	DIMENSION	LANE TIES	CONCRETE CYD / LFT
	T		
D1	9"	AS SHOWN	0.0788
D2	9"	OMITTED	0.0788
D3	10"	AS SHOWN	0.0826

D



DETAIL	DIMENSION		LANE TIES	CONCRETE CYD / LFT
	M	N		
C1	1'-6"	7/8"	AS SHOWN	0.0506
C2	1'-6"	7/8"	OMITTED	0.0506
C3	2'-0"	1 3/8"	AS SHOWN	0.0632
C4	2'-0"	1 3/8"	OMITTED	0.0632
C5	2'-6"	1 7/8"	AS SHOWN	0.0757
C6	2'-6"	1 7/8"	OMITTED	0.0757

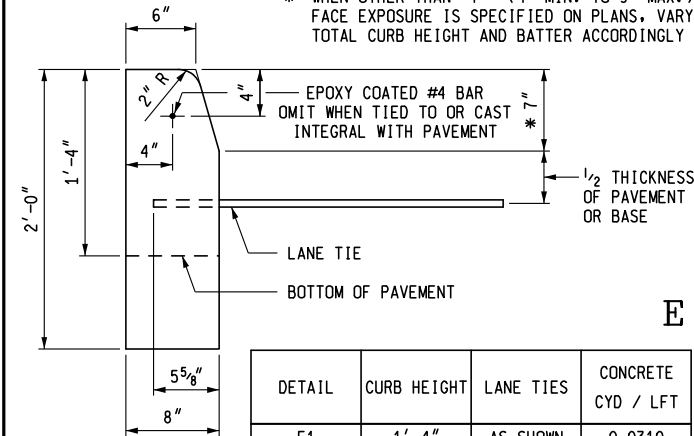
C



DETAIL	DIMENSION		LANE TIES	CONCRETE CYD / LFT
	M	N		
F1	1'-6"	7/8"	AS SHOWN	0.0484
F2	1'-6"	7/8"	OMITTED	0.0484
F3	2'-0"	1 3/8"	AS SHOWN	0.0610
F4	2'-0"	1 3/8"	OMITTED	0.0610
F5	2'-6"	1 7/8"	AS SHOWN	0.0737
F6	2'-6"	1 7/8"	OMITTED	0.0737

F

* WHEN OTHER THAN 7" (4" MIN. TO 9" MAX.)
FACE EXPOSURE IS SPECIFIED ON PLANS. VARY
TOTAL CURB HEIGHT AND BATTER ACCORDINGLY



DETAIL	CURB HEIGHT	LANE TIES	CONCRETE CYD / LFT
E1	1'-4"	AS SHOWN	0.0310
E2	1'-4"	OMITTED	0.0310
E4	2'-0"	OMITTED	0.0477

E

MDOT
Michigan Department of Transportation

PREPARED BY
DESIGN DIVISION

DRAWN BY: B.L.T.

CHECKED BY: W.K.P.

DEPARTMENT DIRECTOR
Kirk T. Stuedle

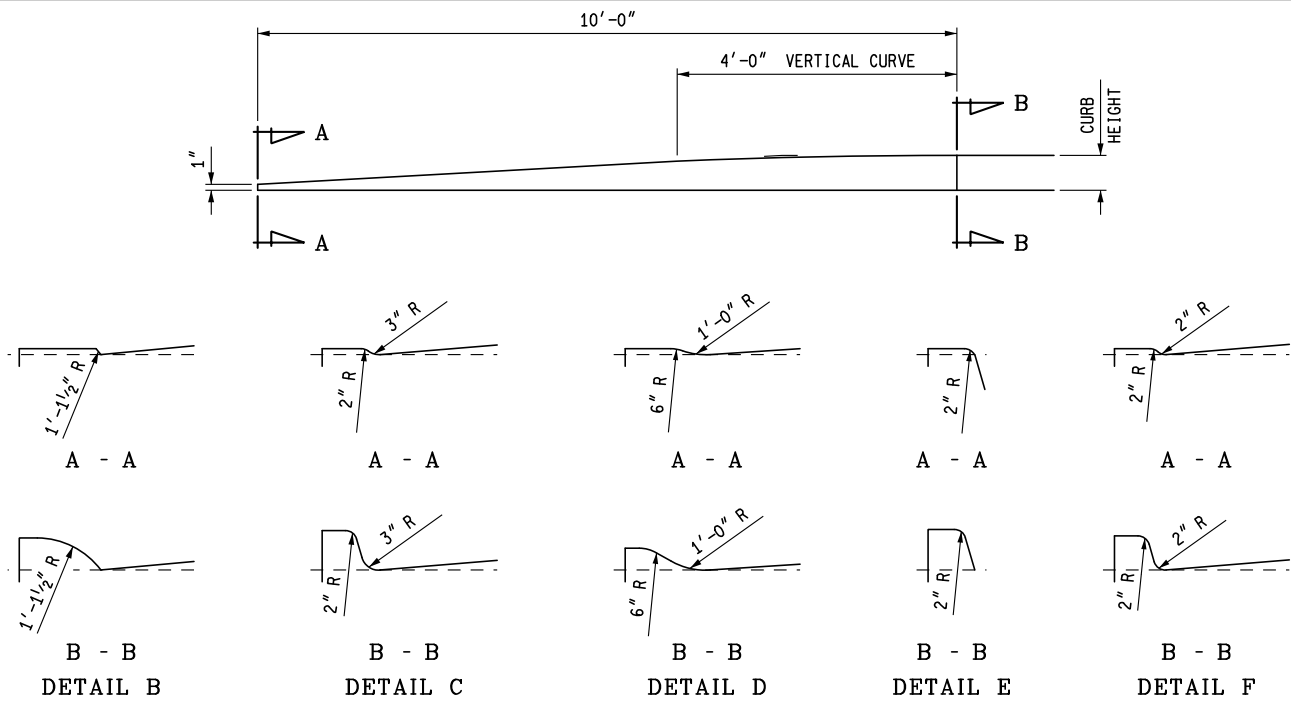
APPROVED BY: Randy U. Puffel
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: Mark A. Van Pelt
DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT

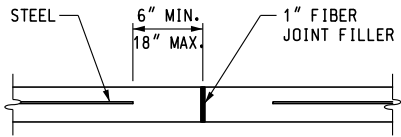
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

**CONCRETE CURB AND
CONCRETE CURB & GUTTER**

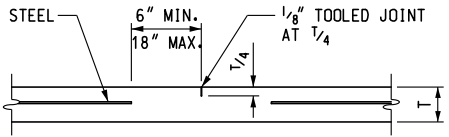
9-30-2014 F.H.W.A. APPROVAL	2-6-2014 PLAN DATE	R-30-G	SHEET 1 OF 2
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CONCRETE CURB, CURB AND GUTTER ENDINGS



1" FIBER JOINT FILLER



CONTRACTION JOINT

NOTES:

- CURB AND GUTTER RADII SHALL BE DIMENSIONED TO THE FRONT EDGE OF THE GUTTER PAN OR EDGE OF PAVEMENT.
- CONCRETE CURB AND GUTTER ENDINGS WILL BE PAID FOR IN LINEAR FEET OF THE ADJACENT CURB DETAIL.
- JOINTS SHALL BE PLACED AT RIGHT ANGLES TO THE EDGE OF CONCRETE CURB AND GUTTER.
- JOINTS DETAILED ON THE PLANS SHALL SUPERSEDE THOSE SPECIFIED ON THIS STANDARD PLAN.
- BOTTOM SLOPE OF CURB AND GUTTER STRUCTURE MAY BE THE SAME SLOPE AS BOTTOM OF PAVEMENT. BACK OF CURB AND VERTICAL EDGE OF GUTTER PAN MAY HAVE A MAXIMUM 1/2" BATTER TO FACILITATE FORMING.
- WHEN CURB AND GUTTER IS CAST INTEGRALLY, SEE CURRENT STANDARD PLAN R-31-SERIES.
- ALL JOINTS FOR CURB OR CURB AND GUTTER ARE INCLUDED IN THE PAY ITEM FOR THE CURB OR CURB AND GUTTER.

JOINTS IN CURB OR CURB AND GUTTER NOT TIED TO CONCRETE PAVEMENT; ADJACENT TO CONCRETE BASE COURSE; OR ADJACENT TO HMA PAVEMENT:

- A. PLACE 1" FIBER JOINT FILLER AT 400' MAXIMUM INTERVALS.
- B. PLACE 1" FIBER JOINT FILLER AT SPRING POINTS OF INTERSECTING STREETS.
- C. PLACE 1/2" ISOLATION JOINT AT CATCH BASINS PER STANDARD PLAN R-37-SERIES.
- D. PLACE CONTRACTION JOINTS AT 40' MAXIMUM INTERVALS.

JOINTS IN CURB OR CURB AND GUTTER TIED TO JOINTED PAVEMENT

- A. PLACE 1" FIBER JOINT FILLER OPPOSITE ALL TRANSVERSE EXPANSION JOINTS IN PAVEMENT.
- B. PLACE 1/2" ISOLATION JOINT AT CATCH BASINS PER STANDARD PLAN R-37-SERIES.
- C. PLACE CONTRACTION JOINTS OPPOSITE ALL TRANSVERSE CONTRACTION JOINTS IN PAVEMENT.
- D. A SYMBOL (B) JOINT SHALL BE PLACED BETWEEN CURB OR CURB AND GUTTER AND ADJACENT CONCRETE PAVEMENT AS SPECIFIED ON STANDARD PLAN R-41-SERIES.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

**CONCRETE CURB AND
CONCRETE CURB & GUTTER**

9-30-2014 F.H.W.A. APPROVAL	2-6-2014 PLAN DATE	R-30-G	SHEET 2 OF 2
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SECTION 32 18 16

PLAYGROUND SAFETY SURFACE

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Furnish all labor, materials and equipment required to install the poured-in-place playground rubber surfacing as indicated on the drawings or as approved and specified herein. The work shall include any incidentals required to provide a finished job.

1.02 RELATED SECTIONS

- A. SECTION 11 68 13 – PLAYGROUND EQUIPMENT.

1.03 REFERENCE SAFETY GUIDELINES AND TESTING STANDARDS:

- A. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension.
- B. ASTM D624 Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
- C. ASTM D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.
- D. ASTM D2859 Standard Test Method for Flammability of Finished Textile Floor Covering Materials.
- E. ASTM E303 Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester.
- F. ASTM F1951 Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.

1.04 PERFORMANCE REQUIREMENTS

- A. Flammability (ASTM D2859): Pass.
- B. Tensile Strength (ASTM D412): 60 psi (413 kPa).
- C. Tear Resistance (ASTM D624): 140%.
- D. Water Permeability: 0.4 gal/yd²/second.
- E. Accessibility: Comply with requirements of ASTM F1951.
- F. Dry Static Coefficient of Friction (ASTM D2047): 1.0.
- G. Wet Static Coefficient of Friction (ASTM D2047): 0.9.
- H. Dry Skid Resistance (ASTM E303): 89.
- I. Wet Skid Resistance (ASTM E303): 57.

1.05 SUBMITTALS

- A. Comply with Section 01 33 00 Submittal Procedures.
- B. Product Data: Submit manufacturer's product data and installation instructions.
- C. Verification Samples: Submit manufacturer's standard verification samples of 9" x 9" minimum for each color specified for ENGINEERS approval prior to placement of order of remaining materials. If material is ordered prior to ENGINEERS approval, CONTRACTOR will be responsible for any restocking charges without any additional compensation by OWNER.
- D. Quality Assurance/Control Submittals: Submit the following:
 - 1. Certificate of qualifications of the surfacing installer.
- E. Closeout Submittals: Submit the following:
 - 1. Warranty documents specified herein.

1.06 QUALITY ASSURANCE

- A. Utilize an installer trained and approved by the manufacturer, having experience with at least 5 other projects of the scope and scale of the work described in this section. Contractor to provide project name, location and contact information upon request of ENGINEER.

1.07 DELIVERY & STORAGE

- A. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Store all materials in accordance with manufacturer's instructions.
- B. Store materials protected from exposure to weather and / or other harmful environmental conditions and at a minimum temperature of 50 degrees F and a maximum temperature of 90 degrees F.

1.08 PROJECT SITE CONDITIONS

- A. Install surfacing on a dry sub-surface with no prospect of rain within initial drying period, and with an ambient air temperature between 40 degrees F and 90 degrees F. Installation outside the specified temperature range allowed only with ENGINEERS approval.
- B. Protect adjacent surfaces during installation and curing

1.09 WARRANTY

- A. Playground surface shall maintain required impact attenuation characteristics and be guaranteed against defects in workmanship and materials for a period of no less than five years from date of completion of work. Maintenance requirements shall be maintained for duration of warranty period.

PART 2 – PRODUCTS

2.01 GENERAL

- A. GT-Impax PIP Safety Surface or approved equal from list as follows.
 - 1. Surface America – Playbound (surfaceamerica.com/)
 - 2. Fibar EPDM Safety Surface - fibar.com/playgrounds/pip/pip.htm
 - 3. Spectraturf EPDM Safety Surface (Spectraturf.com)
 - 4. Perma-Play EPDM Safety Surface (pro-techssurfacing.com/)
 - 5. Softline Solutions EPDM Safety Surface (softlinesolutions.net/)
- B. Equivalent Products - Requests for substitution of specific products shall be allowed in writing to ENGINEER 7 days or more prior to bid opening. No requests will be considered by ENGINEER within 7 days of bid opening.
- C. Specificity of Design - Material selection is based on specific program requirements, physical constraints within the site, safety, and risk management. Requests for Product Substitution may be subject to additional subjective criteria.
- D. Variance -The Contractor/manufacturer shall submit, prior to their bid, a list along with technical specifications and cut sheets of all variances from these specifications.
- E. Playground surfacing shall be a 2-layer poured-in-place playground surfacing system meeting the requirements of this specification and available from a reputable manufacturer. System shall consist of:
 - 1. A base (cushion) layer of styrene butadiene rubber (SBR) & high-grade aromatic polyurethane and
 - 2. A top (wear) layer of EPDM (ethylene propylene diene monomer) rubber.

2.01 AGGREGATE SUBBASE

- A. Subbase shall be 6 inches of 21AA Crushed Aggregate installed and compacted in 3 inch lifts. Compaction shall be at 95% Standard Proctor Compaction.
- B. Supply and install layer of non-woven geotextile fabric TerraTex® N05 or approved equal between sand subbase and aggregate subbase.

2.02 PRIMERS

- A. A single component moisture cured polyurethane primer, or a two-component troweled on underwater primer.

2.03 BINDER:

- A. Elastic Polyurethane Pre-Polymer, MDI based. Low odor, containing no TDI Monomers.

2.04 BASE LAYER

- A. Base shall be recycled SBR (styrene butadiene rubber), cryogenically processed, chopped to 1-3mm, or 3/8" shredded granules containing less than 4% dust, packed in labeled, moisture-proof bags. Base layer shall consist of 100% recycled materials mixed with a polyurethane binder.

B. Select base layer thickness to meet ASTM F1292 requirements for critical fall height.

2" for 5' critical fall height

2 1/2" for 6' or 7' critical fall height

3" for 8' critical fall height

4" for 10' critical fall height

C. Color: Black

2.05 TOP LAYER

A. Poured-In-Place Top: Man-made rubber blend containing a minimum of 30% post-industrial recycled EPDM (ethylene propylene diene monomer) high-grade aromatic or aliphatic polyurethane having a density of 1.5-0.05. Product shall be delivered from manufacturer appropriately sized for the specified thickness.

B. Nominal thickness of 0.5", with a minimum 0.4" and a maximum 0.6".

C. Colors: Two top layer colors of 50% black and 50% from one standard colors as selected by OWNER of the following: Red EPDM, Yellow EPDM, Dark Green EPDM, Bright Green EPDM, Light Green EPDM, Beige EPDM, Light Beige EPDM, Blue EPDM, Dark Blue EPDM, Light Blue EPDM, Gray EPDM, Dark Gray EPDM, Pearl EPDM, Purple EPDM, Brown EPDM, Teal EPDM, Gold EPDM.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verification of Site Conditions: CONTRACTOR shall inspect and verify the substrate complies with manufacturer's specifications for suitable conditions, and matches the conditions specified in the contract documents. CONTRACTOR shall not proceed with installation until unsuitable conditions are corrected.

B. Drainage: Proper drainage is critical to the longevity of the poured-in-place surfacing system. Inadequate drainage will cause premature breakdown of the poured system in affected areas; and void the manufacturer's warranty. CONTRACTOR shall notify ENGINEER of any improper drainage in the installation area. Installation shall not proceed until drainage is satisfactory.

3.02 PREPARATION

A. Existing Substrate Preparation: Remove any loose or delaminated material that would be deleterious to application of the new surface. Fill cracks in existing concrete substrate with cementitious patching compound and allow patches to fully cure.

B. Comply with all instructions and recommendations of the surfacing manufacturer.

3.03 INSTALLATION

A. Do not proceed with playground surfacing installation until all applicable site work, including substrate preparation, fencing, playground equipment installation and other relevant work, has been completed.

B. Primer:

1. Using a brush or short nap roller, apply primer to the substrate perimeter and any adjacent vertical barriers (such as playground equipment) at the rate of 1 gallon per 300 sft.

C. Base Layer Installation:

1. Mix SBR to Binder at a ratio of 82/18.
2. Spread and compact base layer evenly at specified thickness using screeds and hand trowels at a consistent density of 29 pounds per cubic foot.
3. Allow base layer to cure for sufficient time so that indentations are not left in the base layer from applicator foot traffic or equipment, a minimum of 24 hours.

D. Binder

1. Binder may be applied directly over the base layer or over the top layer.
2. Comply with all instructions and recommendations of the surfacing manufacturer.

E. Top Layer Installation:

1. Using a bristle brush apply urethane binder mixture to
 - a. Interior of existing curbing.
 - b. Any other vertical structures within the installation areas,
 - c. Base layer a minimum of 2" around the perimeter of topcoat area.
2. Mix EPDM to Binder at a ratio of 82/18.
3. Using a steel trowel, install top layer ¼" higher than required thickness and spread per manufacturers recommendations at a consistent density of 58 pounds, 9 ounces per cubic foot to a nominal thickness of 0.5".
 - a. For compacting: Lubricate trowel with diesel fuel or soapy water.
 - b. For finishing: Spray a light mist of water on surface and trowel smooth.
4. Allow top layer to cure for a minimum of 48 hours.

At the end of the minimum curing period, verify that the surface is sufficiently dry and firm to allow foot traffic and use without damage to the surface.

- F. Do not allow foot traffic or use of the surface until it is sufficiently cured. CONTRACTOR shall provide all protective measures required to limit pedestrian or vehicular traffic.

3.04 PROTECTION AND CLEANUP

- A. Protect the installed surface from damage resulting from subsequent construction activity on the site.
- B. Using a watering hose or a pressure washer, not exceeding 1,000 PSI, rinse off all excess debris from the surface. While surface is wet, apply a mild cleaning detergent and agitate lightly with a soft bristle brush. Repeat as necessary. Once clean, final rinse with low-pressure water from a hose to remove any excess cleaning agents.

END OF SECTION

SECTION 32 31 13

CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.01 SUMMARY:

- A. This section includes work necessary for chain link fences and gates and the slide gate operator.

1.02 SUBMITTALS:

- A. Pre-Construction:
 - 1. Fencing components:
 - a. Manufacturer, materials of construction, dimensions and certifications for each fencing component.

1.03 TEMPORARY FENCES:

- A. General:
 - 1. Temporary fences consisting of properly installed and braced snow fence with a minimum height of 4 feet may be used until the corresponding section of permanent fence is installed. This does not include temporary pasture fence.
 - 2. Temporary fences shall be installed at no additional cost.
 - 3. Temporary fencing, such as orange construction safety fence, snow fence or woven wire pasture fence shall be installed and maintained as needed throughout the duration of the project.

PART 2 - PRODUCTS

2.01 POSTS, RAILS AND BRACES:

- A. End, corner, angle and braced posts: End, corner, angle and braced posts shall be 3 1/2 inch by 3 1/2-inch roll-formed corner section with a minimum bending strength of 482 pounds or 2.875 inches O.D., Schedule 40 pipe with a minimum bending strength of 381 pounds. All posts shall conform to ASTM A 120.
- B. Line Posts: Line posts shall be nominal 2.55 inches by 1.70 inches "C" Section, standard roll-formed with minimum bending strength of 314 pounds, or 1.90 inches O.D., Schedule 40 pipe with minimum bending strength of 117 pounds and shall conform to ASTM A 570.
- C. Gate Posts: Gate posts shall conform to the following:
 - 1. Gate opening up to and including 6'-0": 3 1/2 inches by 3 1/2 inches roll-formed section or 2.875 inches O.D., Schedule 40 pipe.
 - 2. Gate opening over 6'-0" and up to and including 13'-0": 4 inches O.D., Schedule 40 pipe.
 - 3. Gate opening over 13'-0" and up to and including 18'-0": 6 5/8 inches O.D., Schedule 40 pipe.
 - 4. Gate opening over 18'-0": 8 5/8 inches O.D., Schedule 40 pipe.
 - 5. Conform to ASTM A 120.
- D. Top Rail:

1. Top rail shall be roll-formed sections 1.625" x 1.25" with minimum bending strength of 192 pounds or 1.660 inches O.D., Schedule 40 pipe, with minimum bending strength of 192 pounds.
 2. Furnish in manufacturer's standard length of at least 18 feet with couplings approximately 6 inches long for each joint. One coupling in five shall have an expansion spring.
 3. Provide means for attaching top rail securely to each gate, corner, angle, and braced post.
 4. Top rails shall form a continuous brace from end to end of each run of fence.
- E. Tension Wire:
1. Tension wire shall be aluminum-coated steel wire and shall be No. 9 gauge.
 2. Aluminum-coated steel wire shall have a coating weight of not less than 0.40 ounces of aluminum per square foot of uncoated wire surface in accordance with ASTM A 491.
- F. Post bracing assembly: The post bracing assembly shall match the top rail and shall be complete with a 3/8-inch diameter rod and adjustable take up.
- G. Finish:
1. Posts, rails, and braces shall be galvanized.
- H. Temporary Fence:
1. Steel posts - Posts shall be fabricated from steel meeting the physical requirements specified in ASTM A 36 or ASTM A 499.
 2. All steel fence posts, braces and fittings shall be galvanized in accordance with ASTM A 123. The weight of the zinc coating per square foot of actual surface on posts and braces shall average not less than 2.0 ounces and no individual specimen shall show less than 1.8 ounces, regardless of metal thickness. The weights specified below for line posts, and for end, corner, intersection, and intermediate braced posts and post braces shall include the zinc coating, except that any weight of galvanizing over 4.0 ounces of zinc per square foot of surface will be deducted from the weight of the post.
 3. Line posts shall be of an approved section, shall be 7 feet 1 inch long, and shall have a nominal weight of 1.33 pounds per linear foot with a minimum weight of 1.28 pounds per linear foot for any post, exclusive of anchor plate. The posts shall be notched, studded, or have other approved provision for holding the fabric in place on the post and shall be provided with a suitable anchor plate. Each post shall be furnished with not less than seven No. 11 gage galvanized or aluminum coated wire clamps.

2.02 FABRIC:

- A. General:
1. Fabric shall be of one-piece width with 2-inch mesh fabricated from 9-gauge wire.
 2. Minimum breaking strength: 1290 lbs.
- B. Height: Fabric shall be 4 feet high unless otherwise indicated on the drawings.
- C. Finish:
1. Fabric shall be zinc-coated steel conforming to the requirements of ASTM A 641.
- D. Selvage ends:
1. Fabric in heights 60 inches and under shall be knuckled at both selvages.
 2. Fabric over 60 inches in height shall be knuckled at bottom selvage and twisted and barbed at top.

- E. Woven wire fence:
 - 1. Fence fabric - The fence fabric shall be zinc-coated steel woven wire conforming to ASTM A 116, Design No. 1047-6-11, Class 1 Zinc Coating or shall be aluminum-coated steel woven wire conforming to ASTM A 584, Design No. 1047-6-11. Height shall be designated on the drawings.

2.03 ACCESSORIES:

- A. General: All accessories shall be galvanized to comply with ASTM A 153.
- B. Post tops:
 - 1. Post tops shall be pressed steel or malleable iron designed as a weather-tight enclosure when tubular posts are used.
 - 2. Provide tops to permit passage of the top rail.
- C. Stretcher bars and bar bands:
 - 1. For tubular, corner, angle, and braced posts, provide stretcher bars of one-piece lengths equal to the full height of the fabric and with a minimum cross-section of 3/16" x 3/4". Provide one stretcher bar for each gate and end post and two for each corner and brace post.
 - 2. Stretcher bar bands shall be heavy pressed steel, spaced at least every 15 inches to secure stretcher bars to tubular end, corner, braced, and gate posts.
- D. Wire ties:
 - 1. For tying fabric to line posts, use minimum 9-gauge aluminum wire ties for tubular posts. Space ties every 14 inches.
 - 2. For tying fabric to rails and braces, use 9-gauge aluminum wire ties spaced every 24 inches.
 - 3. For tying fabric to tension wire, use 11-gauge hog rings spaced every 24 inches.

2.04 GATES:

- A. Fabrication and assembly:
 - 1. Fabricate gate perimeter frames of 1.90 inches O.D. tubular members in accordance with ASTM A 120.
 - 2. Provide additional horizontal and vertical members to insure proper gate operation and for attachment of fabric, hardware, and accessories.
 - 3. Assemble gate frames by welding or fittings and rivets for rigid connections.
 - 4. Use same fabric as for fence, unless otherwise indicated.
 - 5. Install fabric with stretcher bars at vertical edges and tie at top and bottom edges.
 - 6. Attach stretcher bars to gate frame every 15 inches.
 - 7. Attach hardware with rivets or by other means which will provide security against removal or breakage.
 - 8. Provide diagonal cross-bracing consisting of 3/8-inch diameter adjustable length truss rods or gates where necessary to provide frame rigidity without sag or twist.
- B. Hardware: Provide the following hardware and accessories for each gate. All parts shall be galvanized in accordance with ASTM A 120.
 - 1. Hinges:
 - a. Pressed steel or malleable iron to suit size, non-lift-off-type, offset to permit 180-degree gate opening.
 - b. Provide one pair of hinges for each shelf.
 - 2. Latch:
 - a. Forked type or plunger-bar type to permit operation from either side of gate.

- b. Provide padlock eye as integral part of latch.
- 3. Keeper: For all vehicle gates, provide keeper which automatically engages the gate leaf and holds it in the open position until manually released.
- 4. Double gates:
 - a. Provide gate stops for all double gates, consisting of mushroom type or flush plate with anchors.
 - b. Set in concrete to engage the center drop rod or plunger bar.
 - c. Provide locking device and padlock eyes as an integral part of the latch, requiring one padlock for locking both gate leaves.
- 5. Sliding gates: Provide manufacturer's standard heavy-duty track, ball bearing hanger sheaves, overhead framing and supporting, framing and supports, guides, stays, bracing, and accessories as required.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Layout:
 - 1. Measure and lay out complete sections of the fence line.
 - 2. Measure parallel to surface of ground.
- B. Location:
 - 1. Locate line posts at equal distance spacing, not exceeding 10-foot centers.
 - 2. Locate corner posts at positions where fence changes direction more than 10 degrees.

3.02 INSTALLATION:

- A. Posts:
 - 1. Minimum post hold diameter shall be three times outside post diameter.
 - 2. Post bottom shall be at a minimum depth of 2'-8" below final ground elevation.
 - 3. Minimum post hole depth shall be 4 inches below post bottom.
 - 4. Place concrete in hole to depth of post bottom.
 - 5. Set post plumb to 1/4 inch in 10 feet.
 - 6. Fill hole with concrete to 2 inches above grade.
 - 7. Crown surface of concrete to slope away from post.
- B. Fence fabrics:
 - 1. Stretch fabric tight between terminal post.
 - 2. Position bottom of fabric approximately 1 to 2 inches above ground level at each post
 - 3. Cut fabric to form one continuous piece between terminal posts.
 - 4. Install fabric on security side of fence and anchor to framework so that fabric remains in tension after pulling force is released.
- C. Tension Wire: Install tension wires before stretching fabric and tie to each post with ties or clips.
- D. Stretcher Bars: Thread stretcher bars through fabric and secure to posts with metal bands spaced not over 15 inches.
- E. Gates:
 - 1. Install gates plumb and level to 1/4 inch in 10 feet.
 - 2. Install ground-set items in concrete as recommended by the manufacturer.
 - 3. Adjust hardware to provide smooth operation.

3.03 ADJUSTMENT:

A. General:

1. Adjust brace rails and tension rods for rigid installation.
2. Tighten hardware, fasteners, and accessories.

END OF SECTION

SECTION 32 92 00

SURFACE PROTECTION, RESTORATION AND TURF ESTABLISHMENT

PART 1 - GENERAL

1.01 SUMMARY:

- A. Work included in this specification consists of the establishment of a durable, permanent, weed free, mature, perennial turf and protection and restoration of site improvements.
- B. Definition of Site Improvements: Fences, mailboxes, street signs, sheds, playground equipment, landscaping stones and decorations, underground lawn irrigation systems, retaining walls, parking appurtenances, and yard accessories.

1.02 REFERENCES:

- A. MDOT - Michigan Department of Transportation, "2020 Standard Specifications for Construction".
- B. MDOT – Michigan Department of Transportation, "Materials Source Guide" current edition.
- C. ASTM – American Society of Testing Materials, latest edition.

1.03 SUBMITTALS:

- A. Pre-Construction:
 - 1. Topsoil test results.
 - 2. Property owner notification letter.
 - 3. Seed mixture.
 - 4. Fertilizer product.
 - 5. Herbicide product and application method
- B. Post Construction:
 - 1. Contractor's Daily Reports

1.04 JOB REQUIREMENTS:

- A. Surface Areas Disturbed by Construction Operation:
 - 1. Restoration and Turf Establishment:
 - a. Fine grade to 4 inches below finished grade.
 - b. Remove all stones and debris greater than 1-inch diameter.
 - c. Place 4 inches of topsoil.
 - d. Rake smooth to finished grade, seed, fertilize and mulch, or place mulch blanket pegged in place, where specified or required for slope stability.
- B. Site Improvements:
 - 1. Protect all items not indicated for removal.
 - 2. Where Site Improvements impact proposed construction, remove the item carefully, store and protect the item and reinstall the item upon completion of construction.
- C. Scheduling:
 - 1. Restoration of lawns and other surface features:

- a. As soon as possible after final grading of the areas designated for turf establishment but no later than the maximum time frames stated in MDOT 208.03 or as required by project soil erosion control permit.
2. Clean up: Promptly following restoration.

D. Seasonal Limitations:

1. MDOT 816.03.C.4.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Topsoil:

1. Topsoil may be salvaged and reinstalled from the project site or imported to the site:
 - a. Salvaged topsoil:
 - 1) Must be segregated during construction and kept free of intermingling with other soils.
 - 2) The acceptance of salvaged topsoil is subject to its ability to establish turf. The salvaged topsoil must be acceptable to the Owner and property owner after turf is established. The existing topsoil may or may not be acceptable in its existing condition.
 2. Material:
 - a. Salvaged and imported topsoil:
 - 1) Shall be screened and amended either on-site or off-site.
 - 2) Shall be loose, friable, and free of refuse and foreign material.
 - 3) 20% minimum organic material by test method ASTM D2974.
 - 4) pH of 6.8 to 7.5 by test method ASTM D4972.
 - 5) Gradation:
 - a) 100% passing the ½" sieve.
 - b) 98% minimum passing the ¼" sieve.
 - c) 30% maximum passing the #200 sieve.

B. Grass Seed Mixture:

1. All species and their cultivars or varieties must be guaranteed hardy for Michigan.
2. The species selected must be disease and insect resistant and of good color.
3. Grass seed mix shall contain no more than 5% inert material by weight.
4. The species of seed selected must be adapted for the site conditions and locations including but not limited to manicured yards.
5. Grass Seed Mix : See SP 32 92 19.16 Hydroseeding.

C. Chemical Fertilizer: MDOT 917.09, Class A.

1. Phosphorus can only be used at the time of planting or when soil conditions require.

D. Hydro-mulch: MDOT 917, Recycled newsprint or wood fiber. See SP 32 92 19.16 Hydroseeding.

E. Co-polymer Gel: Finn Hydro Gel B, or equal.

F. Herbicide:

1. Herbicides shall be furnished and applied as required to control weed growth. The Contractor shall select the herbicide and rate of application in accordance with the manufacturer's recommendations. The Contractor shall comply with all federal, state and local laws as noted in MDOT Section 107.

G. Water:

1. Water shall be furnished and applied from an approved source. Do not draw water from any waterway (i.e. river, ditch, creek, lake, etc.)

H. Mulch Blanket:

1. MDOT 917.14, Excelsior or straw mulch blanket listed on the current Qualified Products List in the MDOT Materials Source Guide.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Prior to construction, provide advance notice to property owners of privately-owned surface features within the project area to allow the property owner time to remove or relocate them.
- B. Prior to placing topsoil, shape, compact and assure all areas to be seeded are debris and weed free. Place topsoil to a minimum depth of 4 inches and to meet proposed finished grade. If the area being restored requires more than the minimum depth of topsoil to meet finished grade, this additional depth shall be filled using topsoil. Furnishing and placing this additional material will not be paid separately.

3.02 TREES AND SHRUBS:

- A. Protect all trees and shrubs during construction.
- B. Where existing trees and shrubs will be impacted by construction, Contractor shall prune or trim branches in accordance with industry standard horticulture practice.
- C. Tree limbs inadvertently damaged during construction shall be trimmed to remove the damaged portion within 5 days. Contractor shall notify the property owner and Owner or Owner's representative of the inadvertent damage caused and the remedy.

3.03 IRRIGATION SYSTEMS:

- A. Contractor shall make every effort to protect existing irrigation systems adjacent to the project area.
- B. Irrigation repair is the responsibility of the Contractor. Where existing irrigation systems are encountered during construction the Contractor shall temporarily relocate or remove as required to place the proposed improvements and repair the irrigation system promptly following construction of the improvements. This work may require cutting and capping of the existing sprinkler lines and salvaging of the existing sprinkler heads for reuse during replacement. Where lines are cut Contractor shall take measures to prevent dirt or debris from entering the existing sprinkler lines or heads. Damaged irrigation heads shall be replaced in-kind. Acceptance of the repair subject to the approval of the property owner.

3.04 TOPSOIL:

- A. Place 4 inches of topsoil in preparation of seeding.
- B. Construction methods:
 1. MDOT 816.03.A.

3.05 HYDROSEEDING, FERTILIZING AND MULCHING:

- A. Construction methods: Hydro-seed with mixture of seed, fertilizer, and mulch, and co-polymer gel with at the rates listed in SP 32 92 19.16 Hydroseeding.

3.06 MULCH BLANKET:

- A. Construction Methods:
 - 1. MDOT 816.

3.07 MAINTENANCE

- A. Mowing:
 - 1. Contractor shall mow the grass prior to final acceptance.
 - 2. Turf shall be maintained at a visually appealing level and not more than 8 inches in height at any time prior to acceptance.
- B. Weeding:
 - 1. Weeds must be controlled to less than 10% of the turf establishment area during establishment and turf shall be weed free at time of acceptance.
 - 2. The Contractor shall apply weed killer no sooner than recommended for newly established turf by weed control product manufacturer.
- C. Watering:
 - 1. Shall occur at minimum of twice per week for 2 months after turf establishment has been placed.
 - 2. Amount of water shall total a combined minimum of 1.5 inches of natural rainwater, irrigation water and contractor applied water per week.
- D. Repair:
 - 1. The Contractor is responsible, at no additional cost, for the repair of turf establishment work occasioned by storm events up to 3 inches of rain in a 24-hour period as documented by local meteorological data.
 - 2. Repairs made to damaged turf establishment areas as a result of a documented storm by a local meteorological data resulting in rainfall amounts of more than 3 inches in a 24 hr period will be paid for as an increase to the turf restoration quantity.
- E. Inspections:
 - 1. The Contractor is responsible for all inspection of turf establishment work. Provide notification to Owner or Owner's representative of upcoming inspections or maintenance work.
 - 2. Provide a Contractor's Daily Report to report inspections made and to document turf establishment work performed on this project.
 - 3. Complete and submit a Contractor's Daily Report when any work performed is in progress.
 - 4. Include all necessary materials documentation including tests slips, certifications, etc. with the associated Contractor's Daily Report.

3.08 ACCEPTANCE

- A. Final Acceptance:
 - 1. Before final acceptance of the turf establishment work there must be no exposed bare soil and the turf must be fully germinated, erosion free, weed free, disease free, dark green in color and in a vigorous growing condition.

2. Once growth of weed-free grass has been achieved the Contractor's responsibility in this matter shall have ended. However, it is to be clearly understood that any failure on the part of the property owner to properly care for the restored lawn area prior to achieving a good growth of weed-free grass shall in no way relieve the Contractor of his responsibility as set forth above.

3.09 SITE IMPROVEMENTS:

- A. Site Improvements damaged by contractor shall be replaced by Contractor at Contractor's cost.
- B. Unique and one-of-a-kind items damaged during construction shall be repaired, replaced or otherwise resolved by the Contractor to its owner's satisfaction.

END OF SECTION

SECTION 32 92 19.16

HYDROSEEDING

PART 1 - GENERAL

- 1.01 Description: Furnish all materials, equipment, and labor necessary for Hydroseeding of Lawns, "Eco-turf", Erosion Control, Meadow and Wildflower areas. Provide seeded areas as shown on the contract drawings and as specified herein.
- A. The work includes the following:
1. Preparation of the Sub-soil.
 2. Soil Preparation; including the placing of specified topsoil and/or soil amendments.
 3. Liming and Fertilizing.
 4. Seed Mixes for Various Applications.
 5. Maintenance and Establishment.
- 1.02 Related Sections:
- Section 31 00 00 - Earthwork
Section 32 91 13 - Soil Preparation
- 1.03 Quality Assurance: The seed shall be furnished in containers that show the following information: seed name, lot number, net weight, percentage of purity, germination, weed seed and inert material. Seed that has become wet, moldy, or otherwise damaged will not be accepted. Seed shall conform to the requirements of the Washington State seed law and when applicable the Federal Seed Act, and shall be "certified" grade or better.
- 1.04 Submittals: Submit seed vendor's certification for required grass seed mixture, indicating percentage by weight and percentages of purity, germination and weed seed for each grass species.
- 1.05 Delivery, Storage and Handling: Deliver seed and fertilizer materials in original unopened containers showing weight, analysis, and name of manufacturer. Store the seed in such a manner that will prevent the wetting and deterioration of the seed.
- 1.06 Field Quality Control:
- A. Grading Inspection:
1. Rough grading or sub-grades shall be inspected and approved by the Engineer prior to placing of new or existing topsoil.
 2. Finish grading, soil placement and preparation shall be inspected and approved by the Engineer prior to hydroseed application.
- B. Other Inspections: The Contractor shall request a provisional inspection by the Engineer upon completion of the work. Upon Substantial Completion and completion of the punch list items, the Engineer will make provisional acceptance in writing.

PART 2 - PRODUCTS

- 2.01 Soil Preparation shall be installed per the requirements of Section 32 91 13 - Soil Preparation and shall include the following:
- A. Imported Soil for all Mowed Lawn areas.

- B. Dolomite Lime shall be applied to all soil preparation options for all seeded areas with mixes specified as follows.

2.02 All seed mix general information as follows:

- A. Lesco Brand Seed Mix or approved equal available at Site One Landscape Supply, 46220 40th Street SE, Grand Rapids, MI 49512. Phone (161) 954-0660
- B. The seed shall meet or exceed the following:
 - Minimum pure seed percent - 98%
 - Minimum germination percent - 90%
 - Maximum weed seed percent - 0.5%
- C. The seed mix shall be packed in clean, sound containers that are of uniform weight.

2.02.1 Seed Mix for Non-irrigated Sun & Shade Turf Areas:

Item		Seed Mixture
Light Requirements		Sun & Shade
Coverage Area		3-4 lb./1,000 sq. ft
Type		Sun & Shade Park
Composition		34% Turf - Type Perennial Ryegrass, 33% Fine Fescues, 33% Shamrock KBG
Composition		50% Turf - Type Perennial Ryegrass-2 varieties, 30% Creeping Red Fescue, 20% Kentucky Bluegrass

2.03 Fertilizers:

- A. For Initial fertilization of all Hydroseeded areas use:

- 1. Starter Fertilizer: (10-20-20), or, approved equal.

Total Nitrogen* (N)	10.0%
(10.0% Ammoniacal Nitrogen)	
Available Phosphate (P205)	20.0%
Soluble Potash (K20)	20.0%
Sulfur (S)	7.0%

*Shall be derived from Ammonium Sulfate, Potassium Chloride, and Monoammonium Phosphate.

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- B. For Follow-up fertilization of all Hydroseeded areas use:

- 1. Maintenance Fertilizer: (16-16-16), or approved equal.

Total Nitrogen* (N)	16.0%
(8.5% Ammoniacal Nitrogen)	
(7.5% Urea Nitrogen)	
Available Phosphate (P205)	16.0%
Soluble Potash (K20)	16.0%
Sulfur (S)	7.6%

*Shall be derived from Ammonium Sulfate, Potassium Chloride, Monoammonium Phosphate, and Urea.

- C. Recommended Fertilizer Sources:

1. Site One Landscape Supply, 46220 40th Street SE, Grand Rapids, MI 49512. Phone (161) 954-0660
- 2.04 Hydromulch: Mulch shall be wood cellulose fiber from clean wood chips, containing no growth or germination inhibiting substances; a soil-binding agent (tackifier) is required. Hydromulch shall be dyed a suitable color to facilitate placement.
- 2.05 Soil Binding Agent: Soil binding agent shall consist of non-toxic, biodegradable materials that are environmentally safe such as MG 250F, Guar Gum Powder, or approved equal.

PART 3 - EXECUTION

- 3.01 Soil Preparation: All soil preparation operations, compaction and clean up of debris shall be done prior to seeding per Section 32 91 13 - Soil Preparation.
- 3.02 Cultivation: Cultivation shall be executed in conjunction with the requirements of Section 32 91 13. Cultivation may be done by farm disc, harrow or other suitable equipment approved by the Engineer. Prior to cultivation apply dolomite limestone at the rate of 50 lbs. per 1,000 square feet and cultivate to a depth of 4 inches (if required by soil test or as directed by the Engineer).
- 3.03 Soil Placement: Soil placement shall be executed in conjunction with the requirements of Section 32 91 13. When specified, amendments or prepared soils shall be evenly spread in the locations and to the depths shown on the Plans. After soil has been spread, all large clods, rocks and debris greater than 1" in any dimension, shall be removed. Soil shall not be placed when the ground is frozen, wet or in a condition detrimental to the work.
- 3.04 Compaction:
 - A. Compact with sheep's foot roller, cleated crawler tractor, vibratory roller, or equipment approved by the Engineer. Equipment must produce 150-300 pounds per square inch of ground pressure.
 - B. Compaction shall produce a uniform rough textured surface free of tire ruts, depressions and low spots, and be ready for seeding and mulching. A minimum of four passes is required. After compaction, finish grade shall be flush with the top of curbs, catch basins and other structures.
- 3.05 Irrigation: If required by the Engineer, water shall be provided to condition the soil for compaction or to provide dust control. Water shall be furnished and applied by contractor from on site supply or by watering truck if necessary.
- 3.06 Hydroseeding:
 - A. Seed, Fertilizer and Hydromulch shall be applied in slurry in one operation with approved hydraulic equipment. Apply materials at the following rates:
 1. Seed Mix: See seed mix selected in paragraph 2.02.1
 2. Starter Fertilizer: 1lb. of N per 1,000 square feet of blended materials.
 3. Hydromulch, at 50lbs. per 1,000 square feet.
 4. Soil Binding Agent, at 1lb. per 1,000 square feet.
 - B. Seeding shall not be done during windy weather (above 25 mph) or when the ground is overly wet (saturated) or frozen. Contractor shall give the Owner 48 hours notice of seeding operations. Seeding, fertilizing, and mulching of prepared areas shall be performed during the following time frames:

1. Seeding shall be done from April 1 to May 31 or from September 1 to October 31.
 2. No seeding shall be done before or after these dates without the Engineer's written approval. Written permission to seed from June 1 to August 31 may be granted only if automatic irrigation is available and operational at the site. Permission to seed from November 1 to March 31 will only be given when completion of the Project is imminent and the environmental conditions are conducive to acceptable growth. No seeding shall be done on weekends or legal holidays without written approval of the Engineer.
 3. Application of pre-germinated seed, moisture retention agents and/or provision for supplemental watering may be required by the Engineer should the Contractor schedule this portion of the Work outside the time frames listed in item 1 immediately above.
 4. All areas that are partially completed to grade, shall be prepared and seeded during the first available planting period and shall not be allowed to sit idle for long periods of time without receiving the erosion control specified in the Contract.
 5. When environmental conditions are not conducive to acceptable results from seeding operations, the Engineer may order the Work suspended, and it shall be resumed only when the desired results are likely to be obtained.
- C. Equipment shall use water as the carrying agent utilizing a continuous built-in agitation system. Equipment with a gear pump is not acceptable.
- D. Pump a continuous, non-fluctuating supply of homogenous slurry to provide a uniform distribution of material over designated areas.
- 3.07 Maintenance and Establishment:
- A. Maintain all Hydroseeded areas until seed mix is well established and exhibits a vigorous growing condition.
 - B. Maintenance shall include protection, watering, fertilizing and a minimum of two mowing cycles.
 - C. After the first mowing, turf shall be fertilized with specified Maintenance Fertilizer for lawns and athletic fields, at the rate of 1lb. of N per 1,000 square feet of blended materials.
 - D. All grass clippings shall be removed from the site if requested by the Engineer.
- 3.08 Substantial/Physical Completion:
- A. Inspection to determine Substantial Completion of seeded areas will be made by the Engineer upon the Contractor's request. Provide notification at least five (5) working days before requested inspection date.
 1. Seeded areas shall be accepted provided all requirements, including maintenance, have been complied with and grass is well established and exhibits a vigorous growing condition.
 2. Areas failing to show a uniform stand of grass shall be reseeded at the Contractor's expense.
 - B. Upon Physical Completion, the Owner will assume lawn maintenance.
- 3.09 Clean Up: Perform cleaning during installation of the work and upon completion of the work. Remove from the site all excess materials, soil, debris, and equipment. Repair the damage resulting from seeding operations.

- 3.10 Warranty and Replacement: All seeded areas must have a relatively uniform stand of turf grass or other seed mixes as specified with no bare spots over 6" square at the time of Substantial Completion. Reseed at the original rate and fertilize at the rates as for all blended materials. All slope restoration will be paid on a lump sum basis including grading, topsoiling, topsoil testing, seeding, fertilizer nutrient, mulching, mulch anchoring, watering, mowing, weed control, maintenance and repair of turf during the warranty period. Upon completion of the initial topsoil surfacing, seeding, fertilizing and mulching stage 75 percent of the authorized amount for Slope Restoration will be paid to the Contractor.

At the end of the one-year warranty period, and before final acceptance of the turf establishment work, all of the following minimum parameters are met throughout all exposed areas of the project designated on the plans or identified by the Engineer as turf establishment areas: there must be no exposed bare soil and the turf must be fully germinated, erosion free, weeds less than 10 percent, disease free, dark green in color and in a vigorous growing condition. The remaining 25% balance of authorized amount due for slope restoration will be paid upon final acceptance of the established turf at the end of the one-year warranty period.

END OF SECTION

SECTION 33 05 24

HORIZONTAL DIRECTIONAL DRILLING

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes the work required to install a carrier or casing pipe for underground utilities under an obstacle using the method commonly known as horizontal directional drilling (HDD), to the grades and alignments shown on the Drawings.

1.02 REFERENCES:

- A. ASTM - American Society of Testing Materials, *Latest Edition*.
- B. PPI - Plastics Pipe Institute
- C. AWWA - American Water Works Association
- D. ANSI - American National Standards Institute

1.03 GENERAL REQUIREMENTS:

- A. The Contractor shall be responsible for the method of construction, the stability and accuracy of the drilled and reamed hole and pits constructed, and all costs for damages resulting from any failure thereof. The Contractor shall be solely responsible for the safety of the pits and related structures and personnel engaged in underground construction throughout the duration of the work.
- B. The Contractor's methods and schedule shall consider the overall project requirements and anticipated subsurface soils and groundwater conditions. The Contractor's selection of inadequate, inappropriate or inefficient equipment and methods will not be cause for adjustments to the contract price or contract time.
- C. The general dimensions, arrangement and details for the drilled hole and pits to be constructed shall be as needed to complete the required work.
- D. Methods of excavation, equipment and procedures for the directional drilling operation and pits shall be selected by the Contractor to provide adequate working space and clearances for the work to be performed.
- E. Pit excavation methods, groundwater control and pit support techniques shall be selected by the Contractor.
- F. The Contractor shall comply with the HDD Plan for Preventing and Controlling the Loss of Drilling Mud in Paragraph 3.15 SCHEDULES.

1.04 SAFETY:

- A. The Contractor shall become familiar with, and shall at all times conform to, all applicable codes, ordinances and laws in relation to the work required.

- B. Directional drilling equipment machine safety requirements shall include a common grounding system to prevent electrical shock in the event of a high voltage underground cable strike. The grounding system shall connect all pieces of interconnecting machinery; the drill, mud mixing system, drill power unit, drill rod trailer, operator's booth, worker grounding mats and any other interconnected equipment to a common ground. The drill shall be equipped with an "electrical strike" audible and visual warning system that shall notify the system operators of an electrical strike.
- C. Operators of the drill shall wear electrical shock protection equipment and operate from common grounding mats as required.

1.05 SUBMITTALS:

- A. Pre-Construction:
 - 1. Proposed Drill Path:
 - a. Marked or otherwise indicated on the design drawings.
 - b. Depth, curvature and entrance/exit locations.
 - 2. Pipe & Fittings:
 - a. Manufacturer, material & AWWA/ASTM designation.
- B. Post Construction:
 - 1. As-Constructed Drill Path:
 - a. Marked or otherwise indicated on the design drawings.
 - b. Depth to top of pipe from known surface elevation at 25' intervals with reference to plan stationing.
 - c. Horizontal deviation (left or right) from designed location.

1.06 DELIVERY, STORAGE AND HANDLING:

- A. Handle and store materials in a manner that will prevent:
 - 1. Deterioration or damage
 - 2. Contamination with foreign matter
 - 3. Damage by weather or elements
- B. After the pipe is fused together and before it is pulled through the drilled hole, the Contractor shall be responsible to provide vehicular and emergency access to all properties affected by the fused pipeline. The Contractor shall be responsible to repair all damage to existing surface and site improvements damaged by the fused pipeline.

1.07 UTILITY PROTECTION:

- A. All underground utilities shown on the drawings are shown according to the best available information. It is the Contractor's responsibility to verify the location of all existing utilities prior to working in the area.
- B. All utilities are to remain in service and shall be protected by the Contractor from any damage as a result of his operations.
- C. Where utilities are encountered and are not shown on the drawings, the Contractor shall report them to the Owner before proceeding with the work.
- D. All utilities damaged by the Contractor's activities shall be repaired or replaced by the Contractor without preventable delay. All costs to repair the utility including, but not limited

to, materials, labor, inspection, testing and temporary service shall be born by the Contractor with no cost.

- E. All utilities in close proximity to the drill pilot bore, back ream or product pipe installation must be exposed in accordance with all codes, ordinances and regulations to ensure, by visual inspection, that the Contractor's work has not caused any damage to the utility or to the Contractor's work and adequate clearance between the utility and the Contractor's work is maintained.

1.08 APPLICABLE REGULATIONS:

- A. All work covered by this Section shall be performed in accordance with all applicable federal, state and local laws, regulations, codes and ordinances which pertain to such work, as well as the supplemental regulations contained in these specifications. If a conflict exists between any laws, regulations, codes or ordinances, the most stringent shall govern.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. PIPE

1. Pipe material shall be high density polyethylene (HDPE) constructed of PE 4710 resin with an SDR of 11 or less and conform to AWWA Standard C-906. In addition, all materials must be listed and approved for use with potable water under ANSI/NSF Standards 14 and 61 (Standard 14 meets the requirements of Standard 61). The Exterior wall of all HDPE pipe proposed for potable use must also bare NSF-pw and AWWA C-906 identification. The pipe shall conform to DIPS (Ductile Iron Pipe Size) size and be appropriately striped as water main (blue).
2. The pipe shall have a nominal diameter as indicated on the plans and a standard dimension ratio (SDR) of no greater than 11. The working pressure shall be rated at 160 psi.
3. The Contractor is responsible for calculating loads placed on the pipe during its installation based on the Contractor's chosen means and methods of construction. It is the Contractor's responsibility to ensure the pipe will withstand all loadings placed on it during installation. If the pipe with dimensions given above will not withstand the installation loads, it is the Contractor's responsibility to size the pipe to withstand the installation loads.

B. DRILLING FLUIDS

1. The Contractor must use a high-quality Bentonite drilling fluid or equivalent to ensure hole stabilization, cuttings transport, bit and electronics cooling, and hole lubrication to reduce drag on the drill pipe and the product pipe. Oil-based drilling fluids or fluids containing additives that can contaminate the soil or ground water will not be considered acceptable substitutes. Composition of the drilling fluid must comply with all federal, state and local environmental regulations.
2. Polymer used as lubrication in the drilling fluid is acceptable, if desired.
3. Drilling fluids must be mixed with water that is free from significant solids and contamination. Potable water is acceptable. River water is acceptable provided no organic matter or soil particulates are mixed into the drilling fluid. It is the Contractor's responsibility to apply for and obtain any necessary permits for the procurement of drilling fluid water. It is also the Contractor's responsibility to pay permit application fees, metering charges or any other costs associated with drilling fluid mixing water.

C. HDPE TO DUCTILE IRON CONNECTION

1. A restrained connection between the HDPE pipe and DI pipe shall be made with a self-restraining, fusible, molded PE3408 mechanical joint adapter with stainless steel stiffener meeting the requirements of ASTM D2513 and ANSI/AWWA C906 and manufactured by Central Plastics Company or approved equal. The mechanical joint adapter shall be of the same SDR rating as the pipe. Additional restraint shall be provided on the ductile iron pipe side of the connection point by restraining pipe joints for a distance of at least 150 feet. Additional restraint shall be provided on the HDPE pipe side in the form of an HDPE electrofusion flex restraint encased in concrete or other approved methods. Follow manufacturer's recommendation for number of electrofusion flex restraints needed at each connection.

D. TRACER WIRE:

1. The Contractor shall install, with the directionally drilled pipe, a 10-gauge copper clad steel locator wire with insulation suitable for direct burial. The tracer wire shall be as manufactured by Copperhead Industries, or equal. In rural areas, a test station shall be installed at approximately 1,000-foot intervals, near a fire hydrant or other structure that would fall closest to that interval. In built up urban areas, a station shall be provided at each intersection.

2.02 EQUIPMENT:

- A. The directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the bore and pullback the pipe; a drilling fluid mixing, delivery and recovery system of sufficient capacity to successfully complete the crossing; a drilling fluid recycling system to remove solids from the drilling fluid so that the fluid can be re-used; a magnetic guidance system to accurately guide boring operations; a vacuum truck of sufficient capacity to handle the drilling fluid volume; and trained and competent personnel to operate the system. All equipment shall be in good, safe operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project.

PART 3 - EXECUTION

3.01 ALIGNMENT AND PROFILE OPTIONS:

- A. Alignment and profile shown on the drawings.
- B. An alternate alignment and profile developed by the Contractor with the following requirements:
 1. Alignment must be within easement(s) and right-of-way.
 2. Clearance between utilities is maintained.

3.02 PIPE FUSION

- A. All pipe shall be joined with the "butt fusion" method in accordance with the pipe manufacturers recommendations. Socket fusion, extrusion welding, hot gas welding and mechanical connections are not acceptable.
- B. Butt fusion joining shall produce a joint of equal or greater tensile strength than the strength of the pipe.

3.03 DRILL ENTRANCE AND EXIT PITS

- A. The Contractor is responsible for the design and construction of the drill entrance and exit pits. Supports may be required to maintain safe working conditions. Ensure stability of the pit, minimize loosening, and minimize soil deterioration and disturbance of the surrounding ground.
- B. Entrance and exit pits must be contained in the easement(s) and right-of way.
- C. Drill entrance and exit pits must be maintained at minimum size to allow only the minimum amount of drilling fluid storage prior to transfer to mud recycling or processing system or for removal from the site.
- D. Drilling fluid will not be allowed to freely flow on the site or around the entrance or exit pits. Fluid spilled must be removed as soon as possible and the ground restored to original condition.
- E. Pits must be shored to OSHA standard if workers are required to enter the pits for any reason.

3.04 DRILL ENTRANCE AND EXIT ANGLES

- A. Entrance and exit angles of the drill can be whatever the Contractor desires such that the elevation profile maintains adequate ground cover to ensure no drilling fluid breakout occurs and that ground exit occurs within the designated easement(s) or right-of-way. The Contractor is responsible for ensuring that entrance and exit angles ensure pullback forces do not exceed 5% strain on the polyethylene pipe.

3.05 GUIDANCE SYSTEM

- A. The guidance system must have the capability of measuring inclination, roll and azimuth. The guidance system must have an independent means to ensure the accuracy of the installation. The Contractor will demonstrate a viable method to eliminate accumulated error due to the inclinometer (pitch or accelerometer). The guidance system will be capable of generating a plot of the borehole survey for the purpose of an as-built drawing. The guidance system must meet the following specifications:

Inclination:	Range Accuracy	-90° to +90° 0.2°
Azimuth:	Range Accuracy	0° to 360° 0.5°
Roll:	Range Accuracy	0° to 360° 0.2°

3.06 PILOT HOLE TOLERANCES

- A. The pilot hole shall be drilled along the agreed-to alignment and profile with the following tolerances:
 1. Vertical
 - a. Plus 4 feet (deeper or additional ground cover).
 - b. Minus 1 foot (shallower or reduced ground cover), except that the resulting pipe cover shall not be less than specified or indicated on the plans.
 2. Horizontal
 - a. Plus, or minus 2.5 feet.

3. Curve radius
 - a. Curve radius shall not exceed the pipe manufacturer's recommendations and that of the drilling equipment.

3.07 DRILL PATH DOCUMENTATION

- A. The Contractor is responsible for maintaining drilling logs that provide drill path data every 25 feet along the drill path. Information logged every 25 feet will, at a minimum, include the following:
 1. Pilot hole
 - a. Distance out or station
 - b. Depth below a known ground surface elevation
 - c. Plus, or minus (left or right) of alignment
 - d. Torque
 - e. Drill fluid flow rate
 - f. Time
 2. Back ream
 - a. Distance out or station
 - b. Pull back force
 - c. Torque
 - d. Drill fluid flow rate
 - e. Time

3.08 PIPE GOUGING

- A. The Contractor shall take every precaution to prevent gouging of the pipe prior to and during pipeline installation.
- B. It is expected some pipe gouging will occur during pullback. However, the constructed pipeline shall not have any gouges that are deeper than 10% of the pipe wall thickness. Pipe that has gouges greater than 10% of the pipe wall thickness will not be accepted.

3.09 INSTALLING PRODUCT PIPE

- A. After the pilot hole is completed, install a swivel to the reamer and commence pullback operations. Pre-reaming of the tunnel may be necessary and is at the option of the Contractor.
- B. Reaming diameter will not exceed 1.4 times the diameter of the product pipe being installed.
- C. Allow sufficient length of product pipe to extend past the termination point to allow connections to adjacent pipe sections or gate valves. Pulled pipes will be allowed 24 hours of stabilization prior to making tie-ins. The length of extra product pipe will be at the Contractor's discretion.
- D. Install an AWWA C153 Mechanical Joint Adaptor, per the manufacturer's requirements, when connecting the pipe to a valve or hydrant.

3.10 YIELD STRESS

- A. The yield stress shall be calculated from the HDPE material submitted and the cross-sectional area of the pipe. The result will be the force at which the HDPE pipe will yield.

- B. The pullback force will be monitored throughout the pullback. At no time shall the equipment be operated to produce a pullback force that exceeds 75% of the yield force.

3.11 CLEANUP

- A. All excavated soil, soil cuttings and drilling fluid shall be the property of the Contractor. All material shall be disposed of in accordance with all laws, regulations, codes, ordinance and these specifications.
- B. Immediately upon completion of the work in this section, all rubbish and debris shall be removed from the job site. All construction equipment and implements of service shall be removed and the entire area involved shall be left in a neat, clean and acceptable condition.
- C. If a drilling fluid breakout should occur, the area shall be cleaned immediately, and the surface washed and returned to original condition.
- D. Every precaution shall be implemented to prevent a drilling fluid breakout in the river. It is the Contractor's responsibility to conduct construction activities to prevent this occurrence. However, if a drilling fluid breakout occurs in the river, it is the Contractor's responsibility to clean up any resultant contamination. The Contractor is also responsible for any damage to property or the environment due to such a breakout.

3.12 HYDROSTATIC TESTING

- A. The pipe shall be hydrostatically tested before being connected to other piping systems. The pipe shall be tested independently of other hydrostatic tests.
- B. Hydrostatic testing will consist of filling the constructed pipeline with water taking care to bleed off trapped air. The Contractor shall pressurize the pipe to 150 psi for a minimum of 4 hours to give the pipe time to expand. During this initial 4 hours, make-up water shall be added as needed to maintain the pressure within 5 psi of the specified pressure. At the end of the first 4 hours, the pipe shall be pressurized to the specified pressure and the test commences. The pipeline shall be maintained under the test pressure for a continuous period of between 1 and 3 hours by pumping water into the line at frequent intervals. The volume of water so added to maintain pressure within 5 psi of the specified pressure shall be measured and considered to represent the "leakage" from the line during the interval.

The allowable "leakage" for the pipeline shall not exceed the allowances given in the following table.

Nominal Pipe Size (In)	Allowable "Leakage" (Gal/100' of Pipe)		
	1-Hour Test	2-Hour Test	3-Hour Test
3	0.10	0.15	0.25
4	0.13	0.25	0.40
6	0.30	0.60	0.90
8	0.50	1.0	1.5
10	0.75	1.3	2.1
11	1.0	2.0	3.0
12	1.1	2.3	3.4
14	1.4	2.8	4.2
16	1.7	3.3	5.0
18	2.2	4.3	6.5

20	2.8	5.5	8.0
22	3.5	7.0	10.5
24	4.5	8.9	13.3
28	5.5	11.1	16.8
32	7.0	14.3	21.5
36	9.0	18.0	27.0
40	11.0	22.0	33.0
48	15.0	27.0	43.0

It is understood that the pipe will continue to expand after the initial 4 hours under pressure and throughout the 1 to 3-hour test period. The allowable "leakage" presented in the table above accounts for this expansion and no additional allowable "leakage" will be considered.

- C. Under no circumstances shall the total time under the specified test pressure exceed 8 hours. If the test is not completed due to leakage, equipment failure, etc., the test shall be terminated, and the pipeline shall be de-pressurized and permitted to "relax" for a minimum of 8 hours prior to the next testing sequences.
- D. If there are no visual leaks or significant pressure drops during the final test period, and the measured "leakage" is less than allowable, the pipeline passes the hydrostatic test.
- E. In the event that the "leakage" exceeds the specified allowable, the Contractor shall be responsible to repair or replace the pipeline until the pipeline passes the hydrostatic test.

3.13 TRACER WIRE

- A. The Contractor shall install, with the directionally drilled pipe, a 12-gauge copper clad steel locator wire with insulation suitable for direct burial. In rural areas, a test station shall be installed at approximately 1,000-foot intervals, near a fire hydrant or other structure that would fall closest to that interval. In built up urban areas, a station shall be provided at each intersection. Tracer wire shall be installed with the directionally drilled pipe.

3.14 SCHEDULES:

- A. Horizontal Directional Drilling Plan for Preventing and Controlling the Loss of Drilling Mud (5 sheets).
- B. HDPE / DI Connection and Restraint Detail (1 sheet).
- C. Valve Chamber with Corporation Stops Detail (1 sheet).

END OF SECTION

HORIZONTAL DIRECTIONAL DRILL PLAN
FOR
PREVENTING AND CONTROLLING THE LOSS OF DRILLING MUD

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HORIZONTAL DIRECTIONAL DRILL PLAN

1.0 INTRODUCTION:

- A. This directional drill contingency plan provides specific procedures and steps to prevent and/or to contain inadvertent releases of drilling mud (also referred to as frac-outs) for waterbodies that are crossed using horizontal directional drilling (HDD) techniques.

2.0 HORIZONTAL DIRECTIONAL DRILLING PROCESS:

- A. Installation of a pipeline by HDD is generally accomplished in three stages. The first stage consists of directionally drilling a small-diameter pilot hole along a pre-determined path. The second stage enlarges this pilot hole to a diameter that will accommodate the pipeline. Numerous "reaming" passes will be necessary with each pass enlarging the diameter of the pilot hole incrementally. The third stage involves pulling the pipeline through the enlarged hole.

During the drilling of the pilot hole, directional control is achieved by using a non-rotating drill string with an asymmetrical leading edge. The asymmetry of the leading edge creates a steering bias, which allows the operator to control the direction of the drill bit. The actual path of the pilot hole is monitored during drilling by taking periodic readings of the inclination and azimuth. These readings are used to calculate the horizontal and vertical coordinates along the pilot holes relative to the initial entry point on the surface.

Once the pilot hole is complete, it is enlarged using reaming tools that are often custom-made for a particular diameter pipe or type of soil. The reamers are typically attached to the drill string at the exit point and are rotated and drawn to the drilling rig, thus enlarging the pilot hole with each pass. Pipe installation is accomplished by attaching a prefabricated pull section behind a reaming assembly at the exit point and pulling the entire assembly back to the drilling rig.

Ideally, horizontal directional drilling involves no disturbance to the bed or banks of a stream or wetland. However, it is possible that geologic irregularities could be encountered during drilling, and drilling could fail. This plan describes the potential for failure of horizontal directional drilling, the contingency methods that would be implemented in the event of inadvertent release of drilling fluids to water or land, and drill hole abandonment procedures.

The feasibility of the horizontal directional drill method primarily depends on the local geologic setting, as well as site topography and other surface features. For example, horizontal directional drilling may not be feasible in areas of glacial till or outwash interspersed with boulders and cobbles, highly fractured bedrock, or non-cohesive coarse sands and gravels. These formations increase the likelihood that drilling could fail due to refusal of the drill bit, continuous loss of drilling fluid through fractures or weak areas in the ground, or collapse of the bore hole in non-cohesive, unstable substrate.

Fortunately, surface characteristics at the proposed Project drill sites are generally favorable for HDD.

Also, subsurface geotechnical investigations indicate that conditions are favorable for horizontal directional drilling.

3.0 NOTIFICATION PROCEDURES

- A. If in the course of an inspection an inadvertent release is discovered, steps will be taken by construction personnel to contain the release as described in Section 5.0, Corrective Action and Cleanup.

If monitoring indicates an in-stream release, the Contractor will immediately notify the appropriate Federal and State agencies as soon as possible by telephone of an in-stream release event, detailing the nature of the release and corrective actions being taken. The notified agencies will determine whether additional measures need to be implemented.

If a release occurs that may migrate downstream and affect water quality, downstream water users will be contacted.

4.0 CORRECTIVE ACTION AND CLEANUP

- A. By monitoring drilling operations continuously, it is intended to correct problems before they occur. In addition, containment equipment including earth-moving equipment, portable pumps, hand tools, sand, hay bales, silt fence, lumber, and a suction dredge will be readily available at the drill site. If a release does occur, the following measures will be implemented to stop or minimize the release and to clean it up:
- The drilling contractor will decide what modifications to make to the drilling technique or composition of drilling fluid (e.g., thickening of fluid by increasing bentonite content) to reduce or stop minor losses of drilling fluid.
 - If a minor bore path void is encountered during drilling, making a slight change in the direction of the bore path may avoid loss of circulation.
 - If the bore head becomes lodged resulting in loss of drilling pressure, the borehole may be sized by moving the bore head back and forth to dislodge the stuck materials.
 - If necessary, drilling operations will be reduced to assess the extent of the release and to implement other possible corrective actions.
 - If public health and safety are threatened, drilling fluid circulation pumps will be turned off. This measure will be taken as a last resort because it increases the potential for drill hole collapse resulting from loss of down-hole pressure.
 - If a land release is detected, the drilling crew will take immediate corrective action to contain the release and to prevent migration off site.
 - The contractor will construct pits and berms around the borehole entry point to contain inadvertent releases onto the ground.
 - Any drilling mud released into the pits will be pumped by contractor personnel into a mud-processing unit for recycling of drilling fluid and separation of cuttings.
 - Additional berms will be constructed around the bore pit to prevent release materials from flowing into the water body.
 - If the amount of an on-land release does not allow practical collection, the affected area will be diluted with fresh water and allowed to dry. Steps will be taken (such as berm, silt fence, and/or hay bale installation) to prevent silt-laden water from flowing into the water body.
 - If hand tools cannot contain a small on-land release, small collection sumps (less than 5 cubic yards) may be constructed to pump the released material into the mud processing system.
 - Contractor HDD crews will immediately implement non-mechanized measures to contain the spread of drilling fluids, including the installation of hay bales or silt fence.
 - Sump pumps or vacuum trucks will be used to remove and dispose of any drilling fluids.

5.0 ABANDONMENT

- A. If corrective actions do not prevent or control releases from occurring into the water body, the HDD Contractor may opt to re-drill the hole along a different alignment or suspend the Project altogether. In either case, the following procedures will be implemented to abandon the drill hole.
- The method for sealing the abandoned drill hole is to pump thickened drilling fluid into the hole as the drill assembly is extracted, and using cement grout to make a cap.
 - Closer to the surface of the hole(s) (within approximately 10 feet of the surface), a soil cap will be installed by filling with soil extracted during construction of the pit and berms.
 - The bore hole entry location will be graded by the contractor to its original grade and condition after the drill hole has been abandoned.

SECTION 33 11 00

WATER MAIN

1.01 DESCRIPTION

Scope:

The work shall consist of furnishing and installing water main of the specified size(s) at the depth shown on the drawings, or specified herein, and furnishing all labor, materials, fittings, tools and equipment for receiving, unloading, transporting, laying, testing and disinfecting of water pipe and fittings. The Contractor shall provide all material including but not limited to water main, hydrants, valves, structures, fittings, joints, joint materials, joint restraints, nuts, bolts, glands, gaskets, plugs, brass wedges, tracing wire and accessories as shown on the drawings and specified herein, or as required to complete the project. The Contractor shall also be responsible for bedding, laying, hydrostatic testing, flushing and disinfection of the water main piping systems.

1.02 DEFINITIONS

CITY – shall be the City of Big Rapids

OWNER– shall be the City of Big Rapids

ENGINEER – shall be a registered professional engineer as designated by the CITY

CONTRACTOR – shall be the individual or entity with whom the OWNER has entered into an agreement to complete the work shown on the plans and included in these specifications and shall include the individual or entity and its employees, all subcontractors and their employees and all suppliers and their employees.

(WATER) MAIN – Any pipe, other than service pipe, used for conveying or distributing water.

SERVICE PIPE – The pipe tapped into the mains and extending thence to the meter horn.

If additional terms require interpretation, they shall be defined using the most recent edition of the Standard General Conditions of the Construction Contract prepared by the Engineers Joint Contract Documents Committee and issued and published jointly by the American Consulting Engineers Council, the National Society of Professional Engineers and the American Society of Civil Engineers. Additional definitions may be found in Chapters 52 and 54 of the City of Big Rapids Code of Ordinances.

1.03 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies

Conform to the applicable requirements of State and local regulatory agencies having jurisdiction for disinfecting and testing and complete that work according to applicable AWWA/ANSI Standards.

B. Reference Standards

Unless otherwise specified, the Work for this section shall conform to the applicable portions of the current edition of the following Standard Specifications:

ASTM American Society of Testing & Materials

ANSI American National Standard Institute

UL Underwriters Laboratories

MDOT Michigan Department of Transportation

AWWA American Water Works Association, Ten-State Standards

GLUMRB Great Lakes-Upper Mississippi River Board, Recommended Standards for Water Works; 10 States Standards

In the event these Specifications conflict with those of the community or agency controlling the right-of-way where the water main is being installed, the more stringent requirements will govern.

1.04 SUBMITTALS

A. Certification

All procedures and materials provided under this division of the specification, where not specifically stated, shall be in accordance with the current published industry standards applicable to the type of use proposed and the applicable standards itemized in Part 1.03 B.

The manufacturer of pipe and fittings shall furnish a certified statement that all pipe and fittings furnished have been inspected and tested in accordance with the applicable specifications. Pipe will be subject to inspection and approval upon delivery and no previously used, cracked, broken, damaged, or defective pipe or fittings shall be laid in the work. Any piece that is found to be defective after it has been laid shall be removed by the Contractor at the Contractor's expense and shall be replaced by a new and sound piece.

All pipes, bends, valves, hydrants, fittings, et al shall be NSF Standard 61 certified. All chlorine and any other chemical applied to the interior of the pipe, fittings, et al shall be NSF Standard 60 certified.

Ductile iron water main installation shall comply with AWWA C600 requirements.

Disinfection of new water mains shall comply with AWWA C651 standards.

If contaminated or aggressive soils are encountered during trench excavation, the pipe shall be poly wrapped and the encasement shall be specified and selected in accordance with ANSI/AWWA C105/A21.5. (see section 4.3.3.8 of AWWA C600) and only Nitrile/Viton gaskets shall be used as they are more resistant to hydrocarbon permeation.

B. Shop Drawings

The Contractor shall furnish, as prescribed in the General Requirements, dimension and erection drawings and details of the water main, valves, fittings, hydrants and other appurtenances furnished under this section. Complete details of all pipe directional changes, joint deflections and joint restraints shall be submitted to the Engineer for approval.

C. Easements

Easements shall be granted to the City of Big Rapids for all water main that is not installed in a City-owned right of way. Easements shall be 20 feet in width, and shall be written so that the easement is centered on the as-installed water main, unless the City directs otherwise and shall extend to the property line and or public right-of-way so that in the future The City can tie-into said water main, or gain access to the Easement. Water service shall not begin until the easement has been received, reviewed, and approved by the City Commission.

1.05 PRODUCT STORAGE AND HANDLING

A. Pipe Marking

Each piece of pipe and each fitting shall have its weight and class designation conspicuously painted or cast on it. Where required, other designation marks shall be painted on the pipe or fittings to indicate correct location in the pipeline in conformity to a detailed layout plan.

B. Handling

When pipe is delivered to the site, the ends of the pipe shall be immediately covered or wrapped before being unloaded. Pipe shall be carried into position and not dragged. Use of pinch bars

and tongs for aligning or turning pipe will be permitted only on the bare ends of the pipe. Before installation, the pipe shall be inspected for defects. Material found to be defective before or after laying shall be replaced with sound material without additional expense to the Owner.

Pipe and accessories shall be handled so as to insure delivery to the site in sound, undamaged condition. Particular care shall be taken not to injure the pipe coating. If the coating or lining of any pipe or fitting is damaged, the pipe or fitting shall be returned to the supplier unless written approval is obtained for a repair to be made by the Contractor at his expense in a manner satisfactory to the Engineer.

The interior of pipe and accessories shall be thoroughly cleaned of foreign matter before being lowered into final position and shall be kept clean during handling operations by plugging and/or covering the ends or other approved method.

Rubber gaskets that are not to be installed immediately shall be stored in a cool and dark place.

C. Storage

1. Water Main Piping

Piping materials at the construction site shall not be stacked higher than six (6) feet and shall be braced to prevent rolling. Suitable racks, chairs and other supports shall be provided to protect preformed pipe mating surfaces from damage. Store bottom tiers off the ground, alternate tiers and check tier ends. The ends of the water main shall be wrapped in plastic while stored. Pipe stored at the site shall be the responsibility of the Contractor.

2. Hydrants, Valves, and Accessories

Store all hydrants, valves, wells and prefabricated structures off the ground, drained and kept free of water to protect against damage from freezing. Hydrants, valves, wells, their accessories and appurtenances shall be kept in their original containers until ready for installation.

2.0 PRODUCTS

A GENERAL: Disinfection of new Water-Storage facilities shall comply with AWWA C652 standards.

B MATERIALS:

The CONTRACTOR shall furnish all pipe materials required for the Contract. Materials shall meet the requirements of the AWWA, Michigan Department of Environmental Quality (MDEQ), and the City of Big Rapids as required.

1. Ductile Iron Pipe. Pipe shall be ductile iron class 52 with standard thickness cement mortar lining of the diameter shown on the plans. The exterior of the pipe shall be coated with a bituminous seal coat. Pipe shall be manufactured in accordance with AWWA, specification C151 (ANSI A21.51), and seal coated in accordance with AWWA specification C104 (ANSI A21.4), unless otherwise noted on the plans. Pipe delivered to the site shall contain the following information stamped on each pipe: metal thickness class, nominal size, manufacturer, and the weight of the pipe excluding lining. Pipe sizes indicated on the plans are inside diameter (I.D.).

2. Fittings. Fittings for Ductile iron pipe shall be mechanical joint ductile iron and shall meet the requirements of AWWA C153 (ANSI A21.53). Cement mortar lining and bituminous seal coat in accordance with AWWA specification C 104. (ANSI A21.4) shall be required as well. Fitting sizes indicated on the plans are inside diameter (I.D.).

Electrical continuity shall be provided at all joints by means of three serrated silicone bronze wedges except where mechanical joints are used.

3. Joints. Ductile iron joints shall be mechanical or push-on as required by the installation and as approved by the Engineer. Joints shall meet the requirement of AWWA C111 (ANSI A21.11). All joint materials shall be included with the pipe.

Push-On Joint (POJ). Push-On Joints will generally be used on all ground buried, straight run, ductile iron pipe.

Mechanical Joints (MJ). Each joint shall be complete with rubber gasket, cast iron gland, and a full complement of high strength, low alloy steel bolts and nuts. All mechanical joints, unless otherwise specified, are to be restrained in accordance with the paragraph on joint restraints. Nitrile gaskets shall be used in areas of known or suspected contamination.

4. Anchorage:

4.1 Restrained Joint Pipe. All ductile iron restrained joint pipe shall be Clow Corporation "Super-Lock"; American Ductile Iron Pipe "Lok-Ring Joint" or "Flex-Ring Joint"; Griffin Pipe Products Co. "Snap-Lok"; or approved equal. All components of the restrained joint shall be as manufactured, supplied or recommended by the manufacturer of the restrained joint pipe system actually installed.

4.2 Joint Restraining Glands. Joint restraining glands shall be Megalug as manufactured by EBAA Iron Sales, Inc., or approved equal.

4.3 Mechanical Joint Anchoring Fittings. Mechanical joint anchoring fittings shall be as manufactured by Clow Corporation, Tyler Corporation or approved equal.

4.4 Anchorage for Hydrants. All hydrants shall be restrained to the hydrant lateral valve and the hydrant lateral valve shall be restrained to the main using an approved joint restraint system consisting of restrained joint pipe, joint restraining glands, mechanical joint anchoring fittings or approved equal.

4.5 Anchorage for Plugs, Caps, Tees, Bends and Valves. Unless otherwise specified or approved in writing by the Engineer, movement of all plugs, caps, tees, bends and valves shall be prevented by the use of restrained joint pipe or joint Megalugs as manufactured by EBAA Iron Sales, Inc.

When joints are to be restrained with mechanical devices as noted above, all joints shall be restrained for a minimum distance from the fitting as required in the following table.

**TABLE 1:
PIPE RESTRAINT LENGTH REQUIRED, FEET**

Pipe Diameter	Tees, 90 ⁰ Bends	45 ⁰ Bends	22-1/2 ⁰ Bends	11-1/4 ⁰ Bends	Dead Ends	Reducers (one size)	Reducers **
4-inch	23	9	5	2	57		
6-inch	32	13	6	3	82	43	63
8-inch	41	17	8	4	104	43	55
12-inch	58	24	12	6	149	80	120
16-inch	74	31	15	7	192	82	110
20-inch	89	37	18	9	233	82	104
24-inch	104	43	21	10	272	82	99
30-inch	123	51	25	12	328	115	148
36-inch	141	58	28	14	379	115	140

** If straight run of pipe on small side of reducer exceeds this value, then no restrained joints are necessary.

NOTE: the length of restrained joint pipe required as shown in the table above is based on trench backfill being compacted to 95% of maximum unit weight in accordance with MDOT procedures. If the pipe is wrapped in polyethylene, a greater length of restrained pipe will be required as specified, shown on the drawings or directed by the City Engineer. A multiplier of 1.43 shall be used if the pipe is installed with polyethylene wrap.

All joints lying within the above minimum distances from the fitting must be restrained as noted herein.

4.6 Tees. Tees shall be restrained in the branch direction as required in the table above. Also, to augment the above, in the straight through direction, the minimum length of the first pipe on either side of the tee shall be ten (10) feet. In those cases, where a valve is placed at the tee, the valve shall be restrained to the tee as noted below, and the next pipe shall be a minimum length of ten (10) feet.

4.7 Plugs/Caps. All dead ends on water mains shall be plugged or capped with standard plugs or caps. The water main, including the plug or cap shall be restrained back from the plug or cap as required in the table above.

4.8 Bends. Bends shall be restrained in both directions as required in the table above.

4.9 Valves. Valves used in conjunction with the restrained joint pipe shall be restrained in accordance with the recommendations of the manufacturer of the restrained joint pipe. All valves at crosses or tees shall be restrained to the tee by use of restrained joint pipe or joint restraining glands as specified above. Hydrant valves may be restrained using anchoring fittings.

Secure all fitting with restrained joint pipe or joint restraining glands throughout entire area of unstable soils plus an additional length beyond the unstable area in accordance with the distance noted in this section.

5. Valves. All valves for use in potable water distribution systems shall be resilient seat valves.

All valves shall be suitable for direct bury without a manhole. Valves shall be constructed in accordance with AWWA Specification C515. Valves shall be epoxy coated with a minimum of ten mils thickness to protect all internal and exterior exposed iron surfaces. Coating shall comply with AWWA C550.

City of Big Rapids – East Jordan Iron Works (EJIW) Flow Master, Mechanical Joint (M.J.), LEFT-HAND OPEN, non-rising bronze stem (N.R.S.), resilient seat.

A valve shall be provided on each water main at all tees and crosses, i.e., three valves on tees and four valves on crosses. The location of each valve shall be approved by the Engineer before installation.

Insertion valve shall be EZ Valve by Advance Valve Technologies, Insta Valve 250 by Hydra-Stop or approved equal.

6. Valve Box. The valve box shall be made of cast iron conforming to the requirements for Class No. 20 of the Specification ASTM Designation 48. Each box shall be screw type and consist of six sections: Gate Valve Adaptor, Base, center, extension, top and cover (marked "water"). The valve boxes shall be designed to withstand heavy traffic.

City of Big Rapids - Valve boxes shall be provided with a gate valve adapter manufactured by Adapter, Inc. West Allis, Wisconsin.

7. Fire Hydrant. Hydrants shall meet the current standard in accordance with ANSI/AWWA C502 Standard.

City of Big Rapids -- EJIW Water Master 5BR250, 5" vertical opening, 6" mechanical joint inlet, two 2 ½" hose connections with National Standard Thread pattern, one 4 ½" pumper connection with National Standard Thread pattern, OPEN LEFT 1 ½" pent nut.

Hydrants shall be supplied with valve adjacent to the tee on the water main, unless modified in writing by the Engineer. Hydrants located more than 50 feet from the main may also require a valve at the hydrant.

Contractors are reminded that 6-foot hydrants installed to the bottom of the bury level may not provide the required six (6) feet bury for the water main. Contractors shall provide the proper adaptors to assure that the hydrant is properly installed with respect to height above final grade.

All hydrant drains shall be plugged. In areas where high or potentially high groundwater is not present, the Engineer may authorize the removal of the drain plug, and the hydrant will be backfilled with pea stone and geotextile fabric.

8. Water Services. All materials for Water Services shall meet the following minimum requirements and shall be provided by the manufacturer listed unless otherwise approved in writing by the ENGINEER.

Curb Stop Box - Ford, three piece, cast iron threaded base, with two-hole lid marked, "water"

Curb Valve - Ford compression or threaded ends of the required diameter, with threaded top, and quarter turn operation stem

Corporation Stops - Ford ball type corporation valves with compression ends, and 360° operation stem Service

Pipe - "k" copper pipe of the diameter specified.

9. Tracer Wire. Unless waived in writing by the Engineer, the Contractor shall install 12-gauge wire on top of or within 8 inches of the water main. The wire shall be brought to the surface of the ground in a manner acceptable to the CITY at the beginning and end of the proposed water main. The location of the ends of the wire shall be suitably marked and shall be so noted for CITY personnel. Locating the water main using GPS mapping techniques will be reviewed on a case-by-case basis and must be approved by the Engineer in writing in advance of construction.

Substitutions to the materials listed in this section shall not be allowed unless the prior written approval of the Engineer is obtained.

C. CONSTRUCTION METHOD:

CONTRACTOR shall install all pipe materials, required for the contract, according to the most recent edition of the AWWA, MDEQ, MDOT, and City of Big Rapids Standards.

1. Utilities. The location of existing utilities is shown in accordance with best available data. The CITY does not guarantee the accuracy of the information. The CONTRACTOR shall make his own determination when required, of existing utilities, depth, material, location, and proximity to proposed work.

Contractor shall not disturb nor cut into any existing water main(s) in service. When the operation of valves in any existing main is required, the CONTRACTOR shall notify the CITY of Big Rapids Water Department a minimum of either forty-eight (48) hours or three working days in advance of work, whichever is greater.

The CITY will provide the necessary labor, equipment, and material necessary to operate the valves at no cost to the CONTRACTOR.

2. Excavation and Bedding. Prior to the installation of any water main piping or materials, the CONTRACTOR shall examine all trenches and other excavations for the proper grades, lines, levels and clearances required to receive the new Work. He shall further ascertain that all excavation bottoms, compacted subgrades and pipe bedding are adequate to receive water main materials to be installed and correct all defects and deficiencies before proceeding with the work. Trench depths shall be as shown on the plans and shall provide not less than 6 feet of cover measured from the top of pipe to the final grade.

After the bottom of trench has been excavated and filled to the required grade with MDOT Class II granular material thoroughly compacted by tamping, the pipe shall be installed in strict accordance with the manufacturer's recommendations and AWWA C600. After the pipe is laid, the backfill shall be continued to a point 24 inches above the top of the pipe barrel. Particular care shall be taken to assure filling and tamping all spaces under, around and above the top of pipe. Backfill shall be as indicated on the Contract. Continuous and uniform bedding shall be provided in the trench, to a distance of one and a half times the pipe diameter, measured horizontally for all buried pipe.

Disposal of waste material shall be done in accordance with the most recent edition (currently 2012) of MDOT's Standard Specifications for Construction unless otherwise specified.

3. Laying and Erecting Pipe. Pipe shall be installed in accordance with the specified trench detail and as recommended by the manufacturer or applicable AWWA installation manual or specification.

Unless otherwise specified, pipe shall be laid with bell ends facing in the direction of laying. After a length of pipe is placed in the trench, the spigot shall be centered in the bell end of the adjacent pipe section, the pipe shoved into position and brought to true alignment and secured with sand tamped under and on both sides of the pipe except at bell holes. Adequate support shall be provided for all water main pipe.

Water main shall be installed at least 10 feet, measured horizontally and 18 inches, measured vertically, from storm or sanitary sewers. All measurements shall be from outside of pipe to outside of pipe. Whenever possible, water mains shall cross sanitary or storm sewers at the mid-point of the water main. Finally, whenever possible, the water main shall cross above the sanitary or storm sewer while maintaining 6 feet of cover, otherwise a fitting will be used to cross pipes with a minimum of 18" of separation.

Pipe and fittings shall be installed as directed by the manufacturer. Pipe and accessories shall be carefully lowered into the trench by means of derrick, belt slings, or other approved method. Under no circumstances shall any of the pressure main materials be dropped or dumped. Care shall be taken to avoid abrasion of the pipe coating.

The full length of each section of pipe shall rest uniformly upon the pipe bed, with recesses excavated to accommodate bells, couplings, and joints. Pipe that has the grade or joint disturbed after laying shall be taken up and re-laid. Pipe shall not be laid or jointed in water or when trench conditions are unsuitable for the work. When work is not in progress, open ends of pipe, fittings, and valves shall be securely closed so that no trench water, earth, or other substance will enter the pipes or fittings.

Where any part of the coating or lining is damaged, the repair shall be made by the CONTRACTOR at his expense in a satisfactory manner. Pipe ends left for future connections shall be valved, plugged, or capped, and anchored as shown on the plans or as directed by the Engineer.

Pipe Plugs. During the progress of all water main work, watertight plugs shall be carried along and inserted in the end of each pipe as it is laid to prevent foreign matter or rodents from entering the pipe. This watertight plug shall be fastened in the end of the water main in such a manner as to prevent it from floating or being otherwise displaced whenever construction operations are temporarily halted, such as at noon or at the end of the day's work.

Pipe Bearing. Each section of pipe, when placed to grade and line, shall have firm bearing on the trench bedding throughout its length between bell holes.

4. Pipe Cutting. Cutting of pipe shall be done with approved tools and by approved methods that produce a smooth, square-cut end without damage to the pipe and/or cement lining and that minimize airborne particles. Pipe cutting shall be performed using the recommendations of the manufacturer of the type of pipe materials being cut and according to the best trade practices. When pipe is cut in the field, the outside of the cut end shall be tapered back about one eighth (1/8) inch at an angle of 30 degrees with the centerline of pipe to remove any sharp or rough edges.

Pipe Linings and Coatings. When cutting pipe or fittings, care shall be taken to prevent damage to linings and coatings. Damage to linings shall be cause for rejection of the complete Section. Damage to exterior coatings shall be corrected to original Specifications.

Gaskets. Where pipe using a resilient gasket to effect the seal is cut, the leading pipe end shall be tapered at a 30° angle with the centerline of the pipe, and ground smooth, on the outside end to remove any sharp edges or burrs which might damage the gasket.

Remove all lumps, blisters, excess coatings from the socket and plain ends of pipe. Wire brush and wipe clean the outside surfaces of all plain ends and the inside surfaces of all socket ends before installation. Any pipe or fitting which has acquired a coating of mud or other foreign material shall be scrubbed clean with heavily chlorinated water and flushed with clean water.

5. Joint Deflection. For ductile iron pipe, the maximum allowable deflection shall meet the AWWA C 600 Standard.

Whenever it is desirable to deflect push-on joint pipe in order to form a long radius curve, the amount of deflection shall not exceed the maximum limits shown in Table 2 below, unless recommended by the pipe manufacturer and approved by the Engineer.

TABLE 2
PERMISSIBLE DEFLECTIONS IN PUSH-ON JOINT PIPE
Maximum Permissible Deflection Per Length, Inches

Pipe Size, Inches	Deflection Angle	18 foot	20 foot
3	8-18	31	35
4	8-18	31	35
6	7-17	27	30
8	5-21	20	22
10	5-21	20	22
12	5-21	20	22
14	3-35	13.5	15
16	3-35	13.5	15
18	3-00	11	12
20	3-00	11	12
24	2-23	11	12

If the proposed alignment requires deflection in excess of the above limitations, bends will be used to accomplish the desired deflection subject to obtaining the written approval of the engineer.

6. Bolts, Studs and Nuts. Install bolts, studs and nuts of the type specified per the manufacturer's installation and torquing requirements. All steel bolts, studs, and nuts shall be painted with bituminous paint after installation.

7. Electrical Continuity. Where mechanical joint ductile iron pipe and fittings are used, provide three bronze wedges at each joint, "Electro-bond" strips or "Cadweld" connectors, or other means of providing metal to metal contact at the joint to allow an electric current to flow through the joint for thawing purposes. Check electrical continuity after installing each joint.

8. Connection to Existing. Where connections are made between new work and existing mains, the connections shall be made by using fittings to suit the actual conditions. Special fittings necessary shall be approved by the City of Big Rapids prior to installation. Standard methods are available for making connections to various types of pipe, either under pressure or in the dewatered condition, where approved by the Engineer. CONTRACTOR shall provide notice to the CITY prior to connecting new mains to existing mains.

No connections to existing pressure mains shall be made until the new main has been pressure tested, flushed clean of all foreign material, disinfected and tested for bacterial contamination prior to the connection. Connection to the existing main shall not be made until the new main is accepted in writing by the Engineer or his/her authorized representative.

When making the connection to the existing main, remove all loose material and swab all pipe and fittings with a solution of commercial chlorine bleach containing at least 4% available chlorine.

9. Abandoning Water Mains. Where excavation requires the removal of abandoned pipe, such pipe shall be removed and disposed of by the CONTRACTOR without extra compensation. If, in the judgement of the ENGINEER, the abandoned main may be left in place, the contractor shall either cap both ends of the abandoned main or shall pump the abandoned main full of grout or flowable fill starting at the low end until the grout exits from the upper end. All services and branch line shall be plugged prior to grouting the abandoned main. The location of the abandoned main shall be shown on the as-built plans.

10. Hydrants. Fire hydrants shall be set at the locations shown on the plans or as directed by the ENGINEER. Hydrants shall be equipped with auxiliary valves as shown on the plans. All hydrants shall stand plumb and shall have their nozzles parallel with, or normal to the curb with the pumper nozzle, if so equipped, normal to the curb. Nozzles shall be set at the height indicated by the plans or as recommended by the manufacturer, but not less than 16 inches above the curb grade, or as directed by the ENGINEER.

Hydrant excavation shall allow for a one (1) foot deep by three (3) foot square compacted, coarse gravel base under the hydrant inlet shoe. The hydrants shall be furnished in the color required by the CITY.

Hydrants shall be supplied with a hydrant valve as specified in Section 2. B. 7.

11. Remove Hydrant. Removal of the hydrant shall include the removal of the barrel of the hydrant, and valve box. Removed hydrants shall be delivered to the CITY.

12. Water Main - Cut and Plug. Where called for on the plans, the CONTRACTOR shall arrange for the CITY to shut down the main. The CONTRACTOR shall then remove the necessary section of pipe and plug the main as shown on the plans or as directed by the ENGINEER. The

CONTRACTOR shall install proper restraint as called for in the contract, and complete backfilling operations.

13. Backfill. The CONTRACTOR shall protect backfill, trench, and pipe material against freezing or shall thaw out the material before using. Backfill shall be in accordance with the trench detail on the water main detail sheet of the plans, and According to AWWA C600.

14. General Field Quality Control. The pressure main sections shall be tested by the Contractor to meet the requirements stated below. The Contractor shall furnish all supplies and equipment needed to carry out the testing program.

Before connecting a new water main to an existing main, the new main shall be hydrostatically tested, flushed, swabbed, and chlorinated as outlined herein. A physical gap of at least three (3) feet must be left between the existing and new water mains until all testing results are satisfactory. The testing sequence shall be:

- a. Pressure Test
- b. Conductivity Testing - metallic mains only
- c. Swabbing and flushing
- d. Disinfection
- e. Bacteriological Analysis
- f. Connection to existing system
- g. Place water main in service
- h. Tap and install services

Following approval by the CITY, water for testing may be taken from a nearby hydrant or tee connection by using fittings to accommodate a standard fire hose. A backflow preventer and water meter must be used on the hose connection between the main being tested and the existing water main.

Hydrostatic testing shall not be started until the pipe is laid, the joints completed, valves and fire hydrants permanently installed and the trench at least partially backfilled. The use of concrete thrust blocks shall not be allowed.

The method proposed for disposal of hydrostatic test water and disinfection water shall be submitted to the Engineer for approval prior to performing hydrostatic tests. The pressure used for testing and allowable leakage shall follow Section 5 of AWWA C600.

15. Hydrostatic Pressure Testing. The pressure main, or sections thereof, shall be tested by the CONTRACTOR in the presence of the ENGINEER and all leaks shall be made tight to meet the requirements below. The CONTRACTOR shall furnish all piping, bulkheads, pumps, gauges, and other equipment required to carry out the test, and shall obtain ENGINEER'S approval of same prior to the testing.

The section of main to be tested shall be slowly filled with water and completely filled at least 24 hours prior to the commencement of the test. Expel all air through corporation stops or air release valves at high points in the line.

At the start of testing, the main shall be pumped up to the test pressure required; the test period shall start immediately thereafter. The line shall be maintained under this test pressure for a continuous period of at least two hours, at a minimum pressure of 150 psi, measured at the high point on the main and the pressure will be maintained at +/- 5 psi of the test pressure throughout the test.

Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain the specified leakage test pressure after the air in the

pipeline has been displaced by water. No pipe installation will be accepted if the leakage is greater than that determined by the formula:

$$L = \frac{SD \sqrt{P}}{148,000}$$

Where: L = Allowable leakage in gallons per hour;
S = Length of pipe tested, in feet;
D = Nominal diameter of the pipe, in inches;
P = Average test pressure during the test, in pounds per square inch gage

This formula is based on allowable leakage of 10.5 gallons per day, per mile of pipe, per inch nominal diameter at 150 psi.

The CITY shall be furnished a written report of the results of the leakage test that identifies the specific length of pipe tested, the pressure, the duration of the test and the amount of leakage. The contractor shall sign the report.

If any test of pipe laid discloses leakage greater than that specified above, the Contractor shall at his expense locate and repair the leak(s) until the leakage is within the specified allowance. The Contractor shall not increase or decrease the test section as a means of complying with the leakage as determined by the formula.

Each main line valve shall be opened and closed several times during the test. Cracked or defective pipe, joints, fittings and valves discovered in process shall be removed and replaced with sound material. The test shall then be repeated without additional expense to the Owner.

When an elevation difference in the section of pressure main being tested is noted, the test pressure shall be averaged, but shall be not less than 90 percent of the test pressure at the highest elevation.

After completion of the two-hour pressure test, each valve shall be checked against system pressure for visible leakage. The CONTRACTOR shall notify the CITY so that appropriate staff can witness the operation of the valves. All hydrant valves shall be included in the check. Any valve(s) or hydrant(s) found to be leaking shall be repaired immediately, or replaced at CONTRACTOR'S expense.

16. Electrical Continuity. The system (pipeline and hydrants) shall be tested for electrical continuity and current capacity. The electrical test shall be made after the hydrostatic pressure test and while the line is at normal operating pressure. Backfilling shall have been partially completed. The line may be tested in sections of convenient length as approved by the ENGINEER. Direct current of 400 amperes, +10 percent, shall be passed through the pipeline for five minutes. Current flow through the pipe shall be measured continuously on a suitable ammeter and shall remain steady without interruption or excessive fluctuation throughout the five-minute test period.

Insufficient current or intermittent current or arcing, indicated by large fluctuation of the ammeter needle, shall be evidence of defective electrical contact in the pipeline. The cause shall be isolated and corrected. Thereafter, the section in which the defective test occurred shall be retested as a unit and shall meet the requirements, without additional cost to the OWNER.

17. Flushing of Mains: Preliminary flushing. Before the main is chlorinated, it shall be filled with potable water to eliminate air pockets and flushed to remove particulates. The flushing velocity in the main shall not be less than 3.0 ft/sec (0.91 m/sec) unless the City determines that conditions do not permit the required flow to be discharged to waste. (Note: flushing is no substitute for preventive measures during construction. Certain contaminants, such as caked deposits, resist

flushing at any feasible velocity, and pigging of the main, or other suitable method acceptable to the purchaser, may be required.) Where such flow rates are not possible, flushing at the maximum expected flow rate for the line for 2–3 volumes may be acceptable. For larger mains, pigging (or other suitable method acceptable to the City) is an option in place of high velocity flushing. The Contractor shall submit to the Engineer a procedure outlining the method he proposes for the flushing. Mains shall be flushed in lengths not to exceed ¼ mile.

If acceptable samples can not be obtained after disinfecting the main, the main shall be flushed using the "poly-pig" method of flushing. The Contractor shall furnish the necessary number and sizes of foam "poly-pig" or equal swabs, including all other necessary equipment to be used.

Contractor shall insert "poly-pig" swab in the end of the new main nearest the existing water main as approved by the Engineer. The swab shall be passed through the new main using water pressure from a portable water pump or a fire hose connection. The swab shall be recovered at the end of the main through the blow-off assembly or cleanout. When the water exiting the pipe is clear, the Contractor shall disinfect the pipe as described below.

18. Water Main Disinfection. All newly laid water mains shall be disinfected according to ANSI/AWWA C651 Standard. The Contractor shall furnish all necessary equipment and materials and shall furnish all necessary assistance for effective disinfection of the water main. Chlorination shall be accomplished by using the following general procedure.

After the water main has been pressure tested and flushed, the Contractor shall pump a chlorine solution into the water main in such a manner and at such strength that the residual chlorine shall be 50 to 100 parts per million (ppm).

The amount of chlorine required for each 100 feet of pipe of various diameters to produce 50-ppm chlorine solution is shown in Table 3, as follows:

**TABLE 3
Chlorine Required for Disinfecting Water Mains**

Pipe Size, Inches	100 % Chlorine, Pounds	16% Bleach, Gallons
6	0.061	0.046
8	0.108	0.081
10	0.170	0.128
12	0.240	0.180
16	0.436	0.313
20	0.683	0.512
24	0.980	0.737

The chlorine solution shall be applied at the supply end of the line through a corporation cock. The water for injecting the chlorine into the new main may be taken from the pressure side of the isolation valve or by utilizing a pressure pump. If the water is taken from an existing main, a reduced pressure zone backflow preventer shall be provided on the public water supply main.

After the main, or section thereof, has been filled with the chlorinated water, a contact period of at least 24 hours shall be allowed during which all valves and hydrants shall be opened and closed several times each. At the end of this period, the treated water in all portions of the main shall have a residual of 10-ppm free chlorine. If the minimum residual is not present, the main shall be flushed and the disinfection process repeated.

19. Post-Disinfection Flushing. After the retention period and prior to bacteriological testing, the heavily chlorinated water shall be flushed from the main until the residual is about 1.0 ppm. Properly dispose of the waste chlorinated water. Discharge directly to a surface body of water shall not be allowed. The contractor shall properly neutralize the water where required by local, state, or federal regulations.

20. Bacteriological Testing. After flushing is complete, samples shall be drawn from the main from sample cocks according to the following schedule:

- at least one sample every 1200 feet;
 - one sample every 200 feet if trench water or debris may have entered the pipe;
 - one sample from the end of the line;
 - one sample from each branch.
- after disinfection water has been flushed and the area to be tested has been filled, wait sixteen (16) hours, and take two sets of samples - 15 minutes apart.

If the report of the analyses is reported as unsafe, the Contractor shall repeat the disinfection process until such time as the mains are shown to be free of coliform bacteria by the results of two consecutive (see above), successful bacteriological analyses. If three (3) consecutive sets of coliform samples are unsatisfactory, the Contractor shall flush the main using the "poly-pig" swab method, and then begin the disinfection process again.

The Contractor shall furnish the chlorine and all necessary equipment for its application. The Contractor shall make suitable arrangements and pay for the bacteriological analyses.

The Contractor shall deliver all samples collected for bacteriologic analyses to the City of Big Rapids water treatment laboratory, unless prior written approval is obtained from the Engineer. Samples shall be delivered to the water plant laboratory during the hours of 7:30 AM and 2:30 PM, Monday through Friday. Samples may be delivered on Saturday and Sunday if prior written permission is obtained from the water treatment plant superintendent.

21. Cleanup.

Upon completion of the installation, all debris and surplus materials resulting from the work shall be removed. The site shall be restored to a condition equal to that which existed before work began.

22. Safety

The Contractor shall be solely responsible for safety. Accordingly, the 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.

SECTION 33 31 00

SANITARY SEWERS

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes work required for sanitary sewers, structures and appurtenant work.

1.02 REFERENCES:

- A. ASTM – American Society of Testing Materials, latest edition.
- B. NCPI - National Clay Pipe Institute.

1.03 SUBMITTALS:

- A. Pre-Construction:
 - 1. Individual Manhole Build Sheets:
 - a. Top, bottom and invert elevations.
 - b. Pipe orientation.
 - c. Individual precast concrete section dimensions.
 - d. Prefabricated rubber boot material & manufacturer.
 - 2. Castings:
 - a. Manufacturer & model numbers.
 - 3. Pipe & Fittings:
 - a. Manufacturer, material & ASTM designation.
 - b. Joint construction details.
- B. Post Construction:
 - 1. Witnesses:
 - a. Three witness measurements to end of laterals from permanent fixtures such as building corners.
 - b. Measurement from lateral wyes to nearest downstream manhole.
 - c. Invert elevation at end of each lateral.

1.04 JOB CONDITIONS:

- A. Maintain existing sanitary sewer system operational. At new connections to the existing sewer system, plug the downstream end of the new sewer until the new sewer has been tested and accepted.
- B. Do not bypass wastewater to ground or surface waters.
- C. Install service lines as pipe laying progresses and within maximum of 600 feet of mainline sewer installation.
- D. Clean up promptly following pipe installation and within maximum of 400 feet behind pipe laying operation. Clean-up includes backfill and rough grading.

PART 2 - PRODUCTS

2.01 PIPE:

- A. Service Pipe and Fittings: Provide minimum 6-inch, same classification as mainline pipe.
 - 1. Plastic (PVC) ASTM D3034 – SDR 35 or 26.
- B. Plastic Pipe: Provide seating marks where couplings are used for jointing.
 - 1. joints: Provide rubber "O" ring.
- C. Joint Repair or Connecting to Existing Sewer Pipe of Different Material:
 - 1. Provide Fernco adapter coupling and stainless-steel bands.
- D. Provide Joint Materials as Indicated for the following Pipes:
 - 1. Plastic (PVC): ASTM D3212 or ASTM F679 (18" & larger).

2.02 MANHOLES

- A. Manholes shall be precast units.
- B. Precast Units: ASTM C478 with circular reinforcement, modified for "O" ring gaskets.
 - 1. Pipe Openings: Provide flexible, watertight rubber boot using mechanically compressed flexible joint re-seal, link-seal, Pressure Wedge, Kor-N-Seal or equal. Conform to ASTM C923.
- C. Concrete: 3500 psi 28-day, 4-inch maximum slump.
- D. Concrete Brick: ASTM C55, Grade N-1.
- E. Grade Rings: ASTM C478 with "O" ring gaskets or ASTM D4976 HDPE adjusting rings with butyl sealant manufactured by Ladtech, Inc. or equal.
- F. Mortar: ASTM C270: 1-part Portland cement, 1-part lime and 3 parts sand by volume.
- G. Manhole Steps:
 - 1. Polypropylene encapsulated steel.
 - 2. Dimensions: 10-inches wide, 4-inch minimum clear tread depth, spaced 16 inches apart.
 - 3. Steps shall be in accordance with:
 - a. ASTM C 478
 - b. ASTM D 4101 (polypropylene)
 - c. ASTM A 615 (steel)
- H. Standard Manhole Castings: East Jordan 1045Z1 A cover or Neenah R-1642, solid lid; with City of Big Rapids wording and logo.
- I. Watertight Manhole Castings (bolted and gasketed): East Jordan 1045ZPT 1040APT 4-bolt Sanitary Sewer Assembly or Neenah R-1916 F with watertight assembly; with letter S.
- J. Cement Waterproofing: Masonry filler.
- K. Chimney Seal: external waterproof membrane encompassing the chimney from precast concrete to casting.

1. Infi-Shield External Uni-Band Seal by Sealing Systems, Inc.
 2. WrapidSeal by CANUSA-CPS
 3. Approved equal.
- L. Flowable Fill: See SECTION 31 23 23 – FLOWABLE FILL.
- M. Pipe Insulation: Closed cell extruded polystyrene 2-inch-thick rigid board manufactured by Dow, Owens Corning or approved equal.
- N. Drop pipe diameter:
1. 8" diameter for incoming pipe sizes 8" through 12".
 2. 10" diameter for incoming pipe sizes 15" through 18".
 3. 12" diameter for incoming pipe sizes 21" through 27".
 4. 15" diameter for incoming pipe sizes 30" through 36".

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Alignment and Grade:
1. Deviations: Notify Engineer and obtain instructions to proceed where there is a grade discrepancy, or an obstruction not shown on the plans.
 2. Laser Beam Control: Provide.
 3. Check grade: At set-up point, 25-foot, 50-foot, 100 foot and 200-foot points thereafter to the next set-up point.
 4. Projector advancement: Reset at each manhole.
- B. Bedding:
1. Method: Article 3.05 SCHEDULES.
 2. Provide bedding area backfill in accordance with SECTION 31 23 33 - TRENCHING, EXCAVATING AND BACKFILLING.
 3. Provide continuous bearing by supporting entire length of pipe barrel evenly.
 4. Bedding of carrier pipe in casing pipe shall be in accordance with SECTION 33 05 25 - BORING AND JACKING.

3.02 INSTALLATION:

- A. Laying pipe:
1. Direction shall be upstream with spigot or tongue end downstream and bell end upstream.
 2. Joints shall be smooth and clean.
 3. Place pipe length and bedding as a unit in a frost free, dry trench.
 4. Install PVC pipe in accordance with ASTM 2321 and these specifications.
 5. Install reinforced concrete pipe in accordance with ASTM D 1479 except as exceeded by these specifications.
 6. Special supports and saddles: Article 3.05 SCHEDULES.
- B. Jointing:
1. Provide solvents, adhesives and lubricants as furnished by Manufacturer.
 2. Gasket position: Confirm that the gasket is in place and that the joint is properly made.
- C. Manholes:
1. General: Article 3.05 SCHEDULES:

2. Base bedding: Provide 4-inch pea stone with full and even bearing in impervious soils or wet conditions. Otherwise provide on undisturbed, frost-free, dry subgrade.
 3. Fill joint space completely and trowel between sections of precast units.
 4. Provide casting grade setting as follows:
 - a. Existing pavement: Finished grade.
 - b. Gravel or lawn grade: 4 inches below.
 - c. Unpaved areas: Finished grade.
 5. Flow channels:
 - a. Construct with concrete up to the top of pipe and slope benches toward center of manhole. Trowel smooth.
 - b. Provide clean, smooth, straight flow channels for main line and laterals.
 - c. Provide smooth curvilinear flow channels for turning flows.
 6. Casting adjustment: Concrete or HDPE ring between leveling and top course of bituminous. Match cross slope of top of casting to cross slope of pavement.
 - a. HDPE adjusting rings:
 - 1) Install per manufacturer's recommendations.
 - 2) Seal to manhole structure, casting and to one another by means of an approved butyl sealant.
 - 3) Adjustment for matching road grade and/or cross slope shall be made utilizing a molded and indexed slope ring.
 7. All sanitary sewer laterals, sewer main, service connections and drop manhole pipes shall have flow channels and shall not discharge onto the surface of the bench. Outside drop connection required for drop of 2 feet or more: ARTICLE 3.05 SCHEDULES
- D. Abandoning and filling existing sanitary sewer and manholes:
1. Pipe: Plug ends of pipe to be abandoned and fill completely with flowable fill.
 2. Manhole: Remove top 3 feet of manhole, plug pipe openings and fill manhole to be abandoned with flowable fill.
- E. Connections:
1. Expose existing sanitary sewer and structures to which the new work is to be connected to confirm condition, location and elevation.
 2. Connect to existing sanitary manhole by coring an opening adequate to connect the proposed pipe with a flexible rubber boot to form a watertight connection.
 - a. Relay and repoint loose blocks and bricks on existing block and brick structures. Rechannel flowlines and benches with concrete, trowel smooth.
 3. Future Sanitary Sewer: Provide the following:
 - a. Plug: Pipe 4 inch through 21 inches with standard disc.
 - b. Bulkhead: Pipe 24 inch and larger with brick and mortar and ½ inch plaster coat outside.
 - 1) 24 inch - 36 inch: 4 inches thick.
 - 2) 42 inch - 60 inch: 8 inches thick.
- F. Service Lines:
1. Align at right angles to street or easement line.
 2. Grade: Provide at uniform rate from mainline wye or riser to the property or easement line, at minimum grade 1/4 inch per foot.
 3. Provide minimum depth at street right-of-way line, property line or easement line as follows (based on house with 8-foot ceiling height in basement, length on private property of 100 feet, and minimum grade on private property of 1/8 inch per foot):
 - a. House with basement: 12 feet below first floor elevation or 3 feet below basement elevation, whichever is deeper.

- b. Commercial and industrial buildings, schools, churches: Confirm required depth with facility owner.
 - c. The above depths govern, except that the minimum depth at the right-of-way line or property line shall be 6 feet below street or easement centerline grade.
 - d. Property line riser excluded from the above minimum depths.
 - e. The minimum depths shown above shall be increased based on actual basement ceiling height and distance away.
4. Connection fitting:
 - a. Locate in field.
 - b. 45° or 60° Wyes: Provide on all pipe except concrete pipe.
 - c. Tees: Allowed only on reinforced concrete pipe.
 5. Main riser will be allowed where cover exceeds 13 feet at mainline.
 6. Plugging: Provide standard plugs or caps securely blocked.
 7. Markers: Place a wood marker (2" x 2" minimum) at end of lateral with sufficient length to extend from invert of lateral to ground surface. Attach a steel rerod 36 inches in length immediately next to the wood marker with the top of the rerod 2 inches below grade. Cover wood marker and steel rerod with 6' long 4" PVC pipe buried 3 feet.
 8. Witnesses: Report the following:
 - a. Wyes or Tees: Measurements to nearest downstream manhole.
 - b. End of Laterals: Three (3) measurements to permanent surface features and elevation.
 9. Property line Riser: Required on all laterals. See ARTICLE 3.05 SCHEDULES.
- G. Bypass Pumping: Provide temporary bypass pumping of wastewater flow as required during construction or replacement of sanitary sewer. See SECTION 01 57 20 - TEMPORARY PUMPING.
- H. Pipe Insulation: Where noted on Drawings, place insulation board 4 feet wide over pipe at top of bedding.

3.03 TESTING AND INSPECTION:

- A. General:
 1. Observation: By Owner or Owner's representative.
 2. Testing: Perform upon completion and before connecting to active system.
 3. Leakage tests: Provide promptly following installation of sewer pipe including services and keep within maximum 1200 feet behind pipe laying operation.
 4. Notification: Clean, pretest and arrange with Owner or Owner's representative for final inspection and test.
 5. Provide necessary equipment, manpower and assistance.
 6. Manholes: See ARTICLE 3.05 SCHEDULES.
 7. Video televising: Provide prior to paving.
- B. Line and Grade: Allowable drift between structures from proposed alignment will be as follows:
 1. Line:
 - a. Through 36 inches: 0.20 foot.
 - b. Over 36 inches: 0.40 foot.
 2. Grade:
 - a. Through 36 inches: 0.02 foot.
 - b. Over 36 inches: 0.05 foot.
 - c. Allowable sag between pipe joints: 5% of pipe diameter with maximum of 1-inch.
 3. Repair sags in excess of tolerance prior to acceptance (required only if video televising indicates a problem).

- C. Plastic pipe deformation:
 - 1. Pipe deformation will be limited to five percent (5%) of diameter.
 - 2. Pull GO, NO-GO type gauge through pipe by hand. Article 3.05 SCHEDULES.
 - 3. Contractor shall provide proof ring for GO, NO-GO gauge from the manufacturer.
 - 4. Schedule: Conduct after final backfill has been in place a minimum of thirty (30) days, and after shutdown of dewatering operation.
 - 5. Correction: Repair defects and retest until acceptable.

- D. Video Televising:
 - 1. Contractor shall complete video televising of new sewers prior to acceptance
 - 2. The sewers and manholes to be televised shall be cleaned completely free of debris prior to televising.
 - 3. Contractor shall provide to Owner or Owner's representative.

- E. Leakage Testing:
 - 1. Contractor to perform exfiltration (water or air) test unless ground water is present, in which case Contractor may opt to perform infiltration test.
 - 2. Acceptable leakage will be as follows:
 - a. Water: Less than 100 gallons per inch of pipe diameter per mile of pipe per twenty-four (24) hours.
 - b. Air: Holding time not less than that listed in table. Article 3.05 SCHEDULE.
 - 3. Correction: Repair defects and repeat test until acceptable.
 - a. Method of repairing defects shall be approved by Owner or Owner's representative.

- F. Infiltration Test (water):
 - 1. Conditions: Minimum groundwater depth 2 feet above high point of system under test.
 - 2. Procedure:
 - a. Install and maintain "V" notch weir at low end of system under test.
 - b. Leakage: Quantity of water measured by "V" notch weir.

- G. Exfiltration Test (water):
 - 1. Conditions: Determine groundwater elevation.
 - 2. Procedure:
 - a. Fill system minimum 2 feet above high point of system or 2 feet above groundwater, whichever is higher.
 - b. Leakage: Quantity of water required to maintain constant level.

- H. Exfiltration (air): Perform in accordance with NCPI Publication, "Low Pressure Air Test for Sanitary sewers", and in accordance with ASTM F 1417, "Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air".
 - 1. Condition: Determine groundwater elevation.
 - 2. Procedure:
 - a. All pressure readings are above the average groundwater head.

3.04 ADJUST AND CLEAN:

- A. General:
 - 1. Keep pipe and structures clean as work progresses.

3.05 SCHEDULES:

- A. Exfiltration Air Test Table.
- B. Manhole Final Inspection Punch List.

END OF SECTION

EXFILTRATION AIR TEST

Time Required for Loss of Pressure from 3.5 PSIG to 3.0 PSIG for Size and Length of Pipe indicated for Q = 0.0015 (Cu. Ft./Min./Sq.Ft. of Internal Surface Area)

Pipe Diameter (in.)	Minimum Time min; sec.	Length for Min. Time (ft.)	Time for Longer length (sec.)	Specification Time for Length (L) Shown (min:sec)											
				100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft	500 ft	550 ft	600 ft	
4	1:53	597	.190L	1:53	1:53	1:53	1:53	1:53	1:53	1:53	1:53	1:53	1:53	1:53	1:54
6	2:50	398	.427L	2:50	2:50	2:50	2:50	2:50	2:50	2:51	3:12	3:34	3:55	4:16	
8	3:47	298	.760L	3:47	3:47	3:47	3:47	3:48	4:26	5:04	5:42	6:20	6:58	7:36	
10	4:43	239	1.187L	4:43	4:43	4:43	4:57	5:56	6:55	7:54	8:54	9:54	10:53	11:52	
12	5:40	199	1.709L	5:40	5:40	5:42	7:08	8:33	9:48	11:24	12:50	14:15	15:40	17:06	
15	7:05	159	2.671L	7:05	7:05	8:54	11:08	13:21	15:35	17:48	20:02	22:16	24:29	26:43	
18	8:30	133	3.846L	8:30	9:37	12:49	16:01	19:14	22:26	25:38	28:51	32:03	35:16	38:28	
21	9:55	114	5.235L	9:55	13:05	17:27	21:49	26:11	30:32	34:54	39:16	43:37	47:59	52:21	
24	11:20	99	6.837L	11:24	17:57	22:48	28:30	34:11	39:53	45:35	51:17	56:59	62:41	68:23	
27	12:45	88	8.653L	14:25	21:38	28:51	36:04	43:16	50:30	57:42	64:54	72:07	79:20	86:33	
30	14:10	80	10.683L	17:48	26:43	35:37	44:31	53:25	62:19	71:13	80:07	89:02	97:56	106:51	
33	15:35	72	12.926L	21:33	32:19	43:56	53:52	64:38	75:24	86:10	96:57	107:44	118:31	129:17	
36	17:00	66	15.384L	25:39	38:28	51:17	64:06	76:55	89:44	102:34	115:23	128:13	141:02	153:51	
39	18:25	61	18.054L	30:57	45:09	60:11	75:14	90:16	105:19	120:22	135:24	160:32	165:31	180:34	
42	19:50	57	20.939L	34:54	52:21	69:48	87:15	104:42	122:09	139:37	157:03	174:31	191:58	209:25	

Note: When 2 sizes of pipe are involved, the time shall be computed by the ratio of lengths involved.

Example: 400 feet of 10-inch pipe and 200 feet of 6-inch pipe

$$\text{Time} = \frac{\text{Length}(1) \times \text{Time}(1) + \text{Length}(2) \times \text{Time}(2)}{\text{Length}(1) + \text{Length}(2)} = \frac{400 \times 7:54 + 200 \times 2:50}{400 + 200} = \frac{400 \times 474 + 200 \times 170}{400 + 200} = 373 \text{ seconds} = \mathbf{6:13 \text{ (min:sec)}}$$

MANHOLE FINAL INSPECTION PUNCH LIST

- Verify specification for correct casting
- Record depth of all inverts to top of casting.
- Verify chimney adjustment rings are completely cemented in place and plaster coated.
- Verify casting is centered in the opening and completely cemented in place with no voids between casting and top of chimney. (check maximum dimensions – see Manhole Detail)
- Cement lift holes and all penetrations.
- Verify pipe penetrations are properly sealed.
- Flow lines are completed and smooth with no high or low spots.
- Flow line is poured up to spring line or ½ the diameter of pipe.
- Benches sloped to flow line at 1" per foot minimum.
- All voids in walls and bottom are cemented.
- Manhole steps and bottom are clean of concrete, bituminous, dirt, debris, etc.
- Verify slope is correct from proposed upstream to downstream inverts.
- Drainage structure constructed of blocks or bricks is plaster coated inside and outside of entire structure.
- Verify catch basin sumps are clean.
- Casting has been properly adjusted prior to final top course. (check tilt to match pavement cross slope)
- Final inspection completed before final top course of asphalt is laid.

RECOMMENDED SAFETY CHECK LIST (may not be all-inclusive)

1. Use vehicle to protect yourself from traffic.
2. Use construction cones on street with traffic (4 minimum)
3. Always wear reflectorized safety vest.
4. Follow Confined Space Entry Procedures if entering a manhole.

SECTION 33 32 05

SUBMERSIBLE PUMP STATIONS

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes work associated with submersible pump stations and their associated mechanical and structural components.

1.02 PUMP DESIGN AND PERFORMANCE REQUIREMENTS:

- A. General:
 - 1. Three pumps are required at each pump station. Pumps within an individual pump station shall be identical.
 - 2. Pumps shall be specifically made for raw sewage pumping applications.
 - 3. Each pump shall be equipped with a submersible motor and discharge base elbow.
 - 4. Pumps shall operate between the maximum and minimum system head curves provided within the pump manufacturers recommended limitation of the pump without excessive vibration and any cavitation.
 - 5. Each pump shall be automatically and firmly connected to the discharge connection, guided by no less than two guide rails extending from the top of the station to the discharge connection.
 - 6. The pump connection to the discharge shall be watertight.
 - 7. All equipment and materials placed inside the pump station shall be UL or FM listed for use in NEC Classified Class 1, Division 2 Hazardous Location
 - 8. All fasteners and miscellaneous metals shall be non-magnetic stainless steel.
- B. Performance criteria
 - a. Pump Type: Non-clog
 - b. Design point: 180 gpm @ 18' TDH
 - c. Motor Size: 2 Horsepower minimum
 - d. Nominal Rotative Speed: 1750 RPM

1.03 SUBMITTALS:

- A. Submit in accordance with Section 01 33 00 – Submittals.
- B. Shop Drawings:
 - 1. Pump Submittal:
 - a. Show capacity head curve with rotative speed, operating points, impeller type and diameter, efficiency, brake horsepower, shutoff head, net positive suction head and impeller diameter.
 - b. Manufacturer's data pump dimensional drawing, seal details, guide rail details and dimensions, weight of each pump and motor unit, discharge connection, and materials of construction.
 - c. Certified pump curve
 - 2. Bearings:
 - a. Submit calculations of L₁₀ bearing life at the design point of each pump.
 - 3. Motor submittal:
 - a. Manufacturer and model.
 - b. Rated horsepower.

- c. Voltage.
 - d. NEMA classification.
 - e. Insulation.
 - f. Efficiency.
 - g. Service Factor.
 - h. Amperage data.
 - i. Bearing types.
4. Access Doors:
 - a. Detailed dimensional drawing showing location of door in top with respect to pumps and/or piping and valves in the chambers.
 - b. Manufacturer's detailed dimensional drawing of access doors.
 - c. Materials of Construction.
 5. Piping and Valves:
 - a. Piping product data sheets.
 - b. Valve product data sheets.
 - a. Rated working pressures for piping and valves.
 6. The prefabricated FRP lift station manufacturer shall prepare shop drawings for the complete lift station including structural and opening details, equipment mounting and location details, and manufacturer's cut sheets for each item of equipment in the lift station. The main component of the submittals shall be an 8½" x 11" drawing of the complete prefabricated FRP lift station prepared by the manufacturer. Manufacturer's cut sheets shall indicate capacities, dimensions, and materials of construction for all equipment in the prefabricated FRP lift station.
 7. Pressure Gauges:
 - a. Manufacturer & model with dimensional drawings and materials of construction.
- C. Provide five (5) copies of the installation instructions with the delivery of the equipment.
- D. Provide five (5) copies of the operation and maintenance manuals, each containing as-constructed" data on pump station equipment, instructions on operation and maintenance, list of parts and sources from which they may be obtained, and a list of recommended spare parts maintained at site.

1.04 QUALITY ASSURANCE:

- A. Factory Testing:
 1. Test each pump before shipment. Furnish factory certified performance curves for each pump based on test results. Required data across the entire pump curve include:
 - a. Flow
 - b. Head
 - c. Rotation speed
 - d. Amp draw
 2. Submit certified performance curves for review in accordance with Submittals.

1.05 DELIVERY, STORAGE AND HANDLING:

- A. Protect all equipment during delivery and during storage on site. Store equipment on suitable blocking to maintain parts clear of the ground and cover to insure drainage of all rainwater.
- B. Exercise and lubricate equipment during storage in accordance with manufacturer's recommendations.
- C. Rejected material and replacements:

1. Reject damaged, deteriorated or contaminated material and immediately remove from the Site.
2. Replace rejected materials with new materials at no additional cost to OWNER.

PART 2 - PRODUCTS

2.01 FIBERGLASS REINFORCED POLYESTER WETWELL:

A. Materials:

1. Unless otherwise indicated the plastic terminology used in this specification shall be in accordance with the definitions given in American Society for Testing and Materials (ASTM) designations D883 - Definitions of Terms Relating to Plastics.

B. Resins:

1. The resins used shall be a commercial grade polyester and shall be evaluated as a laminate by test or determined by previous service to be acceptable for the intended environment. The resins used may contain the minimum amount of fillers or additives required to improve handling properties. Up to 5% by weight of thixotropic agent, which will not interfere with visual inspection, may be added to the resin for viscosity control. Resins may contain pigments and dyes by agreement between manufacturer and engineer, recognizing that such additives may interfere with visual inspection of FRP laminate quality.

C. Reinforced Material:

1. The reinforcing material shall be a commercial grade of glass fiber (continuous strand, chopped-strand, continuous mat and non-continuous mat) having a coupling agent, which will provide a suitable bond between the glass reinforcement material and resin.

D. Laminate Structure:

1. FRP laminate shall consist of a resin rich inner surface: chop-spray interior liner; and, a chop-hoop filament-wound structural exterior layer.
 - a. Inner surface:
 - (1) The resin rich inner surface shall be free of cracks and crazing with smooth finish and with an average of not over two (2) pits per square foot, providing the pits are less than 0.125 inches in diameter and 0.3125 inches in depth and are covered with sufficient resin to avoid exposure of any fiberglass reinforcement material. Some waviness shall be permissible as long as the surface is smooth. Between 0.01 to 0.02 inches of resin, rich surface shall be provided.
 - (2) Chop-Spray Interior Liner: The interior liner shall be reinforced by 25 to 35% by weight of chopped strand glass fiber having fiber lengths from 0.5 to 2.0 inches. The chop-spray interior liner protects the chop-hoop filament-wound structural exterior liner from corrosion damage caused by "wicking" of the wet well liquid contents. A minimum of 0.100 inches of chop-spray interior liner shall be provided.
 - (3) Chop-Hoop Filament-Wound Structural Exterior Layer:
 - (a) The structural reinforcement of the wet well shall be by the chop-hoop filament-wound manufacturing method only. The axial reinforcement shall be continuous-strand glass fiber. The longitudinal reinforcement shall be chopped-strand glass fiber. The glass fiber reinforcement content of the chop-hoop filament wound structural exterior layer shall be 50 to 80% by weight. The exterior surface of the wet well shall be relatively smooth with no exposed reinforcement fibers or sharp projections. Hand finish work is permissible to prevent reinforcement fiber exposure. The wall thickness of the

chop-hoop filament-wound structural exterior layer shall vary with the wet well height to provide the aggregate strength necessary to meet the tensile and flexural physical properties requirements.

E. Physical Properties:

1. Wet Well FRP Wall Laminate: The wet well FRP wall laminate must be designed to withstand wall collapse or buckling based on the following assumptions and third party specifications:
 - a. Hydrostatic Loading of 62.4 lbs. per cubic foot
 - b. Saturated soil weight of 120 lbs. per cubic foot
 - c. Soil Modulus of 700 lbs. per square foot
 - d. Pipe stiffness values as specified in ASTM D3753The wet well FRP laminate must be constructed to withstand or exceed two times the assumed loading on any depth of the wet well.

F. Wet Well FRP Bottom Laminate:

1. The wet well FRP bottom laminate shall have less than 0.375 inches of center elastic deflection (deformation) when in service in totally submerged conditions.

G. FRP Laminate Surface Hardness:

1. The finished FRP laminate will have a Barcol Hardness of at least 90% of the resin manufacturer's specified hardness for the fully cured resin. The Barcol Hardness shall be the same for both interior and exterior surfaces.

H. Wet Well Top Flange:

1. The wet well top flange shall have an outside diameter at least 4.0 inches greater than the inside diameter of the well.
2. A six-hole pattern shall accommodate the mounting of a cover with at least 0.375 inches in diameter 316 stainless steel fasteners. Non-corroding stainless steel threaded inserts shall be fully encapsulated with non-continuous mat or chopped-strand glass fiber reinforcement. The inserts shall have an offset tab to prevent stripping or spinning out when removing and reinserting cover fasteners.

I. Steel Anti-Floatation Flange:

1. The steel anti-floatation flange shall be constructed from 0.1875 inches thick ASTM A36 structural steel plate, encapsulated in at least 0.125 inches of chopped-strand glass fiber reinforcement on all sides. The steel anti-floatation flange shall be square with outside dimensions of at least 4.0 inches greater than the wet well inside diameter. The steel anti-floatation flange shall be attached to the wet well bottom with chopped-strand glass fiber reinforcement.

2.02 WETWELL COMPONENTS:

A. Pump Quick Disconnect Mounting Studs:

1. Shall be 316 series stainless steel threaded studs of at least 0.375 inches in diameter. The studs shall first be threaded into the 0.1875" inches thick ASTM A36 structural steel anti-floatation flange/bottom of the wet well and then welded into place. Once installed, the studs shall be sealed with at least two layers of non-continuous glass fiber mat or chopped-strand glass fiber reinforcement.

B. Discharge Coupling:

1. A 2" NPT full coupling full welded in the center of a 14 gauge steel plate, finished with black enamel, shall be factory installed with at least 0.375 inches in diameter 316 stainless steel fasteners. The wet well wall penetrations shall be sealed with silicone

sealer. A sufficient quantity and type of "Link-Seal" type modular, mechanical, interlocking, synthetic rubber links shaped to continuously fill the annular space between the discharge pipe and the aluminum sleeve shall be used to provide a hydrostatic seal. The aluminum sleeve shall be bolted on the wet well wall and sealed with silicone sealer.

A. Electrical Coupling:

1. 2 – 2" stainless steel NPT full coupling full welded in the center of a 14 gauge 316 stainless steel plate, shall be factory installed with at least 0.375 inches in diameter 316 stainless steel fasteners. The wet well wall penetrations shall be sealed with silicone sealer.

D. Inlet Hub:

1. A 6" nominal pipe diameter thermoplastic pipe grommet shall be field installed by the contractor. The pipe grommet shall provide a mechanical seal and shall not require any secondary sealing materials.

E. Float Bracket:

1. Float Bracket shall be fabricated from 316 stainless steel with four compression style cord grips to maintain float level position. It shall be factory installed with at least 0.375 inches in diameter 316 stainless steel fasteners. The wet well wall penetrations shall be sealed with silicone sealer.

F. Ventilation:

1. Wet well ventilation shall comply with all applicable codes.

G. Slide Rail Assembly:

1. The slide rail assembly shall include pump quick disconnect discharge elbow, sealing flange with rail guide, upper guiderail bracket, lifting chain and guiderails.

H. Pump Quick Disconnect (QDC) Discharge Elbow:

1. The pump quick disconnect (QDC) discharge elbow, made of cast iron, designed to mount directly on the wet well floor, shall be supplied for each pump. It shall have a standard ANSI B16.1 125 lb. flange, flat faced and drilled on the discharge side, with a machined mating pump connection. The design shall be such that connection between the pump and QDC is made without the need for any nuts, bolts or gaskets.

I. Sealing Flange with Rail Guide:

1. The sealing flange with rail guide shall be mounted on each pump discharge. It shall have a machined mating flange, which matches the QDC discharge elbow. Sealing of this pump and discharge piping connection shall be accomplished by a simple linear downward motion of the pump along the guiderails culminating with the entire weight of the pumping unit supported by the QDC discharge elbow.

J. Upper Guiderail Bracket:

1. The upper guiderail bracket, made from 316 stainless steel, shall align and support the two guiderails at the top of the wet well. It shall bolt directly to the hatch frame and incorporate a beveled stainless steel inserts for secure rail installation.

K. Lifting Chain:

1. The lifting chain shall be 316 series stainless steel with a diameter of at least 3/16" and a nominal breaking strength of at least 2500 pounds.

L. Guiderails:

1. The guiderails shall be $\frac{3}{4}$ inch schedule 40 316 stainless steel pipe. There shall be two guiderails per pump to insure proper alignment with the QDC discharge elbow and stationary piping.

M. Discharge Pipe and Fittings:

1. Discharge pipe and fittings shall be schedule 80 PVC

N. Valves:

1. Gate valves shall be bronze with extended handles to the top of the hatch for ease of operation. Check valves shall be bronze swing check. A bypass connection shall be provided in the valve chamber with a 2" quick connect.
2. Irrigation solenoid valve shall be brass body, 1-1/2" NPT, 150 psi proof, normally closed and electrically actuated with 120 vac coil. Design based on ASCO 8210G022 or approved equal.

O. Aluminum Hatch Cover:

1. The wet well and integral cover shall be constructed of 0.250 inches thick mill finish aluminum diamond plate with 316 stainless steel hardware. The access hatch shall have a recessed handle and locking pin. The hatch shall be held open in the vertical position by means of a hold open arm of corrosion resistant design. The cover shall be mounted to the wet well with a least six 316 stainless steel fasteners of at least 0.375 inches in diameter.

P. Manufacturer or package pump station assembly:

1. Topp Industries, Inc.
2. AK Industries, Inc.
3. Engineer approved equal.

Q. Warranty

1. Manufacturer shall guarantee the complete prefabricated FRP lift station, piping, all components to be free from defects in materials and workmanship for a period of one year from the date of substantial completion.

2.03 PRESSURE GAUGES:

B. General: Pressure gauges to be mounted on each pump discharge line, as shown on the drawings.

1. Quantity: Three (3) required at each pump station.
2. Gauge accuracy shall be 1% of full scale.
3. Pressure gauge case shall be constructed of stainless steel.
4. Gauge window shall be shatterproof glass.
5. Gauge shall be liquid (glycerin) filled.
6. Connection size shall be $\frac{1}{4}$ " NPT.
7. Gauge shall be stem mounted with a lower connection location.
8. Bourdon tube/socket material shall be 316 stainless steel / 316 stainless steel.
9. Provide shut-off cocks, diaphragm seal protectors, and other appurtenances at each pressure gauge tap location as detailed on the Drawings.
10. Pressure range shall be 0-60 psi, with 5.0 psi figure intervals and 0.5 psi minor graduations

C. Manufacturer and Model:

1. Pressure gauges shall be Ashcroft® Duragauge® Type 1009, or approved equal.

2.04 MISCELLANEOUS:

- A. All mating sealed parts shall be machined and have Buna N elastomeric gaskets and shall provide a watertight connection.
- B. Pump Base Anchor Bolts: Non-magnetic 316 stainless steel. Size, length, and embedment per the pump manufacturer's recommendations.
- C. Guide bracket: Non-sparking with corrosion resistant surfaces.
- D. Pump discharge: Automatically sealed to discharge connection when pump is lowered into place. Pump flange shall have non-sparking contact surfaces.
- E. Miscellaneous Metals: All miscellaneous metals shall be non-magnetic 316 stainless steel.

2.05 PUMP CONSTRUCTION:

- A. General: The submersible pump shall be manufactured to pump raw wastewater including grinding larger solids without plugging or dewatering of the solids as in integral part of the pumping action.
- B. Solid Size: The submersible pump shall be capable of grinding or passing a 3" diameter solid and passing the remaining pieces without clogging or jamming.
- C. Pump Volute and Motor Casing:
 - 1. ASTM A48 Class 30 ductile iron.
 - 2. All water or oil passages shall be smooth and free of imperfections and blowholes for good flow performance.
 - 3. Impeller
 - a. Dynamically balanced semi-open type
 - b. Two vanes minimum capable of trimming while maintaining dynamic balance
 - c. Slip fit to a tapered shaft and key driven.
 - d. ASTM A148 cast iron case hardened
 - e. Minimum hardness: Rockwell C 60
- D. Shaft: Stainless steel
- E. Bearings:
 - 1. Upper radial and lower thrust bearings required
 - 2. Permanently lubricated without the need for lubricating at a prescribed schedule.
 - 3. Minimum L₁₀ bearing life at the design point of the pump:
 - a. Upper bearing: 50,000 hrs.
 - b. Lower bearing: 50,000 hrs.
- F. Seals
 - 1. Dual mechanical cartridge style seals with an oil chamber between them.
 - a. Upper Seal: Carbon rotating face vs Ceramic stationary face
 - b. Lower Seal: Silicon Carbide vs Silicon Carbide
 - c. All other seal components shall be 316 stainless steel
 - 2. Oil in reservoir must be FDA approved non-toxic.
 - 3. Leak detection probe:
 - a. Mounted in the oil reservoir between the seals

- b. Must detect water in the oil and trip the Seal Fail Alarm
 - 4. Leak detection probe relay:
 - a. As recommended and provided by pump manufacturer.
 - b. Ship loose to control panel manufacturer for installation in factory.
- G. Factory applied paint:
 - 1. The finished assembled pump shall be painted the manufacturer's recommended coating for immersion in raw sewage.
- H. Warranty:
 - 1. The pump, motor and, power cord unit shall be warranted against defects in material and workmanship for a period of five (5) years after final acceptance of the pumping system after pump station start-up.
 - 2. Defects shall be repaired or replaced at no cost including pump removal, pump reinstallation, shipping, parts, labor and materials.
- I. Acceptable Manufacturers. For the purpose of this specification, the following manufacturers are considered capable of providing the pumps as specified:
 - 1. Hydromatic
 - 2. Flygt
 - 3. Or engineer approved equal.

K. Start-up Service:

A factory authorized start up technician with a minimum of 5 years experience shall be provided to visit the site for a minimum of 8 hours on-site and confirm pumps/s and control operation meets or exceeds the specifications. The name of the technician along with the qualifications shall be submitted prior to start up upon Engineer/Owner request. The service technician shall be outfitted with a service crane truck capable of pulling the pumps to verify rotation and perform a visual check of the pump/s along with the following items at a minimum:

- 1. Megger stator and power cables.
- 2. Inspect pump/s cables for damage.
- 3. Verify proper base and rail installation.
- 4. Check seal lubricant.
- 5. Check power supply voltage.
- 6. Measure motor operating amperage load and no load amperage.
- 7. Perform shut off head test and draw down flow test.

2.06 SPARE PARTS:

- A. Furnish the following spare parts for each pump station:
 - 1. One (1) impeller.
 - 2. One (1) set of double mechanical seals.
 - 3. One (1) set of pump discharge seal gaskets
- B. Package each spare part and clearly label.

2.07 MOTORS

- A. Submersible, capable of driving pump over full range of pump characteristic curve without exceeding one hundred percent (100%) of motor horsepower rating based on a 1.15 service factor.

- B. Continuous use: Minimum 10 starts and stops per hour
 - 1. 240 volt, 1-phase
 - 2. Horsepower: 2 Hp
 - 3. U.L. or F.M. listed for NEC classified Class 1, Division 2, hazardous location
 - 4. Housing: Air or oil filled watertight casing.
 - 5. Insulation: Class H.
 - 6. Shaft: 316 Stainless steel.
 - 7. Capable of running totally, partial or non-submerged.
 - 8. Provide seal leakage water sensor probe to indicate water in seal chamber.
 - 9. Thermal sensors in motor windings shall deactivate starter when temperature exceeds safe level.
 - 10. Motor electric service cable shall be extra hard usage and submergence rated with sufficient length to reach control panel without splices. Wiring in the pumping chamber shall permit total submergence without affection operation.
 - 11. Motor starting requirements not to exceed NEMA Code G.
 - 12. Inverter Duty Rated in accordance with NEMA MG1 Part 31
 - 13. Provide duplicate pump motor nameplate to control panel fabricator with seal fail relays for installation in control panel.

2.08 PUMP GUIDE RAIL SYSTEM:

- A. Entire guide rail system shall be non-magnetic 316 stainless steel suitable for NEC classified Class 1, Division 2, hazardous locations.
- B. Rail dimensions shall be per the pump manufacturer and shall be a minimum of 2" diameter, and minimum schedule 40.
- C. Rails shall be securely anchored to the pump discharge elbow and the hatch opening. Intermediate supports shall be provided at 12' spacing (minimum).

2.09 ACCESS DOORS:

- A. Access doors shall:
 - 1. Be designed for 300 psf loading
 - 2. Have single or double leaf as shown on the drawings
 - 3. Be ¼" aluminum diamond plate top
 - 4. Have aluminum or stainless-steel hinges with stainless steel pin
 - 5. Have a spring assist operator
 - 6. Have a holding arm to lock door in open position at 90 degrees from horizontal.
 - 7. Have a recessed padlock hasp
 - 8. Have a flush square "key-hole" with removable opening handle and threaded plug for hole for operation of door from outside the structure.
 - 9. Have a spring-loaded latching mechanism with handle for opening of door from interior of the structure.
 - 10. Have a secondary safety grate that:
 - a. is integral to door frame
 - b. is Aluminum
 - c. is powder coat painted with an orange finish
 - d. has a 300 psf load rating
 - e. shall not interfere with withdrawal of equipment
 - f. be manufactured by: Topp, AK Industries, or approved equal.

2.10 ACCESSORIES:

- A. Discharge connection: Cast iron, bolted to the floor.
- B. Lift chain: 316 Stainless steel, with lifting capacity of twice pump weight, minimum.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Install in accordance with manufacturers' recommendations, shop drawings and contract drawings.

3.02 FIELD QUALITY CONTROL:

- A. Wet Well Chamber Interior Evaluation:
 - 1. Contractor shall provide the opportunity for Owner or Owner's representative to view the interior of all structures in accordance with current confined space entry requirements.
 - 2. Equipment and all personnel for confined space entry provided by Contractor.
 - 3. Contractor shall provide all other personnel appropriately trained for confined space entry.
 - 4. Evaluation and any corrections must be completed prior to Start-up.
- B. Pressure Testing:
 - 1. Air or air-water methods of applying pressure prohibited.
 - 2. Test must conform to pressure testing specified in Section 33 34 00 SANITARY FORCEMAINS.
 - 3. Additionally, all visually noted leaks or pipe movements must be repaired until satisfactory to the engineer.

3.03 PUMP STATION START-UP AND TESTING:

- A. All work at the pump station shall be complete including communications, utility power supply, emergency power supply, programming, as well as all mechanical and electrical work prior to scheduling the start-up. The contractor must have a reasonable expectation the station will perform as designed.
- B. Contractor to coordinate and schedule the start-up
 - 1. The Contractor shall arrange and pay for all required personnel to attend the start-up. Costs for the Engineer and Owner to attend the start-up shall be borne by the Owner for the first Start-up attempt. Costs for subsequent start-up attempts shall be the responsibility of the Contractor. Required personnel at start-up:
 - a. General Contractor
 - b. Mechanical Contractor
 - c. Electrical Contractor
 - d. Systems Integrator
 - e. Pump Manufacturer's Representative
 - f. Generator Manufacturer's Representative
 - g. Engineer
 - h. Owner
 - 2. The Contractor shall provide and pay for clean water for station testing as well as be responsible for disposal of the water at the discharge of the forcemain.
 - 3. Contractor must fill the discharge forcemain full of water prior to scheduling start-up.

4. The Contractor shall operate the pump station to allow the following tests to be completed. Measurements and witnesses of the measurements shall be coordinated by the Contractor. Tests may be repeated at the discretion of the Owner or Owner's representative.
 - a. Visual verification the forcemain is full of water by running a pump while looking at the forcemain discharge.
 - b. Flow and head of each pump running alone
 - c. Flow and head of pumps running together
 - d. Amp draw on each leg
 - e. Flow Meter reading
 - f. Test each alarm condition and ensure the alarm reaches the Owner's operator.
 - g. Simulate utility power outage and ensure that:
 - 1) the permanent generator automatically starts and automatically transfers power to the station, or
 - 2) the portable generator and manual transfer switch transfer power to the station.
 - 3) Other tests as equipment manufacturers or Owner or Owner's representative deem necessary.
 5. If the station fails to pass the start-up tests and it is necessary to reassemble the start-up team at a later date, the costs for the subsequent testing shall be borne by the Contractor and shall include, but not be limited to, the time and materials for Owner or Owner's representative and equipment manufacturers.
- C. Owner's Operator Training:
1. A training session shall be held to train the operators how the system is operated.
 2. The operator training shall be separated from the start-up and shall be on a separate day than the start-up.
 3. The Contractor shall coordinate and pay for appropriate training personnel to train the operators in the use and programming of the system and shall, at a minimum, include the following personnel:
 - a. Systems integrator
 - b. Pump manufacturer's representative
 - c. Generator Manufacturers representative
 4. Minimum on-site time of each training representative: 8 hours

3.04 SCHEDULES:

- A. System Head Curve of pump station.

END OF SECTION

SECTION 33 34 00
SANITARY FORCE MAINS

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes work required for sanitary force mains, pressure sewers, related structures and appurtenant work.

1.02 REFERENCES:

- A. ASTM - American Society of Testing Materials, latest edition.
- B. ANSI - American National Standards Institute, latest edition.
- C. AWWA – American Waterworks Association, latest edition.

1.03 SUBMITTALS:

- A. Pre-Construction:
 - 1. Pipe & Fittings:
 - a. Manufacturer, material & AWWA/ASTM designation.
 - b. Joint construction details.
 - 2. Mechanically Restrained Joints:
 - a. Manufacturer, model number & material.
 - 3. Valves & Boxes:
 - a. Valve manufacturer, model number & AWWA designation.
 - b. Valve box manufacturer, model number, material & dimensional drawings.
 - 4. Air Release Valves & Appurtenances:
 - a. Valve manufacturer, model number & size.
 - b. Pipe, fittings and valves to connect to the forcemain.
 - 5. Tracer Wire & Appurtenances:
 - a. Wire manufacturer, model & size.
 - b. Splice connectors.
 - c. Terminal end devise details.
 - 6. Individual Air Release Valve Structure Build Sheets:
 - a. Top, bottom and invert elevations.
 - b. Pipe orientation.
 - c. Individual precast concrete section dimensions.
 - d. Prefabricated rubber boot material & manufacturer.
 - e. Casting manufacturer & model.
- B. Post Construction:
 - 1. Witnesses:
 - a. Three witness measurements to buried fittings and valves from permanent fixtures such as building corners.

1.04 JOB CONDITIONS:

- A. Activating New System: Notify Owner or Owner's representative after completing tests.

- B. Clean up promptly following pipe installation and within maximum of 600 feet behind pipe laying operation. Clean-up includes backfill and rough grading.

PART 2 - PRODUCTS

2.01 GENERAL:

- A. Cement Lining: AWWA C104, ANSI A21.4 Standard thickness for ductile iron pipe and fittings.

2.02 PIPE:

- A. Ductile Iron: AWWA C151, ANSI A21.50 and ANSI A21.51; Pressure Class 350.
- B. PVC: AWWA C900, Pressure Class 150 (DR 18).
- C. High Density Polyethylene (HDPE): ASTM D1248, PE-4710, (SDR 11, PR 160 psi) or (SDR 9, PR 200 psi), cell classification ASTM D3350-99, 345464C.

2.03 JOINTS:

- A. Ductile Iron Pipe and Fittings: AWWA C111, ANSI A21.11, rubber gasket
 1. Electrical continuity: Provide conductive gaskets (M.J.), bronze wedges (3 per joint) (push-on), or thermite welded sockets and cables (push-on).
- B. PVC: AWWA C900 or C905, ASTM D3139, ASTM F477 rubber gasket.
- C. HDPE: Fused.

2.04 JOINT RESTRAINT:

- A. Ductile Iron Pipe:
 1. Push-on (Bell and Spigot): Ford Uni-flange Series 1450 (4-inch through 36-inch), EBAA Iron Megalug Restraint Harness Series 1700 (4-inch through 48-inch) or approved equal.
 2. Mechanical joint: Ford Uni-flange Series 1400 (4-inch through 36-inch), EBAA Iron Megalug Series 1100 (4-inch through 48-inch) or approved equal.
- B. PVC Pipe Push-on (Bell and Spigot):
 1. Ford Uni-flange Series 1390 (4-inch through 42-inch), EBAA Iron Megalug Restraint Harness Series 2800 (C905 pipe 14-inch through 48-inch), EBAA Iron Megalug Restraint Harness Series 1600 (C900 pipe 4-inch through 12-inch) or approved equal.
- C. PVC Pipe to Ductile Iron Fitting Mechanical Joint: Ford Uni-flange Series 1300 (4-inch through 42-inch), Ford Uni-flange Series 1500 (C905 pipe 14-inch through 24-inch and C900 4-inch through 12-inch), EBAA Iron Megalug Series 2000 PV (4-inch through 48-inch), or approved equal.
- D. HDPE to Ductile Iron Connection: Self-restraining, fusible, molded PE3408 mechanical joint adapter meeting requirements of ASTM D2513 and AWWA C906 and manufactured by Central Plastics Company or approved equal. The mechanical joint adapter shall be of the same SDR rating as the pipe. Additional restraint shall be provided on the ductile iron pipe side of the connection point by restraining pipe joints for a distance of at least 150 feet. Additional restraint shall be provided on the HDPE pipe side in the form of an HDPE electrofusion flex restraint encased in concrete, or other approved methods. Follow

manufacturer's recommendation for number of electrofusion flex restraints needed at each connection.

2.05 FITTINGS:

- A. Ductile Iron and PVC Pipe: Ductile iron, AWWA C110 / ANSI 21.10, Thickness Class 54, Pressure Class 350, coated and cement lined, or fusion bonded epoxy lined. Joints shall be mechanical joints. All bolts, nuts and set screws shall be carbon steel and field coated for corrosion resistance.
- B. HDPE Pipe: HDPE, FM approved, ASTM D3350-02, cell classification 345464C.

2.06 VALVES (OPEN CW) AND VALVE BOX:

- A. Gate: AWWA C515, resilient seated disc, non rising stem, fully bronze mounted and roller and gear operator over 16 inches.
- B. Eccentric Plug Valve:
 - 1. AWWA C517 buried service with mechanical joint ends meeting ANSI/AWWA C111/A21.11.
 - 2. Manufacturers: GA Industries, or approved equal.
- C. Air release: ARI Valve Corporation Model S-025.
 - 1. 2" NPT connection.
- D. Boxes: Three (3) section cast iron with lid marked SEWER.
 - 1. Upper section: Screw on adjoining center section and full diameter throughout. Place geo-textile fabric around threaded joint of risers, if used.
 - 2. Center section: Minimum 5 inch inside diameter.
 - 3. Base section: Fit over valve bonnet and shaped round for valves through 10 inch and oval for 12 inch and over. Place geo-textile fabric around valve bonnet.

2.07 AIR RELEASE VALVE CHAMBERS:

- A. Chambers shall be precast concrete.
- B. Precast Units: ASTM C478.
 - 1. Joints: Cement mortar, preformed bituminous rope or "O"-ring gaskets.
 - 2. Pipe Opening: Pipe diameter plus 6 inches, maximum.
- C. Concrete Brick: ASTM C55, Grade N-1.
- D. Grade Rings: ASTM C478 with "O" ring gaskets or ASTM D4976 HDPE adjusting rings with butyl sealant manufactured by Ladtech, Inc. or equal.
- E. Mortar: ASTM C270, 1-part Portland cement, 1-part lime and 3 parts sand by volume.
- F. Manhole Steps:
 - 1. Polypropylene encapsulated steel.
 - 2. Dimensions: 10-inches wide, 4-inch minimum clear tread depth, spaced 16 inches apart.
 - 3. Steps shall be in accordance with:
 - a. ASTM C 478

- b. ASTM D 4101 (polypropylene)
 - c. ASTM A 615 (steel)
- G. Standard Chamber Casting: East Jordan 1045Z1, Type B vented cover or Neenah R-1916-F vented cover, with letter S.
- H. Watertight Manhole Castings (bolted and gasketed): East Jordan 1045ZPT 1040APT 4-bolt Sanitary Sewer Assembly or Neenah R-1916 F with watertight assembly; with letter S. Provide vent pipe as detailed on drawings.

2.08 MISCELLANEOUS:

- A. Plastic Seamless Encasement Tubing: ANSI A21.5.
 - 1. Material: ASTM D1248 Polyethylene, Type I, Class C, 8 mils thick.
 - 2. Closing tape: 2-inch-wide Poly Ken #900 or Scotchwrap #50.
- B. Pipe Insulation: Closed cell extruded polystyrene 2-inch-thick rigid board manufactured by Dow, Owens Corning or approved equal.
- C. Tracer Wire: 6-gauge solid copper locator wire with insulation suitable for direct burial with the pipe.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Alignment and Grade:
 - 1. Deviations: Notify Engineer and obtain instructions to proceed where there is a grade discrepancy, or an obstruction not shown on the plans.
 - a. Verify location and depth of existing utilities in advance of construction and provide adjustments in alignment and grade of force main at no additional cost.
 - 2. Depth of pipe: Minimum cover over pipe by zones:
 - a. Lower part of lower peninsula of Michigan and south (South of the north boundary of tier of townships 20 north which is approximately highway US 10): 5 feet - 0 inches.
 - b. Upper part of lower peninsula: 5 feet - 6 inches.
 - c. Upper peninsula: 6 feet - 0 inches.
 - 3. High points in pipeline: Locate at air release valves.
 - 4. Install pipe to elevations and grades when indicated on drawings.
- B. Bedding:
 - 4. Method: See *Methods of Bedding Pressure Pipe* detail.
 - 5. Provide bedding area backfill as specified elsewhere.
 - 1. Provide continuous bearing by supporting entire length of pipe barrel evenly. Excavate for bells of pipe joints.
- C. Cleaning Pipe and Fittings:
 - 1. General: Provide interior free of foreign material and joint surfaces free of lumps and blisters.

3.02 INSTALLATION:

- A. Laying pipe:
 - 1. Place pipe length and bedding as a unit in a frost free, dry trench.

2. Special supports and saddles: Article 3.04 SCHEDULES.
 3. Joint deflection shall be as recommended by pipe manufacturer.
 4. Prevent entrance of foreign material and plug watertight when left unattended.
 5. Provide minimum vertical and horizontal separation between force main and water main of 18 inches and 10 feet, respectively, unless otherwise approved.
- B. Cutting Pipe:
1. PVC or HDPE: Power saw or hand saw.
 2. Ductile iron: Power saw.
 3. Asbestos Cement: ASTM E 2394 – 04.
- C. Jointing:
1. Mechanical:
 - a. Lubricate with vegetable soap.
 - b. Tighten bolts evenly to 75 to 90-foot pounds.
 2. Push-on:
 - a. Lubricate as recommended by manufacturer.
 - b. Shape beveling as recommended by manufacturer.
 3. HDPE:
 - a. Manufacturer's equipment shall be used for fusing pipe.
 4. PVC: Manufacturer's standard.
 5. Asbestos cement pipe: Meet requirements of ASTM E 2394 – 04.
- D. Setting Valves and Fittings:
1. General: Article 3.04 SCHEDULES.
 2. Valves: Plumb.
 3. Valve boxes:
 - a. Base section: Center and plumb over operating nut and 2 inches above bonnet joint.
 - b. Upper section: Set cover $\frac{1}{4}$ inch below finished grade.
 - c. Witnesses: Provide three (3) measurements to permanent surface features.
 4. Provide mechanical joint restraint in accordance with the pipe restraint table in paragraph 3.02.G.
- E. Air Release Valve Chambers:
1. General: Article 3.04 SCHEDULES:
 2. Base Bedding: Provide 4-inch pea stone with full and even bearing in impervious soils or wet conditions. Otherwise provide on undisturbed, frost-free, dry subgrade.
 3. Precast: Fill joint space completely and trowel.
 4. Provide casting setting as follows:
 - 1) Existing pavement: Flush.
 - 2) Gravel grade: 4 inches below.
 - 3) Unpaved areas: Finished grade.
 5. Casting adjustment: Concrete or HDPE ring between leveling and top course of bituminous. Match cross slope of top of casting to cross slope of pavement.
 - a. HDPE adjusting rings:
 - 1) Install per manufacturer's recommendations.
 - 2) Seal to manhole structure, casting and to one another by means of an approved butyl sealant.
 - 3) Adjustment for matching road grade and/or cross slope shall be made utilizing a molded and indexed slope ring.
- F. Reaction Backing:
1. Placement: Article 3.04 SCHEDULES.

- a. Place concrete reaction backing only where restrained joints cannot be provided. Megalugs and fitting bolts shall not be covered with concrete.

G. Pipe Joint Restraint: Provide mechanical joint restraint for the minimum lengths shown below:

PIPE RESTRAINT LENGTH REQUIRED (FEET)*							
Pipe Dia.	Tees 90° Bends	45° Bends	22½° Bends	11¼° Bends	Dead Ends	Reducers (one size)	**
4"	23'	9'	5'	2'	57'		
6"	32'	13'	6'	3'	82'	43'	63'
8"	41'	17'	8'	4'	104'	43'	55'
12"	58'	24'	12'	6'	149'	80'	120'
16"	74'	31'	15'	7'	192'	82'	110'
20"	89'	37'	18'	9'	233'	82'	104'
24"	104'	43'	21'	10'	272'	82'	99'
30"	123'	51'	25'	12'	328'	115'	148'
36"	141'	58'	28'	14'	379'	115'	140'

* The length of restrained pipe required shown in the table above is based on trench backfill being compacted to 95% of the maximum density according to the Modified Proctor Method. The above table does not consider polyethylene wrapped pipe. If the pipe is wrapped with polyethylene, a greater length of restrained pipe will be required. Unless otherwise specified, a multiplier of 1.5 shall be used to determine the required length when the pipe is wrapped with polyethylene.

** If straight run of pipe on small side of reducer exceeds this value, then no restrained joints are necessary.

1. Tees: Pipe restraint shall be provided in the branch direction shown in the table above. Also, the minimum length of pipe restraint in the straight through (run) direction shall be 10 feet on both sides of the tee.
2. Bends: Pipe restraint length shown in the table above shall be provided on both sides of the bend.

H. Polyethylene Encasement:

1. In corrosive soils: Install over ductile iron pipe and tape seams in accordance with AWWA C-105.
2. Pipe Insulation: Where noted on Drawings, place insulation board 4 feet wide over pipe at top of bedding.

I. Tracer Wire: When PVC pipe is used, install locator wire directly above the pipe at a maximum depth of 18 inches below finished grade. Connect wire to each ductile iron fitting, valve, etc. Connection of the wire for splices and branch connections shall be by mechanical crimper. The wire shall extend to the top of each valve box, cleanout and air release chamber. The Contractor shall be responsible for testing continuity of locator wire.

3.03 WATER MAIN CROSSINGS:

A. Minimum vertical distance measured from the outside of the water main pipe to the outside of the forcemain pipe is 18".

- B. One full length of forcemain pipe shall be located so both joints are as far from the water main as possible. This may require cutting the adjacent forcemain pipe to length, so the forcemain crossing pipe is a full pipe length.

3.04 TESTING AND INSPECTION:

A. General:

- 1. Observation: By Owner or Owner's representative.
- 2. Completion: Before connection to lift station and downstream system.
- 3. Notification: Pretest and arrange for inspection and test.
- 4. Equipment and assistance: Provide.
- 5. Required water: By Owner where available from municipal system.

B. Electrical Continuity: Test ductile iron pipe for continuity and repair breaks.

C. Pressure (Ductile Iron and PVC Pipe):

- 1. Conditions: Air or air-water methods of applying pressure prohibited.
- 2. Range: 100 to 110 psi at lowest elevation.
- 3. Duration: 1 hour and until completion of inspection.
- 4. Procedure: Fill system slowly, expel air through air release valve connection at high points and apply pressure. Install air release valve after test.
- 5. Inspection: Examine line and appurtenances for leaks and movement.
- 6. Corrections: Repair defects, visible leaks and repeat test until acceptable.

D. Leakage (Ductile Iron and PVC Pipe):

- 1. Condition: Following pressure test.
- 2. Average pressure: Within pressure test range.
- 3. Duration: two (2) hours.
- 4. Filling: As in pressure test.
- 5. Supplying make-up water: Measurable source.
- 6. Leakage: Quantity of water supplied to maintain test pressure.
- 7. Allowable: Less than:

$$L = \frac{ND \times \text{Square root of } P}{3700}, \text{ where}$$

L = leakage (gallons per hour)

N = number of joints

D = nominal pipe diameter (inches)

P = average test pressure (pounds per square inch gauge)

Note: Formula equals 0.8 gallon per hour per mile per inch diameter at 100 psi for 18-foot lengths.

- 8. Correction: Repair defects and repeat test until acceptable.

E. HYDROSTATIC TESTING (HDPE Pipe):

- 1. The pipe shall be hydrostatically tested before being connected to other piping systems. The pipe shall be tested independently of other hydrostatic tests.
- 2. Hydrostatic testing will consist of filling the constructed pipeline with water taking care to bleed off trapped air. The Contractor shall pressurize the pipe to 150 psi for a minimum of 4 hours to give the pipe time to expand. During this initial 4 hours, make-up water shall be added as needed to maintain the pressure within 5 psi of the specified

pressure. At the end of the first 4 hours, the pipe shall be pressurized to the specified pressure and the test commences. The pipeline shall be maintained under the test pressure for a continuous period of between 1 and 3 hours by pumping water into the line at frequent intervals. The volume of water so added to maintain pressure within 5 psi of the specified pressure shall be measured and considered to represent the "leakage" from the line during the interval.

The allowable "leakage" for the pipeline shall not exceed the allowances given in the following table.

Nominal Pipe Size (In)	Allowable "Leakage" (Gal/100' of Pipe)		
	1-Hour Test	2-Hour Test	3-Hour Test
3	0.10	0.15	0.25
4	0.13	0.25	0.40
6	0.30	0.60	0.90
8	0.50	1.0	1.5
10	0.75	1.3	2.1
11	1.0	2.0	3.0
12	1.1	2.3	3.4
14	1.4	2.8	4.2
16	1.7	3.3	5.0
18	2.2	4.3	6.5
20	2.8	5.5	8.0
22	3.5	7.0	10.5
24	4.5	8.9	13.3
28	5.5	11.1	16.8
32	7.0	14.3	21.5
36	9.0	18.0	27.0
40	11.0	22.0	33.0
48	15.0	27.0	43.0

It is understood that the pipe will continue to expand after the initial 4 hours under pressure and throughout the 1 to 3-hour test period. The allowable "leakage" presented in the table above accounts for this expansion and no additional allowable "leakage" will be considered.

3. Under no circumstances shall the total time under the specified test pressure exceed 8 hours. If the test is not completed due to leakage, equipment failure, etc., the test shall be terminated, and the pipeline shall be de-pressurized and permitted to "relax" for a minimum of 8 hours prior to the next testing sequences.
4. If there are no visual leaks or significant pressure drops during the final test period, and the measured "leakage" is less than allowable, the pipeline passes the hydrostatic test.
5. In the event that the "leakage" exceeds the specified allowable, the Contractor shall be responsible to repair or replace the pipeline until the pipeline passes the hydrostatic test.

END OF SECTION

SECTION 33 41 00

STORM SEWERS

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes work required for storm sewers, culverts, structures, under drains, drain excavation/cleanout and related work.

1.02 REFERENCES:

- A. MDOT - Michigan Department of Transportation, "2020 Standard Specifications for Construction".
- B. ASTM - American Society of Testing Materials, latest edition.

1.03 DEFINITIONS:

- A. Standard manhole unit: Depth of 12 feet or less, from top of casting to lowest invert.
- B. Additional manhole depth: Depth in excess of 12 feet.

1.04 SUBMITTALS:

A. Pre-Construction:

- 1. Individual Drainage Structure Build Sheets:
 - a. Top, bottom and invert elevations.
 - b. Pipe orientation.
 - c. Individual precast concrete section dimensions.
 - d. Prefabricated rubber boot material & manufacturer.
- 2. Castings:
 - a. Manufacturer & model numbers.
- 3. Pipe & Fittings:
 - a. Manufacturer, material & ASTM designation.
 - b. Joint construction details.
- 4. Geotextile Fabric:
 - a. Manufacturer, material & ASTM designation.

B. Post Construction:

- 1. Witnesses:
 - a. Three witness measurements to blind taps and lateral ends from permanent fixtures such as building corners.
 - b. Invert elevation at end of each lateral.

1.05 JOB CONDITIONS:

- A. Maintain existing storm sewer operational.
- B. Install service lines, catch basins and inlet leads as pipe laying progresses and within maximum of 600 feet of mainline sewer installation.

- C. Clean up promptly following pipe installation and within maximum of 400 feet behind pipe laying operation. Clean-up includes backfill and rough grade.

PART 2 - PRODUCTS

2.01 PIPE:

A. Concrete Pipe Classification Table:

Type & Size	Design Depth (feet)		
	0' - 10'	10' - 19'	Over 19'
Reinforced Concrete 12" - 54"	ASTM C-76 Class III	ASTM C-76 Class III	ASTM C-76 Class IV
Reinforced Concrete 60" - 90"	ASTM C-76 Class II	ASTM C-76 Class III	ASTM C-76 Class IV

- 1. Concrete Pipe shall be circular.

- B. Polyethylene (PE): MDOT 909.06.
 - a. Manufacturers: ADS N-12 or Hi-Q.

- C. Footing Drains: PVC pipe, ASTM D3034 SDR35, Schedule 80, or match existing pipe material.

- D. Under drains: MDOT 909.07 with geotextile sock.

2.02 PREMIUM JOINTS:

- A. Concrete: ASTM C443, modified to include "O" rings on grooved pipe ends.

- B. Plastic: Rubber O-Rings.

2.03 MANHOLES, CATCH BASINS AND INLETS:

- A. Precast Units: ASTM C478.

- 1. Joints: Cement mortar, preformed bituminous rope or "O" ring gaskets.
- 2. Pipe openings: Pipe diameter plus 6 inches, maximum.

- B. Concrete Radial Units: ASTM C139.

- C. Grade Rings: ASTM C478 with "O" ring gaskets or ASTM D4976 HDPE adjusting rings with butyl sealant manufactured by Ladtech, Inc. or equal.

- D. Manhole Steps:

- 1. Polypropylene encapsulated steel.
- 2. Dimensions: 10-inches wide, 4-inch minimum clear tread depth, spaced 16 inches apart.
- 3. Steps shall be in accordance with:
 - a. ASTM C 478
 - b. ASTM D 4101 (polypropylene)

- c. ASTM A 615 (steel)
- E. Manhole Castings: East Jordan 1045Z1, B cover or Neenah R-1733, vented lid.
- F. Catch Basin and Inlet Castings: MDOT C, E OR K as follows:
 - 1. Concrete rolled curb and gutter: Cover C.
 - 2. Bituminous valley gutter: Cover C.
 - 3. Ditch centerline: Cover E.
 - 4. Concrete standard curb and gutter: Cover K. Cover KK where called for on plans. Cover KK shall be East Jordan Iron Works #7030 T1 or T3, Neenah Grate r-3246 or equal.
 - 5. Concrete gutter pan within influence of ADA sidewalk ramp: EJIW 5100 with 5105 M3 ADA grate or approved equal.
 - 6. Catch basin backs / grates shall be marked with lettering "DUMP NO WASTE, DRAINS TO WATERWAYS".

2.04 END SECTIONS:

- A. End Section material shall match that of the adjoining pipe unless otherwise specified otherwise.
 - 1. Concrete: MDOT 909.04.E, ASTM C 76 Class II and AASHTO M 170 Class II.
 - 2. Metal: AASHTO M 36 as shown on the drawings with coupling bands and associated hardware.
 - 3. Polyethylene: Use metal end sections as specified herein.
- B. End Section Grates: At locations identified on the drawings. Fabricate end section grates from weldable grade hot-rolled steel bars, plain or deformed, of the diameter and configuration shown on the drawings.

2.05 RIPRAP:

- A. Riprap: MDOT 916.01.C.
- B. Geotextile Fabric: MDOT 910.03.B and Table 910-1.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Alignment and Grade:
 - 1. Deviations: Notify Engineer and obtain instructions to proceed where there is a grade discrepancy, or an obstruction not shown on the drawings.
 - 2. Expose existing utilities at crossings of proposed storm sewer in advance of laying pipe to verify existing depth. Advise Engineer of conflicts in grade and provide adjustments in grade of storm sewer at no additional cost.
- B. Laser Beam Control:
 - 1. Check grade at set-up point, 25-foot, 50-foot, 100 foot and 200-foot points thereafter to the next set-up point.
 - 2. Projector advancement: Reset at each manhole.
- C. Bedding:
 - 1. Provide minimum 3 inches granular material bedding in areas of consolidated soils (i.e. clay, hardpan, bedrock, etc.).

2. Provide bedding area backfill in accordance with SECTION 31 23 33 TRENCHING, EXCAVATING AND BACKFILLING.
3. Provide continuous bearing by supporting entire length of pipe barrel evenly. Excavate for bells of pipe joints.
4. Bedding of carrier pipe in casing pipe shall be in accordance with SECTION 33 05 25 BORING AND JACKING.

3.02 INSTALLATION:

A. Laying pipe:

1. Direction shall be upstream with spigot or tongue end downstream and bell end upstream.
2. Joints shall be smooth and clean.
3. Place pipe length and bedding as a unit in a frost free, dry trench.
4. Install reinforced concrete pipe in accordance with ASTM D 1479 except as exceeded by these specifications.
5. Special supports and saddles: Article 3.05 SCHEDULES.
6. Footing drains and under drains shall have 4'-0" minimum cover.

B. Jointing:

1. Premium:
 - a. Solvents, adhesives, and lubricants shall be furnished by Manufacturer.
 - b. Seating: Fully.
 - c. Gasket position: Check.

C. Manhole, Catch Basins, and Inlets:

1. General: Article 3.05 SCHEDULES.
2. Base bedding: Provide 4-inch pea stone with full and even bearing in impervious or wet conditions. Otherwise provide on undisturbed frost-free dry subgrade.
3. Precast: Fill joint space completely and trowel.
4. Block: Set in full bed of mortar with key slots filled, joints maximum ½ inch at inside face and wipe joints. Plaster coat complete interior of structure with ½ inch coat of cement mortar.
5. Provide manhole casting grade setting as follows:
 - a. Existing pavement: Finish grade.
 - b. Gravel or lawn grade: 4 inches below.
 - c. Unpaved areas: Finished grade.
6. Provide catch basin casting grade setting as follows:
 - a. Gutter grade: ½ inch below.
 - b. Unpaved areas: 6 inches below finished grade.
7. Manhole casting adjustment: Concrete ring between leveling and top course of bituminous. Match cross slope of top of casting to cross slope of pavement.
 - a. HDPE adjusting rings:
 - 1) Install per manufacturer's recommendations.
 - 2) Seal to manhole structure, casting and to one another by means of an approved butyl sealant.
 - 3) Adjustment for matching road grade and/or cross slope shall be made utilizing a molded and indexed slope ring.
8. Flow Channels:
 - a. Not Required.

D. Riprap: MDOT 813.03.E.

- E. Connections:
 - 1. Expose existing storm sewer and structures to which the work is to be connected to confirm condition, location and elevation.
 - 2. Connect to existing storm manhole by coring or jack hammering opening adequate to insert pipe and secure circumference of pipe with non-shrink cement mortar.
 - a. Relay and repoint loose blocks and bricks on existing block and brick structures.
 - b. Rechannel flowlines and benches with concrete, trowel smooth.
 - 3. Future Storm Sewer:
 - a. Plug: Pipe 4 inch through 21 inches with standard disc.
 - b. Bulkhead: Pipe 24 inch and larger with brick and mortar, ½ inch plaster outside.
 - 1) 24 inch - 36 inch: 4 inches thick.
 - 2) 42 inch - 60 inch: 8 inches thick.
 - 3) 60 inch and larger: 12 inches thick.
- F. Under drains: MDOT Section 404.
 - 1. Connect to downstream storm manholes.
- G. Footing Drains:
 - 1. Connect to edge drain (under drain) or directly to catch basin. Connections to the mainline storm sewer will not be allowed.
- H. Drain Excavation/Cleanout:
 - 1. Section: 4-foot flat bottom with 1 on 2 maximum side slopes.
 - 2. Remove trees and brush as required, unless otherwise indicated.
 - 3. Excess excavated material:
 - a. Drain excavation of 2 feet or less: Spread, level and grade to drain along top of banks.
 - b. Drain excavation in excess of 2 feet: Remove from site and place in an upland disposal site.

3.03 TESTING AND INSPECTION:

- A. General:
 - 1. Observation: By Owner or Owner's representative.
 - 2. Completion: Before connecting to active system.
 - 3. Notification: Clean and arrange for inspection.
- B. Line and Grade: Allowable drift between structures from proposed alignment will be as follows:
 - 1. Line:
 - a. Through 36 inches: 0.40 foot.
 - b. Over 36 inches: 0.80 foot.
 - 2. Grade:
 - a. Through 36 inches: 0.05 foot.
 - b. Over 36 inches: 0.10 foot.

3.04 ADJUST AND CLEAN:

- A. General:
 - 1. Keep pipe and structures clean as work progresses.

END OF SECTION