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**City of Lowell  
Kent County, Michigan**

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**2020 STREET RESURFACING PROJECT**



**AS ADVERTISED  
03.24.2020**

**williams&works**  
engineers | surveyors | planners

Project No. 219184

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ADVERTISEMENT  
FOR THE  
**CITY OF LOWELL**  
**2020 STREET IMPROVEMENTS**

The City of Lowell is soliciting sealed proposals for the **2020 Street Improvements** project. Items of work include removing existing HMA pavement, placing and grading new aggregate base, placing new HMA, intermittent curb and gutter replacement, new A.D.A. sidewalk ramps, sanitary and storm sewer replacement and related work.

Sealed proposals will be received by The City of Lowell in the City offices located at 301 East Main Street, Lowell MI, 49331-1798 until **11:00 a.m. local time on Wednesday, April 8, 2020** at which time they will be publicly opened and read aloud.

**In order for your bid to be recognized and opened**, your company must be registered as a Planholder of Record for this project by completing the registration form contained on the project website.

The registration form and PDF versions of the Contract Documents may be obtained only at:

<http://williams-works.com/#bids>

Contact Williams & Works at 616-988-3507 if you have trouble accessing the Contract Documents or using the online registration form.

Contract Documents are available for viewing only at the following locations:

Williams & Works, Inc.  
549 Ottawa Ave NW  
Grand Rapids, MI 49503

Bids must be accompanied by a certified check or bid bond by a recognized surety in the amount of five percent (5%) of the bid amount. After the time of opening, no bid may be withdrawn for a period of sixty (60) days.

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

City of Lowell  
BY ORDER OF:

Michael Burns  
City Manager

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ARTICLE 1 – BASIS OF PROPOSAL

- 1.1 The Bid is based on unit and lump sum prices as stipulated in the Bid Form. The totals of the extensions of unit and lump sum prices will be used as a basis for determining the total bid price.
- 1.2 All work necessary for completion of the Contract, but not specifically listed as a pay item, will be considered to be covered under one or more of the Bid items.

ARTICLE 2 - QUALIFICATIONS OF BIDDERS

Bids are solicited only from responsible BIDDERS skilled and regularly engaged in work of similar character and magnitude.

ARTICLE 3 – EXAMINATION OF CONTRACT DOCUMENTS AND SITE

- 3.1 Before submitting a Bid, each BIDDER shall:
  - A. Examine the Contract Documents thoroughly;
  - B. Visit the Site to become familiar with local conditions that may in any manner affect cost, progress, performance or timely completion of the Work;
  - C. Become familiar with all laws, rules and regulations that may in any manner affect cost, progress, performance or timely completion of the Work; and
  - D. Study and carefully correlate BIDDER's observations with the Contract Documents.
- 3.2 Surveys, investigations, and reports of subsurface or latent physical conditions at the Site which have been relied upon by ENGINEER in preparing the Drawings and Specifications are not guaranteed as to accuracy or completeness. Each BIDDER shall, at his own expense, make additional surveys and investigations as necessary to determine his Bid for the performance of the Work.

ARTICLE 4 - INTERPRETATION

Questions about the meaning or intent of the Contract Documents shall be submitted to the ENGINEER not less than seven (7) days prior to date of opening of Bids. Replies will be issued by Addenda mailed or delivered to Planholders of Record not less than three (3) days before Bids are due. ENGINEER may issue other Addenda at any time prior to opening of Bids. Only answers given by Addenda shall be binding. Oral and other interpretations or clarifications shall be without legal effect.

ARTICLE 5 – BID SECURITY

- 5.1 The type and amount of Bid Security is stated in the Advertisement. Bid Security from each BIDDER on the Work shall be by a single Surety.
- 5.2 A Bid Bond when used as Bid Security, shall be issued by a Surety named in U.S. Treasury Circular 570 licensed to conduct business in the state in which the Work is located.
- 5.3 The Bid Security of the successful BIDDER will be retained until the executed Agreement, Bonds, insurance certificates and other required information is delivered by the BIDDER to the OWNER.
- 5.4 Failure of the successful BIDDER to execute and deliver the Agreement, Bonds, insurance certificates and other required information within ten (10) days of the Notice of Award shall be just cause for OWNER to annul the Notice of Award and declare the Bid and Bid Security forfeited.

- 5.5 The Bid Security of any BIDDER whom OWNER believes to have a reasonable chance of receiving the award may be retained by OWNER until either the executed Agreement, Bonds, insurance certificates and other required information are delivered by the successful BIDDER to the OWNER or the expiration of the time limit specified for the Bid Hold Period, whichever occurs first.
- 5.6 Unless specifically requested, Bid Bond will not be returned to BIDDER.

ARTICLE 6 – CONTRACT TIME

The time(s) for completion of the Work shall be as stipulated in the Agreement. If the time requirement(s) cannot be met, the BIDDER is requested to stipulate in the Bid Form his schedule for performance of the Work. Consideration will be given to time in evaluating Bids.

ARTICLE 7 - LIQUIDATED DAMAGES AND EXPENSES

Provisions for liquidated damages and expenses for failure to complete on time are set forth in the Agreement.

ARTICLE 8 – BID PREPARATION

- 8.1 Submit the Bid on the separate Proposal and Bid Form with Bid Security and other required documents. The bound copy is for BIDDER's records.
- 8.2 No change shall be made in the wording of the form or in any of the items. Bids should be typed or filled out legibly in ink.
- 8.3 All names must be printed or typed below the signature.
- 8.4 The Proposal shall contain an acknowledgement of receipt of all Addenda.
- 8.5 Bid by partnership shall be executed in the partnership name and signed by a partner. Partner's title must appear under signature.
- 8.6 Bid submitted by two or more firms will not be considered (i.e. no joint bids).
- 8.7 Bid by corporation must be executed in the corporate name by a corporate officer accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be listed.
- 8.8 Agreement will be on the basis of material and equipment described in the Contract Documents without consideration of substitute or "or-equal" items; except for alternates which may be offered by the BIDDER in the Bid Form and accepted by the OWNER prior to execution of the Agreement. Applications for substitutions will be considered only after the Agreement has been executed. The procedure for substitutions is set forth in the General Conditions.
- 8.9 On unit price Bids, BIDDERS shall show the unit price for each item listed, the total price for the quantity of each item, and the total price for all items. If ENGINEER finds any errors in the Bidder's computations, ENGINEER reserves the right to make corrections.
- 8.10 Cash Allowances, where stipulated in the Bid Form, are to be included in the total bid price.

ARTICLE 9 – SUBMISSION OF BIDS

- 9.1 Bids, Bid Security and other required documents shall be submitted prior to the time and at the place indicated in the Advertisement.
- 9.2 Submit Bid Documents, in a sealed envelope, properly identified.



- 9.3 If the Bid Documents are sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face thereof.
- 9.4 Bid documents may not be sent by facsimile. Bids must be submitted in a sealed envelope as stated in part 9.2

ARTICLE 10 – MODIFICATION AND WITHDRAWAL OF BIDS

- 10.1 Bids may be modified or withdrawn by an appropriate document duly executed and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.
- 10.2 If, within 24 hours after Bids are opened, any BIDDER files a duly signed 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 Bid, that BIDDER may withdraw its Bid, and the Bid Security will be returned by OWNER.

ARTICLE 11 – OPENING OF BIDS

The Bid opening location and time will be as indicated in the Advertisement.

ARTICLE 12 - BID HOLD PERIOD

All bids shall remain firm, after the day of the Bid opening, for the period stipulated in the Advertisement.

ARTICLE 13 – AWARD OF CONTRACT(S)

- 13.1 BIDDER will be required to complete Bid documentation and correct irregularities as a condition of award. OWNER reserves the right to reject any and all Bids and waive any and all irregularities. OWNER further reserves the right to accept or reject nonconforming, qualified, alternate or conditional Bids.
- 13.2 In evaluating Bids, OWNER will consider the qualifications of the BIDDERS, whether or not the Bids comply with the prescribed requirements and include completed alternates and unit prices if requested in the Bid Form. OWNER may conduct investigations to establish the responsibility, qualifications and financial ability of the BIDDERS and proposed Subcontractors to do the Work within the prescribed time. OWNER reserves the right to reject the Bid of any BIDDER who does not pass such evaluation to OWNER's satisfaction.
- 13.3 Subject to the rights reserved by the OWNER, it is intended that a contract will be awarded to a responsible, responsive BIDDER whose evaluation indicates to OWNER that such award will be in the best interests of the OWNER.
- 13.4 Prior to the Notice of Award, ENGINEER will notify the apparent successful BIDDER if OWNER, after due investigation, has reasonable objection to any listed Subcontractor(s), where such listing is requested in the Bid Form. Failure of OWNER to make objection prior to Notice of Award will constitute acceptance of the listed Subcontractor(s), but not a waiver of any right of OWNER to reject defective work, material or equipment, or material and equipment not in conformance with the requirements of the Contract Documents.
- 13.5 If, prior to the Notice of Award, OWNER refuses to accept any listed Subcontractor(s), the apparent successful BIDDER may:
  - A. Submit an acceptable substitute without an increase in bid price; or
  - B. Withdraw Bid and Bid Security.
- 13.6 If, after Notice of Award, OWNER refuses to accept any Subcontractor, CONTRACTOR shall submit an acceptable substitute and the Contract Price will be adjusted by the difference in cost occasioned by such substitution.

- 13.7 Concurrently with execution and delivery of Agreement, CONTRACTOR shall deliver to OWNER the Bonds, insurance certificates and other information as required by the Contract Documents.
- 13.8 If Bidder is a business entity (i.e., corporation, partnership, joint venture, etc.) organized under the laws of a state other than the state of the location of the Work, Bidder must provide evidence of proper registration to do business in the state of the location of the Work as a condition to execution of the Agreement.
- 13.9 The Agreement and such other documents as required will be signed by OWNER and CONTRACTOR within 10 days of the Notice of Award. OWNER will sign Agreement within 1 days of receipt of required Bonds, insurance certificates, other required information, and CONTRACTOR executed Agreement. OWNER, CONTRACTOR, SURETY and ENGINEER will each receive an executed copy of the Agreement.

END OF SECTION

City of Lowell  
301 E. Main St.  
Lowell, MI 49331

ARTICLE 1-CONTRACT PRICE

Having carefully examined the site of the proposed Work; being fully informed of the conditions to be met in the prosecution and completion of the Work; having read and examined the Contract Documents applicable to this Work and agreeing to be bound thereby; the undersigned proposes to perform all services, and furnish all necessary labor, materials, tools, and equipment to complete the Work described in the Contract Documents for the amounts set forth in the accompanying Bid Form.

ARTICLE 2-CONTRACT TIME

If awarded a Contract, undersigned agrees to prosecute the Work regularly and diligently to ensure full completion within the Contract Time(s) indicated in the Agreement.

ARTICLE 3-LIQUIDATED DAMAGES

The undersigned agrees that liquidated damages, in the amount stipulated in the Agreement, shall be assessed for each day that expires after the completion time(s), stipulated in the Agreement, until the Work is complete.

ARTICLE 4 -BIDDER'S QUALIFICATIONS

The undersigned agrees to furnish, upon request, a list of projects of a similar nature completed in the last 3 years.

ARTICLE 5-WAIVER

The undersigned certifies the price(s) entered in the Bid Form are correct and complete and that all information given or furnished in connection therewith is correct, complete and submitted as intended. The undersigned waives any right to:

- 5.1 Claims he may now have or which may accrue to him,
- 5.2 Refuse to execute the Contract if awarded to him,
- 5.3 Demand the return of the Bid Security,
- 5.4 Be relieved from any obligation by reason of any errors, mistakes or omissions, subject to right of withdrawal of Bid as provided in the Instructions to Bidders.

ARTICLE 6-BID NON-COLLUSIVE

The undersigned certifies that this Proposal is fair, genuine and not collusive or sham, and has not in any manner, directly or indirectly, agreed or colluded with any other person, firm or association to submit a sham Bid, to refrain from bidding, or in any way to fix the amount of this Bid or that of any other BIDDER, or to secure any advantage against the OWNER. The undersigned further certifies that no officer or employee of the OWNER is personally or financially interested, directly or indirectly, in this Bid or in the undersigned.

ARTICLE 7-BID SECURITY

The undersigned encloses a Bid Security in the form and amount required by the Advertisement. The undersigned agrees to contract for the Work and to furnish the necessary Bonds, Insurance Certificates and other information, as stipulated in the Instructions to Bidders. If this Proposal shall be accepted by the OWNER and the undersigned shall fail to contract as aforesaid and to furnish the required Bonds, Insurance Certificates and other information, then the undersigned shall be considered to have abandoned the Contract and the Bid Security accompanying this Proposal shall become due and payable to the OWNER.

ARTICLE 8-OWNERS' RIGHTS

In submitting this Bid, it is understood that the right is reserved by the OWNER to accept any Bid, or reject any or all Bids, or to waive irregularities and/or informalities in any Bid and to make the award in any manner deemed in the best interest of the OWNER. By submission of this bid, undersigned agrees to provide sufficient additional information to allow the OWNER to deduce the qualifications and capabilities of the undersigned to perform the WORK and to waive any claim that it has, or may have, against the OWNER, any of its agents, or employees, arising out of, or in connection with, the administration, evaluation or recommendation of any PROPOSAL.

ARTICLE 9-RECEIPT OF ADDENDA

Receipt of Addenda \_\_\_\_\_ through \_\_\_\_\_ is acknowledged.

**SIGNED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2020.**

|                       |                |
|-----------------------|----------------|
| _____                 | _____          |
| (Firm Name)           | (Signature)    |
| _____                 | _____          |
| (Street Address)      | (Name Printed) |
| _____                 | _____          |
| (City, State and Zip) | (Title)        |
| _____                 |                |
| (Telephone No.)       |                |

LEGAL STATUS OF BIDDER: (Fill out appropriate form and cross out others.)

\*A Corporation, duly organized in good standing and doing business under the laws of the state of \_\_\_\_\_, for whom \_\_\_\_\_ bearing the office title of \_\_\_\_\_ whose signature is affixed to this proposal, is duly authorized to execute contracts. If a foreign corporation, the BIDDER states this corporation is qualified to and will register in state in which project Work is located.

\*A Partnership, all members of which with address are:

|       |       |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

\*An Individual whose name with address is:

|       |       |
|-------|-------|
| _____ | _____ |
|-------|-------|

## ARTICLE 1-SCHEDULE OF PRICES

For the entire Work outlined in these Contract Documents complete as specified, using equipment and materials only of the type and manufacturers where specifically named, the following unit and lump sum prices:

| Item | Description                                      | Units | Quantity | Unit Price | Amount |
|------|--|-------|----------|------------|--------|
| 1    | Mobilization                                     | LSUM  | 1        |            |        |
| 2    | Maintaining Traffic                              | LSUM  | 1        |            |        |
| 3    | Erosion & Sedimentation Control                  | LSUM  | 1        |            |        |
| 4    | Concrete Drive and Sidewalk, Rem                 | Syd   | 53       |            |        |
| 5    | Curb and Gutter, Rem                             | Ft    | 491      |            |        |
| 6    | Pavt, Rem  | Syd   | 6,940    |            |        |
| 7    | Coldmilling HMA Surface                          | Syd   | 2,845    |            |        |
| 8    | Dr Structure, Repair                             | Ea    | 4        |            |        |
| 9    | Suffolk / Amity Storm Sewer Repair               | LSUM  | 1        |            |        |
| 10   | Suffolk / Lincoln Lake Sanitary Sewer Repair     | LSUM  | 1        |            |        |
| 11   | Storm Sewer, 12 inch                             | Lft   | 30       |            |        |
| 12   | Connect to Existing Storm Manhole or Catch Basin | Ea    | 1        |            |        |
| 13   | Conc Curb and Gutter                             | Ft    | 491      |            |        |
| 14   | Gutter Pan                                       | Ft    | 43       |            |        |
| 15   | Subbase, CIP                                     | Cyd   | 699      |            |        |
| 16   | Agg Base, 6 inch                                 | Syd   | 6,990    |            |        |
| 17   | Machine Grading                                  | Sta   | 21.4     |            |        |
| 18   | Dr. Structure Cover, Adj                         | Ea    | 19       |            |        |
| 19   | Dr. Structure Cover                              | LBS   | 1,200    |            |        |
| 20   | Gate Box, Adj                                    | Ea    | 12       |            |        |
| 21   | Water Shutoff, Adj.                              | Ea    | 8        |            |        |
| 22   | HMA, LVSP  | Ton   | 2,072    |            |        |
| 23   | Sidewalk, Conc, 4 inch                           | Sft   | 50       |            |        |
| 24   | Curb Ramp Opening, Conc                          | Ft    | 81       |            |        |
| 25   | Sidewalk Ramp, 6 inch                            | Sft   | 498      |            |        |
| 26   | Detectable Warning Surface                       | Ft    | 49       |            |        |
| 27   | Slope Restoration                                | LSUM  | 1        |            |        |

TOTAL BASE BID \$ \_\_\_\_\_

A1 BID Alternate - Deliver HMA Millings to City Yard

Add/Deduct \$ \_\_\_\_\_

ARTICLE 2 - MATERIAL AND EQUIPMENT SELECTION

The Contract Documents stipulate that the Base Bid price shall include materials and equipment selected from the designated items and manufacturers listed herein. This is done to establish uniformity in bidding and to establish standards of quality for the items named.

The Base Bid is submitted on the basis of supplying the following products, selected from the items and manufacturers listed herein:

| <b>Item</b> | <b>Manufacturer</b> |
|-------------|---------------------|
| _____       | _____               |
| _____       | _____               |
| _____       | _____               |
| _____       | _____               |

Failure to complete Article 2 of the Bid Form shall be considered an irregularity by the Owner. In such cases where Article 2 is not completed, the Owner shall assume the Bidder has named one of the named suppliers as given in the appropriate technical section.

ARTICLE 3-MATERIAL AND EQUIPMENT ALTERNATES

The Contract Documents stipulate that the Base Bid price shall include materials and equipment selected from the designated items and manufacturers listed therein. This is done to establish uniformity in bidding and to establish standards of quality for the items named.

If the BIDDER wishes to quote alternate items for consideration by the OWNER, he may do so under this Article. A complete description of the item and the proposed price differential are to be provided. Unless approved at the time of award, substitutions, where items are specifically named, will be considered only in accordance with the terms set forth in the General Conditions.

| <b>Item No.</b> | <b>Description</b> | <b>Add/Deduct<br/>Amount (Dollars)</b> |
|-----------------|--------------------|--|
|-----------------|--------------------|--|

ARTICLE 4-TIME ALTERNATE

If the BIDDER takes exception to the time(s) stipulated in Article 3 - Contract Time of the Agreement, he is requested to stipulate below his proposed time for performance of the Work. Consideration will be given to time in evaluating bids.

ARTICLE 5-SUBCONTRACTOR LISTING

Bid is submitted on the basis of the use of the following Subcontractors:

| Work Item   | Firm  | City  |
|-------------|-------|-------|
| Concrete    | _____ | _____ |
| HMA Paving  | _____ | _____ |
| Restoration | _____ | _____ |
| _____       | _____ | _____ |
| _____       | _____ | _____ |
| _____       | _____ | _____ |

Please note if work is to be performed by BIDDER. OWNER shall have the right to reject any Subcontractor for reasonable cause. If Subcontractors are not identified in the Bid, the BIDDER/CONTRACTOR shall engage a Subcontractor acceptable to OWNER and waives the right to withdraw Bid and Bid Security, and further, waives right to a change in Contract Time or Price due to failure to list.

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This Agreement is dated the \_\_\_\_\_ day of \_\_\_\_\_ 2020, by and between The City of Lowell, 301 E. Main Street, Lowell, Michigan 49331 hereinafter called OWNER, and \_\_\_\_\_, hereinafter called CONTRACTOR.

OWNER and CONTRACTOR, in consideration of the mutual covenants set forth herein, agree as follows:

ARTICLE 1-WORK

CONTRACTOR shall complete the Work as specified or indicated in the Contract Documents, generally described as follows: **2020 Street Improvements** project. Items of work include removing existing HMA pavement, placing and grading new aggregate base, placing new HMA, intermittent curb and gutter replacement, new A.D.A. sidewalk ramps, sanitary and storm sewer replacement and related work

ARTICLE 2-ENGINEER

The Work has been designed by the firm of Williams & Works., who will act as ENGINEER on the Work, unless Notice is otherwise given by the OWNER.

ARTICLE 3-CONTRACT TIME

- 3.1 The Work to be completed under this Contract shall be commenced immediately after receipt of a fully executed Contract and Notice to Proceed unless otherwise indicated in ARTICLE 4 – TIME ALTERNATE of SECTION 00410 – BID FORM.
- 3.2 The Work under this Contract shall be substantially completed within 60 calendar days of receipt of formal Notice to Proceed, which shall be the Contract Time.
- 3.3 OWNER and CONTRACTOR recognize that time is of the essence of this Contract and that OWNER will suffer financial loss if the Work is not completed within the Contract Time(s) plus any extensions as provided for in the General Conditions. They recognize that the financial loss suffered by OWNER in the event that CONTRACTOR fails to complete the Work within the Contract Time(s) would be most difficult to determine accurately in any legal or arbitration proceedings. Instead of requiring such proof, OWNER and CONTRACTOR agree that as liquidated damages, but not as a penalty, CONTRACTOR shall pay OWNER Two Hundred Dollars (\$200) for each day of delay in the completion of the Work beyond the Contract Time(s).
- 3.4 CONTRACTOR agrees to pay, in addition to liquidated damages, expenses arising from failure to complete the Work within the Contract Time including expenses for engineering services, attorney's fees, technical services and administration costs.

ARTICLE 4-CONTRACT PRICE

- 4.1 OWNER shall pay CONTRACTOR for performance of the Work in accordance with the Contract Documents in current funds as follows: \_\_\_\_\_
- 4.2 The amount paid shall be equitably adjusted to cover changes in the Work ordered by the ENGINEER but not required by the specifications. Such increases or decreases in the Contract Price shall be determined by agreement between the OWNER and CONTRACTOR.

ARTICLE 5-PAYMENTS

- 5.1 CONTRACTOR will prepare and submit monthly and final payment requests in accordance with the General Conditions.
- 5.2 OWNER will make monthly and final payments in accordance with the GENERAL CONDITIONS.
- 5.3 All monies not paid when due shall bear interest at the greater of the rate of 7% per annum, or the highest rate allowed by law.

ARTICLE 6-CONTRACT DOCUMENTS

6.1 The complete Contract between OWNER, CONTRACTOR and FUNDING AGENCY consists of the following Contract Documents:

- |                        |   |
|------------------------|---|
| Advertisement          | General Conditions                        |
| Instruction to Bidders | Supplemental Conditions                   |
| Proposal               | Specifications                            |
| Bid Form               | Drawings                                  |
| Bonds                  | Addenda (numbers _____thru ____inclusive) |
| Agreement              | Modifications                             |

6.2 In resolving conflicts, errors and discrepancies, the Contract Documents shall be given precedence in the following order: Modifications, Agreement, Addenda Supplemental Conditions, General Conditions, Specifications, Drawings, Advertisement, Instructions to Bidders, Proposal/Bid Form, and Bonds.

ARTICLE 7-MISCELLANEOUS

- 7.1 Terms used in this Agreement are defined in the General Conditions.
- 7.2 Neither party shall assign, in whole or in part, any of its rights or obligations, including any monies due, or to become due, under the terms of the Contract Documents without the written prior consent of the other party. This paragraph shall not be construed to limit the powers vested in the OWNER under the General Conditions.
- 7.3 The OWNER and CONTRACTOR each binds itself, successors and assigns to the other party hereto in respect to all covenants, agreements, and obligations contained in the Contract Documents.
- 7.4 The Contract Documents may only be altered, amended, or repealed by a Modification.

IN TESTIMONY WHEREOF, the parties hereto have executed this contract in at least three (3) counterparts, each of which shall be deemed an original, the day and year first above written.

**WITNESS**

**CONTRACTOR**

\_\_\_\_\_  
(Contractor)

\_\_\_\_\_

By \_\_\_\_\_  
(Signature)

Name & Title: \_\_\_\_\_

**WITNESS**

**OWNER**

The City of Lowell  
\_\_\_\_\_  
(Owner)

\_\_\_\_\_

By \_\_\_\_\_  
(Signature)

Name & Title: Michael Burns, City Manager

LEGAL STATUS OF CONTRACTOR: (Fill out appropriate form and cross out others.)

\*A Corporation: The same officer shall not execute both the Agreement and this certificate, unless only one person occupies all corporation offices.

I, \_\_\_\_\_ certify that I am the \_\_\_\_\_ of the corporation named as CONTRACTOR herein; that \_\_\_\_\_, who signed this Agreement on behalf of the corporation, was then \_\_\_\_\_ of the corporation, that the Agreement was duly signed for and in behalf of the corporation by authority of its board of directors, and is within the scope of its corporate powers. If a foreign corporation, this corporation is qualified to and will register in state in which project Work is located.

\_\_\_\_\_  
(Date) (Signature) L.S.

\*A Partnership: The same officer shall not execute both the Agreement and this certificate, unless only one person occupies all partnership offices.

I, \_\_\_\_\_, certify that I am the \_\_\_\_\_ of the partnership named as CONTRACTOR herein; that \_\_\_\_\_, who signed this Agreement on behalf of the partnership, was then \_\_\_\_\_ of the partnership, that the Agreement was duly signed for and in behalf of the partnership by authority of its partners, and is within the scope of its partnership powers. If a foreign partnership, this partnership is qualified to and will register in state in which project Work is located.

\_\_\_\_\_  
(Date) (Signature) L.S.

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PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that \_\_\_\_\_, as Principal, and \_\_\_\_\_, a Corporation, organized and existing under the laws of the State of \_\_\_\_\_, and duly authorized to transact business in the State of Michigan, as Surety, are held and firmly bound unto \_\_\_\_\_, as obligee, and hereinafter called OWNER, in the just and full sum of \_\_\_\_\_ Dollars (\$\_\_\_\_\_) lawful money of the United States of America, for the payment whereof the Principal and Surety bind themselves, their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above Principal has entered into a written Contract with the OWNER, dated the \_\_\_\_\_ day of \_\_\_\_\_, 2020, for \_\_\_\_\_ in accordance with plans and specifications prepared by Williams & Works, Inc., 549 Ottawa Avenue, N.W., Grand Rapids, Michigan, 49503 which Contract is hereby referred to and made a part hereof as fully and to the same extent as if the same were entirely written herein.

NOW, THEREFORE, the conditions of this obligation are such, that if the said Principal shall in all respects well and truly keep and perform the said Contract, and shall pay all sums of money due or to become due, for any labor, materials, apparatus, fixtures or equipment furnished for the purpose of constructing the work provided in said Contract, and shall defend, indemnify and save harmless the OWNER against any and all liens, incumbrances, damages, demands, expenses, costs and charges of every kind except as otherwise provided in said Contract Documents, arising out of or in relation to the performance of said Work and the provisions of said Contract, and shall remove and replace any defects in workmanship or materials which may be apparent or may develop within a period for one year from the date of final acceptance, then this obligation shall be null and void; otherwise it shall remain in full force and effect;

AND PROVIDED, that any alterations which may be made in the terms of said Contract, or in the Work to be done under it, or any extension of time for the performance of said Contract, or any forbearance on the part of either party to the other, or the placing of an inspector or resident engineer thereon by the OWNER, shall not in any way release the Principal and Surety or either of them, their heirs, executors, administrators, successors or assigns from any liability hereunder; notice to the surety of any such alteration, extension or forbearance being hereby waived.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_ A.D., 2020.

WITNESS:

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

PRINCIPAL:

\_\_\_\_\_  
By \_\_\_\_\_ (Seal)  
By \_\_\_\_\_

WITNESS:

\_\_\_\_\_

SURETY:

By \_\_\_\_\_ (Seal)  
Title \_\_\_\_\_

LOCAL ADDRESS OF AGENT FOR SURETY:

\_\_\_\_\_  
Street City State Zip Code

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PAYMENT BOND

(under Act 213 of 1963)

KNOW ALL MEN BY THESE PRESENTS, that \_\_\_\_\_, as Principal, and \_\_\_\_\_, a Corporation, organized and existing under the laws of the State of \_\_\_\_\_, and duly authorized to transact business in the State of Michigan, as Surety, are held and firmly bound unto the (City/Village/Township) of \_\_\_\_\_, as obligee, and hereinafter called OWNER, in the just and full sum of (\$\_\_\_\_\_) lawful money of the United States of America, or the payment whereof the Principal and Surety bind themselves, their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above Principal has entered into a written Contract with the OWNER, dated the \_\_\_\_ day of \_\_\_\_\_, 2020 for \_\_\_\_\_ in accordance with plans and specifications prepared by Williams & Works Inc., 549 Ottawa Avenue N.W., Grand Rapids, MI 49503 which Contract is hereby referred to and made a part hereof as fully and to the same extent as if the same were entirely written herein;

AND WHEREAS, this bond is given in compliance with subject to the provisions of Act. No. 213 of the Public Acts of Michigan, for the year 1963, as amended by subsequent acts to date.

NOW, THEREFORE, the condition of this obligation is that if the Principal and his Subcontractors shall make all payments as they become due and payable of all amounts owing to Subcontractors and to parties supplying labor or materials to the Principal or to his Subcontractors in the prosecution of the Work provided for in said Contract (intending to include herein all claimants as defined in Section 6 of Act 213 of 1963, as amended), then this obligation shall be void, otherwise the same shall be in full force and effect;

AND PROVIDED, that any alterations which may be made in the terms of said Contract, or in the Work to be done under it, or the giving by the party of the first part of said Contract, any extension of time for the performance of said Contract or any other forbearance on the part of either party to the other, shall not in any way release the Principal and the Surety or either of them, their heirs, executors, administrators, successors or assigns from any liability hereunder; notice to the Surety of any alterations, extensions of or of any forbearance being hereby waived.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_ A.D., 2020.

WITNESS:

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

PRINCIPAL:

\_\_\_\_\_  
By \_\_\_\_\_(Seal)  
By \_\_\_\_\_

WITNESS:

\_\_\_\_\_

SURETY:

By \_\_\_\_\_(Seal)  
Title \_\_\_\_\_

LOCAL ADDRESS OF AGENT FOR SURETY:

\_\_\_\_\_  
Street City State Zip Code

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ARTICLE 1-DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:

|                            |  |
|----------------------------|--|
| Act of God                 | Unpredictable phenomenon of nature such as earthquake, flood or cyclone.   |
| Addendum                   | A document issued by ENGINEER prior to the receipt of bids which sets forth additional provisions, changes or clarifications of the Contract Documents.  |
| Advertisement              | The notice published by OWNER to solicit Bids.   |
| Affidavit of Completion    | A document which includes the CONTRACTOR's sworn statement that the Work has been completed in accordance with the Contract Documents and that labor and material men have been paid and the Surety's consent to final payment.                                |
| Agreement                  | An instrument, signed by OWNER and CONTRACTOR covering the Work to be performed and setting forth the Contract Time, the Contract Price and other matters.   |
| Allowance                  | A fixed sum stipulated in the Contract Documents, to be used in total or in part, as determined by the OWNER, for a specific service, product or group of products to be furnished by CONTRACTOR. All cash allowances shall be included in the Contract Price. |
| Bid                        | The offer of the BIDDER submitted on the prescribed forms setting forth the conditions under and prices for which the Work will be performed.  |
| Bid Documents              | The Bid and additional documents required to be submitted with the Bid as set forth in the Instructions to Bidders.  |
| BIDDER                     | Any person, firm, joint venture or corporation submitting a Bid for the Work.  |
| Bid Security               | Bid Bond or other instrument of security furnished by BIDDER.  |
| Bonds                      | Bid, Performance and Payment Bonds furnished by CONTRACTOR.  |
| Bulletin                   | A document issued by ENGINEER which clarifies and interprets the Contract Documents or which directs minor changes or alterations in the Work not involving extra cost.  |
| Certificate of Completion  | Notice from ENGINEER to OWNER that the Work has been completed and establishing a one year bonded correction period.   |
| Change Order               | An order to CONTRACTOR signed by OWNER authorizing an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time or both, issued after execution of the Agreement.  |
| Construction Schedule      | The timetable outline of CONTRACTOR's sequence of operations.  |
| Contract                   | The agreement between OWNER and CONTRACTOR set forth in the Contract Documents.  |
| Contract Documents         | The Agreement and all related documents as identified in the Agreement.  |
| Contract Price             | The total moneys payable to CONTRACTOR for the Work.   |
| Contract Time              | The stated date or number of days for the completion of the Work.  |
| CONTRACTOR                 | The person, firm, joint venture or corporation with whom OWNER has executed the Contract.  |
| Day                        | Calendar day of 24 hours from midnight to the next midnight.   |
| Defective Work             | Work that does not conform to the requirements of the Contract Documents and damaged Work.   |
| Drawings                   | The Drawings prepared or approved by ENGINEER and approved by OWNER, which show the character and scope of the Work to be performed.   |
| Effective Date of Contract | The date shown in the Agreement.   |

|                                 |  |
|---------------------------------|--|
| ENGINEER                        | The designated representative of the OWNER.  |
| General Requirements            | The Sections of Division 1 of the Specifications.  |
| Inspect, Inspection, Inspector  | Observe the work of the CONTRACTOR as it relates to implementing CONSULTANT's plans, specifications, reports, and other instruments of professional service. An inspector has no authority or responsibility to direct any construction workers, and may not stop the work. An inspector is not responsible for the means, methods, sequences, or operations of construction, or safety procedures attendant thereto.  |
| Insurance Certificate           | The documents issued by CONTRACTOR's insurer listing policies and extent of coverage applicable to the Work.   |
| Liens                           | Claims, security interests, and encumbrances.  |
| Modification                    | (a) An amendment of the Contract Documents signed by both parties, (b) a Change Order, or (c) Bulletin. A Modification may only be issued after the Effective Date of the Contract.  |
| Notice                          | A written communication between the parties specifically called for by the Contract Documents.   |
| Notice of Award                 | The Notice by OWNER to BIDDER that BIDDER has been awarded the Contract.   |
| Notice of Termination           | Notice from OWNER to CONTRACTOR terminating services of the CONTRACTOR.  |
| Notice to Proceed               | A Notice by ENGINEER to CONTRACTOR fixing the date on which the Contract Time will commence and on which CONTRACTOR shall start the Work.  |
| OWNER                           | The public body or authority, corporation, association, partnership, or individual with whom CONTRACTOR has entered into the Contract and for whom the Work is to be performed.  |
| Partial Completion              | For the Work that is being constructed in phases, Partial Completion is Substantial Completion of a defined portion of the Work. Partial Completion is reached whenever the defined portion of the Work is ready for use by OWNER. To be considered partially complete, use must not be prevented by other activities of CONTRACTOR. When use is delayed by factors that are beyond CONTRACTOR's control, the designated portion of the Work shall be considered partially complete. |
| Partial Utilization             | Partial Utilization is placing a portion of the Work or facility in service for the purpose for which it was intended or for a related use before reaching Partial Completion or Substantial Completion.   |
| Planholders of Record           | Parties recorded by ENGINEER as having received a copy of Contract Documents and a separate set of Bid Documents and as making required deposit therefor, under their own name.  |
| Product                         | Materials, systems, and equipment incorporated or to be incorporated in the Work.  |
| Product Data                    | Catalog data, illustrations, standard schedules, performance charts, instructions, and other information prepared by manufacturer or supplier.   |
| Project                         | Work and other related facilities of the OWNER.  |
| Project Manual                  | The volume or volumes containing the bidding information, schedules, equipment uses, page-size details, and the Contract Documents for the Work except large drawings and modifications.   |
| Proposal                        | The document which forms a portion of the Bid.   |
| Provide                         | Furnish and install.   |
| Resident Project Representative | The authorized representative of ENGINEER who is assigned to the Work site or any part thereof.  |

|                        |  |
|------------------------|--|
| Schedule of Values     | The breakdown of the Bid into component parts aggregating the total Bid.   |
| Shop Drawings          | All drawings, diagrams, illustrations, schedules and other data specifically prepared by CONTRACTOR, a Subcontractor, manufacturer, fabricator, supplier or distributor to illustrate the equipment, material or some portion of the Work.   |
| Site                   | The location(s) where the Work is to be performed.   |
| Specifications         | Those portions of the Contract Documents consisting of technical descriptions of materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative details applicable thereto, specifically Divisions 1 through 16.  |
| Subcontractor          | An individual, firm, joint venture or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the Site.  |
| Substantial Completion | The stage in construction when the Work can be utilized for the purposes for which it was intended. At Substantial Completion, minor items and items that are seasonally restricted need not be completed, but the items that affect operational integrity and function of the Work must be capable of continuous use. |
| Supplier               | Firm providing products to CONTRACTOR.   |
| Surety                 | A company which provides a Bond.   |
| Work                   | The entire completed construction and the various separately identified parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor, and furnishing and incorporating Products into the construction as required by the Contract Documents.       |

ARTICLE 2-PRELIMINARY MATTERS

COPIES OF DOCUMENTS

- 2.1 OWNER will furnish CONTRACTOR up to 10 copies of the Contract Documents. Additional copies will be furnished, upon request, as ENGINEER determines are necessary for execution of the Work. Copies requested beyond these limits are available at the cost of reproduction.

CONTRACTOR'S REPRESENTATION:

- 2.2 By executing the Agreement, CONTRACTOR represents that CONTRACTOR has visited the Site and assumes full responsibility for being familiar with the nature and extent of the Contract Documents, Work, locality, local conditions and availability of manpower, materials and machinery that may in any manner affect the Work to be done, the Contract Price or the Contract Time.

CONTRACT TIME

- 2.3 The Contract Time will commence on the day indicated in the Notice to Proceed; but in no event shall the Contract Time commence later than the later of 30 days after the time stipulated for Bids to remain firm or 30 days after the Effective Date of Contract.
- 2.4 The date of beginning and the Contract Time for completion of the Work are essential conditions of the Contract Documents. Time requirements are for the benefit of OWNER, CONTRACTOR and other Project Contractors.
- 2.5 CONTRACTOR shall proceed with the Work at a rate of progress to ensure completion within the stipulated Contract Time. It is expressly agreed by CONTRACTOR that the Contract Time is reasonable, taking into consideration the average climatic and economic conditions and the availability of manpower, products, and construction machinery prevailing at the locality of the Work.

BEFORE STARTING THE WORK

- 2.6 CONTRACTOR shall carefully study and compare the Contract Documents and check and verify all figures shown thereon and all field measurements. CONTRACTOR shall, within 48 hours, report to ENGINEER any conflict, error or discrepancy which CONTRACTOR may discover before proceeding with the Work.
- 2.7 CONTRACTOR shall submit to the ENGINEER:  
Construction Schedules;  
Schedule of Values; and  
Schedule of Shop Drawings, Product Data and samples.
- 2.8 A preconstruction meeting will be held to review the Construction Schedules, to establish procedures for handling Shop Drawings and other submissions and for processing payments, and to establish working relationships between the parties.

STARTING THE WORK

- 2.9 CONTRACTOR shall start to perform the Work on the date when the Contract Time commences.
- 2.10 CONTRACTOR shall attend a progress meeting a minimum of once each month at a time and place designated by the ENGINEER.

ARTICLE 3-CONTRACT DOCUMENTS INTENT

GENERAL:

- 3.1 It is the intent that the Contract Documents comprise the entire agreement between OWNER and CONTRACTOR and may be altered only by a Modification.
- 3.2 All communications between OWNER, CONTRACTOR, and ENGINEER intended to affect or modify any of the terms or obligations contained in the Contract Documents shall be in writing in order to be valid. Communications intended to affect or modify the Contract Documents include the following terms: claim, submission, notice, request, acceptance, report, objection, order, consent, advise, communicate, communications, certify, authorize, authorization, issue, or like terms.
- 3.3 No oral order, objection, claim or notice by OWNER, CONTRACTOR or ENGINEER shall affect or modify any of the terms or obligations contained in the Contract Documents.
- 3.4 The Contract Documents are complementary; what is called for by one is as binding as if called for by all. In resolving conflicts, errors and discrepancies, the documents shall be given precedence in the order stipulated in the Agreement. Detailed drawings shall govern over general drawings. Any Work that may reasonably be inferred from the Contract Documents as being required to produce the intended result shall be supplied whether or not it is specifically called for. Work, materials or equipment described in words which, so applied, have a well-known technical or trade meaning shall be deemed to refer to such recognized standards or meanings.
- 3.5 The Contract Documents shall be governed by the law of the place of the Work.

REUSE OF DOCUMENTS

- 3.6 Neither CONTRACTOR nor any Subcontractor, manufacturer, fabricator, supplier or distributor shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents or copies thereof prepared by or bearing the seal of ENGINEER; and they shall not reuse any of them on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

ARTICLE 4-LANDS AND CONTROLS

GENERAL

- 4.1 OWNER will, upon request, furnish to CONTRACTOR copies of all available boundary surveys and subsurface tests.

AVAILABILITY OF LANDS

- 4.2 OWNER will furnish, not later than CONTRACTOR's Construction Schedule starting date, the lands or rights-of-way upon which or within which the Work is to be performed, rights-of-way for access thereto, and lands designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained by OWNER. CONTRACTOR shall obtain all additional lands and access required for temporary construction facilities and storage of materials and equipment.

UNFORESEEN SUBSURFACE CONDITIONS

- 4.3 The underground conditions indicated in the Contract Documents represent the information available at the time of preparation and are not guaranteed as to accuracy or completeness. CONTRACTOR shall within 48 hours after discovery notify OWNER and ENGINEER of any subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents. ENGINEER will investigate within 72 hours after Notice and, if warranted, advise OWNER to obtain additional investigations and tests. If said additional investigations and tests show subsurface or latent physical conditions to be materially different and which could not have reasonably been anticipated by CONTRACTOR, a Change Order will be issued incorporating the necessary revision.

REFERENCE POINTS

- 4.4 CONTRACTOR shall be responsible for the preservation of established property corners, monuments, bench marks and similar reference points outside of the normal working area. CONTRACTOR shall report to ENGINEER whenever any reference point is lost, destroyed or requires relocation.
- 4.5 Replacement of reference points within the normal working area are the responsibility of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is in danger of being lost or destroyed or requires relocation.
- 4.6 Construction stakes will be provided by the OWNER to the extent as may be set forth in the Specifications.

ARTICLE 5 - BONDS AND INSURANCE

PERFORMANCE AND PAYMENT BONDS:

- 5.1 CONTRACTOR shall furnish separate Bonds as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. Each of these Bonds shall be in amounts at least equal to the Contract Price and in such form and with such Sureties as are acceptable to OWNER. Bond forms for the aforementioned securities are a part of the Contract Documents and CONTRACTOR shall ensure that each executed copy of the Bond form is complete and sealed.
- A. Bonds shall be issued by a Surety named in U.S. Treasury Circular 570 licensed to conduct business in the state where the Work is located.
- B. If the Surety on any Bond is declared bankrupt or becomes insolvent or its right to do business is terminated in the state where the Work is located, or it ceases to be listed as an acceptable Surety in U.S. Treasury Circular 570, CONTRACTOR shall, within 5 days thereafter, substitute another Bond from an acceptable Surety.

CONTRACTOR'S LIABILITY INSURANCE

- 5.2 CONTRACTOR shall purchase and maintain such comprehensive general liability and other insurance from an insurance company authorized to write casualty insurance in the state where the Work is located and

shall provide protection from claims set forth below which may arise out of, or result from, CONTRACTOR's performance of the Work and CONTRACTOR's other obligations under the Contract Documents, whether such performance is by CONTRACTOR, by any Subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.

- A. Claims under worker's compensation, disability benefits, and other similar employee benefits.
- B. Claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees.
- C. Claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees.
- D. Claims for damages insured by personal injury liability coverage which are sustained by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR or by any other person for any other reason.
- E. Claims for damages because of injury to, or destruction of, tangible property, including loss of use resulting therefrom.
- F. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

5.3 This insurance shall be written for the following minimum limits of liability and shall have an endorsement covering all CONTRACTOR'S obligations under the Contract Documents:

- A. Worker's Compensation & Employer's Liability Insurance:

|                       |           |
|-----------------------|-----------|
| Worker's Compensation | Statutory |
| Employer's Liability  | \$500,000 |

- B. Comprehensive General Liability (personal injury, bodily injury and property damage) - covering premises; underground, explosion and collapse hazard; products completed operations; independent contractors' property damage; personal injury and blanket broad form contractual liability.

|                   |             |
|-------------------|-------------|
| General Aggregate | \$2,000,000 |
| Each Occurrence   | \$1,000,000 |

This Policy Must Include coverage for the liability assumed by the CONTRACTOR under the indemnity provisions of the Contract.

- C. Automobile Liability Insurance (bodily injury and property damage) - covering all owned, hired and non-owned automobile equipment.

|                       |             |
|-----------------------|-------------|
| Combined Single Limit | \$1,000,000 |
|-----------------------|-------------|

Coverage will also comply with all applicable automobile statutes and no-fault laws.

Comprehensive General Liability and Comprehensive Automobile Liability Insurance may be arranged under a single policy for the full limits required or a combination of underlying policies with the balance provided by an Excess or Umbrella Liability Policy.

#### OWNER'S LIABILITY INSURANCE

5.4 CONTRACTOR shall obtain Owner's Protective liability insurance in the name of OWNER and ENGINEER as agent for OWNER, with such provisions as will protect OWNER and ENGINEER from contingent liability under this Contract, and shall maintain and pay the premiums of such insurance. The amounts of coverage shall be the same as CONTRACTOR's liability insurance requirements in this Article.

PROPERTY INSURANCE:

- 5.5 CONTRACTOR shall purchase and maintain property insurance upon the Work to the full insurable value thereof. This insurance shall include the interests of OWNER, CONTRACTOR, and Subcontractors in the Work and shall insure against the perils of fire and include extended coverage and "all risk" coverage for physical loss and damage including theft, vandalism, and malicious mischief, collapse and water damage. Payment for losses, if any, shall be retained by OWNER as security for Contract and shall be released to CONTRACTOR in periodic payments as such Work progresses.
- A. Any insured loss under the property insurance policies is to be adjusted with, and made payable to, OWNER as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause.
  - B. OWNER and CONTRACTOR waive all rights against each other and the Subcontractors and their agents and employees and against ENGINEER and separate contractors' agents and employees for damages caused by fire or other perils to the extent covered by this property insurance, except such rights as they may have to the proceeds of such insurance held by OWNER as trustee. CONTRACTOR shall require similar waivers by Subcontractors.
  - C. OWNER as trustee will have the power to adjust and settle any loss with the insurers unless one of the parties in interest shall object to OWNER's exercise of this power within 15 days after the occurrence of loss. If such objection be made, arbitrators shall be chosen by the American Arbitration Association. OWNER as trustee will, in that case, make settlement with the insurers in accordance with the direction of such arbitrators. If distribution of the insurance proceeds by arbitration is required, the arbitrators will direct the distribution.
  - D. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion, no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof from OWNER and consented by endorsement on the policy or policies. The property insurance shall not be canceled or lapse on account of any such use or occupancy.

CERTIFICATE OF INSURANCE:

- 5.6 Before commencing performance of Contract, CONTRACTOR shall furnish the OWNER with Certificates of Insurance evidencing:
- A. Insurer(s) affording coverage, acceptable to the OWNER.
  - B. Effective and expiration dates of policies.
  - C. That the OWNER will be given 30 days written notice of any cancellation, non-renewal or material change in any policy.
  - D. That the Contractual Liability Endorsement has been included in Comprehensive General Liability policy.
  - E. Any deductibles and/or self-insured retentions.
  - F. Any exclusions to policies which are not part of the standard form.

ARTICLE 6-CONTRACTOR'S RESPONSIBILITIES

GENERAL

- 6.1 CONTRACTOR will issue communications relative to the Work, to OWNER through ENGINEER.
- 6.2 CONTRACTOR shall supervise and direct the Work competently, efficiently and with skill and attention required to complete the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction.

CONTRACTOR shall be responsible for accurate compliance of the finished Work with the Contract Documents.

- 6.3 CONTRACTOR shall keep on the Work, at all times the Work is in progress, a competent superintendent who shall be replaced only under extraordinary circumstances with Notice to OWNER and ENGINEER. The superintendent shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be binding on CONTRACTOR.
- 6.4 CONTRACTOR shall provide notice to allow all utilities to locate their facilities prior to the performance of Work. The form and time of notice, the person(s) notified and all other issues related to notice to utilities which may be effected by the Work shall be in accordance with the laws and regulations of the state in which the Work is to be performed.
- 6.5 Unless otherwise specified, restricted work times shall be as follows, except in the event of an emergency as defined in this Article: Sunday or holiday work will not be permitted; and, work will not be permitted from 8:00 p.m. to 7:00 a.m.

LABOR, MATERIALS AND EQUIPMENT

- 6.6 CONTRACTOR shall provide competent, suitably qualified personnel to execute and complete the Work as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the Site. ENGINEER may judge the competency and qualifications of personnel and, upon his written request to the CONTRACTOR, the CONTRACTOR shall cause the immediate dismissal from the Work of any personnel considered by ENGINEER to be incompetent and/or unqualified.
- 6.7 CONTRACTOR shall guarantee that he has available the quantities and quality of labor and supervision necessary to fulfill the CONTRACTOR'S obligations under the Contract Documents.
- 6.8 CONTRACTOR shall furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, and all other facilities and incidentals necessary for the execution, testing, initial operation, and completion of the Work.
- 6.9 All Products shall be of good quality and new. When required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence as to the kind and quality of materials and installed equipment. CONTRACTOR shall submit to the ENGINEER Shop Drawings, Product Data and samples of Products to be incorporated in the Work.

SUBCONTRACTORS

- 6.10 CONTRACTOR shall be fully responsible for all acts and omissions of Subcontractors and of persons directly or indirectly employed by them and persons for whose acts any of them may be liable to the same extent that CONTRACTOR is responsible for the acts and omissions of persons directly employed by CONTRACTOR. Nothing in the Contract Documents shall create any contractual relationship between any Subcontractor and OWNER or ENGINEER or any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any Subcontractor, except as may otherwise be required by law. OWNER or ENGINEER may furnish to any Subcontractor, to the extent practicable, evidence of amounts paid to CONTRACTOR for specific work done.
- 6.11 The Divisions and Sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or delineating work to be performed by any specific trade.
- 6.12 All work performed for CONTRACTOR by a Subcontractor shall be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor, subject to the applicable terms and conditions of the Contract Documents.

SUBSTITUTE PRODUCTS

- 6.13 Whenever Products are specified or described in the Drawings or Specifications by using the name of a proprietary item or the name of a particular manufacturer, fabricator, supplier or distributor, it is intended to establish the type, function and quality required. Unless the substitution is specifically prohibited, substitute



items may be accepted by ENGINEER. ENGINEER will be the sole judge of the acceptability of proposed substitutions. No substitution shall be ordered or installed without ENGINEER's prior acceptance. OWNER may require CONTRACTOR to furnish a special performance guarantee or other surety with respect to any substitute.

- A. During the bidding period, requests for substitutions may be given consideration by the ENGINEER, and if approved, an Addendum will be issued to incorporate the approved Product into the Contract Documents. Such requests must be received by the ENGINEER in ample time, not later than 10 days before bid due date, so that any necessary Addendum can be issued to all prospective BIDDERS before submission of the Bids.
- B. A request for substitution after award of the Contract shall be accepted from the CONTRACTOR only, shall be accompanied by manufacturer's data or other detailed description of the proposed Product and will be considered for one of the following reasons only:
  - 1. Increased value to the OWNER.
  - 2. Decreased cost to the OWNER.
  - 3. Specified item not procurable.
- C. A request for a substitution constitutes a representation that the CONTRACTOR has investigated and determined that the proposed Product is equal to or superior in all respects to that specified.
- D. CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's consultants for evaluating accepted or rejected substitutes and for resulting changes in Drawings and Specifications.

**OWNER FURNISHED PRODUCTS:**

- 6.14 When the Contract Documents stipulate that the OWNER will furnish Products to be incorporated in the Work, the CONTRACTOR'S responsibilities will be:
  - A. Designate the delivery for each Product in the Construction Schedule.
  - B. Review the Shop Drawings, Product Data and samples.
  - C. Submit to ENGINEER Notice of any discrepancies or problems anticipated in the use of the Product.
  - D. Receive and unload the Products at the Site.
  - E. Promptly inspect Products jointly with the OWNER, record shortages, and damaged or defective items.
  - F. Handle Products at the Site, including uncrating and storage.
  - G. Protect the Products from exposure to the elements and from damage.
  - H. Assemble, install, connect, and adjust the Products as stipulated in the Specifications.
  - I. Repair or replace items damaged by the CONTRACTOR.

**PERMITS**

- 6.15 CONTRACTOR shall obtain all temporary permits required to complete the Work. Application and inspection fees associated with temporary permits shall be paid by the CONTRACTOR.

**USE OF PREMISES**

- 6.16 CONTRACTOR shall confine Work operations to the Site and other designated areas. All disturbed areas shall be restored to equal to or better than original condition.

- 6.17 Material and equipment storage areas on Site shall be established and maintained in a manner that will not disrupt or impair the use of the Site.

PATENT FEES AND ROYALTIES

- 6.18 CONTRACTOR shall pay license fees, royalties and costs incident to the use of any invention, design, process or device which is the subject of patent rights or copyrights in connection with the Work. OWNER will pay for processes involved in the operation of the completed facilities.

SAFETY AND PROTECTION

- 6.19 CONTRACTOR shall be responsible for initiating, maintaining and supervising safety programs in connection with the Work. CONTRACTOR shall take precautions and provide protection to prevent damage, injury or loss to:

- A. Employees on the Work and other persons who may be affected thereby;
- B. The Work and Products to be incorporated therein, whether in storage on or off the site; and
- C. Other property at the Site or adjacent thereto, both above and below ground, not designated for removal, relocation or replacement. CONTRACTOR shall erect and maintain necessary safeguards for safety and protection of property and shall notify owners of adjacent utilities when prosecution of the Work may affect them. CONTRACTOR shall be responsible for costs associated with all damage, injury or loss.

- 6.20 CONTRACTOR shall designate a superintendent at the site as safety officer, whose duty shall be the prevention of accidents.

- 6.21 Damage, injury or loss to property referred to in this Article caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor and anyone directly or indirectly employed by any of them and anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR at CONTRACTOR'S cost. CONTRACTOR's duties and responsibilities for the safety and protection of the Work shall continue until the Work is completed and ENGINEER has issued the Certificate of Completion.

LAWS AND REGULATIONS

- 6.22 CONTRACTOR shall comply with all laws, ordinances, rules, regulations and orders of public bodies applicable to the Work.

- 6.23 When the CONTRACTOR becomes aware that the Contract Documents, or any requirements thereof, are at variance to laws and regulations, CONTRACTOR shall promptly serve written Notice to the ENGINEER. Any alterations required to bring the Work in compliance will be made by Modification.

- 6.24 When the CONTRACTOR is aware that the Contract Documents, or any requirements thereof, are at variance to laws and regulations and performs any of the Work contrary to laws and regulations without Notice to the ENGINEER, all costs incurred in correcting the Work shall be borne by the CONTRACTOR.

HAZARDOUS MATERIALS

- 6.25 In the event CONTRACTOR discovers on the Site unexpected regulated hazardous materials, including without limitation, inorganics, organics and asbestos, CONTRACTOR shall immediately give Notice to ENGINEER and request a determination of how to proceed. In the event CONTRACTOR releases, under any circumstances, regulated hazardous materials on the Site, CONTRACTOR shall immediately give Notice to ENGINEER, take emergency action as appropriate and, following approval by ENGINEER of CONTRACTOR'S proposed plan of remediation, CONTRACTOR shall remediate said release at CONTRACTOR'S expense, all in compliance with all applicable laws and regulations.

EMERGENCIES

- 6.26 In emergencies affecting the safety of persons, the Work or adjacent property, CONTRACTOR, without authorization from ENGINEER or OWNER, is obligated to act, at CONTRACTOR's discretion, to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt Notice of the emergency

action taken, and any significant changes in the Work or deviations from the Contract Documents caused thereby. INDEMNIFICATION

- 6.27 CONTRACTOR shall indemnify, defend and hold harmless OWNER and ENGINEER, their consultants, agents and employees, from and against claims, damages, losses, attorney's fees, and expenses arising out of, or resulting from, the performance of the Work, provided that any such claim, damage, loss or expense:
- A. is attributable to bodily injury, sickness, disease or death, or to injury to, or destruction of, tangible property other than the Work itself, including the loss of use resulting therefrom; and
  - B. is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.
- 6.28 In all claims against OWNER or ENGINEER or their agents or employees, by any employee of CONTRACTOR or Subcontractors or anyone for whose acts they may be liable, the indemnification obligation shall not be limited by the amount or type of damages, compensation or benefits under workmen's compensation acts, disability benefit acts, or other employee benefit acts.
- 6.29 The indemnification obligation of CONTRACTOR shall not extend to the liability of ENGINEER, agents or employees arising out of the preparation or approval of maps, Drawings, reports, surveys, Change Orders, designs or Specifications.

ARTICLE 7-WORK BY OTHERS

- 7.1 OWNER may perform or may contract with others to do additional work related to the Project. CONTRACTOR shall afford others a reasonable opportunity to perform work as well as to store materials and equipment on Site and shall properly integrate and coordinate CONTRACTOR's work with others. CONTRACTOR shall coordinate and cooperate with contractors working in the area for other owners or jurisdictions.
- 7.2 If any part of CONTRACTOR's work depends for proper execution or results upon the work of other contractors, other owners, or OWNER, CONTRACTOR shall inspect and promptly report to ENGINEER any defects or deficiencies in such work. CONTRACTOR's failure to so report shall constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR's work.
- 7.3 Additional Work resulting from other contracts, or work by OWNER not noted in the Contract Documents will be added by Change Order.

ARTICLE 8-OWNER'S RESPONSIBILITIES

GENERAL

- 8.1 OWNER will issue all communications to the CONTRACTOR through the ENGINEER.
- 8.2 In case of termination of the employment of ENGINEER, OWNER will appoint an engineer against whom CONTRACTOR makes no substantial objections, whose status under the Contract Documents will be that of the former ENGINEER.
- 8.3 OWNER will furnish the data required under the Contract Documents promptly and will make payments to CONTRACTOR promptly.

OWNER FURNISHED PRODUCTS

- 8.4 When the Contract Documents stipulate that the OWNER will furnish Products to be incorporated in the Work, the OWNER'S responsibilities will be:
- A. Arrange for and deliver the necessary Shop Drawings, Product Data, and samples to the CONTRACTOR.

- B. Arrange and pay for delivery of the Products to the Site in accordance with the Construction Schedule.
- C. Deliver supplier's bill of materials to the CONTRACTOR.
- D. Inspect deliveries jointly with the CONTRACTOR.
- E. Submit claims for transportation damage.

ARTICLE 9-ENGINEER'S STATUS

OWNER'S REPRESENTATIVE

- 9.1 ENGINEER will be OWNER'S representative during the bidding and construction period. Communications between the OWNER and the CONTRACTOR, or claimant, will be directed through the ENGINEER. The duties, responsibilities and limitations of authority of ENGINEER as OWNER's representative during the bidding and construction are set forth in these Contract Documents and shall be modified only with consent of OWNER and ENGINEER.
- 9.2 ENGINEER will not be responsible for the construction means, methods, techniques, sequences or procedures, or the safety precautions and programs incident thereto, and ENGINEER will not be responsible for the CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.
- 9.3. ENGINEER will not be responsible for the acts or omissions of the CONTRACTOR, or any Subcontractors, or any of their agents or employees, or any other persons performing any of the Work.

VISITS TO SITE

- 9.4 ENGINEER will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections 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 to the Contract Documents. On the basis of such visits and on-site observations as an experienced and qualified professional, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defects and deficiencies in the Work.

CLARIFICATIONS AND INTERPRETATIONS

- 9.5 ENGINEER may issue clarifications or interpretations consistent with, or inferable from, the intent of the Contract Documents.

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

- 9.6 ENGINEER shall review Shop Drawings, Product Data and samples of Products submitted by the CONTRACTOR.

REJECTING DEFECTIVE WORK

- 9.7 ENGINEER will have authority to disapprove of or reject Defective Work. ENGINEER will also have authority to require special inspection or testing of Work whether or not the Work is fabricated, installed or completed.

SITE REPRESENTATIVE

- 9.8 ENGINEER will furnish a Resident Project Representative, who may have one or more assistants, to aid OWNER and ENGINEER in carrying out their responsibilities at the Site. The duties, responsibilities and authority of the Resident Project Representative are set forth in Article 18 of these General Conditions.

DECISIONS ON DISAGREEMENT

- 9.9 ENGINEER will be initial interpreter of the requirements of Contract Documents and judge of acceptability of the Work. Claims, disputes, and other matters pertaining to bidding, execution and progress of the Work shall be referred initially to ENGINEER with a request for an informal meeting and a formal decision. Notice of each such claim, dispute and other matter shall be delivered by claimant to ENGINEER and other party within 15 days of occurrence of the event giving rise thereto. Additional supporting data shall be supplied within 30 days of occurrence. ENGINEER's written decision will be rendered within 40 days after the occurrence. In ENGINEER's capacity as interpreter and judge, ENGINEER will be impartial to OWNER, CONTRACTOR or claimant and will not be liable for any decision rendered in good faith.
- 9.10 The rendering of a decision by ENGINEER with respect to any such claim, dispute or other matter, will be a condition precedent to arbitration under these General Conditions. The ENGINEER's decision shall become final and binding on the parties 30 days after the decision is rendered unless deferred by an arbitration request, litigation or administrative appeal (if applicable) is filed by either party within the 30-day period. Lawsuits shall be brought in Kent County.
- 9.11 No decision made by ENGINEER in good faith, either to exercise or not to exercise authority under this Article shall give rise to any duty, liability or responsibility of ENGINEER to claimant, CONTRACTOR, any Subcontractor, any of their agents or employees, or any other person performing any of the Work.

ARTICLE 10-CHANGES IN THE WORK

- 10.1 Without invalidating the Contract, OWNER may, at any time, order additions, deletions or revisions in the Work by Change Orders. Upon receipt of an executed Change Order, CONTRACTOR shall proceed with the Work involved.
- 10.2 ENGINEER may authorize minor changes or alterations in the Work not involving extra cost and not inconsistent with the overall intent of the Contract Documents. These changes will be authorized by a Bulletin and will be binding upon OWNER and CONTRACTOR.
- 10.3 Additional work performed by CONTRACTOR without authorization of a Change Order will not entitle CONTRACTOR to an increase in the Contract Price or an extension of the Contract Time, except as set forth in these General Conditions.
- 10.4 OWNER shall execute appropriate Change Orders recommended by ENGINEER as set forth in these General Conditions.
- 10.5 It shall be CONTRACTOR's responsibility to notify Surety of any changes affecting the general scope of the Work or change in the Contract Price or Time. The amount of the applicable Bonds shall be adjusted accordingly.

ARTICLE 11-CHANGE OF CONTRACT PRICE

GENERAL

- 11.1 The Contract Price constitutes the total compensation payable for performing all duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR, and includes all taxes payable by CONTRACTOR as a result of the Work.
- 11.2 The Contract Price shall only be changed by a Change Order. Claims for a change in the Contract Price shall be submitted, with supporting data, to ENGINEER within 15 days of the occurrence of the event giving rise to the claim.
- 11.3 Claims for extra compensation shall not be made by CONTRACTOR for reasonable delays:
- A. caused by the work of other Project contractors or subcontractors.

- B. due to the failure of OWNER to perform any obligations required of OWNER under these Contract Documents.
- 11.4 Value of the Work covered by a Change Order shall be determined by one of the following methods:
- A. where the Work is covered by Contract unit prices by application of unit prices to the items involved.
  - B. by mutual acceptance of a lump sum.
  - C. on the basis of the cost of the Work, plus overhead and profit, but only in the event OWNER and CONTRACTOR cannot agree on one of the above methods.

**COST-PLUS WORK**

- 11.5 Cost-plus work means cost of the Work plus a fee. Cost of the Work means the sum of all costs incurred and paid by CONTRACTOR in the performance of cost-plus work. Such costs shall be in amounts no higher than those prevailing in the locality of the Work. Cost of the Work shall only include:
- A. payroll costs for employees including superintendents and foremen at the Site in the direct employ of CONTRACTOR under schedules of job classifications. Payroll costs shall include, but not be limited to, salaries and wages, social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay.
  - B. cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation, storage and manufacturers' field services.
  - C. rentals of all construction equipment, machinery and accessories, and costs of transportation, loading, unloading, installation, dismantling and removal. Rental rates shall not exceed rates listed in the "Rental Rate Blue Book for Construction Equipment" published by Equipment Guide Book Company. Rates allowed will be based on the most economical time unit. The rental determined by multiplying the rate (e.g., hourly, daily, weekly, etc.) by the period of use shall not exceed the rental determined by applying the next highest rate (e.g., for this purpose the daily rate would be "higher" than the hourly rate, etc.) to the corresponding period of use.
  - D. fees of special consultants.
  - E. cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, hand tools, office and temporary facilities at the Site.
  - F. transportation, travel and subsistence expenses.
  - G. sales, use or similar taxes imposed by any governmental authority.
  - H. unavoidable deposit losses, royalty payments, and fees for permits and licenses, and losses and damages to the Work not compensated by insurance.
  - I. the cost of utilities, fuel, telegrams, long distance telephone calls, and expressage.
- 11.6 Cost of the Work shall not include:
- A. compensation for CONTRACTOR's officers, executives, principals, managers, professionals, clerks and other personnel, whether at the Site or office.
  - B. any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.
  - C. cost 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 or damage to the property, disposal of materials or equipment wrongly supplied.

- D. other overhead or general expense costs.
- 11.7 The fee allowed to the CONTRACTOR for overhead and profit shall be 10 percent of the cost of the Work; except for payments to Subcontractors in which case the fee shall be 5 percent.
- 11.8 Payments to Subcontractors will be determined in the same manner as CONTRACTOR's cost of the Work. The fee allowed to the Subcontractors for overhead and profit shall be 10 percent.
- 11.9 The amount of credit to OWNER for any change which results in a net decrease in cost will be the amount of the actual net decrease, exclusive of any fee for overhead and profit. When both additions and credits are involved in any one change, the overhead and profit shall be based on the net increase in the Work.
- 11.10 CONTRACTOR shall submit daily cost reports of cost-plus work to the ENGINEER.

ARTICLE 12-CHANGE OF THE CONTRACT TIME

- 12.1 The Contract Time may only be altered by a Change Order. Claim for a change of Contract Time shall be delivered to OWNER and ENGINEER within 15 days of the event giving rise to the claim. Adjustment in the Contract Time will be determined by ENGINEER.
- 12.2 The Contract Time will be extended in an amount equal to time lost due to unreasonable time delays beyond control of CONTRACTOR. Reasons for such delays shall be restricted to fires, labor disputes, epidemics, abnormal weather conditions, and Acts of God. In addition Contract Time may be extended for unreasonable time delays:
  - A. caused solely by work of other Project contractors or subcontractors
  - B. due to failure of OWNER to perform any obligations required of OWNER under these Contract Documents.

ARTICLE 13-WARRANTY, TESTS AND DEFECTIVE WORK

WARRANTY AND GUARANTEE

- 13.1 CONTRACTOR warrants and guarantees to OWNER and ENGINEER that materials and equipment shall be new and that Work shall be of good quality and free from faults or defects and in accordance with requirements of the Contract Documents. Prompt Notice of any defects will be given to CONTRACTOR.
- 13.2 CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by monthly estimates, passes automatically to OWNER at the time of payment, free and clear of all liens.

TESTS AND INSPECTIONS

- 13.3 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any portion of the Work to be inspected, tested, or approved by someone other than CONTRACTOR, CONTRACTOR shall give ENGINEER timely notice of readiness therefore. Such tests shall be in accordance with the methods prescribed by the applicable organization or the Contract Documents. All certification fees, testing laboratory fees, and inspection fees of said public authorities will be paid by CONTRACTOR. Other inspection, certification and testing fees are the responsibility of the OWNER. Inspection coordination is the responsibility of the CONTRACTOR, unless otherwise indicated in the Contract Documents.
- 13.4 Neither observations by ENGINEER nor inspections, tests or approvals by persons other than CONTRACTOR shall relieve CONTRACTOR from obligations to perform the Work required by the Contract Documents, laws, ordinances, rules, regulations or orders of public authority having jurisdiction.

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- 13.5 When inspection readiness is declared by the CONTRACTOR and the inspection proves unsuccessful, all costs for the inspection shall be borne by the CONTRACTOR. ACCESS TO THE WORK
- 13.6 ENGINEER, his representatives, and representatives of OWNER shall at all times have access to the Work. CONTRACTOR shall provide proper facilities for access, observation of the Work, and for any inspection or testing by manufacturers, suppliers, material men, and other parties as authorized by OWNER.

## UNCOVERING WORK

- 13.7 If Work requiring inspection, testing or approval is covered either without ENGINEER's written approval where required, or contrary to ENGINEER's specific request, the Work shall, if requested by ENGINEER, be uncovered for observation and replaced at CONTRACTOR's expense.
- 13.8 If ENGINEER considers it necessary or advisable that covered Work be inspected or tested, other than as outlined under the previous paragraph, CONTRACTOR, at ENGINEER's request, shall uncover and expose that portion of the Work. If the Work is defective, CONTRACTOR shall bear all the expenses of satisfactory repair and reconstruction, including compensation for additional engineering services resulting therefrom. If such Work is not found to be defective, CONTRACTOR shall be allowed an increase in Contract Price, an extension of Contract Time, or both, directly attributable to such uncovering and reconstruction.

## CUTTING AND PATCHING

- 13.9 CONTRACTOR shall be responsible for all cutting, fitting and patching required to complete the Work, to make its several parts fit together properly, or to uncover portions of the Work to provide for installation of ill-timed Work. CONTRACTOR shall not cut or alter any part of the Work or the work of another Contractor or Subcontractor without written approval of the ENGINEER. In no case shall the CONTRACTOR endanger any portion of the Work by cutting or altering any part of it.

## CORRECTION OR REMOVAL OF DEFECTIVE WORK

- 13.10 CONTRACTOR shall promptly, as specified by ENGINEER, either correct any Defective Work or remove it from the Site and replace it with acceptable Work. If CONTRACTOR does not correct or remove and replace such Defective Work within a reasonable time, OWNER may have the deficiency corrected or the Defective Work removed and replaced by others. All direct and indirect costs of such correction or removal, and replacement, including compensation for additional engineering services, shall be paid by CONTRACTOR in an amount as verified by ENGINEER. CONTRACTOR shall also repair all Work of others destroyed or damaged by replacement of CONTRACTOR's Defective Work.

## ONE YEAR CORRECTION PERIOD

- 13.11 Prior to the expiration of one year after the date of Certificate of Completion or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents, CONTRACTOR shall promptly correct identified Defective Work or remove it from the Site and replace it with acceptable Work. If CONTRACTOR does not promptly comply, OWNER's rights to correction will be the same as for Defective Work in this Article. Repairs and replacements made under this paragraph shall bear an additional 12-month correction period dated from the acceptance of repair and replacement.

## ACCEPTANCE OF DEFECTIVE WORK

- 13.12 If OWNER prefers to accept Defective Work, an appropriate reduction in the Contract Price will be made. If the acceptance occurs after final payment, an appropriate amount, as determined by ENGINEER, shall be paid by CONTRACTOR to OWNER.

## OWNER'S RIGHT TO DO WORK:

- 13.13 If CONTRACTOR should neglect to prosecute the Work properly and diligently, or fail to perform any provision of this Contract, including requirements of the Construction Schedule, OWNER, after three (3) days Notice to CONTRACTOR and his Surety may, without prejudice to any other remedy that OWNER may have, correct and remedy any such deficiency. Direct and indirect costs of OWNER, including compensation for additional engineering services, shall be verified by ENGINEER and an appropriate



reduction in the Contract Price will be made. If the payments due CONTRACTOR are not sufficient to cover such amount, CONTRACTOR shall pay the difference to OWNER.

ARTICLE 14-PAYMENTS AND COMPLETION

PROGRESS PAYMENTS AND RETAINAGES

- 14.1 As a condition precedent to the first progress payment, CONTRACTOR shall submit a Construction Schedule and Schedule of Values.
- 14.2 Monthly, CONTRACTOR will prepare a payment request covering Work completed to date supported by such data as ENGINEER may reasonably request from CONTRACTOR.
- 14.3 The monthly payment requests shall not include Products not incorporated in the Work unless specifically requested by CONTRACTOR and approved by OWNER subject to the following mandatory conditions:
  - A. the Products have been specifically manufactured for the Work;
  - B. the Products have been delivered and suitably stored at the Site or at another location agreed to; and
  - C. CONTRACTOR has furnished supporting data, satisfactory to OWNER, that establishes OWNER's title to the Products, free of any Liens or other encumbrances, and protects OWNER's interest therein, including applicable insurance.
- 14.4 Monthly progress payments and retainage shall conform to the following, provided CONTRACTOR'S progress is in accordance with the approved Construction Schedule and the conditions for payment as set forth in this Article.
  - A. Progress payments covering the first 50 percent of the Work shall be 90 percent of the progress period Work completed and 75 percent of the Products furnished and not incorporated in the Work, but specifically authorized by the OWNER.
  - B. Progress payments covering the final 50 percent of the Work, at the discretion of the OWNER, may be increased to 100 percent of the progress period Work completed and 75 percent of Products furnished and not incorporated in the Work, but specifically authorized by the OWNER.
  - C. All payments to the CONTRACTOR by the OWNER, including retainage, shall be in accordance with all laws and regulations applicable to these activities in the state in which the Work is performed.

APPROVAL OF PAYMENT

- 14.5 CONTRACTOR will prepare monthly payment requests and present them to ENGINEER for recommendation to the OWNER. ENGINEER shall complete review of such requests, make adjustments as deemed appropriate, and forward to the OWNER within ten (10) days of receipt from the CONTRACTOR.
- 14.6 ENGINEER'S submittal and recommendation of any payment request shall constitute a representation by ENGINEER to OWNER, based on ENGINEER's on-site observations of Work in progress as an experienced qualified professional, that the Work has progressed to the point indicated; that, to the best of ENGINEER's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents; and that CONTRACTOR is entitled to payment. However, by recommending payment, ENGINEER shall not thereby be deemed to have represented that ENGINEER made exhaustive or continuous on-site inspections to check the quality or the quantity of the Work, or that ENGINEER has reviewed the means, methods, techniques, sequences, and procedures of construction or that ENGINEER has made any examination to ascertain how or for what purpose CONTRACTOR has used the moneys paid or to be paid to CONTRACTOR or that title to any Work, materials, or equipment has passed to OWNER free and clear of any liens.

- 14.7 OWNER will make payment to CONTRACTOR on monthly requests within 30 days of ENGINEER'S presentation to OWNER.

PAYMENT WITHHELD

- 14.8 ENGINEER may not recommend any payment or may nullify any payment previously recommended, to such extent as may be necessary to protect OWNER from loss because:
- A. Work is defective or completed Work has been damaged requiring correction or replacement.
  - B. written claims have been made against OWNER or liens have been filed in connection with the Work.
  - C. Contract Price has been reduced by Modifications.
  - D. CONTRACTOR has failed to file receipts for payment of equipment and materials not incorporated in the Work.
  - E. OWNER has been required to correct Defective Work or complete neglected Work.
  - F. unsatisfactory prosecution of the Work, including failure to clean-up or failure to perform testing as required by the Contract Documents.

PARTIAL UTILIZATION

- 14.9 OWNER shall have the right to take possession of, and use any completed or partially completed portions of the Work prior to completion. The OWNER's possession and use shall not be deemed an acceptance of any Work not completed in accordance with the Contract Documents. Unless otherwise called for in the Contract Documents, CONTRACTOR will be reimbursed for any extra costs or provide an extension of Contract Time for any delays or both which result from Partial Utilization of Work. Special insurance coverage, if required, shall be provided by the OWNER. Upon receipt of a request from OWNER to utilize a portion of the Work, ENGINEER shall:
- A. make an inspection and shall prepare a list of items of incompleted and Defective Work remaining for the portion of the Work to be utilized.
  - B. determine if any extra compensation or time extension is due the CONTRACTOR due to the OWNER'S Partial Utilization of the Work.

SUBSTANTIAL COMPLETION

- 14.10 When ENGINEER considers that the Work has been substantially but not entirely completed, and full completion thereof is materially delayed through no fault of CONTRACTOR, ENGINEER will issue a Certification of Substantial Completion. Liquidated damages for that portion of Work will not be assessed beyond the date of Substantial Completion.

PAYMENT FOR SUBSTANTIAL COMPLETION

- 14.11 OWNER will, upon Certificate of Substantial Completion by ENGINEER and without terminating the Contract, make payment of the balance due for Work fully completed and accepted. Consent of the Surety shall be submitted by CONTRACTOR to ENGINEER prior to certification of such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

NOTIFICATION OF COMPLETION

- 14.12 When CONTRACTOR considers the Work required in the performance of this Contract to be complete and ready for final inspection, CONTRACTOR shall provide Notice to the ENGINEER.

FINAL INSPECTION

- 14.13 CONTRACTOR shall serve Notice of completion on ENGINEER who will, within 7 days, schedule the final inspection with OWNER and CONTRACTOR, and will notify CONTRACTOR of incomplete and Defective Work. CONTRACTOR shall remedy such defects immediately and again submit a Notice of completion. Questions regarding quantities for payment will be measured jointly by the CONTRACTOR and ENGINEER.

FINAL PAYMENT

- 14.14 After CONTRACTOR has remedied all incomplete and Defective Work and delivered documents required by the Contract Documents, CONTRACTOR will prepare a request for final payment. CONTRACTOR shall furnish an executed Affidavit of Completion, in the form set forth in Article 19 of these General Conditions, including consent of the Surety to final payment. In lieu thereof, CONTRACTOR may furnish a Bond satisfactory to OWNER to indemnify OWNER against any lien.

APPROVAL OF FINAL PAYMENT

- 14.15 If ENGINEER is satisfied that the Work has been completed, and has received CONTRACTOR's Affidavit of Completion, ENGINEER will, within 10 days, issue the Certificate of Completion and present a recommendation for final payment to the OWNER for approval and payment. If said documentation is satisfactory in form and substance, OWNER shall pay CONTRACTOR within 30 days of receipt thereof.

CONTRACTOR'S CONTINUING OBLIGATION

- 14.16 The CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents shall be absolute. Recommendation of any progress or final payment by ENGINEER, issuance of a Certificate of Substantial Completion, any payment by OWNER to CONTRACTOR, any use or occupancy of the Work or any part thereof by OWNER, any act of acceptance by OWNER or any failure to do so, or any correction of Defective Work by OWNER shall not constitute an acceptance of Work contrary to the Contract Documents.
- 14.17 The duties and obligations imposed on CONTRACTOR by these General Conditions, and the rights and remedies available hereunder, and the rights and remedies available to OWNER and ENGINEER hereunder, shall be in addition to, and not a limitation of, any otherwise imposed or available by law, by special guarantee, or other provisions of the Contract Documents.

WAIVER OF CLAIMS

- 14.18 The making and acceptance of final payment shall constitute:
- A. a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from Defective Work appearing after final inspection pursuant to this Article or from failure to comply with the Contract Documents. However, it shall not constitute a waiver by OWNER of any rights with respect to CONTRACTOR's continuing obligations under the Contract Documents; and
  - B. A waiver of all claims by CONTRACTOR against OWNER, except those claims under negotiation, arbitration, or litigation.
- 14.19 CONTRACTOR'S refusal to accept the final payment as tendered by OWNER shall constitute a waiver of any right to interest thereon.

LIQUIDATED DAMAGES

- 14.20 OWNER will deduct the amount of any liquidated damages and expenses, calculated in accordance with the Agreement, from moneys due or to become due to CONTRACTOR. If such amount exceeds such unpaid balance, the CONTRACTOR shall pay the difference to the OWNER.

ARTICLE 15-SUSPENSION AND TERMINATION

WORK SUSPENSION

- 15.1 OWNER may order CONTRACTOR to suspend the Work, or any portion thereof, until the reason for such suspension has been eliminated; however, this right shall not give rise to any duty by OWNER to exercise this right for the benefit of CONTRACTOR or any other party.
- 15.2 OWNER may suspend the Work for the following reasons:
- A. Defective Work.
  - B. CONTRACTOR fails to supply sufficient skilled workmen or suitable Products.
  - C. CONTRACTOR fails to make prompt payments to Subcontractors or for labor or Products.
  - D. CONTRACTOR fails to maintain proper insurance, bonds, licenses, or federal, state, or local permits.

OWNER TERMINATION OF WORK

- 15.3 Upon the occurrence of any one or more of the following events OWNER may, after giving CONTRACTOR and Surety 10 days written Notice of Termination, terminate the services of the CONTRACTOR.
- A. CONTRACTOR fails to initiate and diligently proceed with the Work.
  - B. CONTRACTOR is adjudged bankrupt or insolvent.
  - C. CONTRACTOR makes a general assignment for the benefit of creditors.
  - D. a trustee or receiver is appointed for CONTRACTOR or for any of CONTRACTOR's property.
  - E. CONTRACTOR files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or similar laws.
  - F. CONTRACTOR repeatedly fails to supply sufficient skilled workmen or suitable Products.
  - G. CONTRACTOR repeatedly fails to make prompt payments to Subcontractors or for labor or Products.
  - H. CONTRACTOR disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction.
  - I. CONTRACTOR disregards the authority of the ENGINEER.
  - J. CONTRACTOR otherwise violates any provisions of the Contract Documents.

OWNER COMPLETION OF WORK ON TERMINATION:

- 15.4 If the Surety does not resume performance of the Work within 10 days after Notice of Termination is received from OWNER, OWNER shall have the absolute right to complete the Work in the most expeditious manner and shall have the right to exclude CONTRACTOR from the Site and take possession of the Work and of all CONTRACTOR's tools, appliances, equipment and machinery at the Site and use the same without liability to CONTRACTOR for trespass or conversion. OWNER may incorporate in the Work all Products for which OWNER has paid CONTRACTOR but which are stored elsewhere. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the balance due to CONTRACTOR at the time of termination exceeds the direct and indirect costs of completing the Work, including compensation for additional engineering services, attorney's fees, technical services and administrative costs, such excess shall be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER shall be

verified by ENGINEER and incorporated in a Change Order, but in finishing the Work OWNER shall not be required to obtain the lowest cost for the remaining portion of the Work performed.

OWNER'S ADDITIONAL TERMINATION RIGHTS

- 15.5 Where CONTRACTOR's services have been terminated by OWNER, said termination shall not affect any rights of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention due or payment of money by OWNER to CONTRACTOR shall not release CONTRACTOR from liability.

OWNER'S TERMINATION FOR CONVENIENCE

- 15.6 Upon 10 days' written Notice to CONTRACTOR, Surety and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Contract. In such case, CONTRACTOR will be paid for Work executed and expense sustained plus a reasonable profit.

CONTRACTOR'S CONTINUING WORK DURING DISPUTES

- 15.7 CONTRACTOR shall carry on the Work and maintain the Construction Schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as CONTRACTOR and OWNER may otherwise agree.

CONTRACTOR MAY STOP WORK OR TERMINATE

- 15.8 If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than 90 days by the OWNER or by an order of court or other public authority, or OWNER fails to pay CONTRACTOR any sum recommended by ENGINEER within 90 days of its presentation, then CONTRACTOR may, upon 10 days' written Notice to OWNER, terminate this Contract and recover from OWNER payment for all Work executed and any expense sustained plus a reasonable profit. In lieu of terminating the Contract, CONTRACTOR may, upon 10 days' notice to OWNER, stop the Work until CONTRACTOR has been paid amounts then due.

ARTICLE 16-ARBITRATION

- 16.1 In the event that a claim, dispute or other question arises relating to the Contract Documents, except claims which have been waived by the making or acceptance of final payment or claims not subject to arbitration under applicable law, OWNER and CONTRACTOR may, by mutual agreement, submit the claim, dispute or matter to arbitration. In the event the parties agree to arbitration, the right to proceed to arbitration shall be subject to the terms and conditions in this Article.
- 16.2 The parties must agree on the specific claims, disputes or matters to be arbitrated. The written arbitration submission shall state the nature and circumstances surrounding the claim or dispute, state the amount claimed or relief sought, and the specific supporting provisions relied upon in the Contract Documents. The scope of the arbitration shall be strictly limited to matters defined in the arbitration submission.
- 16.3 Once the arbitration submission has been signed by both parties, it shall be submitted to the American Arbitration Association which shall proceed to process the case in accordance with the Construction Industry Arbitration Rules, except to the extent that the same have been modified by this Article and the arbitration submission.
- 16.4 The arbitration panel shall consist of one Professional Engineer or Architect, one Contractor, and one Attorney selected in accordance with the applicable rules of the American Arbitration Association. In lieu of the appointment of an Arbitration Panel to settle an existing claim or dispute, OWNER and CONTRACTOR may agree upon a permanent arbitrator or Arbitration Panel to decide all claims, disputes, and other matters relating to the Contract Documents.
- 16.5 The arbitrator or Arbitration Panel shall apply the terms and conditions of the Contract Documents to the claim, dispute or matter submitted to it and shall base its decision on said Contract Documents.
- 16.6 The arbitrator's or Arbitration Panel's decision shall be set forth in writing, shall state the decision on each claim, dispute or matter submitted, and the reason for each decision.

- 16.7 Once a written arbitration submission has been executed, the agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law. The arbitration award rendered by the arbitrator(s) shall be final and judgment may be entered upon it in any court having jurisdiction thereof.
- 16.8 During the pendency of the arbitration proceedings, CONTRACTOR covenants and agrees that CONTRACTOR shall continue to proceed with the Work required pursuant to the Contract Documents. In the event that CONTRACTOR is terminated by OWNER at any time prior to the issuance of the arbitrator's or Arbitration Panel's written decision, or if CONTRACTOR fails to proceed with the Work during the pendency of the arbitration proceedings, OWNER shall be entitled to obtain a court order enjoining the continuance of said arbitration proceedings by reason of such action.

ARTICLE 17-MISCELLANEOUS

- 17.1 Whenever any provision of the Contract Documents requires the giving of Notice, it shall be deemed to have been validly given, if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if sent by certified mail or commercial carrier, with provision for receipt acknowledgement, to the last business address known to party who gives the Notice. Notice may also be made by facsimile transmission. In such case, Notice will be deemed received when the transmission is made. The party making such facsimile transmissions shall also forward a copy of such Notice by regular mail.
- 17.2 If any section, paragraph, clause or provision of the Contract Documents shall be held invalid, the invalidity of such section, paragraph, clause or provision shall not affect any of the other provisions of the Contract Documents. The Article and paragraph headings in the Contract Documents are furnished for convenience of reference only and shall not be considered to be a part of the Contract Documents.

ARTICLE 18-RESIDENT PROJECT REPRESENTATIVE

GENERAL

- 18.1 Resident Project Representative is ENGINEER's Agent under the supervision of ENGINEER in matters pertaining to the on-site Work. Dealings with Subcontractors shall be through, or with knowledge of, CONTRACTOR.

DUTIES AND RESPONSIBILITIES

- 18.2 Resident Project Representative will:
- A. Review the Construction Schedule, schedule of Shop Drawing submissions, and Schedule of Values prepared by CONTRACTOR, and consult with ENGINEER concerning their acceptability.
  - B. Attend preconstruction conferences, progress meetings, and other job conferences; chair meetings and maintain and circulate copies of minutes and notices thereof.
  - C. Serve as ENGINEER's liaison with CONTRACTOR, principally through with CONTRACTOR's Superintendent. Assist ENGINEER as OWNER's liaison when CONTRACTOR's operations affect OWNER's on-site operations.
  - D. Assist ENGINEER in obtaining from OWNER additional details or information when required for proper execution of the Work.
  - E. Receive Shop Drawings, Product Data and samples, submittals, and receive samples delivered at the site for ENGINEER's examination.
  - F. Advise ENGINEER and CONTRACTOR immediately of the commencement of any Work requiring a Shop Drawing of sample submission if the submission has not been approved by ENGINEER.
  - G. Conduct on-site observations of the Work to assist ENGINEER in determining compliance with the Contract Documents.

- H. Report to ENGINEER whenever it appears that any portion of the Work does not conform to the Contract Documents or has been damaged prior to final payment; and advise ENGINEER when it appears any portion of the Work should be uncovered for observation or requires special testing, inspection or approval.
- I. Verify that required tests, equipment and systems startups, and operating and maintenance instructions are conducted in the presence of required personnel, and that CONTRACTOR maintains adequate records thereof; observe, record and report to ENGINEER details of test procedures, startups, inspections, and operating and maintenance instructions.
- J. Accompany inspectors representing public or other agencies having jurisdiction on the Project; record and report to ENGINEER on the outcome of these inspections.
- K. Transmit to CONTRACTOR, ENGINEER's clarifications and interpretations of the Contract Documents.
- L. Consider and evaluate CONTRACTOR's suggestions for modifications in Drawings or Specifications and report them with recommendations to ENGINEER.
- M. Maintain at the Site orderly files for correspondence, reports of job conferences, Shop Drawings, Product Data and samples submissions, reproductions of original Contract Documents, including all Addenda, Change Orders, additional Drawings, ENGINEER's clarifications and interpretations of the Contract Documents, progress reports, and other Project related documents.
- N. Maintain a log book, recording hours on the Site, weather conditions, data relative to extras or deductions, list of visiting officials and representatives of manufacturers, fabricators, suppliers and distributors, daily activities, decisions, and general and specific observations of test procedures.
- O. Furnish ENGINEER periodic reports of progress of the Work and its relationship with the approved Construction Schedule and schedule of Shop Drawing submissions.
- P. Consult with ENGINEER relative to scheduled major tests, inspections or start of critical phases of the Work.
- Q. Report accidents immediately to ENGINEER.
- R. Review applications for payment with CONTRACTOR and forward them with recommendations to ENGINEER, noting relation to the Schedule of Values, Work completed, and payment for materials and equipment not incorporated in the Work.
- S. During the course of the Work, verify that certificates, maintenance and operation manuals, and other data required to be assembled and furnished by CONTRACTOR are applicable to the items actually installed; and that this material is delivered to ENGINEER for review and forwarding to OWNER prior to final acceptance of the Work.
- T. Prior to, and as a condition of, recommending to ENGINEER issuance of a Certificate of Substantial Completion, Resident Project Representative will:
  - 1. Prepare a list of incomplete or Defective Work.
  - 2. Verify that all items required for Substantial Completion have been corrected or completed.
  - 3. Secure agreement between OWNER and CONTRACTOR relative to responsibilities for utilities, heat, janitorial services, insurance, Project security, access by the parties, safety and any other matters.
  - 4. Secure CONTRACTOR's specific Construction Schedule to fully complete the Work.
- U. Conduct final inspection with ENGINEER, OWNER and CONTRACTOR and prepare a final list of items to be completed or corrected.

- V. Verify that all items on final list have been completed or corrected and make recommendations to ENGINEER concerning acceptance.

LIMITATIONS OF AUTHORITY

- 18.3 Resident Project Representative shall not guarantee or warrant CONTRACTOR's Work. Except upon written instructions of ENGINEER, Resident Project Representative shall not:
  - A. Authorize any deviation from the Contract Documents or approve any substitute Products.
  - B. Exceed limitations on ENGINEER's authority as set forth in the Contract Documents.
  - C. Undertake any of the responsibilities of CONTRACTOR, Subcontractors or CONTRACTOR's Superintendent, or expedite the Work.
  - D. Advise on, or issue directions relative to, any aspect of the means, methods, techniques, sequences or procedures of construction unless such is specifically called for in the Contract Documents.
  - E. Advise on, or issue directions as to, safety precautions and programs in connection with the Work.
  - F. Authorize OWNER to occupy the Project in whole or in part.
  - G. Participate in specialized field or laboratory tests.
  - H. Order the Work stopped.





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PART 1 - GENERAL

1.01 SUMMARY OF WORK – GENERAL

The City of Lowell is soliciting sealed proposals for the 2020 Street Improvements project. Items of work include removing existing HMA pavement, placing and grading new aggregate base, placing new HMA, intermittent curb and gutter replacement, new A.D.A. sidewalk ramps, sanitary and storm sewer replacement and related work.

1.02 CONTRACT TIMING:

- **Award** - Award of this project is tentatively scheduled for the April 20, 2020 City Council Meeting.
- **Start Date** – The City will allow bidders to base their bids on any start time between June 1 and June 15, 2020, with substantial completion (all but restoration) in 60 days (substantial completion no later than August 14. ***If your bid is based on a specific start date after June 1st, 2020, please indicate so in ARTICLE 4 – TIME ALTERNATE, of Section 00410 – BID FORM.***
- **Completion Date** – 60 Days from the issuance of the Notice to Proceed. - See Section 00 50 00 – Agreement.
- **Restricted Work Times** - No work shall be performed or lane closures allowed during the Memorial Day, July 4th, or Labor Day holiday periods, as defined by the Engineer. No work shall be performed on Riverside Drive on July 9, 10 or 11 in avoidance of the City's Riverwalk Festival.

1.03 TRAFFIC CONTROL:

All sections of this work are in residential areas. The streets are to be open to local traffic. Truck Traffic will be rerouted to use Washington Street to the west. The Contractor shall install and maintain the traffic control facilities shown on the Maintaining Traffic sheet of the plan set. See (Section 01 90 00 Maintaining Traffic)

1.04 CONCRETE PLACEMENT:

The OWNER requests that all concrete pours be completed in the A.M. with form work occurring the previous afternoon. Historically this effort has been effective in reducing the vandalism on freshly cast concrete surfaces. Regardless of the pour time it is the responsibility of the CONTRACTOR to protect freshly cast concrete from acts of vandalism or damage.

1.05 LOCAL UNDERGROUND CONDITIONS

Soil borings were obtained within this project area and are attached to this section. The City of Lowell is known to contain numerous rocks and cobbles of various sizes that may not show up in soil boring information. No additional payment will be made to the CONTRACTOR for having to excavate and remove these rocks and cobbles during this project.

1.06 SUPRLUS HMA MILLINGS - HMA millings are to be delivered and deposited to the City of Lowell Department of Public Works. See Section 31 23 00 – EXCAVATION AND FILL for location.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION – Not Used

END OF SECTION

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PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Measurement and payment criteria applicable to the Work.

1.02 AUTHORITY:

- A. Measurement methods delineated in the individual specification sections are intended to complement the criteria of this section.
- B. The ENGINEER will take all measurements and compute quantities accordingly.
- C. Assist by providing necessary equipment, workers, and survey personnel as required.

1.03 UNIT QUANTITIES SPECIFIED:

- A. Quantities and measurements indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the ENGINEER shall determine payment.
- B. If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit prices contracted.

1.04 MEASUREMENT OF QUANTITIES:

- A. Measurement Devices:
  - 1. Weigh Scales: Inspected, tested and certified.
  - 2. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.
  - 3. Metering Devices: Inspected, tested and certified.
- B. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook weights.
- C. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
- D. Measurement by Area: Measured by square dimension using mean length and width or radius.
- E. Linear Measurement: Measured by linear dimension, at the item centerline.

1.05 PAYMENT:

- A. Payment Includes: Full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.
- B. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the ENGINEER multiplied by the unit price for Work which is incorporated in or made necessary by the Work.

1.06 MEASUREMENT AND PAYMENT SCHEDULE:

- A. The following schedule outlines the method of measurement and basis of payment to be used on this project. Requirements for materials and methods described under each unit price are included in the specification sections.
- B. Quantities of work completed under the contract will be measured by the Engineer according to United States standard measures unless otherwise noted. Quantities of materials furnished and of work performed under the contract will be determined by methods of measurement and computations that are generally recognized as conforming to good engineering practice. Unless

specified in the contract, manufacturing tolerances established by the industries involved will be accepted. When required by the Engineer, the Contractor shall file copies of paid freight bills, trucking slips, bills of lading, and paid invoices for any material used in the work.

- C. When the contract specifies payment of an item or part of an item on a plan quantity basis, the payments will be those quantities shown on the plans. Any changes to the quantities will result from an authorized variation in the plan. For earthwork, the basis for changes in quantities will include any of the following:
1. Changes in original ground topography after the original survey was made;
  2. Any demonstrated errors discovered in plan quantities;
  3. Any changes required by the Engineer during construction, such as: grade changes, changing of cut or fill slopes, and for excavation of peat, muck, marl, and underlying very soft clay.
- D.
1. **Mobilization** - Will be paid in accordance with MDOT procedures and consists of preparatory work and operations, including, but not limited to the following: The movement of personnel, equipment, supplies, and incidentals to the project site; The establishment of the Contractor's offices, buildings, and other facilities to work on the project; Expenses incurred, prior to beginning work on the various contract items on the project site; Pre-construction costs, exclusive of bidding costs, which are necessary direct costs to the project rather than directly attributable to other pay items under the contract; The maximum amount that will be paid is stated on the bid form
  2. **Maintaining Traffic** - Will be measured and paid as a lump sum and includes all necessary signing, flagging, traffic regulators, drums, and barricades to safely maintain traffic and protect the work site during the duration of the project per the requirements provided in the plans and specifications. Includes all signs shown on plan Sheet 9 – Maintaining Traffic.
  3. **Erosion & Sedimentation Control** – Paid for as a lump sum and includes all equipment, materials, and labor required for construction, maintenance, and removal of the erosion control and sediment filtration items including silt fence, Inlet Protection, and necessary best management practice items.
  4. **Concrete Drive and Sidewalk , Rem** - Will be measured and paid for where marked for removal by engineer and paid for by the square yard.
  5. **Curb and Gutter, Rem** - Will be measured by the lineal ft. along the base of the curb face or along the flowline of the gutter where marked by the Engineer, regardless of vertical size. Includes saw cutting. Also includes removal of sidewalk curb at 421 Elizabeth St., gutter pans on Riverside Dr. Removal of curb, curb and gutter, or gutter in conjunction with removing concrete or masonry pavement or concrete driveways will be measured and paid as Pavt, Rem.
  6. **Pavt, Rem** - Includes the removal of HMA surface, and existing aggregate base where the existing aggregate base is being replaced. **Pavt, Rem** will be measured and paid for where marked for removal by engineer and paid for by the square yard. Saw cutting of existing pavement edge is included and will not be paid for separately.
  7. **Coldmilling HMA Surface** – Includes the removal of HMA pavement, and aggregate base in areas where the existing aggregate base is for the most part, being left in place. **Coldmilling HMA Surface** will be measured and paid for where marked for removal by engineer and paid for by the square yard. Includes delivery of milled material to location designated by the City.
  8. **Dr Structure Repair** paid for each Structure repaired. Payment includes all excavating about the damaged or suspected damaged drainage structure, placing concrete patching to seal/repair leak as directed by Engineer backfilling and adjusting the casting. Each vertical foot more than one vertical foot below the casting will be paid as an additional Dr Structure Repair.
  9. **Suffolk / Amity Storm Sewer Repair** - Paid for as lump sum and includes excavation and backfill, removal and replacement of existing 12 in. storm sewer from manhole to pipe

separation, including all fittings, couplings, connection to existing storm sewer. Payment includes all sand subbase, aggregate base (6 in.) to final finished grade. Existing casting to be used. Casting adjustment will be paid for as **Dr. Structure Cover, Adj.**

10. **Suffolk / Lincoln Lake Sanitary Sewer Repair** - Paid for as lump sum and includes excavation and backfill, removal and replacement of existing 8 in. sanitary sewer from manhole to pipe separation, including all fittings, couplings, connection to existing sanitary sewer. Payment includes all sand subbase, aggregate base (6 in.) to final finished grade. Existing casting to be used. Casting adjustment will be paid for as **Dr. Structure Cover, Adj.**
11. **Storm Sewer, 12 inch** - Measured horizontally on the surface along the pipe centerline from center to center of structures and paid for by the linear foot by the pipe size, regardless of pipe material and classification, installed and backfilled, item includes driveway culverts of same size.
12. **Connect to Existing Storm Manhole or Catch Basin** - Counted and paid for by the unit, including coring of existing structure and related work.
13. **Conc Curb and Gutter** - Will be measured in place along the face of the curbing and paid for by the foot for the detail/type constructed, regardless of height. No deductions will be made in length for catch basins, inlet castings, or driveway openings. Includes placement of sidewalk curb at 421 Elizabeth St.
14. **Gutter Pan** – Measured and paid for by the lineal foot. Includes grading and placement of compacted base material. Includes hand patch repair to adjoining disturbed pavement outside of street reconstruction area.
15. **Subbase, CIP** – Measured and paid for by the cubic yard, installed and compacted in place where necessary as directed by Engineer. Payment for sub-base disturbed during utility installation on Suffolk St. is included in the pay items for that utility.
16. **Agg Base, 6 inch** - Measured by the square yard, compacted in place where necessary for construction of the proposed pavement section. Payment for aggregate base disturbed during utility installation on Suffolk St. is included in the pay items for that utility.
17. **Machine Grading** - The item consists of grading to form the road cross section as shown on the plans. This work includes scarifying, plowing, disking, moving, compacting, and shaping. Grade all intersections, approaches, entrances, and driveways as shown on the plans or as directed by the Engineer. The Engineer must approve using the excavated roadbed materials for use to shape aggregate base materials. Measured along centerline and paid for by the 100 ft. Station. Intersections are included and not to be paid for more than once.
18. **Dr. Structure Cover, Adj** - Measured and paid for by the unit. Includes sawcutting existing pavement, curb, and curb and gutter, where required, and adjusting the cover up or down, regardless of height, to the required elevation. Removing and replacing pavement adjacent to the adjusted cover is included in the item **Dr Structure Cover, Adj.** Removing and replacing curb and gutter adjacent to the adjusted structure is not included in adjusting the structure and will be paid for separately. Where new castings are installed, removed castings shall remain property of the City. The City will collect castings from the jobsite with their own forces.
19. **Dr. Structure Cover** – As determined by the Engineer in the field. Measured and paid for by the pound per shipping receipt/catalogue weight. Where drainage structure covers are replaced, the salvaged castings will remain the property of the City. The City will collect these castings.
20. **Gate Box, Adj.** (main line valve boxes) - Measured and paid for each gate box adjusted. Includes furnishing and installing extension(s) as needed and adjusting the existing casting. Pavement removal and replacement for temporary lowering of the gate box, excavation and all other work necessary to restore the area are included in adjustment items of work. The contractor, at his own expense, may elect to replace the uppermost section of the valve box and cover.

- 21. **Water Shutoff, Adj** (service valve boxes) - Measured and paid for each water shutoff adjusted. Includes furnishing and installing extension(s) as needed and adjusting the existing casting. Pavement removal and replacement for temporary lowering of the water shutoff, excavation and all other work necessary to restore the area are included in adjustment items of work. The contractor, at his own expense, may elect to replace the uppermost section of the valve box and cover.
- 22. **HMA, LVSP** - Will be measured and paid by weight in tons for HMA placed, compacted and accepted. No additional payment will be made for intersections, hand patching, or bit valley gutter include these costs in the item.
- 23. **Sidewalk, Conc, 4 inch** - Will be measured in place and paid for by the square foot. Includes grading and placement of compacted base material.
- 24. **Curb Ramp Opening, Conc** - Will be measured in place along the face of the curbing and paid for by the foot.
- 25. **Sidewalk Ramp, 6 inch** - Measured and paid for by the square foot. Includes all items for the work to comply with the ADA. Pay limits are from back of curb to first control joint up gradient from the detectable warning plate. All ramps shall be six inches thick.
- 26. **Detectible Warning Surface** - Measured and paid for by the linear foot. All materials shall be on the MDOT approved manufacturers list. Color shall be brick red.
- 27. **Slope Restoration** paid for as a lump sum. Includes replacing topsoil, placing seed, and straw mulch blanket staked in place and fertilizer for all areas disturbed by the contractors operations.
- A1 **Bid Alternate – Deliver HMA Millings to City Yard** – Offered as an add or deduct to the Base Bid Amount. Paid as a Lump Sum, delivered to the City location designated in the specifications.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION



PART 1-GENERAL

1.01 CONSTRUCTION SCHEDULES:

A. General:

1. Coordinate with work by others as explained in the General Conditions
2. CONTRACTOR shall notify the ENGINEER 72 hours prior to start of work or 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 work day 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 date.

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 initial detailed construction schedule within seven (7) days after the notice of award. ENGINEER will return copy within ten (10) days of receipt. The resubmittal, if required, shall be within (10) days.
2. An updated schedule shall be submitted on the first work day 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 the 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. The CONTRACTOR may authorize in writing a material or equipment supplier to deal directly with the ENGINEER or with the OWNER with regard to a submittal. These dealings shall be limited to contract interpretations.
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. Submittals regarding material and equipment shall be accompanied by the attached Transmittal Form identifying the equipment and any variations from these specifications. A separate form shall be used for each specific item, class of material, equipment, and items specified in separate, discrete sections, for which the submittal is required. Submittals for various items shall be made with a single form when the items taken together constitute a manufacturer's package or are so functionally related that expediency indicates checking or review of the group or package as a whole
- c. 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:
    - b. 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. When the contract documents require a submittal, the CONTRACTOR shall submit five (5), and no more than eight (8), copies of all submittal data of which two (2) copies will be retained by the ENGINEER. For samples this number may vary. For samples, submit the number stated in each specifications section.
  2. Unless otherwise specified, within 14 calendar days after receipt of the submittal, the ENGINEER shall review the submittal and return a minimum of three (3) copies which carry the ENGINEER's stamp of approval. The returned submittal shall indicated 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 and complies with the drawings and specifications, submittal copies will be marked "FURNISH AS SUBMITTED". 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 "FURNISH AS CORRECTED". 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 "REVISE AND 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 "FURNISH AS SUBMITTED" or "FURNISH AS CORRECTED".
    - 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". 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 "FURNISH AS SUBMITTED" or "FURNISH AS CORRECTED".
    - 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 SPECIFIED ITEM". Except as his own risk, the CONTRACTOR shall not undertake the work covered by such submittals until it has been revised, resubmitted and returned marked either "FURNISH AS SUBMITTED" or "FURNISH AS CORRECTED".
- 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 "FURNISH AS SUBMITTED" or "FURNISH AS CORRECTED" 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.

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) copies or complete sets compiled, bound, and indexed.
3. Submittal of operation and maintenance manuals shall be thirty (30) 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 thirty (30) days 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 SCHEDULES:

A. Shop Drawing Transmittal Form

END OF SECTION

# williams&works

engineers | surveyors | planners

616.224.1500 (phone) 616-224-1501 (fax)

549 Ottawa NW, Grand Rapids, MI 49503

[austin@williams-works.com](mailto:austin@williams-works.com)

## SHOP DRAWING TRANSMITTAL FORM

To: David Austin, P.E.  
Williams & Works  
549 Ottawa Ave., N.W.  
Grand Rapids, MI 49503

Date: \_\_\_\_\_  
Job Name: 2020 Street Improvements  
Job No.: 219184  
Job Location: City of Lowell, Michigan  
Contractor: \_\_\_\_\_

### We are sending you:

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Plans                    | <input type="checkbox"/> Specifications     | <input type="checkbox"/> Change Order No. _____ |
| <input checked="" type="checkbox"/> Shop Drawings | <input type="checkbox"/> Contract Documents | <input type="checkbox"/> Other _____            |

| Quantity | Drawing No. | Description |
|----------|-------------|-------------|
|          |             |             |
|          |             |             |
|          |             |             |
|          |             |             |
|          |             |             |
|          |             |             |
|          |             |             |

### These are transmitted as checked below:

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Furnish as Submitted  | <input type="checkbox"/> Rejected      | <input type="checkbox"/> For Your Information |
| <input type="checkbox"/> Furnish as Corrected  | <input type="checkbox"/> For Approval  | <input type="checkbox"/> For Grade Inspection |
| <input type="checkbox"/> Revise and Resubmit   | <input type="checkbox"/> For Field Use | <input type="checkbox"/> For Your Use         |
| <input type="checkbox"/> Submit Specified Item | <input type="checkbox"/> For File      | <input type="checkbox"/> As Requested         |
| <input type="checkbox"/> _____                 | <input type="checkbox"/> _____         | <input type="checkbox"/> _____                |

### Remarks:

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

Copy to: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Authorized by: \_\_\_\_\_

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PART 1 - GENERAL

## 1.01 REFERENCE SPECIFICATIONS:

- A. All specifications referred to in the Contract Documents shall be current at the time of advertisement and hereby incorporated.
- B. Copies may be inspected at the office of the ENGINEER and addresses for purchase will also be supplied.
- C. The references shall be limited to section and subsection specified.
- D. References will be abbreviated as the following example:  
"MDOT 0.0.00."

## 1.02 ABBREVIATIONS:

## A. Standards:

|         |  |
|---------|--|
| AASHTO: | American Association of State Highway Transportation Officials |
| ACI:    | American Concrete Institute                                    |
| ACPA:   | American Concrete Pipe Association                             |
| AI:     | Asphalt Institute  |
| AIA:    | American Institute of Architects                               |
| AISI:   | American Iron and Steel Institute                              |
| AGA:    | American Gas Association                                       |
| ANSI:   | American National Standards Institute                          |
| API:    | American Petroleum Institute                                   |
| ASA:    | American Standards Association                                 |
| ASTM:   | American Society for Testing and Materials                     |
| ASCE:   | American Society of Civil Engineers                            |
| AWS:    | American Welding Society                                       |
| AWWA:   | American Water Works Association                               |
| CE:     | Corps of Engineers   |
| CFR:    | Code of Federal Regulations                                    |
| CRSI:   | Concrete Reinforcing Steel Institute                           |
| CSI:    | Construction Specifications Institute                          |
| DOT:    | Department of Transportation                                   |
| EPA:    | Environmental Protection Agency                                |
| FM:     | Factory Mutual   |
| IEEE:   | Institute of Electrical and Electronic Engineers               |
| ISA:    | Instrument Society of America                                  |
| MBMA:   | Metal Building Manufacturers Association                       |
| MDPH:   | Michigan Department of Public Health                           |
| MDOT:   | Michigan Department of Transportation                          |
| MDNR:   | Michigan Department of Natural Resources                       |
| MDEQ:   | Michigan Department of Natural Resources                       |
| MIOSHA: | State of Michigan OSHA   |
| NAPA:   | National Asphalt Pavement Association                          |
| NEC:    | National Electrical Code.(by NFPA)                             |
| NEMA:   | National Electrical Manufacturers Association                  |
| NFPA:   | National Fire Protection Association                           |
| NPCA:   | National Precast Concrete Association                          |
| OSHA:   | Occupational Safety and Health Administration                  |
| PCI:    | Portland Cement Institute                                      |
| PTI:    | Post-Tensioning Institute                                      |
| SDI:    | Steel Deck Institute   |
| SJI:    | Steel Joist Institute  |
| SSPC:   | The Society for Protective Coatings                            |
| TPI:    | Truss Plate Institute  |
| UL:     | Underwriters Laboratories                                      |

SECTION 01 42 00

01 42 00.2  
ABBREVIATIONS AND REFERENCES

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.



PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Work Included:
  - 1. This section encompasses the work required for all quality control.

1.02 QUALITY ASSURANCE:

- A. General:
  - 1. The test specimen selection will be by the ENGINEER.
  - 2. The testing procedure will be in accordance with the current standard specified.
  - 3. For field quality control, refer to the SECTION requirements.

1.03 SUBMITTALS:

- A. Test Specimens:
  - 1. Delivery shall be to the place of inspection and testing.
- B. Certification of Quality by Producer:
  - 1. Delivery shall be to the ENGINEER.
- C. Certification of Welders:
  - 1. Delivery shall be to the ENGINEER.

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: ASTM D1557-78, AASHTO T-180 (Modified Proctor).
    - b. Field density determination according to ASTM standards.
    - c. CONTRACTOR to provide access to test location and depth.
  - 3. Asphalt cement: Certification of quality by producer.
  - 4. Asphalt mix composition:
    - a. Sample: ASTM D979.
    - b. Extraction test: AASHTO T30, AASHTO T168 and ASTM D2172.
    - c. Frequency: One test within each 500-ton placed.
  - 5. Asphalt 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, catch basins, etc.:
      - (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.
  - d. Protect freshly cast concrete from damage until "set".
- 9. Field quality control of SECTIONS: Required.
- 10. Manholes:
  - a. Precast: Certification of quality by producer.
- 11. Painting:
  - a. Workmanship: Visual inspection on site.
  - b. Film thickness test: Gauge or yield.
  - c. Frequency: One test within each 100 square feet applied.
- 12. Pipe:
  - a. Gravity: Laboratory test 1/2 percent of total item with minimum three pieces each size, material and class. Certification of quality by producer acceptable for corrugated metal.
  - b. Pressure: Certification of quality by producer.
- 13. Steel (reinforcing, structural and miscellaneous): Certification of quality by producer.
- 14. Welding:
  - a. Certification of welders as follows:
    - (1) Buildings: AWS D1.0 Appendix A.
    - (2) Water Tanks: AWS D1.0 Appendix A.
  - b. Visual on-site inspection and nondestructive testing as follows:
    - (1) Buildings: AWS D1.0 Appendix B.
    - (2) Water Tanks: AWWA D100.
- 15. Well soil samples: Sieve analysis ASTM C136.

PART 1 - GENERAL

1.01 SUMMARY:

- A. This section includes, but is not 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 Facilities:
  - 1. Electricity
  - 2. Sanitary Facilities.
- C. Temporary Construction Facilities:
  - 1. Vehicular access.
  - 2. Project cleaning and waste removal.
  - 3. Traffic regulation.
- D. Temporary Controls:
  - 1. Barriers.
  - 2. Water control.
  - 3. Dust control.

1.02 TEMPORARY ELECTRICITY

- A. Provided by CONTRACTOR.

1.03 TEMPORARY SANITARY FACILITIES

- A. Provide service, clean and maintain required facilities and enclosures in compliance with laws and regulations. Existing facility use is not permitted. Provide facilities at time of project mobilization.

1.04 VEHICULAR ACCESS:

- A. Provide unimpeded access for emergency vehicles.
- B. Provide and maintain access to fire hydrants and valves free of obstructions.

1.05 PROGRESS CLEANING AND WASTE REMOVAL:

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

1.06 TRAFFIC REGULATION:

- A. Signs, Signals and Devices:
  - 1. Post Mounted and Wall Mounted Traffic Control and Informational Signs: As approved by authority having jurisdiction.
  - 2. Traffic Control Signals: As approved by local jurisdictions.
  - 3. Traffic Cones and Drums, Flares and Lights: As approved by authority having jurisdiction.
  - 4. Flag person Equipment: As required 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. Provide operate and maintain traffic control signals to direct and maintain orderly flow of traffic in areas under CONTRACTOR's control and areas affected by CONTRACTOR's operations.
    - 3. Relocate as Work progresses to maintain effective traffic control.
  
  - F. Salvaging existing street signs:
    - 1. Remove existing street signs, if necessary, and protect them from damage.
    - 2. Re-install existing signs.
    - 3. Repair damage caused by removal, improper storage, and re-installat
- 1.07 BARRIERS:
- A. Provide barriers to prevent unauthorized entry to construction areas, to allow for OWNER's use of site and to protect existing facilities and adjacent properties from Damage from construction operations.
  - B. Provide barricades required by authorities having jurisdiction for public rights-of-way.
  - C. Provide protection for plants designated to remain. Replace damaged plants.
  - D. Protect non-owned vehicular traffic, stored materials, site and structures from damage.
- 1.08 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. Apply water to grade on a regular basis to control dust.
- 1.10 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS:
- A. Remove any temporary utilities, equipment, facilities and materials prior to Substantial Completion.
  - B. Clean and repair damage caused by installation or use of temporary work.
  - C. Restore existing facilities used during construction to original condition.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

\*\*\*END OF SECTION\*\*\*

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Work Included:
  - 1. Provide permanent and/or temporary erosion and sedimentation control.
- B. Intent and Purpose of Control:
  - 1. Keep disturbed areas small.
  - 2. Stabilize and protect disturbed areas as soon as possible.
  - 3. Keep storm water runoff velocities low.
  - 4. Protect disturbed areas from runoff.
  - 5. Retain sediment within the corridor or site area.

1.02 PERMIT:

- A. Required:
  - 1. OWNER shall apply for and obtain from local Soil Erosion/Sedimentation Control Enforcing Agent.
  - 2. Permit fees to be paid by OWNER.

1.03 JOB CONDITIONS:

- A. Scheduling:
  - 1. Control measures shall be constructed prior to the time construction starts uphill or upstream from the control measure location.
  - 2. Removal and cleanup of temporary control structures: Within one week after control measure is no longer needed.
- B. Street Sweeping:
  - 1. Street sweeping shall be performed regularly when wheeled traffic tracks soil, sediment or mud onto adjacent paved surfaces. All streets affected shall be swept regardless of their relationship to the project limits.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Sodding:
  - 1. MDOT, Sec. 816
- B. Seeding:
  - 1. MDOT, Sec. 816.
  - 2. Temporary Measures: MDOT Table 816-2.
  - 3. Permanent Measures: Hydroseed MDOT Table 816-1.
- C. Topsoil:
  - 1. Temporary Measures: Not required unless readily available.
  - 2. Permanent Measures: MDOT, Sec. 816.
- D. Mulching:
  - 1. Temporary and Permanent Measures: MDOT, Sec. 816. Required as specified on plans and/or in Project Specifications.
- E. Riprap:
  - 1. As specified.

PART 3 - EXECUTION

3.01 PERFORMANCE:

- A. General:

1. Abide with all applicable rules and regulations as established by the State of Michigan and the local governmental unit pursuant to Act 347 P.A. of 1972 as amended. (Soil Erosion and Sedimentation Control Act).
  2. Copies of state guidelines "Better Environment thru Soil Erosion and Sedimentation Control" and applicable OWNER'S Specifications may be obtained at no charge from the OWNER.
  3. The Unified Keying System for erosion control measures is included with the construction plans. Specific erosion control measures, if required, are indicated on the plans.
  4. Even though a specific erosion control measure is not called out on the plans, this does not relieve the contractor from his obligation under the above Act to properly control and/or prevent all erosion caused by the Contractor's construction operation.
- B. Sediment Removal:
1. Take such steps as are necessary to assure the retention and removal of any sediment which enters an existing storm sewer or open ditch along the construction route before said sewer or ditch discharges into a stream or pond.
  2. If eroded material is allowed to enter a storm sewer system it shall be the CONTRACTOR's responsibility to see that all catch basins and manholes are cleaned following construction prior to receipt of final payment. Unless the CONTRACTOR can document positively to what extent an existing storm sewer system along the construction area is silted in prior to construction, no credit will be allowed for cleaning the system stem.
  3. The CONTRACTOR shall be responsible for maintaining the roadways in a passable condition until the paving is completed. This includes any maintenance necessary for dust control.
- C. Soil Erosion and Sedimentation Control Measures:
1. Provide and maintain at least the following temporary soil erosion and sedimentation control measures:
    - a. Excavated or borrow material stock-pile.
      - (1) Place bales of hay or straw 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 bales of hay or straw across trenches, ditches to prevent soil erosion from leaving the site or entering the drainage system until:
        - (a) Seed and mulch have been placed in non-paved areas.
        - (b) Aggregate has been placed in bituminous and gravel areas.
    - c. Dewatering discharge.
      - (1) Place bales of hay, straw and/or siltation fencing at point of discharge, adequately anchored.
    - d. Maintain controls during non-working hours and during working hours if weather so requires.
    - e. Silt sacks shall be placed and maintained in any catch basin receiving storm water from an area where permanent measures are disrupted.
    - f. Silt Fence shall be placed and maintained as directed where sheet drainage is present and existing vegetation is disrupted.
    - e. Remove all silt and solids retention controls following construction.

\*\*\*END OF SECTION\*\*\*

PART 1 - GENERAL

## 1.01 DESCRIPTION:

- A. The work includes all materials, labor, equipment, power, maintenance, etc. to implement a temporary pumping system for the purpose of diverting the existing flow around the work area for the duration required to complete the work.
- B. The design, installation and operation of the temporary pumping system shall be the CONTRACTOR's responsibility. The CONTRACTOR shall provide at least five (5) references of projects of a similar size and complexity as this project performed by his firm within the past three years. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction.
- C. Approval is required before starting installation and pumping activities.

## 1.02 SUBMITTALS:

- A. The CONTRACTOR shall submit a bypass pumping plan to the ENGINEER no less than two weeks in advance of the proposed construction activities. The plans shall be detailed and descriptive, and shall outline all provisions and precautions to be taken by the CONTRACTOR regarding the handling of existing wastewater flows. This plan must be specific and complete, including such items as schedules, locations, elevations, capacities of equipment, materials and all other incidental items necessary and/or required to ensure proper protection of the facilities, including protection of the access and bypass pumping locations from damage due to the discharge flows, and compliance with the requirements and permit conditions specified in these CONTRACT DOCUMENTS. No construction shall begin until all provisions and requirements have been reviewed by the ENGINEER.
- B. The plan shall include but not be limited to details of the following:
  - 1. Staging areas for pumps.
  - 2. Sewer plugging method and types of plugs.
  - 3. Number, size, material, location and method of installation of suction piping.
  - 4. Number, size, material, method of installation and location of installation of discharge piping.
  - 5. Bypass pump sizes, capacity, number of each size to be on site and power requirements.
  - 6. Calculations of static lift, friction losses, and flow velocity (pump curves showing pump operating range shall be submitted).
  - 7. Standby power generator size, location.
  - 8. Downstream discharge plan.
  - 9. Method of protecting discharge manholes or structures from erosion and damage.
  - 10. Thrust restraint block sizes and locations.
  - 11. Sections showing suction and discharge pipe depth, embedment, select fill and special backfill.
  - 12. Method of noise control for each pump and/or generator.
  - 13. Any temporary pipe supports and anchoring required.
  - 14. Design plans and computation for access to bypass pumping locations indicated on the drawings.
  - 15. Calculations for selection of bypass pumping pipe size.
  - 16. Schedule for installation of and maintenance of bypass pumping lines.
  - 17. Plan indicating selection of bypass pumping line locations.

## 1.03 JOB CONDITIONS:

- A. Private Property:
  - 1. Responsibility: All damage and interruption resulting from the bypass pumping operation by CONTRACTOR.
- B. Discharge Disposal:
  - 1. Permission, scheduling and pre-approval by ENGINEER required.

2. All permits which may be required are the CONTRACTOR's responsibility to review and submit for all permitting requirements.
  3. All bypass pumping equipment shall be removed from the site following bypass operations.
- C. Scheduling: Removal and clean-up promptly following utility or structure installation.

PART 2 - PRODUCTS

2.01 EQUIPMENT:

- A. All pumps used shall be fully automatic self-priming units that do not require the use of foot-valves or vacuum pumps in the priming system. The pumps may be electric, gas or diesel powered. All pumps used must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of wastewater flows.
- B. The Contractor shall provide the necessary stop/start controls for each pump.
- C. The Contractor shall include one stand-by pump of each size to be maintained on site. Back-up pumps shall be on-line, isolated from the primary system by a valve.
- D. Discharge Piping – in order to prevent the accidental spillage of flows all discharge systems shall be temporarily constructed of rigid pipe with positive, restrained joints. Under no circumstances will aluminum "irrigation" type piping or glued PVC pipe be allowed. Discharge hose will only be allowed in short sections and by specific permission from the Engineer.

2.02 SYSTEM DESCRIPTION:

- A. Bypass pumping systems shall have sufficient capacity to pump a peak flow of 500 gpm. The Contractor shall provide all pipeline plugs, pumps of adequate size to handle peak flow, and temporary discharge piping to ensure that the total flow of the main can be safely diverted around the section to be repaired. The bypass pumping system shall be required to be operated 24 hours per day.
- B. The Contractor shall have adequate standby equipment available and ready for immediate operation and use in the event of an emergency or breakdown. One standby pump for each size pump utilized shall be installed at the mainline flow bypassing locations, ready for use in the event of primary pump failure.
- C. Bypass pumping system shall be capable of bypassing the flow around the work area and of releasing any amount of flow up to full available flow into the work area as necessary for satisfactory performance of work.
- E. The Contractor shall make all arrangements for bypass pumping during the time when the main is shut down for any reason. System must overcome any existing force main pressure on discharge.

2.03 SYSTEM PERFORMANCE:

- A. It is essential to the operation of the existing sewerage system that there be no interruption in the flow of sewage throughout the duration of the project. To this end, the Contractor shall provide, maintain and operate temporary facilities such as dams, plugs, pumping equipment (both primary and back-up units as required), conduits, all necessary power, and all other labor and equipment interfere with his work, carry it past his work and return it to the existing sewer downstream of his work.
- B. The design, installation and operation of the temporary pumping system shall be the Contractor's responsibility. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction.



- C. The Contractor shall provide all necessary means to safely convey the sewage past the work area. The Contractor will not be permitted to stop or impede the main flows under any circumstances.
- D. The Contractor shall maintain sewer flow around the work area in a manner that will not cause surcharging of sewers, damage to sewers and that will protect public and private property from damage and flooding.
- E. The Contractor shall protect water resources, wetlands and other natural resources.

2.04 PARTS AND ACCESSORIES:

- A. Spare parts for pumps and piping shall be kept on site as required.
- B. Adequate hoisting equipment for each pump and accessories shall be maintained on the site.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. The Contractor is responsible for locating any existing utilities in the area the Contractor selects to locate the bypass pipelines. The Contractor shall locate his bypass pipelines to minimize any disturbance to existing utilities and shall obtain approval of the pipeline locations from the City and the Engineer. All costs associated with relocating utilities and obtaining all approvals shall be paid by the Contractor.
- B. During all bypass pumping operation, the Contractor shall protect the Pumping Station and main and all local sewer lines from damage inflicted by any equipment. The Contractor shall be responsible for all physical damage to the Pumping Station and main and all local sewer lines caused by human or mechanical failure.

3.02 FIELD QUALITY CONTROL AND MAINTENANCE:

- A. The Contractor shall perform leakage and pressure tests of the bypass pumping discharge piping using clean water prior to actual operations. The Engineer will be given 24 hours notice prior to testing.
- B. The Contractor shall inspect the bypass pumping system every two hours to ensure that the system is working correctly.
- C. The Contractor shall insure that the temporary pumping system is properly maintained and a responsible operator shall be on hand at all times when pumps are operating.

3.03 INSTALLATION AND REMOVAL:

- A. The Contractor shall remove manhole sections or make connections to the existing sewer and construct temporary bypass pumping structures only at the access location indicated on the Drawings and as may be required to provide adequate suction conduit.
- B. The CONTRACTOR, when required, shall provide for the flow of sewage around the section, or sections, of pipe designated for rehabilitation. The bypass shall be made by plugging the line at the existing upstream manhole and pumping the flow into a downstream manhole or adjacent system. The pump and bypass lines shall be of adequate capacity and size to handle the anticipated flow. The OWNER may require a detail of the bypass plan to be submitted.
- C. Plugging or blocking of sewage flows shall incorporate a primary and secondary plugging device. When plugging or blocking is no longer needed for performance and acceptance of work, it is to be removed in a manner that permits that sewage flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.

- D. When working inside manhole or force main, the Contractor shall exercise caution and comply with OSHA requirements when working in the presence of sewer gases, combustible or oxygen-deficient atmospheres, and confined spaces.
- E. The installation of the bypass pipelines is prohibited in all salt marsh/wetland areas. The pipeline must be located off streets and sidewalks and on shoulders of the roads. When the bypass pipeline crosses local streets and private driveways, the Contractor must place the bypass pipelines in trenches and cover with temporary pavement. Upon completion of the bypass pumping operations, and after the receipt of written permission from the Engineer, the Contractor shall remove all the piping, restore all property to preconstruction condition and restore all pavement. The Contractor is responsible for obtaining any approvals for placement of the temporary pipeline within public ways from the City.

3.04 METHOD OF MEASUREMENT AND BASIS OF PAYMENT:

- A. Incidental to performance of the work. Not paid for separately.

\*\*\*END OF SECTION\*\*\*

PART 1 - GENERAL

1.01 STAKING:

- A. Construction staking will be furnished by the OWNER through the ENGINEER on the following basis:
  - 1. Gravity pipeline: One staking: Line and grade points at each structure or appurtenance, 50 feet upstream from structure, and at 100 foot station intervals.
  - 2. Pressure pipeline: One staking: Line and grade points at each structure or appurtenance and at 100 foot station intervals.
  - 3. Paving:
    - a. Curb and gutter: One staking: Line and grade points at 25 foot intervals.
    - b. Gravel, bituminous or concrete roadways or runways: One staking: Line and grade points at 50 foot intervals on both sides of roadway or runway.
    - c. Parking lots or aprons: One staking: Line and grade at 50 foot grid point intervals and at grade change points.
    - d. Sidewalk: One staking: Line and grade points at 50 foot intervals.
  - 4. Buildings and structures: One staking: Base line and temporary bench mark on site.
- B. CONTRACTOR shall order the staking five (5) working days in advance of the need for said staking.

1.02 RESTAKING:

- A. If restaking or additional staking is required, it shall be performed by the ENGINEER at the CONTRACTOR'S expense.

1.03 SCHEDULES:

- A. Construction Staking Request Form.

REQUEST FOR CONSTRUCTION STAKES

Project Name 2020 Street Improvements WW Project No. 219184 Code N/A

Location City of Lowell

Contract No. \_\_\_\_\_ Section N/A

Name of Contractor \_\_\_\_\_

Contractor Authorized Signature \_\_\_\_\_ Date \_\_\_\_\_

Contractor to Start Work on [Date] \_\_\_\_\_

Plan Sheet No. \_\_\_\_\_ Street Name \_\_\_\_\_

From Sta. No. \_\_\_\_\_ To Sta. No. \_\_\_\_\_

From M.H. No. \_\_\_\_\_ To M.H. No. \_\_\_\_\_

Sanitary Sewer \_\_\_\_\_ Street Grading \_\_\_\_\_

Storm Sewer \_\_\_\_\_ Water Main \_\_\_\_\_

Curb & Gutter \_\_\_\_\_ Force Main \_\_\_\_\_

Sidewalk \_\_\_\_\_ Other (Specify) \_\_\_\_\_

Stakes \_\_\_\_\_ or Hubs \_\_\_\_\_ Needed for: (Check One)

Line & Grade \_\_\_\_\_ Line Only \_\_\_\_\_ Cut Sheet \_\_\_\_\_

Offset Distance \_\_\_\_\_ Offset Direction N \_\_\_ S \_\_\_ E \_\_\_ W \_\_\_

Remarks: \_\_\_\_\_

CONSTRUCTION & CONTRACTOR

CONSTRUCTION DEPARTMENT

Request Received by \_\_\_\_\_ Date \_\_\_\_\_

Construction Dept. Approval \_\_\_\_\_ Date \_\_\_\_\_

SURVEY DEPARTMENT

Started Work on \_\_\_\_\_ (Date) Estimated Field Time \_\_\_\_\_ (Days) \_\_\_\_\_ (Hours)

Survey Chief Assigned \_\_\_\_\_ Date Completed \_\_\_\_\_

Number of Men \_\_\_\_\_ Number of Man Hours \_\_\_\_\_

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Cleaning:
  - 1. General:
    - a. Manufactured products: Manufacturer's instructions.
    - b. Clean-up during construction: Maintain premises and public properties free from accumulations of waste, debris and rubbish caused by operations.
    - c. 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.
  - 2. Delinquency:
    - a. Remedies: Failure to clean-up promptly is considered to be defective Work:
      - (1) Payment: Per ARTICLE 14 of SECTION 00 70 00, GENERAL CONDITIONS.
      - (2) OWNER may correct per ARTICLE 13 of SECTION 00 70 00, GENERAL CONDITIONS.
- B. Work Record Documents:
  - 1. Maintenance of Documents:
    - a. Maintain 1 copy at jobsite in good order of:
      - (1) Contract Drawings.
      - (2) Specifications.
      - (3) Addenda.
      - (4) Reviewed shop drawings.
      - (5) Change Orders.
      - (6) Other contract Modifications.
    - b. Filing: Work specification format.
    - c. Accessibility: To OWNER and ENGINEER.
  - 2. Recording:
    - a. Keep record documents current.
    - b. Contract Drawings: Legibly mark to record actual construction:
      - (1) Field changes of dimension and detail.
      - (2) Changes made by Change Orders and Bulletins.
      - (3) Details not on original contract Drawings.
    - c. Specifications and Addenda: Legibly mark up each SECTION to record:
      - (1) Manufacturer, trade name, catalog number and supplier of products actually installed.
      - (2) Changes made by Change Orders and Bulletins.
      - (3) Other matters not originally specified.
  - 3. Submittal:
    - a. Delivery: See SECTION 01 33 00.
    - b. Transmittal letter: Contain:
      - (1) Date.
      - (2) Project title and number.
      - (3) CONTRACTOR'S name and address.
      - (4) Title and number of each record documents.
      - (5) Certification that each document as submitted is complete and accurate.

END OF SECTION

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PART 1 - GENERAL

1.01 DESCRIPTION:

- A. The work includes all cast-in-place concrete.

1.02 REFERENCES:

- A. MDOT 2012 Standard Specifications for Construction

1.03 SUBMITTALS: Provide certification of Mix Design to ENGINEER prior to placing.

- A. Proposed mix design prepared by an approved independent testing firm for each class of concrete. Select proportions according to ACI 301, Section 3.9. Approval of mix is required prior to placement of concrete.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Concrete: MDOT Concrete, Grade P1, (3500 psi at 28 days, 5.5 sack mix), no water shall be added at site.
- B. Premolded Joint Filler: Exterior: ASTM D1751, non-extruding, bituminous.
- C. Curing Compound (REQUIRED): ASTM C309. Sodium silicate compounds are prohibited.

2.02 PROPORTIONING CONCRETE:

- A. Proportions and Materials: Per ACI 301, Chapter 3.
  - 1. Minimum Cement Content: 5.5 sacks/cu. yd. for 3500 psi.
  - 2. Maximum Water-Cement Ratio: 5.5 gal./sack (0.44).
  - 3. Entrained Air Content: 5-8%.
  - 4. Maximum Slump: 3-1/2."
  - 5. Minimum Compressive Strength,  $f_c'$  (28 day): 3500 psi unless indicated on Drawings.
- B. Admixtures: Approval of ENGINEER required. 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 thru 13, 17 and 18.

3.02 FIELD QUALITY CONTROL & TESTING: By OWNER thru ENGINEER.

3.03 CURING AND PROTECTION:

- A. Begin curing immediately after concrete is finish broomed. Protect concrete from premature drying and from excessively hot or cold temperatures.

- B. Concrete surfaces not in contact with soil or permanent structure shall be cured by the following method:
    - 1. Application of curing compound in accordance with manufacturer's recommendations.
    - 2. Cure areas covered by forms immediately upon form removal.
  - C. Protect freshly cast concrete from damage (including but not limited to incidental, accidental and malicious).
- 3.04 EMBEDDED ITEMS:
- A. Accurately locate embedded items and hold in place with forms or templates prior to placing concrete.

END OF SECTION



PART 1 - GENERAL

1.01 DESCRIPTION:

- A. This section includes the work required for trenching, excavating and backfilling, clearing, boring and jacking, 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 (Modified Proctor).
- B. Optimum moisture: Percentage of water at maximum density.
- C. Rock excavation: Includes all boulders or rock weighing 400 pounds (approx. 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 no bearing on the suitability of materials to be used. Achieving proper moisture content for compaction is the responsibility of the CONTRACTOR.
- E. Granular Material: Coarse grained material 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 mutual attraction between particles of the mass, involving forces of molecular origin (i.e. Clays are considered cohesive).

1.03 REFERENCES:

- A. MDOT - Michigan Department of Transportation, "Standard Specifications for Construction," 2012 ed.
- B. MDOT – Density Control Handbook, latest edition.
- C. American Society of Testing Materials, latest edition.
- D. Handbook of Specifications for the Protection of Natural Resources.

1.04 SUBMITTALS:

- A. Testing and Inspection Reports: Written reports shall be submitted to ENGINEER, with copy to the CONTRACTOR, documenting testing and/or inspection results. Tests shall include:
  - 1. Test results on borrow material.
  - 2. Gradation analysis for granular backfill and sub-base materials.
  - 3. Field reports for in-place soil density tests.

1.05 JOB CONDITIONS:

- A. The City of Lowell is known to contain numerous cobbles of various sizes that may not show up in soil boring information. No additional payment will be made to the CONTRACTOR for having to remove cobbles during this project.
- B. Obtain and comply with construction permits from agencies having jurisdiction over the work.
- C. Scheduling: Clean up promptly following utility installation backfilling.
- D. Dust Control: Broom or apply dust palliatives as needed.

- E. Driveway Closing: 24 hour maximum. Maintain emergency access to all properties during construction.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Trench Backfill:

- 1. Backfill utility trenches with suitable excavated material, if available or granular material as specified.
- 2. Granular material: MDOT 205, and 902 Class III limited to 1 inch maximum size.
- 3. Concrete: MDOT P2, S3, or DIVISION 3, CAST-IN-PLACE CONCRETE, if included.

PART 3 - EXECUTION

3.01 PREPARATION:

A. Clearing and Grubbing:

- 1. Remove trees, clear and grub as indicated on the drawings along pipeline route, or as approved by Engineer.
  - a. Wood (4 inches in diameter and larger) from trees removed shall belong to the adjacent property owner unless instructed by the property owner to dispose. Cut the wood in 4 foot lengths and stockpile in location suitable to property owner.
  - b. Promptly dispose of brush, wood less than 4 inches in diameter and wood not wanted by property owner.
- 2. Save and protect all trees and vegetation not identified to be removed.
- 3. Repair or replace trees, shrubs and other vegetation damaged by CONTRACTOR'S operation at no additional cost to OWNER.

B. Conflicting Utilities:

- 1. Before starting excavation, establish location and extent of existing utilities in work area.
- 2. Establish potential conflict areas prior to construction.
- 3. Excavate and expose existing utilities presenting potential conflict to determine their exact location and elevation.
- 4. Provide adequate means of support and protection during operations.
- 5. Advise ENGINEER of conflicts and obtain instructions on how to proceed.
- 6. Make adjustments in proposed utility location at no additional cost to OWNER.
- 7. Make arrangements with owner of existing utility for relocation, if necessary.
- 8. Schedule work accordingly.

C. 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.

D. Property Irons

1. Protect existing property irons at edge of right-of-way. If property iron must be removed for construction, the CONTRACTOR shall have a registered professional surveyor witness the property iron(s) prior to disturbance and replace the existing property iron(s) at the CONTRACTOR'S expense.

3.02 EXCAVATION:

A. General:

1. Dispose of surplus and unsuitable excavated material. See Paragraph 3.07.
2. Remove, salvage and stockpile topsoil on-site in area designated by ENGINEER.
3. Unsuitable material encountered in subgrade or below payment line: Notify ENGINEER and 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.
3. Maximum Width: Limitations apply at utility crown.
  - a. 6 inch through 10 inch diameter: 30 inches.
  - b. 12 inch to 30 inch diameter: Outside diameter plus 24 inches.

C. Blasting:

1. Obtain and comply with required permits.
2. Perform only during hours approved by ENGINEER.

D. Length of Open Trench: Maximum 200 feet.

E. Damage to Existing Underground Utilities:

1. Report all damage to ENGINEER and Utility Owner.
2. Repair to utility Owners standard.

3.03 BACKFILLING:

A. Pipe bedding area: Compact granular material to 95% of maximum density.

B. Trench Backfill Area:

1. Under permanent pavement, shoulder areas, and areas within a one on one slope from the shoulder edge:
  - a. Compact native suitable excavated material in top 4 feet and balance native suitable excavated material or granular material in 9" layers to 95% maximum density.
2. Under nonpermanent pavement: Same as permanent pavement.
3. Under unimproved right-of-way areas: Compact suitable excavated material to 85% of maximum density.
4. Under landscaped areas: Compact suitable excavated material to 80% of maximum density.

- 5. Under unimproved areas:
    - a. Suitable excavated material: Compact to 80 percent of maximum density and round neatly over trench.
    - b. Unsuitable excavated material: Replace and round neatly over trench with permission of ENGINEER.
  - 6. Under undercut existing structures: Place concrete.
- C. Structures:
- 1. Density requirements: Same as Trenches.
  - 2. Concrete structure: Place backfill only after 75 percent of concrete design strength has been reached.
- 3.04 SPECIAL PIPE FOUNDATIONS:
- A. Excavation: ENGINEER's instructions.
  - B. Backfill: To payment line with granular material.
- 3.05 COMPACTION, TESTING AND INSPECTION:
- A. Surplus excavated and unsuitable excavated material becomes the property of the Contractor.
  - B. Dispose of surplus excavated or unsuitable excavated materials off-site or on-site in areas designated by ENGINEER.
  - C. Performance and test equipment: By ENGINEER or OWNER approved independent laboratory.
  - D. Moisture - Density relationships:
    - 1. AASHTO T99 Method C
  - E. Field Density: Either of following:
    - 1. ASTM D-2167 (Rubber Balloon)
    - 2. ASTM D-2922 (Nuclear)
    - 3. AASHTO T191
    - 4. One Point Michigan Cone
  - F. Furnish equipment and personnel to provide access to test location and depth. Density tests will be performed at various levels, as determined by ENGINEER, during or after backfilling operation.
  - G. Correct any deficiencies resulting from insufficient or improper compaction. Retest if required.
- 3.06 SOIL EROSION AND SEDIMENTATION CONTROL: See Section 01 57 13
- 3.07 SURPLUS MATERIALS:
- A. If a Bid Alternate is awarded for the City to keep the HMA millings, HMA millings are to be delivered and deposited to a City of Lowell Department of Public Works. See Section 32 10 00 – PAVING AND SURFACING for location.
  - B. All surplus non - HMA excavated and unsuitable excavated material becomes the property of the Contractor.

- C. Dispose of surplus excavated or unsuitable excavated materials off-site or on-site in areas designated by Engineer.

3.08 DEWATERING:

- A. Provide dry excavations until utility has been placed and backfill is completed.
- B. Provide and maintain slopes, crowns, ditches and ponds to insure satisfactory surface drainage at all times.

END OF SECTION

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PART 1 - GENERAL

1.01 DESCRIPTION:

- A. The work includes temporary dewatering of the shallow aquifer in the designated construction area (see construction plans) to permit construction of utilities and structures in dry subsurface conditions. Approval is required before starting installation and pumping activities.
- B. Unless otherwise noted, this work is considered incidental to the project.

1.02 REFERENCES:

- A. American Water Works Association (AWWA):
- B. Michigan Water Well Grouting Manual

1.03 SUBMITTALS:

- A. Proposed dewatering method should be submitted two weeks in advance of the expected construction activities. The proposed dewatering plan shall include at a minimum the proposed number of dewatering wells and their locations, size and horsepower of well pumps, electrical service needs, a plan showing the interconnecting piping, and the location of pumping discharge. The plan shall include an installation schedule.
- B. Where well installation or abandonment requires a licensed driller, provide driller's license number to the ENGINEER.
- C. Submit under provisions of SECTION 01 33 00, "Submittals".

1.04 JOB CONDITIONS:

- A. Private Wells and Property:
  - 1. Responsibility: All damage and interruption resulting from dewatering private wells caused by the dewatering operation by CONTRACTOR.
  - 2. Interruption: Limited to 4 hours.
- B. Discharge Disposal:
  - 1. Permission, scheduling and pre-approval by ENGINEER required.
  - 2. Surface discharge: All permits which may be required are the CONTRACTOR's responsibility to review and submit for all permitting requirements.
  - 3. All dewatering equipment, including casings shall be removed from the site following dewatering operations.
- C. Scheduling: Removal and clean-up promptly following utility or structure installation.

1.05 METHOD OF MEASUREMENT AND BASIS OF PAYMENT: Incidental to other work. Not paid for separately

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. General: Adequate for the purposes intended.

PART 3 - EXECUTION

3.01 PERFORMANCE:

- A. Provide and maintain temporary dewatering system to insure dry working conditions until installation of utility or structure is completed.
- B. Prevent hydraulic stressing of structures.
- C. Internal Dewatering: Provide where bulkheads are to be removed.
- D. Dewatering well abandonment records. The Contractor shall maintain a complete record of the plugging operation, including plugging material used, volume of material used, and placing method. The completed well plugging record shall be submitted to the ENGINEER within 30 days of completion.

END OF SECTION



PART 1 - GENERAL

## 1.01 DESCRIPTION:

- A. Work includes construction of new and reconstruction of existing HMA pavements including associated earthwork, paving and surfacing for all roads, driveways, parking lots, curb and gutter, sidewalks, and shoulders.
- B. Definitions:
  - 1. Pavement structure: Any combination of subbase, base course, and surface course, including shoulders, placed on a 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. Base course: The layer or layers of specified or selected material of designed thickness placed on a subbase or a subgrade to support leveling and surface courses.
  - 6. Leveling course: Layer of specified material placed on the base course in preparation for the surface course.
  - 7. Surface course: The top layer of a pavement structure.
  - 8. Maximum density (soils): Maximum unit weight of soil material according to Modified Proctor Method ASTM D1557.
  - 9. Maximum density (HMA): Maximum unit weight of a representative sample of the hot mix asphalt according to the Marshall Method ASTM D2726.

## 1.02 REFERENCES:

- A. Michigan Department of Transportation (MDOT), "Standard Specifications for Construction," 2012 ed.
- B. American Society of Testing Materials (ASTM), latest edition.

## 1.03 SUBMITTALS:

- A. Asphalt Mix Design: Provide job-mix formula prepared by independent lab or approved by MDOT for HMA surface course to ENGINEER two weeks prior to paving.
- B. Certification of quality by producer for the following:
  - 1. Cement
  - 2. Aggregates
  - 3. Asphalt cement
  - 4. Pavement marking material
  - 5. Prime coat
  - 6. Bond coat
- C. Concrete Test Specimens: Provide sample.

## 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: Unless otherwise specified, execute during the period from May 5 to November 15 (Region South of M-46).
- B. Clean up promptly following pavement installation. All removed material becomes property of CONTRACTOR.
- C. Maintenance of Temporary Surfaces: Maintain temporary surfaces until permanent pavement installation is completed.
- D. Driveway Closing: 8 hour maximum except during concrete curing process. Provide on-street parking for residents during driveway closings. Make provisions for disabled persons.
- E. Allow access to the HMA plant for verification of mix proportions, aggregate gradations, and temperatures.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Subbase: Granular material MDOT Class II or IIA, MDOT table 902-3.
- B. Aggregate Base: MDOT 21AA aggregate conforming to Table 902-1 and Table 902-2, except for the following modifications.

Sieve Analysis, Total Percent Passing

|      |     |          |         |         |        |       |
|------|-----|----------|---------|---------|--------|-------|
| 21AA | 1½" | 1"       | ½"      | No. 8   | No. 30 | LBW * |
|      | 100 | 85 - 100 | 50 - 75 | 20 - 45 |        | 4 - 8 |

\* Footnote - "e" in Table 902-1 shall not apply to assure the base is permeable.

Physical Requirements

Crushed material, Min. .... 95%  
Loss, % Max., Los Angeles Abrasion (MTM 102) ..... 40%

- C. HMA Leveling and Surface Courses – Shall be MDOT mixture HMA, LSVP, Modified Polymer. See POLYMER MODIFIED PERFORMANCE GRADE BINDERS Special Provision in Section 3.05 of this specification.
- D. HMA Bond Coat: HMA material. MDOT 904-5. (SS 1h Asphalt emulsion)
- E. Pavement Marking: Conform to MDOT 920.
- F. Concrete Curb & Gutter: Unless otherwise specified, use concrete Grade P1 for concrete curb, gutter, combination curb and gutter, gutter pan and spillways. MDOT 601, 701, 5.5 sacks per cubic yard minimum.
- G. Concrete Sidewalk: Unless otherwise specified, use concrete Grade P1 for concrete sidewalk, ramps and steps. MDOT 601, 701, 5.5 sacks per cubic yard minimum.
- H. Concrete Joint Filler: Conform to ASTM D 1751.
- I. Reinforcing Bars: Bar reinforcement shall be deformed steel bars meeting ASTM requirements as specified under MDOT 905.

- J. Curing Compound: Conform to ASTM C 309 Type 2 White Membrane Curing Compound.
- K. Detectable Warning Surface - All materials shall be on the MDOT approved manufacturers list. Color shall be brick red.

### PART 3 - EXECUTION

#### 3.01 PREPARATION:

- A. Removal: Remove all existing pavement structure required, as shown on the plans or in the proposal.
  - 1. Pavement remnant limit: Remove pavement to edge or joint, where dimension is less than 3 feet. All removals shall be to a saw cut edge if a joint is more than three feet away.
  - 2. Butt joint: Provide where new pavement meets existing pavement.
- B. Dispose of all material removed during the construction.
  - 1. If Bid Alternate is awarded for the City to keep the HMA millings, HMA millings are to be delivered and deposited to a City of Lowell Department of Public Works yard located at 504 Front St., Lowell, MI 49331. This yard is located approximately 1.0 mi. from the Suffolk/Elizabeth/Howard St. locations and approximately 0.5 mi. from the Riverside St. location.
- C. Subgrade:
  - 1. Obtain approval prior to placing the subbase or base course.
  - 2. Construct to the required line, grade and cross section. MDOT 205.03.N.
    - a. Tolerance if subbase is required: Trim within  $\pm$  1 inch of design grade.
    - b. Tolerance if subbase is not required: Trim within  $\pm$  3/4 inch of design grade.
  - 3. Compaction:
    - a. Compact to not less than 95 percent of the maximum density using Modified Proctor.
- D. Excavation: Conform to MDOT 205.03.G.
- E. Embankment: Conform to MDOT 205.03.H.

#### 3.02 PERFORMANCE:

- A. Subbase:
  - 1. Thickness: Conform to design cross section.
  - 2. Construction method:
    - a. Place in layers not exceeding 12 inches loose measure.
    - b. Spread evenly and compact to not less than 95 percent maximum density according to Modified Proctor.
    - c. Conform construction to MDOT 301.01 thru 301.03.
- B. Aggregate Base Course:
  - 1. Construction Method: Conform the placing of aggregate base course with MDOT 302.01 thru 302.03.
  - 2. Drives: Fine grade existing aggregate in preparation for HMA surfacing to provide:
    - a. A uniform grade from sidewalk to back of curb.
    - b. A smooth surface free from ruts, bumps and other obstructions.

- c. A tight flush joint between proposed HMA surface and existing or proposed sidewalk and curb and gutter.
  3. Provide clean aggregate as required to meet proposed grades. Dispose of all excess aggregate.
- C. HMA Surface Course:
  1. Thickness: Yield specified on plans - Do not place HMA mixture in lifts exceeding 2 inches unless otherwise approved.
  2. Construction Methods:
    - a. Paving: Conform method of paving to MDOT 502.03.F.
    - b. Prior to placement of HMA surface, grades will be verified by CONTRACTOR. Any deficiencies in grade shall be corrected prior to placement of surface course.
  3. Windrowing (placing a lift of varying thickness to create a crown) HMA shall not be allowed to correct grading deficiencies.
  4. Pavement density: Minimum density of in-place course material when the course thickness is greater than 3 times the maximum aggregate size of the mix shall be 97 percent of the recorded laboratory specimen density and 95 percent when the course thickness is less.
- D. Concrete Curb & Gutter (P1 & S2): Conform to MDOT R-30 series for profile.
  1. Removal: Remove to joint.
  2. Thickness: Conform thickness to plan detail.
  3. Construction Methods: Unless otherwise specified, construct curbing mechanically or with forms and either by casting separately or as an integral part of the pavement MDOT 802.
- E. Concrete Sidewalk (P1 & S2):
  1. Sidewalk ramps shall meet MDOT Standard Plan R-28-series.
  2. Removal: Remove to joints.
  3. Thickness: 4 inches nominal and 6 inches at driveways and alleys.
  4. Construction Methods: Conform construction of sidewalks, unless otherwise specified, to MDOT 803 and details on the Drawings.
- F. Curing Compound:
  1. Conform placement to MDOT 602.03.M.
  2. Place immediately after free water has left the surface, maximum of 4 hours after pouring.
  3. Mix thoroughly before application, do not thin.
  4. Minimum of one gallon per 25 square yards.
  5. CONTRACTOR responsible for any sidewalk that cures improperly, regardless of curing compound usage or methods.

### 3.03 STRUCTURE ADJUSTMENT:

- A. Street Castings.
  1. Adjust castings to finish grade or to a maximum of 1/4" below finish grade of all manholes, catch basins, and valve boxes.
    - a. Set grades of castings and valve boxes from street grades with a tilt of castings where necessary to meet proposed street grades and crown.
    - b. All castings, when adjusted to finish grade, shall be back filled with a concrete mix placed to the same elevation as the HMA leveling course.
  2. Castings shall be adjusted 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.
3. Adjustment of new structures will not be paid for separately.

3.04 TESTING AND INSPECTION:

- A. Inspection: By the ENGINEER or his designated authorized representative.
- B. Acceptance Testing:
  1. DIVISION 1 - SECTION 01450 QUALITY CONTROL.
  2. If initial testing indicates failed or nonconformance to specifications, perform additional tests. If further testing verifies nonconformance, additional testing shall be paid by CONTRACTOR. Replace nonconforming material at no additional cost to OWNER.
- C. Aggregates:
  1. Sampling and analysis: Michigan Testing Methods, Series 100.
  2. Exception: Provide certification of approved stockpiled material.
- D. HMA Mix Composition:
  1. Sampling: ASTM D979, one sample per mix or one per two thousand tons.
  2. Extraction: ASTM D2172.
  3. Sieve analysis: ASTM C117 and ASTM C136.
- E. Concrete:
  1. Slump: 3.5 inches maximum.
  2. Entrained Air: 5.5 to 8 percent.
  3. Strength: 3500 psi, 28 day.

3.05 SCHEDULES

- A. POLYMER MODIFIED PERFORMANCE GRADE BINDERS - Special Provision (3 pages)

END OF SECTION

CITY OF LOWELL

SPECIAL PROVISION  
FOR  
**POLYMER MODIFIED PERFORMANCE GRADE BINDERS**

W&W

1 of 3

5/13

**a. Description.** This special provision shall consist of furnishing a polymer modified performance grade binder for incorporation into the designated bituminous mixtures. The performance grade binder will be provided according to the requirements of the 2012 Standard Specifications for Construction, except where modified herein.

This special provision only applies when polymer modified performance grade (PG) binders are identified by the suffix "P" at the end of a grade. For example, PG 64-28(P), PG 70-22(P). (The binder grades listed for a specific project are listed in the Bituminous Application Estimate Table found in the plans).

**b. Materials.** The polymer modified asphalt shall be preblended by adding a polymer to a base asphalt supplied from one of the approved certifiers listed in the MDOT Materials Sampling Guide.

Direct in-line blending of polymer at the hot mix plant is allowed only if the Contractor is one of the approved certifiers listed in the MDOT Materials Sampling guide.

The modified asphalt binder shall be smooth, homogenous and comply with the requirements shown in Table 1 or Table 2. Results from the listed tests recently conducted on the binder shall be submitted to the Engineer in accordance with Section 104.02 of the Standard Specifications prior to paving.

If polymers and modifiers other than styrene-butadiene-styrene (SBS) or styrene-butadiene rubber (SBR) are used for asphalt binder modifications, approval from the Engineer will be needed.

**c. Reclaimed Asphalt Pavement (RAP) Guidelines.** When specifying a polymer modified asphalt binder, the use of reclaimed asphalt pavement (RAP) shall be limited to a maximum of 14 percent by weight of the total binder in the mixture. A binder grade adjustment is not allowed. When a polymer modified binder is used in a mix, any other special provision within this contract that refers to RAP usage does not apply.

**e. Measurement and Payment.** Payment for this work shall be included in the price bid for the applicable bituminous items of work.

**Table 1 Requirements for Styrene-Butadiene-Styrene (SBS) Modified Binders**

| Test   | Asphalt Grade PG 58-34(P), PG 64-28(P) PG 70-22(P), PG 70-28(P) | Asphalt Grade PG 64-34(P), PG 76-22(P), PG 76-28(P) |
|--|---|---|
| Tests On Original Binder, (1)  |   |   |
| Separation of Polymer ASTM D5892-96A 163 °C, 48 hours, (R & B difference between top and bottom), Maximum  | 2   | 2   |
| Force Ratio AASHTO T300-95 4°C, 50 mm/min.; 300 mm elongation, Minimum   | 0.30  | 0.35  |
| Tests On Residue From Rolling Thin Film Oven, (1)  |   |   |
| Elastic Recovery AASHTO T301-95, 25°C 100 mm elongation, and cut immediately, % Minimum  | 60  | 70  |
| *Footnote (1): Report DSR values for G*/sin, and the phase angle at the high-grade temperature on the original and on the RTFO residue for informational purposes. |   |   |

**Table 2 Requirements for Styrene-Butadiene-Rubber (SBR) Modified Binders**

| Test   | Asphalt Grade PG 58-34(P), PG 64-28(P) PG 70-22(P), PG 70-28(P) | Asphalt Grade PG 64-34(P), PG 76-22(P), PG 76-28(P) |
|--|---|---|
| Tests On Original Binder, (1)  |   |   |
| Separation Of Polymer ASTM D5892-96A 163°C, 48 hours, ( R & B difference between top and bottom), Maximum  | 2   | 2   |
| Toughness ASTM D5801 25°C, 500 mm/min Newton-Meters (inch-pounds), Minimum   | 12.5 (110)  | 12.5 (110)  |
| Tenacity ASTM D5801 25°C, 500 mm/min, Newton-Meters (inch-pounds)  | 8.5 (75)  | 8.5 (75)  |
| Tests on Residue from Rolling Thin Film Oven, (1)  |   |   |
| Elastic Recovery AASHTO T301-95, 25°C 100 mm elongation, and cut immediately, %minimum   | 40  | 50  |
| *Footnote (1): Report DSR values for G*/sin, and the phase angle at the high-grade temperature on the original and on the RTFO residue for informational purposes. |   |   |



PART 1 - GENERAL

1.01 DESCRIPTION:

- A. This section includes the work required for protection and restoration of surface features such as site improvements and all trees, shrubs, lawns and other landscape features.
- B. Definition of Site Improvements: Fences, retaining walls and parking appurtenances, playing fields and equipment, sheds, mail boxes, lawn sprinkling systems and yard accessories.

1.02 SUBMITTALS:

- A. Topsoil Analysis: Certification of suitability by local agricultural agent.
- B. Seed Analysis: Certification of purity and germination by manufacturer.
- C. Trees and Shrubs: Certification by suppliers of source and species.

1.03 JOB REQUIREMENTS:

- A. Lawn Areas Disturbed by Construction Operation:
  - 1. Restoration within public right-of-way: By seeding.
- B. Scheduling:
  - 1. Restoration of lawns and other surface features: Promptly following curb and gutter, site improvements and paving.
  - 2. Restoration of site improvements: Promptly following installation of improvements.
  - 3. Clean up: Promptly following restoration.
- C. Seasonal Limitations: MDOT Division 816.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Trees, Shrubs and Plants: MDOT 917.
- B. Topsoil: MDOT 917. 3 inches depth minimum, screened.
- C. Chemical Fertilizer: Grade 12:12:12.
- D. Grass Seed,: MDOT 917 except as noted:
 

| <u>Percent By Weight</u> | <u>Class 'A' Seed Type</u>  |
|--------------------------|-----------------------------|
| 10%                      | Cannon Kentucky Bluegrass   |
| 10%                      | Goldrush Kentucky Bluegrass |
| 20%                      | Ronde Kentucky Bluegrass    |
| 20%                      | SR5100 Chewings Fescue      |
| 20%                      | SR5200 Creeping Red Fescue  |
| 10%                      | SR4400 Perennial Ryegrass   |
| 10%                      | SR4500 Perennial Ryegrass   |
- E. Mulch Blanket: Single sided netting and mulch, North American Green or equal.
- F. Hydraulic Seeding: Meet items noted above.
- G. Sod: MDOT 816 and 917.
- H. Compost: MDOT 816 and 917 (must be supplied by source indicated on MDOT's Qualified Products List.).

- I. Site Improvements: Provide materials equal to or better than those that existed prior to start of construction whether shown or not shown on the drawings.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Inspection: Approval required.

3.02 TREES AND SHRUBS:

- A. Protection: All items not indicated for removal.
- B. Damaged branches: Trim and seal within 5 days.

3.03 TOPSOIL

- A. Place new topsoil in preparation of seeding or sodding.
- B. Construction Methods: MDOT 816

3.04 SLOPE RESTORATION –

Per MDOT Special Provision for Slope Restoration , NonFreeway 12RC816(A265)

- A. Construction methods: MDOT 816 except with the following rates:
  - 1. Topsoil: 3 inches of new topsoil or Compost
  - 2. Fertilizer: 25 pounds per 1,000 square feet.
  - 3. Sowing: Lawns: 4-6 pounds per 1,000 square feet (minimum 2 seeds per square inch).
  - 4. Mulch and Mulch Anchoring: Cover all seeded areas.
  - 5. Water: 3.5 gallons per square yard as necessary.
- B. Type A - Place Slope Restoration, Type A in all areas up to 1:3 slope.
- C. Type D - Place Slope Restoration, Type D in all areas greater than 1:3 slope. Includes High Velocity Mulch Blanket.

3.05 SODDING: Construction methods: MDOT 816 with 4 inch top-soil.

3.06 Compost: Place per MDOT 816 with seed integrated in compost.

3.07 SITE IMPROVEMENTS:

- A. Protection: All items not indicated for removal.
- B. Restoration: Approval required.

3.08 SURFACE RESTORATION:

- A. Backfill site with approved material, fine grade, rake to remove stones larger than 1-1/2", lumps, wood, debris, and other extraneous materials, provide seeding, mulch and fertilizer. Water as required to restore a vigorous growth of turf.

END OF SECTION

PART 1 – GENERAL

- 1.01 DESCRIPTION:
  - A. This section includes the work required for sanitary sewer pipe, structures, and appurtenant work.
  
- 1.02 SUBMITTALS:
  - A. Submit the following in accordance with SECTION 01 33 00 – SUBMITTAL PROCEDURES:
    - 1. Manufacturer’s certificate for materials provided.
  - B. Contractor shall report witness measurements and "as-built" elevation on end of service lines.
    - 1. Provide measurements from three permanent fixtures such as building corners, power poles and trees 8-inch diameter and larger.
  - C. Report and record presence of underground utilities and drains.
  
- 1.03 JOB CONDITIONS:
  - A. Maintain existing sanitary sewer system operational.
  - 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. Cleanup promptly following pipe installation and within maximum of 400 feet behind pipe laying operation.

PART 2 - PRODUCTS

- 2.01 PIPE:
  - A. Classification Table:
 

| Type<br>&<br>Size         | Design Depth (feet)  |                      |                      |
|---------------------------|----------------------|----------------------|----------------------|
|                           | D1<br>5-10           | D2<br>10-15          | D3<br>over 15        |
| Plastic (PVC)<br>6" - 18" | ASTM<br>D 3034-SDR35 | ASTM<br>D 3034-SDR35 | ASTM<br>D 3034-SDR26 |
  - B. Service Pipe (laterals): Provide minimum 6 inch, same classification as mainline pipe.
  - C. Plastic Pipe: Provide seating marks where couplings are used for jointing.
    - 1. Joints: Provide rubber "o" ring.
  - D. Joint Repair or Connecting to Existing Sewer Pipe of Different Material:
    - 1. Provide Manhole.
  - E. Provide Joint Materials as Indicated for the Following Pipes:
    - 1. Plastic (PVC): Joints shall meet ASTM F477.
  
- 2.02 MANHOLES:
  - A. Manholes shall be precast units with booted pipe connections.
  - B. Precast Units: ASTM C478, modified for "o" ring gaskets.

1. Pipe Openings: Provide flexible, watertight rubber boot using mechanically compressed flexible joint re-seal, link-seal, Pressure Wedge II, Kor-N-Seal, or equal. Conform to ASTM C923.
- C. Concrete Brick: ASTM C55, Grade N-1
- D. Grade Rings: ASTM C478. Note: Ladtech HDPE adjusting rings are a suitable alternate.
- E. Mortar: ASTM C270: 1 part Portland cement, 1 part lime and 3 parts sand by volume.
- F. Manhole Steps:
  1. Plastic with 3/8-inch steel rod reinforcement.
  2. Dimensions: 10-inch deep by 10-inch wide, 5-inch tread depth.
- G. Manhole Castings: Shall have 24 inch opening with solid covers, watertight frame gasket. Standard Manhole Castings: East Jordan 1045Z Frame, 1040A (City of Lowell) cover.
- H. Bituminous Waterproofing: ASTM D449.
- I. Joint Waterproofing: CRETEX, Infi-Shield exterior joint wrap or approved equal. Apply to joints and casting/chimney/adjustment rings.

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 (Use for all sewer less than 24" in diameter):
    - a. Check grade: at set-up point, 25 feet, 50 feet, 100 feet and 200 foot points thereafter to the next set-up point.
    - b. Projector advancement: Reset at each manhole.
- B. Bedding:
  1. Method: ASTM 2321.
  2. Provide bedding area and full trench backfill with MDOT class II granular material.
  3. Provide continuous bearing by supporting entire length of pipe barrel evenly.

3.02 INSTALLATION:

- A. General – Pipe installation shall be in accordance with ASTM 2321.
- B. 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.
- C. 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.

- D. Manholes:
1. General: ASTM C478
  2. Base bedding: Provide 4" 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. Grout annular space between manhole wall and flow channel and pipe.
  5. Provide casting grade setting as follows:
    - a. Existing pavement: Finished grade.
    - b. Gravel or lawn grade: 4 inches below.
    - c. Unpaved areas: Finished grade.
  6. Provide waterproofing on ASTM C478 manholes:
    - a. Bituminous: Apply 1 gallon per 100 s.f. to outside free of holidays and open pin holes.
  7. Provide flexible seal on all joints including: chimney, casting, adjustment rings, and each barrel section joint for entire manhole. Surface preparation required to install seal material shall be in accordance with the manufacturer's instructions.
- E. Connections:
1. Connect to existing sanitary manhole by core drilling a flexible manhole connection meeting ASTM C923 to receive an 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. Re-channel flowlines and benches with concrete.
    - b. System carrying wastewater: by-pass pumping as necessary to complete work.
  2. Future Sanitary Sewer: Provide the following:
    - a. Plug: Pipe 4 inch through 21 inch with standard disc.
    - b. Bulkhead: Pipe 24 inch and larger with brick and mortar and 1/2 inch plaster coat outside.
      - (1) 24 inch - 36 inch: 4 inch thick.
      - (2) 42 inch - 60 inch: 8 inch thick.
- F. Service Lines (laterals):
1. Align at right angles to street or easement line.
  2. Grade: Provide at uniform rate from connection or main riser to the property or easement line, minimum 1/8 inch per foot. (1%)
  3. Provide minimum depth at street right-of-way line, property line, or easement line as follows:
    - a. Standard house with basement: 12 feet below first floor elevation.
    - b. Tri-level house: 4 feet below basement floor elevation.
    - c. House with walkout basement: 5 feet below basement floor elevation.
    - d. Commercial and industrial buildings, schools, churches: As determined in field by ENGINEER.
    - e. The above depths govern, except that the minimum depth at the right-of-way line or property line shall be 10 feet below street or easement centerline grade unless otherwise permitted by ENGINEER. Property line riser excluded from this requirement.
  4. Connection fitting:
    - a. Locate as directed by ENGINEER in field.
    - b. 45 degrees or 60 degrees 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, and meets R.O.W. requirements.
  6. Plugging: Provide standard plugs or caps securely blocked.
  7. Markers: Provide 1/2" steel rod, extended from lateral invert to 4 inches below grade.
  8. Witnesses: Report the following to the ENGINEER:
    - a. Wyes and Tee: Measurement to nearest downstream manhole.
    - b. Markers: 3 measurements to permanent surface features.

## 3.03 TESTING AND INSPECTION:

- A. General:
1. Supervision: By ENGINEER.
  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 ENGINEER for final inspection and test.
  5. Provide necessary equipment, manpower and assistance.
- B. Line and grade: Allowable drift between structures from proposed alignment will be as follows.
1. Line:
    - a. Thru 36 inch: 0.20 foot.
    - b. Over 36 inch: 0.40 foot.
  2. Grade:
    - a. Thru 36 inch: 0.02 foot.
    - b. Over 36 inch: 0.05 foot.
- C. Plastic pipe deformation:
1. Pipe deflection will be limited to 5 percent of diameter.
  2. Pull GO, NO-GO type gauge through pipe.
  3. Schedule: Conduct after final backfill has been in place a minimum of thirty (30) days, and after shutdown of dewatering operation.
- D. Leakage Testing:
1. Acceptable leakage will be as follows:
    - a. Water: Less than 100 gallons per inch of pipe diameter per mile of pipe per 24 hours. (test permitted only when service laterals are not present, and approved by ENGINEER)
    - b. Air: Holding time not less than that listed in table.
  2. Correction: Repair defects and repeat test until acceptable.
    - a. Method of repairing defects shall be approved by ENGINEER.
- E. 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.
- F. 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.
- G. Exfiltration (air):
1. Condition: Determine groundwater elevation.
  2. Procedure: Fill system to a minimum of 4psig plus the additional pressure created by the presence of groundwater, eg. 4 feet average depth of groundwater requires the addition of 1.73 psig to 5.73 psig. Hold test for required time with pressure dropping to no less than 3.5 psig.
  3. Air Exfiltration Tests shall be done in accordance with ASTM F1417
  4. See Attached Exfiltration Air Test Table

## 3.04 ADJUST AND CLEAN:

- A. General: Keep pipe and structures clean as work progresses.
- B. Exfiltration Air Test Table.

SECTION 02530

EXFILTRATION AIR TEST

TIME REQUIRED FOR LOSS OF PRESSURE FROM 3.5 PSIG TO 2.5 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 Minimum Time (ft.) | Time for Longer length (sec.) | Specification Time for Length (L) Shown (min:sec) |       |        |        |        |        |        |        |
|---------------------|-------------------------|-------------------------------|-------------------------------|---|-------|--------|--------|--------|--------|--------|--------|
|                     |                         |                               |                               | 100ft   | 150ft | 200ft  | 250ft  | 300ft  | 350ft  | 400ft  | 450ft  |
| 4                   | 3:46                    | 597                           | 0.380L                        | 3:46  | 3:46  | 3:46   | 3:46   | 3:46   | 3:46   | 3:46   | 3:46   |
| 6                   | 5:40                    | 398                           | 0.854L                        | 5:40  | 5:40  | 5:40   | 5:40   | 5:40   | 5:40   | 5:42   | 6:24   |
| 8                   | 7:34                    | 298                           | 1.520L                        | 7:34  | 7:34  | 7:34   | 7:34   | 7:36   | 8:52   | 10:08  | 11:24  |
| 10                  | 9:26                    | 239                           | 2.374L                        | 9:26  | 9:26  | 9:26   | 9:53   | 11:52  | 13:51  | 15:49  | 17:48  |
| 12                  | 11:20                   | 199                           | 3.418L                        | 11:20   | 11:20 | 11:24  | 14:15  | 17:05  | 19:56  | 22:47  | 25:38  |
| 15                  | 14:10                   | 159                           | 5.342L                        | 14:10   | 14:10 | 17:48  | 22:15  | 26:42  | 31:09  | 35:36  | 40:04  |
| 18                  | 17:00                   | 133                           | 7.692L                        | 17:00   | 19:13 | 25:38  | 32:03  | 38:27  | 44:52  | 51:16  | 57:41  |
| 21                  | 19:50                   | 114                           | 10.470L                       | 19:50   | 26:10 | 34:54  | 43:37  | 52:21  | 61:00  | 69:48  | 78:31  |
| 24                  | 22:40                   | 99                            | 13.674L                       | 22:47   | 34:11 | 45:34  | 56:58  | 68:22  | 79:46  | 91:10  | 102:33 |
| 27                  | 25:30                   | 88                            | 17.306L                       | 28:51   | 43:16 | 57:41  | 72:07  | 86:32  | 100:57 | 115:22 | 129:48 |
| 30                  | 28:20                   | 80                            | 21.366L                       | 35:37   | 53:25 | 71:13  | 89:02  | 106:50 | 124:38 | 142:26 | 160:15 |
| 33                  | 31:10                   | 72                            | 25.852L                       | 43:05   | 64:38 | 86:10  | 107:43 | 129:16 | 150:43 | 172:21 | 193:53 |
| 36                  | 34:00                   | 66                            | 30.768L                       | 51:17   | 76:55 | 102:34 | 128:12 | 153:50 | 179:29 | 205:07 | 230:46 |

Notes:

1. When 2 or more sizes of pipe are involved, the time shall be computed by using the lengths involved.
2. Air Exfiltration Tests shall be done in accordance with ASTM F1417

END OF SECTION

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PART 1 - GENERAL

1.01 DESCRIPTION:

- A. This section includes work required for storm sewer pipe, structures, culverts, under drains, drain excavation, cleanouts, and related work.

1.02 DEFINITIONS:

- A. Line and grade control terminology: SEE PLAN DETAILS
- B. Standard manhole unit: Depth of 12 feet or less, from top of casting to lowest invert.
- C. Additional manhole depth: Depth in excess of 12 feet.

1.03 SUBMITTALS:

- A. Submit the following in accordance with SECTION 01 33 00 – SUBMITTAL PROCEDURES.
- B. Notify ENGINEER on presence of wastewater:
- C. Line and grade control method other than Laser Beam shall be approved by ENGINEER.
- D. Contractor shall provide witness measurements and "as-built" elevation on end of storm laterals.
  - 1. Provide measurements from three permanent fixtures such as building corners, power poles and trees 8-inch diameter and larger where shown on the drawings.

1.04 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.
- D. Connections to existing manholes and catch basins shall be made via core drilling.
- E. Existing castings removed from service shall remain the property of the Owner.

PART 2 – PRODUCTS

2.01 PIPE:

- A. Concrete Pipe Classification Table:

| Type and Size                       | Design Depth (feet)    |                        |                       |
|-------------------------------------|------------------------|------------------------|-----------------------|
|                                     | 3-10                   | 10-19                  | Over 19               |
| Non-reinforced Concrete<br>6" - 15" | ASTM C-14<br>Class III | ASTM C-14<br>Class III | ASTM<br>Not Allowed   |
| Reinforced Concrete<br>12" - 54"    | ASTM C-76<br>Class III | ASTM C-76<br>Class III | ASTM C-76<br>Class IV |
| Reinforced Concrete<br>60" - 90"    | ASTM C-76<br>Class II  | ASTM C-76<br>Class III | ASTM C-76<br>Class IV |

- B. Reinforcement: Concrete pipe reinforcing shall be circular.
  - C. Corrugated Metal Pipe (Culverts): MDOT 909.05.A.
  - D. Footing Drains:
    - 1. PVC: ASTM D 3034-SDR 35 with premium joints.
    - 2. Fittings: Connect to storm sewer with tee or Kor-N-Tee connector (flexible rubber boot) or equal.
  - E. Underdrains:
    - 1. Perforated HDPE with geotextile covering ("sock"): AASHTO M252, 6 inch diameter. Joints shall use couplers. Geotextile covering shall overlap and be secured by an approved means.
  - F. Chlorinated Poly Vinyl Chloride (CPVC): AASHTO 304 tested per MTM 728.
  - G. High Density Polyurethane (HDPE): Smooth lined corrugated meeting AASHTO M 294
    - 1. Manufacturers: ADS N-12 WT IB, or Hancor Hi-Q WT
    - 2. Allowed only where depth of cover is >3 ft. to 16 ft.
  - H. Storm Laterals (6"):
    - 1. PVC pipe, ASTM D3034 SDR 35 with premium joints.
    - 2. Fittings: Connect to storm sewer with tee or Kor-N-Tee connector (flexible rubber boot) or equal.
  - I. Driveway culverts: Meet MDOT 401 driveway culvert class F, With metal end sections regardless of selected pipe material.
- 2.02 STANDARD JOINTS: Not used
- 2.03 PREMIUM JOINTS:
- A. Concrete: ASTM C443, modified to include "O"-rings on grooved pipe ends. .
  - B. HDPE: AASHTO M252 or M 294, ASTM D3212.
  - C. Corrugated Metal:
    - 1. Coupling bands. Same as standard joints.
    - 2. Waterproofing materials: 3/8" Neoprene, solid.
    - 3. Neoprene width: 7" for 12" bands and 12" for 24" bands.
- 2.04 PIPE FITTINGS:
- A. Storm lateral connections to concrete pipe: Kor-N-Tee, NPC Products.
  - B. PE reducing tees: Same classification as pipe. Utilize Fernco adapter coupling for corrugated PE to PVC pipe connection.
  - C. 6" Storm Sewer Tap: Shall be a drip tight seal positively connected to both the main line storm sewer and the storm lateral.
    - 1. Inserta-tee
    - 2. Kor-N-Tee
    - 3. Or ENGINEER approved equal
- 2.05 MANHOLES, CATCH BASINS AND INLETS:
- A. Precast Units: ASTM C478 and ASTM C76 Class III.
    - 1. Joints: Cement mortar, preformed bituminous rope or "o"-ring gaskets.
    - 2. Pipe openings: Pipe diameter plus 6 inch, maximum.
  - B. Concrete: 3,500 psi 28 day, 4-inch maximum slump.

- C. Concrete Radial Units: ASTM C139.
  - D. Grade Rings: ASTM C478. Ladtech HDPE adjusting rings are a suitable alternate.
  - E. Manhole Steps:
    - 1. Plastic with 3/8 inch steel rod reinforcement.
    - 2. Dimensions: 10-inch deep by 10-inch wide, 5-inch tread depth.
  - F. Castings: East Jordan or Neenah East Jordan catalogue numbers provided for reference.
    - 1. STM 1: Frame EJIW 1205C SELFLEVEL Assembly type C cover used in paved areas
    - 2. STM 1 Frame EJIW 1120 type C cover in unpaved areas
    - 3. CB K: EJIW 7045 Frame type M2 cover use in F curb section
    - 4. CB C EJIW 7066 Frame type T1 back M2 cover use in Bit Wedge curb section
    - 5. CB E EJIW 6508 No frame "beehive"
    - 6. CB G EJIW 6517 No frame low profile dome
    - 7. CB R EJIW 1205C SELFLEVEL cover M1
- 2.06 RIPRAP:
- A. Riprap: MDOT 916.01.A through 916.01.C.
  - B. Geotextile Fabric: MDOT 910.03.B and Table 910-1.
- 2.07 PIPE INSULATION:
- A. Pipe Insulation: Closed cell extruded polystyrene 2" thick rigid board manufactured by Dow, Owens Corning, or ENGINEER approved equal.

### 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. 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 to OWNER.
  - B. Laser Beam Control:
    - 1. Check grade at set-up point, 25 feet, 50 feet, 100 feet and 200 foot points thereafter to the next set-up point.
    - 2. Laser advancement: Reset at each manhole.
  - C. Bedding:
    - 1. Method: SEE PLAN DETAILS
    - 2. Provide bedding area backfill in accordance with SECTION 31 23 00 EXCAVATION AND FILL.
    - 3. Provide continuous bearing by supporting entire length of pipe barrel evenly.
- 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. Special supports and saddles: SEE PLAN DETAILS

- B. Jointing:
1. Premium:
    - a. Solvents, adhesives and lubricants shall be furnished by Manufacturer.
    - b. Seating: Fully.
    - c. Gasket position: Check.
- C. Manholes, Catch Basins and Inlets:
1. General: SEE PLAN DETAILS
  2. Base bedding: Provide 4 inches of pea or 6A 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. Adjusting rings: Set in full bed of mortar, joints maximum 1/2 inch at inside face and wipe joints. Plaster coat complete interior of structure with 1/2-inch coat of cement mortar. For HDPE adjusting rings, follow manufacturers installation instructions.
  4. Provide manhole casting grade setting as follows:
    - a. Existing pavement: Finished grade.
    - b. Gravel or lawn grade: 4 inches below.
    - c. Unpaved areas: Finished grade.
  5. Provide catch basin casting grade setting as follows:
    - a. Gutter grade: 1/2 inch below.
  6. Flow Channels:
    - a. Construct with concrete up to spring line of pipe and slope benches toward center of manhole. Trowel smooth.
    - b. Provide clean, smooth, straight flow channel for mainline and laterals.
    - c. Provide smooth curvilinear flow channels for turning flows.
- 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 dis-similar pipe materials with appropriate Fernco coupling.
  3. Connect to existing storm manhole by coring for rubber boot connection or non-rigid pipe material, or jack hammering or coring an opening adequate to insert pipe and secure circumference of pipe with non-shrink cement mortar for rigid pipe:
    - a. Structures: Relay and repoint loose blocks and bricks on existing block and brick structures.
    - b. Rechannel flowlines and benches with concrete, trowel smooth.
  2. Future Storm Sewer:
    - a. Bulkhead: Pipe 24 inch and larger with brick and mortar, 1/2 inch plaster outside.
      - (1) up to - 36 inch: 4 inch thick
      - (2) 42 inch - 60 inch: 8 inch thick
      - (3) 60 inch & larger: 12 inch thick
- F. Under drains: MDOT SECTION 404. Connect to CB.
- G. Pipe Insulation: Where noted on Drawings, place insulation board 4 feet wide over pipe at top of bedding.
- H. Storm Laterals: Reconnect all sump lines, roof drains, and foundation drains encountered during construction to the new storm lateral.
- 3.03 GENERAL CONSTRUCTION and TOLERANCES:
- A. General:
1. Coordination: By ENGINEER.
  2. Completion: Before connecting to active system.
  3. Notification: Clean and arrange with ENGINEER for inspection.
  4. Keep pipe and structures clean as work progresses.
- B. Line and Grade Tolerances: Allowable drift between structures from proposed alignment will be as follows:

1. Line:
    - a. Thru 36 inch: 0.40 foot.
    - b. Over 36 inch: 0.80 foot.
  2. Grade:
    - a. Thru 36 inch: 0.05 foot.
    - b. Over 36 inch: 0.10 foot.
- C. Plastic pipe deformation measurement (required only if video televising indicates a problem):
1. Pipe deflection will be limited to five percent (5%) of diameter.
  2. Pull Go, No-Go gauge through pipe by hand.
  3. CONTRACTOR shall provide proof ring for Go, No-Go gauge from the manufacturer.
  4. Schedule: Conduct after final backfill has bene 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 (See SECTION 33 01 30 Cleaning and Video Inspection of Underground Utilities):
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. Flush sewer with flow of water from upstream end immediately prior to televising.
  3. CONTRACTOR shall provide three (3) copies of televising in CD/DVD format, and written inspection logs/report to ENGINEER.
- 3.04 ADJUST AND CLEAN:
- A. General:
1. Keep pipe and structures clean as work progresses.

\*\*\*END OF SECTION\*\*\*