

CITY OF ANN ARBOR
INVITATION TO BID



Landfill Scale and Entrance Improvements

ITB No. 4575

Due Date: April 30th, 2019 at 10:00 a.m. (Local Time)

Public Services Area
Public Work Unit

Issued By:

City of Ann Arbor
Procurement Unit
301 E. Huron Street
Ann Arbor, MI 48104

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- City of Ann Arbor Living Wage Forms*
- City of Ann Arbor Vendor Conflict of Interest Disclosure Form*
- City of Ann Arbor Non-Discrimination Ordinance Notice and Declaration Form*
- Sample Prevailing Wage Form – MDOT Certified Payroll Form*

NOTICE OF PRE-BID CONFERENCE

A pre-bid conference for this project will be held at **10:00 am on April 16, 2019 at Wheeler Service Center, 4251 Stone School Road, Ann Arbor, Michigan 48108.**

Attendance at this conference is highly recommended. Administrative and technical questions regarding this project will be answered at this time. The pre-bid conference is for information only. Any answers furnished will not be official until verified in writing by the Financial Service Area, Procurement Unit. Answers that change or substantially clarify the bid will be affirmed in an addendum.

INSTRUCTIONS TO BIDDERS

General

Work to be done under this Contract is generally described through the detailed specifications and must be completed fully in accordance with the contract documents. All work to be done under this Contract is located in or near the City of Ann Arbor.

Any Bid which does not conform fully to these instructions may be rejected.

Preparation of Bids

Bids should be prepared providing a straight-forward, concise description of the Bidder's ability to meet the requirements of the ITB. Bids shall be written in ink or typewritten. No erasures are permitted. Mistakes may be crossed out and corrected and must be initialed and dated in ink by the person signing the Bid.

Bids must be submitted on the "Bid Forms" provided with each blank properly filled in. If forms are not fully completed it may disqualify the bid. No alternative bid will be considered unless alternative bids are specifically requested. If alternatives are requested, any deviation from the specification must be fully described, in detail on the "Alternate" section of Bid form.

Each person signing the Bid certifies that he/she is the person in the Bidder's firm/organization responsible for the decision as to the fees being offered in the Bid and has not and will not participated in any action contrary to the terms of this provision.

Questions or Clarifications / Designated City Contacts

All questions regarding this ITB shall be submitted via email. Emailed questions and inquires will be accepted from any and all prospective Bidders in accordance with the terms and conditions of the ITB.

All questions shall be due on or before 4:00 pm on April 19, 2019 and should be addressed as follows:

Specification/Scope of Work questions emailed to celenbaas@a2gov.org
Bid Process and Compliance questions emailed to cspencer@a2gov.org

Any error, omissions or discrepancies in the specification discovered by a prospective contractor and/or service provider shall be brought to the attention of Mr. Chris Elenbaas at celenbaas@a2gov.org after discovery as possible. Further, the contractor and/or service provide shall not be allowed to take advantage of errors, omissions or discrepancies in the specifications.

Addenda

If it becomes necessary to revise any part of the ITB, notice of the Addendum will be posted to Michigan Inter-governmental Trade Network (MITN) www.mitn.info and/or City of Ann Arbor web site www.A2gov.org for all parties to download.

Each Bidder must in its Bid, to avoid any miscommunications, acknowledge all addenda which it has received, but the failure of a Bidder to receive, or acknowledge receipt of; any addenda shall not relieve the Bidder of the responsibility for complying with the terms thereof.

The City will not be bound by oral responses to inquiries or written responses other than written addenda.

Bid Submission

All Bids are due and must be delivered to the City of Ann Arbor Procurement Unit on or before 10 am. Tuesday April 30, 2019 (Local Time). Bids submitted late or via oral, telephonic, telegraphic, electronic mail or facsimile **will not** be considered or accepted.

Each Bidder must submit one (1) original Bid and three (3) Bid copies in a sealed envelope clearly marked: **ITB No. 4575 - Landfill Scale and Entrance Improvements.**

Bids must be addressed and delivered to:

City of Ann Arbor
Procurement Unit,
c/o Customer Services, 1st Floor
301 East Huron Street
Ann Arbor, MI 48107

All Bids received on or before the Due Date will be publicly opened and recorded immediately. No immediate decisions are rendered.

The following forms provided within this ITB Document must be included in submitted bids.

- **City of Ann Arbor Prevailing Wage Declaration of Compliance**
- **City of Ann Arbor Living Wage Ordinance Declaration of Compliance**
- **Vendor Conflict of Interest Disclosure Form**
- **City of Ann Arbor Non-Discrimination Ordinance Declaration of Compliance**

Bids that fail to provide these completed forms listed above upon bid opening will be rejected as non-responsive and will not be considered for award.

Hand delivered bids will be date/time stamped/signed by the Procurement Unit at the address above in order to be considered. Normal business hours are 9:00 a.m. to 3:00 p.m. Monday through Friday, excluding Holidays. The City will not be liable to any Bidder for any unforeseen circumstances, delivery or postal delays. Postmarking to the Due Date will not substitute for receipt of the Bid. Each Bidder is responsible for submission of their Bid.

Additional time for submission of bids past the stated due date and time will not be granted to a single Bidder; however, additional time may be granted to all Bidders when the City determines in its sole discretion that circumstances warrant it.

Award

The City intends to award a Contract(s) to the lowest responsible Bidder(s). On multi-divisional contracts, separate divisions may be awarded to separate Bidders. The City may also utilize alternatives offered in the Bid Forms, if any, to determine the lowest responsible Bidder on each division, and award multiple divisions to a single Bidder, so that the lowest total cost is achieved for the City. For unit price bids, the Contract will be awarded based upon the unit prices and the lump sum prices stated by the bidder for the work items specified in the bid documents, with consideration given to any alternates selected by the City. If the City determines that the unit price for any item is materially different for the work item bid than either other bidders or the general market, the City, in its sole discretion, in addition to any other right it may have, may reject the bid

as not responsible or non-conforming.

The acceptability of major subcontractors will be considered in determining if a Bidder is responsible. In comparing Bids, the City will give consideration to alternate Bids for items listed in the bid forms. All key staff and subcontractors are subject to the approval by the City.

Official Documents

The City of Ann Arbor officially distributes bid documents from the Procurement Unit or through the Michigan Intergovernmental Trade Network (MITN). Copies of the bid documents obtained from any other source are not Official copies. Addenda and other bid information will only be posted to these official distribution sites. If you obtained City of Ann Arbor Bid documents from other sources, it is recommended that you register on www.MITN.info and obtain an official Bid. Bidders do not need to be shown on the plan holders list provided by MITN to be considered an official plan holder.

Bid Security

Each bid must be accompanied by a certified check, or Bid Bond by a surety licensed and authorized to do business within the State of Michigan, in the amount of 5% of the total of the bid price.

Withdrawal of Bids

After the time of opening, no Bid may be withdrawn for the period of ninety (90) days

Contract Time

Time is of the essence in the performance of the work under this Contract. The available time for work under this Contract is indicated on page C-1, Article III of the Contract. If these time requirements cannot be met, the Bidder must stipulate on Bid Form Section 3 - Time Alternate its schedule for performance of the work. Consideration will be given to time in evaluating bids.

Liquidated Damages

A liquidated damages clause, as given on page C-2, Article III of the Contract, provides that the Contractor shall pay the City as liquidated damages, and not as a penalty, a sum certain per day for each and every day that the Contractor may be in default of completion of the specified work, within the time(s) stated in the Contract, or written extensions.

Liquidated damages clauses, as given in the General Conditions, provide further that the City shall be entitled to impose and recover liquidated damages for breach of the obligations under Chapter 112 of the City Code.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

Human Rights Information

All contractors proposing to do business with the City shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the Section 9:158 of the Ann Arbor City Code. Breach of the obligation not to discriminate as outlined in Section 5, beginning at page GC-2 shall be a material breach of the contract. Contractors are required to post a copy of Ann Arbor's Non-Discrimination Ordinance attached at all work locations where its employees provide services under a contract with the City.

Wage Requirements

Section 4, beginning at page GC-1, outlines the requirements for payment of prevailing wages and for payment of a “living wage” to employees providing service to the City under this contract. The successful bidder and its subcontractors must comply with all applicable requirements and provide proof of compliance.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. Use of the Prevailing Wage Form provided in the Appendix section or a City-approved equivalent will be required along with wage rate interviews.

For laborers whose wage level are subject to federal, state and/or local prevailing wage law the appropriate Davis-Bacon wage rate classification is identified based upon the work including within this contract. **The wage determination(s) current on the date 10 days before bids are due shall apply to this contract.** The U.S. Department of Labor (DOL) has provided explanations to assist with classification in the following resource link: www.wdol.gov.

For the purposes of this ITB the Construction Type of Heavy will apply.

Conflict Of Interest Disclosure

The City of Ann Arbor Purchasing Policy requires that prospective Vendors complete a Conflict of Interest Disclosure form. A contract may not be awarded to the selected Vendor unless and until the Procurement Unit and the City Administrator have reviewed the Disclosure form and determined that no conflict exists under applicable federal, state, or local law or administrative regulation. Not every relationship or situation disclosed on the Disclosure Form may be a disqualifying conflict. Depending on applicable law and regulations, some contracts may awarded on the recommendation of the City Administrator after full disclosure, where such action is allowed by law, if demonstrated competitive pricing exists and/or it is determined the award is in the best interest of the City. A copy of the Vendor Conflict of Interest Disclosure Form is attached.

Major Subcontractors

The Bidder shall identify on Bid Form Section 4 each major subcontractor it expects to engage for this Contract if the work to be subcontracted is 15% or more of the bid sum or over \$50,000, whichever is less. The Bidder also shall identify the work to be subcontracted to each major subcontractor. The Bidder shall not change or replace a subcontractor without approval by the City.

Debarment

Submission of a Bid in response to this ITB is certification that the Bidder is not currently debarred, suspended, proposed for debarment, and declared ineligible or voluntarily excluded from participation in this transaction by any State or Federal departments or agency. Submission is also agreement that the City will be notified of any changes in this status.

Disclosures

After bids are opened, all information in a submitter’s bid is subjected to disclosure under the provisions of Michigan Public Act No. 442 of 1976, as amended (MCL 15.231 et seq.) known as the “Freedom of Information Act.” The Freedom of Information Act also provides for the complete disclosure of contracts and attachments thereto except where specifically exempted.

Bid Protest

All Bid protests must be in writing and filed with the Purchasing Agent within five (5) business days of the award action. The bidder must clearly state the reasons for the protest. If a bidder contacts a City Service Area/Unit and indicates a desire to protest an award, the Service Area/Unit shall refer the bidder to the Purchasing Agent. The Purchasing Agent will provide the bidder with the appropriate instructions for filing the protest. The protest shall be reviewed by the City Administrator or designee whose decision shall be final.

Any inquiries or requests regarding this procurement should be only submitted in writing to the Designated City Contacts provided herein. Attempts by any prospective bidder to initiate contact with anyone other than the Designated City Contacts provided herein that the bidder believes can influence the procurement decision, e.g., Elected Officials, City Administrator, Selection Committee Members, Appointed Committee Members, etc., may lead to immediate elimination from further consideration.

Cost Liability

The City of Ann Arbor assumes no responsibility or liability for costs incurred by the Bidder prior to the execution of a contract with the City. By submitting a bid, a bidder agrees to bear all costs incurred or related to the preparation, submission and selection process for the bid.

Reservation of Rights

The City of Ann Arbor reserves the right to accept any bid or alternative bid proposed in whole or in part, to reject any or all bids or alternatives bids in whole or in part and to waive irregularity and/or informalities in any bid and to make the award in any manner deemed in the best interest of the City.

Idlefree Ordinance

The City of Ann Arbor adopted an idling reduction Ordinance that goes into effect July 1, 2017. The full text of the ordinance (including exemptions) can be found at: www.a2gov.org/idlefree.

Under the ordinance, No Operator of a Commercial Vehicle shall cause or permit the Commercial Vehicle to Idle:

- (a) For any period of time while the Commercial Vehicle is unoccupied; or
- (b) For more than 5 minutes in any 60-minute period while the Commercial Vehicle is occupied.

In addition, generators and other internal combustion engines are covered

(1) Excluding Motor Vehicle engines, no internal combustion engine shall be operated except when it is providing power or electrical energy to equipment or a tool that is actively in use.

Environmental Commitment

The City of Ann Arbor recognizes its responsibility to minimize negative impacts on human health and the environment while supporting a vibrant community and economy. The City further recognizes that the products and services the City buys have inherent environmental and economic impacts and that the City should make procurement decisions that embody, promote, and encourage the City's commitment to the environment.

The City encourages potential vendors to bring forward emerging and progressive products and services that are best suited to the City's environmental principles.

INVITATION TO BID

City of Ann Arbor
Guy C. Larcom Municipal Building
Ann Arbor, Michigan 48107

Ladies and Gentlemen:

The undersigned, as Bidder, declares that this Bid is made in good faith, without fraud or collusion with any person or persons bidding on the same Contract; that this Bidder has carefully read and examined the bid documents, including City Nondiscrimination requirements and Declaration of Compliance Form, Living Wage requirements and Declaration of Compliance Form, Prevailing Wage requirements and Declaration of Compliance Form, Vendor Conflict of Interest Form, Notice of Pre-Bid Conference, Instructions to Bidders, Bid, Bid Forms, Contract, Bond Forms, General Conditions, Standard Specifications, Detailed Specifications, all Addenda, and the Plans (if applicable) and understands them. The Bidder declares that it conducted a full investigation at the site and of the work proposed and is fully informed as to the nature of the work and the conditions relating to the work's performance. The Bidder also declares that it has extensive experience in successfully completing projects similar to this one.

The Bidder acknowledges that it has not received or relied upon any representations or warrants of any nature whatsoever from the City of Ann Arbor, its agents or employees, and that this Bid is based solely upon the Bidder's own independent business judgment.

The undersigned proposes to perform all work shown on the plans or described in the bid documents, including any addenda issued, and to furnish all necessary machinery, tools, apparatus, and other means of construction to do all the work, furnish all the materials, and complete the work in strict accordance with all terms of the Contract of which this Bid is one part.

In accordance with these bid documents, and Addenda numbered _____, the undersigned, as Bidder, proposes to perform at the sites in and/or around Ann Arbor, Michigan, all the work included herein for the amounts set forth in the Bid Forms.

The Bidder declares that it has become fully familiar with the liquidated damage clauses for completion times and for compliance with City Code Chapter 112, understands and agrees that the liquidated damages are for the non-quantifiable aspects of non-compliance and do not cover actual damages that may be shown and agrees that if awarded the Contract, all liquidated damage clauses form part of the Contract.

The Bidder declares that it has become fully familiar with the provisions of Chapter 14, Section 1:320 (Prevailing wages) and Chapter 23 (Living Wage) of the Code of the City of Ann Arbor and that it understands and agrees to comply, to the extent applicable to employees providing services to the City under this Contract, with the wage and reporting requirements stated in the City Code provisions cited. Bidder certifies that the statements contained in the City Prevailing Wage and Living Wage Declaration of Compliance Forms are true and correct. Bidder further agrees that the cited provisions of Chapter 14 and Chapter 23 form a part of this Contract.

The Bidder declares that it has become familiar with the City Conflict of Interest Disclosure Form and certifies that the statement contained therein is true and correct.

The Bidder encloses a certified check or Bid Bond in the amount of 5% of the total of the Bid Price. The Bidder agrees both to contract for the work and to furnish the necessary Bonds and insurance documentation within 10 days after being notified of the acceptance of the Bid.

If this Bid is accepted by the City and the Bidder fails to contract and furnish the required Bonds and insurance documentation within 10 days after being notified of the acceptance of this Bid, then the Bidder shall be considered to have abandoned the Contract and the certified check or Bid Bond accompanying this Bid shall become due and payable to the City.

If the Bidder enters into the Contract in accordance with this Bid, or if this Bid is rejected, then the accompanying check or Bid Bond shall be returned to the Bidder.

In submitting this Bid, it is understood that the right is reserved by the City to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

SIGNED THIS _____ DAY OF _____, 201_.

Bidder's Name

Authorized Signature of Bidder

Official Address

(Print Name of Signer Above)

Telephone Number

Email Address for Award Notice

LEGAL STATUS OF BIDDER

(The Bidder shall fill out the appropriate form and strike out the other three.)

Bidder declares that it is:

* A corporation organized and doing business under the laws of the State of _____, for whom _____, bearing the office title of _____, whose signature is affixed to this Bid, is authorized to execute contracts.

NOTE: If not incorporated in Michigan, please attach the corporation's Certificate of Authority

• A limited liability company doing business under the laws of the State of _____, whom _____ bearing the title of _____ whose signature is affixed to this proposal, is authorized to execute contract on behalf of the LLC.

* A partnership, organized under the laws of the state of _____ and filed in the county of _____, whose members are (list all members and the street and mailing address of each) (attach separate sheet if necessary):

* An individual, whose signature with address, is affixed to this Bid: _____ (initial here)

Authorized Official

_____ **Date** _____, 201__

(Print) Name _____ Title _____

Company: _____

Address: _____

Contact Phone () _____ Fax () _____

Email _____

BID FORM

Section 1 – Schedule of Prices

Company: _____

Project: **Landfill Scale and Entrance Improvements**

Base Bid –

For the entire work outlined in these documents for **Landfill Scale and Entrance Improvements**, complete as specified, using equipment and materials only of the type and manufacturers where specifically named.

_____ (\$ _____)

BID FORM

Section 2 – Material, Equipment and Environmental Alternates

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

If the Contractor wishes to quote alternate items for consideration by the City, it may do so under this Section. A complete description of the item and the proposed price differential must be provided. Unless approved at the time of award, substitutions where items are specifically named will be considered only as a negotiated change in Contract Sum.

If an environmental alternative is bid the City strongly encourages bidders to provide recent examples of product testing and previous successful use for the City to properly evaluate the environmental alternative. Testing data from independent accredited organizations are strongly preferred.

<u>Item Number</u>	<u>Description</u>	<u>Add/Deduct Amount</u>
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If the Bidder does not suggest any material or equipment alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any material or equipment alternate under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 3 - Time Alternate

If the Bidder takes exception to the time stipulated in Article III of the Contract, Time of Completion, page C-1, it is requested to stipulate below its proposed time for performance of the work. Consideration will be given to time in evaluating bids.

If the Bidder does not suggest any time alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any time alternate under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 4 - Major Subcontractors

For purposes of this Contract, a Subcontractor is anyone (other than the Contractor) who performs work (other than or in addition to the furnishing of materials, plans or equipment) at or about the construction site, directly or indirectly for or on behalf of the Contractor (and whether or not in privity of Contract with the Contractor), but shall not include any individual who furnishes merely the individual's own personal labor or services.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision to Section 4 of the General Conditions covering subcontractor's employees who perform work on this contract.

For the work outlined in these documents the Bidder expects to engage the following major subcontractors to perform the work identified:

<u>Subcontractor (Name and Address)</u>	<u>Work</u>	<u>Amount</u>
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If the Bidder does not expect to engage any major subcontractor, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT expect to engage any major subcontractor to perform work under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 5 – References

Include a minimum of 3 reference from similar project completed within the past 3 years.

[Refer also to Instructions to Bidders for additional requirements, if any]

1) _____
Project Name Cost Date Constructed

Contact Name Phone Number

2) _____
Project Name Cost Date Constructed

Contact Name Phone Number

3) _____
Project Name Cost Date Constructed

Contact Name Phone Number

SAMPLE STANDARD CONTRACT

If a contract is awarded, the selected contractor will be required to adhere to a set of general contract provisions which will become a part of any formal agreement. These provisions are general principles which apply to all contractors of service to the City of Ann Arbor such as the following:

CONTRACT

THIS AGREEMENT is made on the _____ day of _____, 201_, between the CITY OF ANN ARBOR, a Michigan Municipal Corporation, 301 East Huron Street, Ann Arbor, Michigan 48104 ("City") and _____ ("Contractor")

(An individual/partnership/corporation, include state of incorporation)

(Address)

Based upon the mutual promises below, the Contractor and the City agree as follows:

ARTICLE I - Scope of Work

The Contractor agrees to furnish all of the materials, equipment and labor necessary; and to abide by all the duties and responsibilities applicable to it for the project titled [Insert Title of Bid and Bid Number] in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, which are incorporated as part of this Contract:

Non-discrimination and Living Wage
Declaration of Compliance Forms (if
applicable)
Vendor Conflict of Interest Form
Prevailing Wage Declaration of
Compliance Form (if applicable)
Bid Forms
Contract and Exhibits
Bonds

General Conditions
Standard Specifications
Detailed Specifications
Plans
Addenda

ARTICLE II - Definitions

Administering Service Area/Unit means: **Public Services Area/Public Work Unit**

Project means **Landfill Scale and Entrance Improvements – ITB NO 4575**

ARTICLE III - Time of Completion

- (A) The work to be completed under this Contract shall begin immediately on the date specified in the Notice to Proceed issued by the City.
- (B) The entire work for this Contract shall be completed within one hundred eighty (180) consecutive calendar days.
- (C) Failure to complete all the work within the time specified above, including any extension granted in writing by the Supervising Professional, shall obligate the Contractor to pay the City, as liquidated damages and not as a penalty, an amount equal to \$500 for each calendar day of delay in the completion of all the work. If

any liquidated damages are unpaid by the Contractor, the City shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

ARTICLE IV - The Contract Sum

- (A) The City shall pay to the Contractor for the performance of the Contract, the lump sum price as given in the Bid Form in the amount of:

_____ Dollars (\$_____)

- (B) The amount paid shall be equitably adjusted to cover changes in the work ordered by the Supervising Professional but not required by the Contract Documents. Increases or decreases shall be determined only by written agreement between the City and Contractor.

ARTICLE V - Assignment

This Contract may not be assigned or subcontracted any portion of any right or obligation under this contract without the written consent of the City. Notwithstanding any consent by the City to any assignment, Contractor shall at all times remain bound to all warranties, certifications, indemnifications, promises and performances, however described, as are required of it under this contract unless specifically released from the requirement, in writing, by the City.

ARTICLE VI - Choice of Law

This Contract shall be construed, governed, and enforced in accordance with the laws of the State of Michigan. By executing this agreement, the Contractor and the City agree to venue in a court of appropriate jurisdiction sitting within Washtenaw County for purposes of any action arising under this Contract. The parties stipulate that the venue referenced in this Contract is for convenience and waive any claim of non-convenience.

Whenever possible, each provision of the Contract will be interpreted in a manner as to be effective and valid under applicable law. The prohibition or invalidity, under applicable law, of any provision will not invalidate the remainder of the Contract.

ARTICLE VII - Relationship of the Parties

The parties of the Contract agree that it is not a Contract of employment but is a Contract to accomplish a specific result. Contractor is an independent Contractor performing services for the City. Nothing contained in this Contract shall be deemed to constitute any other relationship between the City and the Contractor.

Contractor certifies that it has no personal or financial interest in the project other than the compensation it is to receive under the Contract. Contractor certifies that it is not, and shall not become, overdue or in default to the City for any Contract, debt, or any other obligation to the City including real or personal property taxes. City shall have the right to set off any such debt against compensation awarded for services under this agreement.

ARTICLE VIII - Notice

All notices given under this Contract shall be in writing, and shall be by personal delivery or by certified mail with return receipt requested to the parties at their respective addresses as specified in the Contract Documents or other address the Contractor may specify in writing. Notice will be deemed given on the date when one of the following first occur: (1) the date of actual receipt; or (2) three days after mailing certified U.S. mail.

ARTICLE IX - Indemnification

To the fullest extent permitted by law, Contractor shall indemnify, defend and hold harmless the City, its officers, employees and agents harmless from all suits, claims, judgments and expenses including attorney’s fees resulting or alleged to result, in whole or in part, from any act or omission, which is in any way connected or associated with this Contract, by the Contractor or anyone acting on the Contractor’s behalf under this Contract. Contractor shall not be responsible to indemnify the City for losses or damages caused by or resulting from the City’s sole negligence. The provisions of this Article shall survive the expiration or earlier termination of this contract for any reason.

ARTICLE X - Entire Agreement

This Contract represents the entire understanding between the City and the Contractor and it supersedes all prior representations, negotiations, agreements, or understandings whether written or oral. Neither party has relied on any prior representations in entering into this Contract. No terms or conditions of either party’s invoice, purchase order or other administrative document shall modify the terms and conditions of this Contract, regardless of the other party’s failure to object to such form. This Contract shall be binding on and shall inure to the benefit of the parties to this Contract and their permitted successors and permitted assigns and nothing in this Contract, express or implied, is intended to or shall confer on any other person or entity any legal or equitable right, benefit, or remedy of any nature whatsoever under or by reason of this Contract. This Contract may be altered, amended or modified only by written amendment signed by the City and the Contractor.

FOR CONTRACTOR

By _____

Its: _____

FOR THE CITY OF ANN ARBOR

By _____
Christopher Taylor, Mayor

[signatures continue on next page]

By _____
Jacqueline Beaudry, City Clerk

Approved as to substance

By _____
City Administrator

By _____
Services Area Administrator

Approved as to form and content

Stephen K. Postema, City Attorney

PERFORMANCE BOND

- (1) _____ (referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for \$ _____, the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.
- (2) The Principal has entered a written Contract with the City dated _____, 201_, for: _____ and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq.
- (3) Whenever the Principal is declared by the City to be in default under the Contract, the Surety may promptly remedy the default or shall promptly:
- (a) complete the Contract in accordance with its terms and conditions; or
 - (b) obtain a bid or bids for submission to the City for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, arrange for a Contract between such bidder and the City, and make available, as work progresses, sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs and damages for which Surety may be liable hereunder, the amount set forth in paragraph 1.
- (4) Surety shall have no obligation to the City if the Principal fully and promptly performs under the Contract.
- (5) Surety agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder, or the specifications accompanying it shall in any way affect its obligations on this bond, and waives notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work, or to the specifications.

SIGNED AND SEALED this _____ day of _____, 201_.

(Name of Surety Company)
By _____
(Signature)
Its _____
(Title of Office)

(Name of Principal)
By _____
(Signature)
Its _____
(Title of Office)

Approved as to form:

Name and address of agent:

Stephen K. Postema, City Attorney

LABOR AND MATERIAL BOND

- (1) _____
of _____ (referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan, (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for the use and benefit of claimants as defined in Act 213 of Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq., in the amount of \$ _____, for the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.
- (2) The Principal has entered a written Contract with the City, dated _____, 201_, for _____; and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963 as amended;
- (3) If the Principal fails to promptly and fully repay claimants for labor and material reasonably required under the Contract, the Surety shall pay those claimants.
- (4) Surety's obligations shall not exceed the amount stated in paragraph 1, and Surety shall have no obligation if the Principal promptly and fully pays the claimants.

SIGNED AND SEALED this _____ day of _____, 201_

(Name of Surety Company)

By _____
(Signature)

Its _____
(Title of Office)

Approved as to form:

Stephen K. Postema, City Attorney

(Name of Principal)

By _____
(Signature)

Its _____
(Title of Office)

Name and address of agent:

GENERAL CONDITIONS

Section 1 - Execution, Correlation and Intent of Documents

The contract documents shall be signed in 2 copies by the City and the Contractor.

The contract documents are complementary and what is called for by any one shall be binding. The intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of the work. Materials or work described in words which so applied have a well-known technical or trade meaning have the meaning of those recognized standards.

In case of a conflict among the contract documents listed below in any requirement(s), the requirement(s) of the document listed first shall prevail over any conflicting requirement(s) of a document listed later.

(1) Addenda in reverse chronological order; (2) Detailed Specifications; (3) Standard Specifications; (4) Plans; (5) General Conditions; (6) Contract; (7) Bid Forms; (8) Bond Forms; (9) Bid.

Section 2 - Order of Completion

The Contractor shall submit with each invoice, and at other times reasonably requested by the Supervising Professional, schedules showing the order in which the Contractor proposes to carry on the work. They shall include the dates at which the Contractor will start the several parts of the work, the estimated dates of completion of the several parts, and important milestones within the several parts.

Section 3 - Familiarity with Work

The Bidder or its representative shall make personal investigations of the site of the work and of existing structures and shall determine to its own satisfaction the conditions to be encountered, the nature of the ground, the difficulties involved, and all other factors affecting the work proposed under this Contract. The Bidder to whom this Contract is awarded will not be entitled to any additional compensation unless conditions are clearly different from those which could reasonably have been anticipated by a person making diligent and thorough investigation of the site.

The Bidder shall immediately notify the City upon discovery, and in every case prior to submitting its Bid, of every error or omission in the bidding documents that would be identified by a reasonably competent, diligent Bidder. In no case will a Bidder be allowed the benefit of extra compensation or time to complete the work under this Contract for extra expenses or time spent as a result of the error or omission.

Section 4 - Wage Requirements

Under this Contract, the Contractor shall conform to Chapter 14 of Title I of the Code of the City of Ann Arbor as amended; which in part states "...that all craftsmen, mechanics and laborers employed directly on the site in connection with said improvements, including said employees of subcontractors, shall receive the prevailing wage for the corresponding classes of craftsmen,

mechanics and laborers, as determined by statistics for the Ann Arbor area compiled by the United States Department of Labor. At the request of the City, any contractor or subcontractor shall provide satisfactory proof of compliance with the contract provisions required by the Section.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. A sample Prevailing Wage Form is provided in the Appendix herein for reference as to what will be expected from contractors. Use of the Prevailing Wage Form provided in the Appendix section or a City-approved equivalent will be required along with wage rate interviews.

Where the Contract and the Ann Arbor City Ordinance are silent as to definitions of terms required in determining contract compliance with regard to prevailing wages, the definitions provided in the Davis-Bacon Act as amended (40 U.S.C. 278-a to 276-a-7) for the terms shall be used.

If the Contractor is a "covered employer" as defined in Chapter 23 of the Ann Arbor City Code, the Contractor agrees to comply with the living wage provisions of Chapter 23 of the Ann Arbor City Code. The Contractor agrees to pay those employees providing Services to the City under this Agreement a "living wage," as defined in Section 1:815 of the Ann Arbor City Code, as adjusted in accordance with Section 1:815(3); to post a notice approved by the City of the applicability of Chapter 23 in every location in which regular or contract employees providing services under this Agreement are working; to maintain records of compliance; if requested by the City, to provide documentation to verify compliance; to take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee or person contracted for employment in order to pay the living wage required by Section 1:815; and otherwise to comply with the requirements of Chapter 23.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision covering subcontractor's employees who perform work on this contract.

Section 5 - Non-Discrimination

The Contractor agrees to comply, and to require its subcontractor(s) to comply, with the nondiscrimination provisions of MCL 37.2209. The Contractor further agrees to comply with the provisions of Section 9:158 of Chapter 112 of Title IX of the Ann Arbor City Code, and to assure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity.

Section 6 - Materials, Appliances, Employees

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary or used for the execution and completion of the work. Unless otherwise specified, all materials incorporated in the permanent work shall be new, and both workmanship and materials shall be of the highest quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

The Contractor shall at all times enforce strict discipline and good order among its employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work assigned.

Adequate sanitary facilities shall be provided by the Contractor.

Section 7 - Qualifications for Employment

The Contractor shall employ competent laborers and mechanics for the work under this Contract. For work performed under this Contract, employment preference shall be given to qualified local residents.

Section 8 - Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringements of any patent rights and shall hold the City harmless from loss on account of infringement except that the City shall be responsible for all infringement loss when a particular process or the product of a particular manufacturer or manufacturers is specified, unless the City has notified the Contractor prior to the signing of the Contract that the particular process or product is patented or is believed to be patented.

Section 9 - Permits and Regulations

The Contractor must secure and pay for all permits, permit or plan review fees and licenses necessary for the prosecution of the work. These include but are not limited to City building permits, right-of-way permits, lane closure permits, right-of-way occupancy permits, and the like. The City shall secure and pay for easements shown on the plans unless otherwise specified.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the contract documents are at variance with those requirements, it shall promptly notify the Supervising Professional in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work.

Section 10 - Protection of the Public and of Work and Property

The Contractor is responsible for the means, methods, sequences, techniques and procedures of construction and safety programs associated with the work contemplated by this contract. The Contractor, its agents or sub-contractors, shall comply with the "General Rules and Regulations for the Construction Industry" as published by the Construction Safety Commission of the State of Michigan and to all other local, State and National laws, ordinances, rules and regulations pertaining to safety of persons and property.

The Contractor shall take all necessary and reasonable precautions to protect the safety of the public. It shall continuously maintain adequate protection of all work from damage, and shall take all necessary and reasonable precautions to adequately protect all public and private property from injury or loss arising in connection with this Contract. It shall make good any damage, injury or loss to its work and to public and private property resulting from lack of reasonable protective precautions, except as may be due to errors in the contract documents, or caused by agents or employees of the City. The Contractor shall obtain and maintain sufficient insurance to cover damage to any City property at the site by any cause.

In an emergency affecting the safety of life, or the work, or of adjoining property, the Contractor is, without special instructions or authorization from the Supervising Professional, permitted to act at its discretion to prevent the threatened loss or injury. It shall also so act, without appeal, if authorized or instructed by the Supervising Professional.

Any compensation claimed by the Contractor for emergency work shall be determined by agreement or in accordance with the terms of Claims for Extra Cost - Section 15.

Section 11 - Inspection of Work

The City shall provide sufficient competent personnel for the inspection of the work.

The Supervising Professional shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for access and for inspection.

If the specifications, the Supervising Professional's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Supervising Professional timely notice of its readiness for inspection, and if the inspection is by an authority other than the Supervising Professional, of the date fixed for the inspection. Inspections by the Supervising Professional shall be made promptly, and where practicable at the source of supply. If any work should be covered up without approval or consent of the Supervising Professional, it must, if required by the Supervising Professional, be uncovered for examination and properly restored at the Contractor's expense.

Re-examination of any work may be ordered by the Supervising Professional, and, if so ordered, the work must be uncovered by the Contractor. If the work is found to be in accordance with the contract documents, the City shall pay the cost of re-examination and replacement. If the work is not in accordance with the contract documents, the Contractor shall pay the cost.

Section 12 - Superintendence

The Contractor shall keep on the work site, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Supervising Professional. The superintendent will be responsible to perform all on-site project management for the Contractor. The superintendent shall be experienced in the work required for this Contract. The superintendent shall represent the Contractor and all direction given to the superintendent shall be binding as if given to the Contractor. Important directions shall immediately be confirmed in writing to the Contractor. Other directions will be confirmed on written request. The Contractor shall give efficient superintendence to the work, using its best skill and attention.

Section 13 - Changes in the Work

The City may make changes to the quantities of work within the general scope of the Contract at any time by a written order and without notice to the sureties. If the changes add to or deduct from the extent of the work, the Contract Sum shall be adjusted accordingly. All the changes shall be executed under the conditions of the original Contract except that any claim for extension of time caused by the change shall be adjusted at the time of ordering the change.

In giving instructions, the Supervising Professional shall have authority to make minor changes in the work not involving extra cost and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Supervising Professional, and no claim for an addition to the Contract Sum shall be valid unless the additional work was ordered in writing.

The Contractor shall proceed with the work as changed and the value of the work shall be determined as provided in Claims for Extra Cost - Section 15.

Section 14 - Extension of Time

Extension of time stipulated in the Contract for completion of the work will be made if and as the

Supervising Professional may deem proper under any of the following circumstances:

- (1) When work under an extra work order is added to the work under this Contract;
- (2) When the work is suspended as provided in Section 20;
- (3) When the work of the Contractor is delayed on account of conditions which could not have been foreseen, or which were beyond the control of the Contractor, and which were not the result of its fault or negligence;
- (4) Delays in the progress of the work caused by any act or neglect of the City or of its employees or by other Contractors employed by the City;
- (5) Delay due to an act of Government;
- (6) Delay by the Supervising Professional in the furnishing of plans and necessary information;
- (7) Other cause which in the opinion of the Supervising Professional entitles the Contractor to an extension of time.

The Contractor shall notify the Supervising Professional within 7 days of an occurrence or conditions which, in the Contractor's opinion, entitle it to an extension of time. The notice shall be in writing and submitted in ample time to permit full investigation and evaluation of the Contractor's claim. The Supervising Professional shall acknowledge receipt of the Contractor's notice within 7 days of its receipt. Failure to timely provide the written notice shall constitute a waiver by the Contractor of any claim.

In situations where an extension of time in contract completion is appropriate under this or any other section of the contract, the Contractor understands and agrees that the only available adjustment for events that cause any delays in contract completion shall be extension of the required time for contract completion and that there shall be no adjustments in the money due the Contractor on account of the delay.

Section 15 - Claims for Extra Cost

If the Contractor claims that any instructions by drawings or other media issued after the date of the Contract involved extra cost under this Contract, it shall give the Supervising Professional written notice within 7 days after the receipt of the instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property. The procedure shall then be as provided for Changes in the Work-Section 13. No claim shall be valid unless so made.

If the Supervising Professional orders, in writing, the performance of any work not covered by the contract documents, and for which no item of work is provided in the Contract, and for which no unit price or lump sum basis can be agreed upon, then the extra work shall be done on a Cost-Plus-Percentage basis of payment as follows:

- (1) The Contractor shall be reimbursed for all reasonable costs incurred in doing the work, and shall receive an additional payment of 15% of all the reasonable costs to cover both its indirect overhead costs and profit;
- (2) The term "Cost" shall cover all payroll charges for employees and supervision required under the specific order, together with all worker's compensation, Social Security, pension and retirement allowances and social insurance, or other regular payroll charges on same;

the cost of all material and supplies required of either temporary or permanent character; rental of all power-driven equipment at agreed upon rates, together with cost of fuel and supply charges for the equipment; and any costs incurred by the Contractor as a direct result of executing the order, if approved by the Supervising Professional;

- (3) If the extra is performed under subcontract, the subcontractor shall be allowed to compute its charges as described above. The Contractor shall be permitted to add an additional charge of 5% percent to that of the subcontractor for the Contractor's supervision and contractual responsibility;
- (4) The quantities and items of work done each day shall be submitted to the Supervising Professional in a satisfactory form on the succeeding day, and shall be approved by the Supervising Professional and the Contractor or adjusted at once;
- (5) Payments of all charges for work under this Section in any one month shall be made along with normal progress payments. Retainage shall be in accordance with Progress Payments-Section 16.

No additional compensation will be provided for additional equipment, materials, personnel, overtime or special charges required to perform the work within the time requirements of the Contract.

When extra work is required and no suitable price for machinery and equipment can be determined in accordance with this Section, the hourly rate paid shall be 1/40 of the basic weekly rate listed in the Rental Rate Blue Book published by Dataquest Incorporated and applicable to the time period the equipment was first used for the extra work. The hourly rate will be deemed to include all costs of operation such as bucket or blade, fuel, maintenance, "regional factors", insurance, taxes, and the like, but not the costs of the operator.

Section 16 - Progress Payments

The Contractor shall submit each month, or at longer intervals, if it so desires, an invoice covering work performed for which it believes payment, under the Contract terms, is due. The submission shall be to the City's Finance Department - Accounting Division. The Supervising Professional will, within 10 days following submission of the invoice, prepare a certificate for payment for the work in an amount to be determined by the Supervising Professional as fairly representing the acceptable work performed during the period covered by the Contractor's invoice. To insure the proper performance of this Contract, the City will retain a percentage of the estimate in accordance with Act 524, Public Acts of 1980. The City will then, following the receipt of the Supervising Professional's Certificate, make payment to the Contractor as soon as feasible, which is anticipated will be within 15 days.

An allowance may be made in progress payments if substantial quantities of permanent material have been delivered to the site but not incorporated in the completed work if the Contractor, in the opinion of the Supervising Professional, is diligently pursuing the work under this Contract. Such materials shall be properly stored and adequately protected. Allowance in the estimate shall be at the invoice price value of the items. Notwithstanding any payment of any allowance, all risk of loss due to vandalism or any damages to the stored materials remains with the Contractor.

In the case of Contracts which include only the Furnishing and Delivering of Equipment, the payments shall be; 60% of the Contract Sum upon the delivery of all equipment to be furnished, or in the case of delivery of a usable portion of the equipment in advance of the total equipment delivery, 60% of the estimated value of the portion of the equipment may be paid upon its delivery in advance of the time of the remainder of the equipment to be furnished; 30% of the Contract

Sum upon completion of erection of all equipment furnished, but not later than 60 days after the date of delivery of all of the equipment to be furnished; and payment of the final 10% on final completion of erection, testing and acceptance of all the equipment to be furnished; but not later than 180 days after the date of delivery of all of the equipment to be furnished, unless testing has been completed and shows the equipment to be unacceptable.

With each invoice for periodic payment, the Contractor shall enclose a Contractor's Declaration - Section 43, and an updated project schedule per Order of Completion - Section 2.

Section 17 - Deductions for Uncorrected Work

If the Supervising Professional decides it is inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made.

Section 18 - Correction of Work Before Final Payment

The Contractor shall promptly remove from the premises all materials condemned by the Supervising Professional as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute the work in accordance with the Contract and without expense to the City and shall bear the expense of making good all work of other contractors destroyed or damaged by the removal or replacement.

If the Contractor does not remove the condemned work and materials within 10 days after written notice, the City may remove them and, if the removed material has value, may store the material at the expense of the Contractor. If the Contractor does not pay the expense of the removal within 10 days thereafter, the City may, upon 10 days written notice, sell the removed materials at auction or private sale and shall pay to the Contractor the net proceeds, after deducting all costs and expenses that should have been borne by the Contractor. If the removed material has no value, the Contractor must pay the City the expenses for disposal within 10 days of invoice for the disposal costs.

The inspection or lack of inspection of any material or work pertaining to this Contract shall not relieve the Contractor of its obligation to fulfill this Contract and defective work shall be made good. Unsuitable materials may be rejected by the Supervising Professional notwithstanding that the work and materials have been previously overlooked by the Supervising Professional and accepted or estimated for payment or paid for. If the work or any part shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith make good the defect in a manner satisfactory to the Supervising Professional. The judgment and the decision of the Supervising Professional as to whether the materials supplied and the work done under this Contract comply with the requirements of the Contract shall be conclusive and final.

Section 19 - Acceptance and Final Payment

Upon receipt of written notice that the work is ready for final inspection and acceptance, the Supervising Professional will promptly make the inspection. When the Supervising Professional finds the work acceptable under the Contract and the Contract fully performed, the Supervising Professional will promptly sign and issue a final certificate stating that the work required by this Contract has been completed and is accepted by the City under the terms and conditions of the Contract. The entire balance found to be due the Contractor, including the retained percentage, shall be paid to the Contractor by the City within 30 days after the date of the final certificate.

Before issuance of final certificates, the Contractor shall file with the City:

- (1) The consent of the surety to payment of the final estimate;
- (2) The Contractor's Affidavit in the form required by Section 44.

In case the Affidavit or consent is not furnished, the City may retain out of any amount due the Contractor, sums sufficient to cover all lienable claims.

The making and acceptance of the final payment shall constitute a waiver of all claims by the City except those arising from:

- (1) unsettled liens;
- (2) faulty work appearing within 12 months after final payment;
- (3) hidden defects in meeting the requirements of the plans and specifications;
- (4) manufacturer's guarantees.

It shall also constitute a waiver of all claims by the Contractor, except those previously made and still unsettled.

Section 20 - Suspension of Work

The City may at any time suspend the work, or any part by giving 5 days notice to the Contractor in writing. The work shall be resumed by the Contractor within 10 days after the date fixed in the written notice from the City to the Contractor to do so. The City shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this Contract as a result of the suspension.

If the work, or any part, shall be stopped by the notice in writing, and if the City does not give notice in writing to the Contractor to resume work at a date within 90 days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work suspended and will be entitled to the estimates and payments for all work done on the portions abandoned, if any, plus 10% of the value of the work abandoned, to compensate for loss of overhead, plant expense, and anticipated profit.

Section 21 - Delays and the City's Right to Terminate Contract

If the Contractor refuses or fails to prosecute the work, or any separate part of it, with the diligence required to insure completion, ready for operation, within the allowable number of consecutive calendar days specified plus extensions, or fails to complete the work within the required time, the City may, by written notice to the Contractor, terminate its right to proceed with the work or any part of the work as to which there has been delay. After providing the notice the City may take over the work and prosecute it to completion, by contract or otherwise, and the Contractor and its sureties shall be liable to the City for any excess cost to the City. If the Contractor's right to proceed is terminated, the City may take possession of and utilize in completing the work, any materials, appliances and plant as may be on the site of the work and useful for completing the work. The right of the Contractor to proceed shall not be terminated or the Contractor charged with liquidated damages where an extension of time is granted under Extension of Time - Section 14.

If the Contractor is adjudged a bankrupt, or if it makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if it fails to make prompt payments to subcontractors or for material or labor, or persistently disregards laws, ordinances or the instructions of the Supervising Professional, or otherwise is guilty of a substantial violation of any provision of the Contract, then the City, upon the certificate of the Supervising Professional that sufficient cause exists to justify

such action, may, without prejudice to any other right or remedy and after giving the Contractor 3 days written notice, terminate this Contract. The City may then take possession of the premises and of all materials, tools and appliances thereon and without prejudice to any other remedy it may have, make good the deficiencies or finish the work by whatever method it may deem expedient, and deduct the cost from the payment due the Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the expense of finishing the work, including compensation for additional managerial and administrative services exceeds the unpaid balance of the Contract Sum, the Contractor and its surety are liable to the City for any excess cost incurred. The expense incurred by the City, and the damage incurred through the Contractor's default, shall be certified by the Supervising Professional.

Section 22 - Contractor's Right to Terminate Contract

If the work should be stopped under an order of any court, or other public authority, for a period of 3 months, through no act or fault of the Contractor or of anyone employed by it, then the Contractor may, upon 7 days written notice to the City, terminate this Contract and recover from the City payment for all acceptable work executed plus reasonable profit.

Section 23 - City's Right To Do Work

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the City, 3 days after giving written notice to the Contractor and its surety may, without prejudice to any other remedy the City may have, make good the deficiencies and may deduct the cost from the payment due to the Contractor.

Section 24 - Removal of Equipment and Supplies

In case of termination of this Contract before completion, from any or no cause, the Contractor, if notified to do so by the City, shall promptly remove any part or all of its equipment and supplies from the property of the City, failing which the City shall have the right to remove the equipment and supplies at the expense of the Contractor.

The removed equipment and supplies may be stored by the City and, if all costs of removal and storage are not paid by the Contractor within 10 days of invoicing, the City upon 10 days written notice may sell the equipment and supplies at auction or private sale, and shall pay the Contractor the net proceeds after deducting all costs and expenses that should have been borne by the Contractor and after deducting all amounts claimed due by any lien holder of the equipment or supplies.

Section 25 - Responsibility for Work and Warranties

The Contractor assumes full responsibility for any and all materials and equipment used in the construction of the work and may not make claims against the City for damages to materials and equipment from any cause except negligence or willful act of the City. Until its final acceptance, the Contractor shall be responsible for damage to or destruction of the project (except for any part covered by Partial Completion and Acceptance - Section 26). The Contractor shall make good all work damaged or destroyed before acceptance. All risk of loss remains with the Contractor until final acceptance of the work (Section 19) or partial acceptance (Section 26). The Contractor is advised to investigate obtaining its own builders risk insurance.

The Contractor shall guarantee the quality of the work for a period of one year. The Contractor shall also unconditionally guarantee the quality of all equipment and materials that are furnished and installed under the contract for a period of one year. At the end of one year after the Contractor's receipt of final payment, the complete work, including equipment and materials

furnished and installed under the contract, shall be inspected by the Contractor and the Supervising Professional. Any defects shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. Any defects that are identified prior to the end of one year shall also be inspected by the Contractor and the Supervising Professional and shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. The Contractor shall assign all manufacturer or material supplier warranties to the City prior to final payment. The assignment shall not relieve the Contractor of its obligations under this paragraph to correct defects.

Section 26 - Partial Completion and Acceptance

If at any time prior to the issuance of the final certificate referred to in Acceptance and Final Payment - Section 19, any portion of the permanent construction has been satisfactorily completed, and if the Supervising Professional determines that portion of the permanent construction is not required for the operations of the Contractor but is needed by the City, the Supervising Professional shall issue to the Contractor a certificate of partial completion, and immediately the City may take over and use the portion of the permanent construction described in the certificate, and exclude the Contractor from that portion.

The issuance of a certificate of partial completion shall not constitute an extension of the Contractor's time to complete the portion of the permanent construction to which it relates if the Contractor has failed to complete it in accordance with the terms of this Contract. The issuance of the certificate shall not release the Contractor or its sureties from any obligations under this Contract including bonds.

If prior use increases the cost of, or delays the work, the Contractor shall be entitled to extra compensation, or extension of time, or both, as the Supervising Professional may determine.

Section 27 - Payments Withheld Prior to Final Acceptance of Work

The City may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any certificate to the extent reasonably appropriate to protect the City from loss on account of:

- (1) Defective work not remedied;
- (2) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor;
- (3) Failure of the Contractor to make payments properly to subcontractors or for material or labor;
- (4) Damage to another Contractor.

When the above grounds are removed or the Contractor provides a Surety Bond satisfactory to the City which will protect the City in the amount withheld, payment shall be made for amounts withheld under this section.

Section 28 - Contractor's Insurance

- (1) The Contractor shall procure and maintain during the life of this Contract, including the guarantee period and during any warranty work, such insurance policies, including those set forth below, as will protect itself and the City from all claims for bodily injuries, death

or property damage which may arise under this Contract; whether the act(s) or omission(s) giving rise to the claim were made by the Contractor or by any subcontractor or anyone employed by them directly or indirectly. In the case of all contracts involving on-site work, the Contractor shall provide to the City, before the commencement of any work under this contract, certificates of insurance and other documentation satisfactory to the City demonstrating it has obtained the policies and endorsements required on behalf of itself, and when requested, any subcontractor(s). The certificates of insurance endorsements and/or copies of policy language shall document that the Contractor satisfies the following minimum requirements.

- (a) Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

Bodily Injury by Accident - \$500,000 each accident
Bodily Injury by Disease - \$500,000 each employee
Bodily Injury by Disease - \$500,000 each policy limit

- (b) Commercial General Liability Insurance equivalent to, as a minimum, Insurance Services Office form CG 00 01 07 98 or current equivalent. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements specifically for the following coverages: Products and Completed Operations, Explosion, Collapse and Underground coverage or Pollution. Further there shall be no added exclusions or limiting endorsements which diminish the City's protections as an additional insured under the policy. The following minimum limits of liability are required:

\$1,000,000 Each occurrence as respect Bodily Injury Liability or Property
Damage Liability, or both combined.
\$2,000,000 Per Job General Aggregate
\$1,000,000 Personal and Advertising Injury
\$2,000,000 Products and Completed Operations Aggregate

- (c) Motor Vehicle Liability Insurance, including Michigan No-Fault Coverages, equivalent to, as a minimum, Insurance Services Office form CA 00 01 07 97 or current equivalent. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements which diminish the City's protections as an additional insured under the policy. Further, the limits of liability shall be \$1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.

- (d) Umbrella/Excess Liability Insurance shall be provided to apply excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of \$1,000,000.

- (2) Insurance required under subsection (1)(b) and (1)(c) above shall be considered primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and shall not be required to contribute with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the City.

- (3) Insurance companies and policy forms are subject to approval of the City Attorney, which

approval shall not be unreasonably withheld. Documentation must provide and demonstrate an unconditional 30 day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number; name of insurance company; name and address of the agent or authorized representative; name and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which shall be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified Contractor shall furnish the City with satisfactory certificates of insurance and endorsements prior to commencement of any work. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) to the City. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies and endorsements to the Administering Service Area/Unit at least ten days prior to the expiration date.

- (4) Any Insurance provider of Contractor shall be admitted and authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-admitted insurance companies are not acceptable unless approved in writing by the City.
- (5) City reserves the right to require additional coverage and/or coverage amounts as may be included from time to time in the Detailed Specifications for the Project.
- (6) The provisions of General Condition 28 shall survive the expiration or earlier termination of this contract for any reason.

Section 29 - Surety Bonds

Bonds will be required from the successful bidder as follows:

- (1) A Performance Bond to the City of Ann Arbor for the amount of the bid(s) accepted;
- (2) A Labor and Material Bond to the City of Ann Arbor for the amount of the bid(s) accepted.

Bonds shall be executed on forms supplied by the City in a manner and by a Surety Company authorized to transact business in Michigan and satisfactory to the City Attorney.

Section 30 - Damage Claims

The Contractor shall be held responsible for all damages to property of the City or others, caused by or resulting from the negligence of the Contractor, its employees, or agents during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. The Contractor must restore all property injured including sidewalks, curbing, sodding, pipes, conduit, sewers or other public or private property to not less than its original condition with new work.

Section 31 - Refusal to Obey Instructions

If the Contractor refuses to obey the instructions of the Supervising Professional, the Supervising Professional shall withdraw inspection from the work, and no payments will be made for work performed thereafter nor may work be performed thereafter until the Supervising Professional shall have again authorized the work to proceed.

Section 32 - Assignment

Neither party to the Contract shall assign the Contract without the written consent of the other. The Contractor may assign any monies due to it to a third party acceptable to the City.

Section 33 - Rights of Various Interests

Whenever work being done by the City's forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Supervising Professional, to secure the completion of the various portions of the work in general harmony.

The Contractor is responsible to coordinate all aspects of the work, including coordination of, and with, utility companies and other contractors whose work impacts this project.

Section 34 - Subcontracts

The Contractor shall not award any work to any subcontractor without prior written approval of the City. The approval will not be given until the Contractor submits to the City a written statement concerning the proposed award to the subcontractor. The statement shall contain all information the City may require.

The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and all other contract documents applicable to the work of the subcontractors and to give the Contractor the same power to terminate any subcontract that the City may exercise over the Contractor under any provision of the contract documents.

Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the City.

Section 35 - Supervising Professional's Status

The Supervising Professional has the right to inspect any or all work. The Supervising Professional has authority to stop the work whenever stoppage may be appropriate to insure the proper execution of the Contract. The Supervising Professional has the authority to reject all work and materials which do not conform to the Contract and to decide questions which arise in the execution of the work.

The Supervising Professional shall make all measurements and determinations of quantities. Those measurements and determinations are final and conclusive between the parties.

Section 36 - Supervising Professional's Decisions

The Supervising Professional shall, within a reasonable time after their presentation to the Supervising Professional, make decisions in writing on all claims of the City or the Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the contract documents.

Section 37 - Storing Materials and Supplies

Materials and supplies may be stored at the site of the work at locations agreeable to the City unless specific exception is listed elsewhere in these documents. Ample way for foot traffic and drainage must be provided, and gutters must, at all times, be kept free from obstruction. Traffic on streets shall be interfered with as little as possible. The Contractor may not enter or occupy with agents, employees, tools, or material any private property without first obtaining written permission from its owner. A copy of the permission shall be furnished to the Supervising Professional.

Section 38 - Lands for Work

The Contractor shall provide, at its own expense and without liability to the City, any additional land and access that may be required for temporary construction facilities or for storage of materials.

Section 39 - Cleaning Up

The Contractor shall, as directed by the Supervising Professional, remove at its own expense from the City's property and from all public and private property all temporary structures, rubbish and waste materials resulting from its operations unless otherwise specifically approved, in writing, by the Supervising Professional.

Section 40 - Salvage

The Supervising Professional may designate for salvage any materials from existing structures or underground services. Materials so designated remain City property and shall be transported or stored at a location as the Supervising Professional may direct.

Section 41 - Night, Saturday or Sunday Work

No night or Sunday work (without prior written City approval) will be permitted except in the case of an emergency and then only to the extent absolutely necessary. The City may allow night work which, in the opinion of the Supervising Professional, can be satisfactorily performed at night. Night work is any work between 8:00 p.m. and 7:00 a.m. No Saturday work will be permitted unless the Contractor gives the Supervising Professional at least 48 hours but not more than 5 days notice of the Contractor's intention to work the upcoming Saturday.

Section 42 - Sales Taxes

Under State law the City is exempt from the assessment of State Sales Tax on its direct purchases. Contractors who acquire materials, equipment, supplies, etc. for incorporation in City projects are not likewise exempt. State Law shall prevail. The Bidder shall familiarize itself with the State Law and prepare its Bid accordingly. No extra payment will be allowed under this Contract for failure of the Contractor to make proper allowance in this bid for taxes it must pay.

Section 43

CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period _____, 20___, to _____, 20___, performed any work, furnished any materials, sustained any loss, damage or delay, or otherwise done anything in addition to the regular items (or executed change orders) set forth in the Contract titled _____, for which I shall ask, demand, sue for, or claim compensation or extension of time from the City, except as I hereby make claim for additional compensation or extension of time as set forth on the attached itemized statement. I further declare that I have paid all payroll obligations related to this Contract that have become due during the above period and that all invoices related to this Contract received more than 30 days prior to this declaration have been paid in full except as listed below.

There is/is not (Contractor please circle one and strike one as appropriate) an itemized statement attached regarding a request for additional compensation or extension of time.

Contractor

Date

By _____
(Signature)

Its _____
(Title of Office)

Past due invoices, if any, are listed below.

Section 44

CONTRACTOR'S AFFIDAVIT

The undersigned Contractor, _____, represents that on _____, 20____, it was awarded a contract by the City of Ann Arbor, Michigan to _____ under the terms and conditions of a Contract titled _____. The Contractor represents that all work has now been accomplished and the Contract is complete.

The Contractor warrants and certifies that all of its indebtedness arising by reason of the Contract has been fully paid or satisfactorily secured; and that all claims from subcontractors and others for labor and material used in accomplishing the project, as well as all other claims arising from the performance of the Contract, have been fully paid or satisfactorily settled. The Contractor agrees that, if any claim should hereafter arise, it shall assume responsibility for it immediately upon request to do so by the City of Ann Arbor.

The Contractor, for valuable consideration received, does further waive, release and relinquish any and all claims or right of lien which the Contractor now has or may acquire upon the subject premises for labor and material used in the project owned by the City of Ann Arbor.

This affidavit is freely and voluntarily given with full knowledge of the facts.

Contractor Date

By _____
(Signature)

Its _____
(Title of Office)

Subscribed and sworn to before me, on this _____ day of _____, 20____
_____, _____ County, Michigan

Notary Public

_____ County, MI
My commission expires on:

STANDARD SPECIFICATIONS

All work under this contract shall be performed in accordance with the Public Services Department Standard Specifications in effect at the date of availability of the contract documents stipulated in the Bid. All work under this Contract which is not included in these Standard Specifications, or which is performed using modifications to these Standard Specifications, shall be performed in accordance with the Detailed Specifications included in these contract documents.

Standard Specifications are available online:

<http://www.a2gov.org/departments/engineering/Pages/Engineering-and-Contractor-Resources.aspx>

DETAILED SPECIFICATIONS

TECHNICAL SPECIFICATIONS LANDFILL SCALE AND ENTRANCE IMPROVEMENTS

W. R. WHEELER CENTER
CITY OF ANN ARBOR, MICHIGAN

APRIL 3, 2019

PREPARED FOR:
THE CITY OF ANN ARBOR



**TECHNICAL SPECIFICATIONS
 LANDFILL SCALE AND ENTRANCE IMPROVEMENTS
 W.R. WHEELER SERVICE CENTER
 CITY OF ANN ARBOR, MICHIGAN**

DIVISION 01 GENERAL REQUIREMENTS

01 1100	Summary of Work	01 1100-1 thru 01 1100-3
01 2900	Application for Payment	01 2900-1 thru 01 2900-2
01 3100	Project Coordination	01 3100-1 thru 01 3100-3
01 3119	Project Meetings	01 3119-1 thru 01 3119-3
01 3300	Project Submittals	01 3300-1 thru 01 3300-6
01 4000	Quality Control Services	01 4000-1 thru 01 4000-3
01 5000	Temporary Facilities	01 5000-1 thru 01 5000-4
01 6000	Materials and Equipment	01 6000-1 thru 01 6000-2
01 7173	Field Engineering	01 7173-1 thru 01 7173-1
01 7700	Project Closeout	01 7700-1 thru 01 7700-5

DIVISION 03 CONCRETE

03 3000	Cast In-Place Concrete	03 3000-1 thru 03 3000-8
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DIVISION 10 SCALES

10 8800	Scales	10 8800-1 thru 10 8800-7
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DIVISION 27 COMMUNICATIONS

27 0000	Communications System	27 000-1 thru 27 0000-4
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DIVISION 31 EARTHWORK

31 0000	Earthwork	31 0000-1 thru 31 0000-9
31 1000	Site Preparation	31 1000-1 thru 31 1000-2
31 2200	Grading	31 2200-1 thru 31 2200-3
31 2500	Erosion and Sedimentation Controls	31 2500-1 thru 31 2500-3

DIVISION 32 EXTERIOR IMPROVEMENTS

32 1313	Concrete Paving	32 1313-1 thru 32 1313-7
32 2900	Site Restoration	32 2900-1 thru 32 2900-2

Engineering Plans Prepared by the Mannik Smith Group, Inc., dated April 3, 2019

- C-01 TITLE SHEET
- C-02 OVERALL SITE PLAN
- C-03 EXISTING CONDITIONS PLAN
- C-04 DEMOLITION PLAN
- C-05 PROPOSED SITE PLAN
- C-06 PLAN AND PROFILE
- C-07 NOT USED
- C-08 SOIL EROSION AND SEDIMENTATION CONTROL PLAN
- C-09 SCALE FOUNDATION NOTES
- C-10 SCALE FOUNDATION PLAN
- C-11 SCALE FOUNDATION DETAILS
- C-12 SCALE FOUNDATION DETAILS
- C-13 ROADWAY TYPICAL SECTIONS AND DETAILS
- C-14 GENERAL DETAILS

Electrical Engineering Plans Prepared by DiClemente Siegel Design, Inc., dated April 3, 2019, 2019

- E001 GENERAL ELECTRIC INFORMATION
- E002 ELECTRICAL SITE PLAN
- E003 PARTIAL ELECTRICAL SITE PLAN
- E004 ELECTRICAL DETAIL AND SCHEDULES 1 OF 2
- E005 ELECTRICAL DETAILS AND SCHEDULES 2 OF 2

SECTION 01 1100

SUMMARY OF WORK

PART 1 – GENERAL

1.1 DEFINITIONS

- A. Owner is herewith designated as The City of Ann Arbor.
- B. Contractor is herewith designated as the Selected Contractor.
- C. Engineer is herewith designated as The Mannik Smith Group.
- D. Quality Assurance Officer (QAO) is herewith designated as the Quality Assurance Consultant retained by the Owner to complete quality assurance activities.

1.2 SCOPE OF WORK

- A. The Contractor's scope of work consists of furnishing all labor, materials, supervision, equipment, and services necessary to complete the project as presented in these Specifications and Drawings including the following:
 - 1. Before commencing work, develop and implement a health and safety plan that meets all Federal and State requirements including Michigan Occupational Safety and Health Administration (MISOHA).
 - 2. Develop staging plan that will allow completion of the project without interruption of traffic to the site and without any impact on site access and activities. Site traffic must be maintained by onsite contractor personnel from 7:00 am to 4:00 pm on all weekdays. After hours the site must be left in a condition where traffic can pass the work area and signed to make the drivers aware of all potential hazards including a single lane of traffic.
 - 3. Before commencing any work, contact MISS DIG and ensure that all charted utilities are properly marked. Expose obstructions which may exist and are not shown on the Drawings. Damage to existing facilities and utilities resulting from Contractor's operations, are the responsibility of the Contractor and are to be repaired or replaced under the Owner's direction.
 - 4. Before commencing work, provide submittals as required in the Specifications. Material delivery shall be subject to approval by the Owner.
 - 5. Before commencing work, secure Soil Erosion and Sedimentation Control (SESC) permit from the City of Ann Arbor and install and maintain temporary erosion and sedimentation protection during construction;
 - 6. Construction, maintenance, and, at the Owner's option, removal of all access roads suitable for the traffic anticipated, and any safety equipment, such as barricades, flashers, and signage. The Contractor will be responsible for maintenance and protection of the work, including management of stormwater;
 - 7. Management of stormwater to protect Jobsite and entire site from erosion and damage to the work;
 - 8. Fugitive dust control during all project activities in accordance with applicable rules and City of Ann Arbor requirements;
 - 9. Protection of existing features including wetlands, ditches, culverts, trees, instrumentations, groundwater monitoring wells, fence, etc. Protection of installed features until final project acceptance;
 - 10. Removal and disposal of existing pavement as shown on the plan;
 - 11. Excavation and dispose excess excavated soils;

12. Proof rolling and compaction per project specifications;
13. Placement of concrete pavement including aggregate base;
14. Installation of scale foundations and all associated features;
15. Installation of scales including calibrations and State of Michigan certifications;
16. Installation of communication system;
17. Installation of fencing and main gate;
18. Installation of electrical and communication infrastructure;
19. Coordination with the Owner for installation and integration of owner furnished cameras, networking infrastructure and site security systems;
20. Integration of the scale systems with the Owner's existing scale software;
21. Permanent seeding and placement of erosion protection for all disturbed area, ditches, permanent slopes and other areas that have been disturbed during construction such as material storage areas.
22. Demolish, remove and recycle existing scale after the successful operation of the new scales; removed scale and batch surface area to promote drainage and provide a smooth surface.
23. Remove existing scale foundation and repave the scale area and slope to drain and avoid ponding;
24. Any other activities required to complete the work and restore site areas disturbed during construction activities.

1.3 CONTROL AND CHARGE OF CONSTRUCTION

- A. Contractor shall be solely responsible for and shall have control and charge of construction means, methods, technique, sequences, and procedures, and for safety precautions and programs in connection with the work, and shall carry out the work in accordance with the Contract Documents.
- B. The Engineer of the Quality Control Consultant will not be responsible for, nor have control, nor charge over the acts or omissions of Contractor, its subcontractors, or any of their agents or employees, or any other persons performing any work relating to the work.

1.4 CONFLICT

Contractor shall be solely responsible for advising in writing of any conflicts between the Specifications and design, including performance and levels of quality. Contractor agrees that its obligations, liabilities and warranties shall not be diminished or extinguished due to its meeting the requirements of the Specifications.

1.5 HEALTH & SAFETY

- A. The project is a closed Type II Landfill. Contractor, Contractor's personnel and/or Subcontractor personnel, prior to performing services at the site, shall have adequate training and certifications as required by state and federal laws to complete work at such facilities.
- B. All personnel will become familiar with Owner's site specific health and safety plan and receive orientation and training as required by the Owner. Only personnel that received such training are allowed to work on this project.
- C. No waste excavation is anticipated during the implementation of this project. The Contractor shall not excavate deeper than the grades shown on the plans.

1.6 CONTRACTOR'S USE OF PREMISES

- A. The Owner has the right to complete other work at any location within the site. The other work may be related to this or any other project. Contractor shall coordinate its work with the Owner to allow the completion of the other work without any hindering or delays caused by the Contractor.
- B. Owner will occupy site and existing buildings during entire period of construction. Cooperate with Owner during construction operations to minimize conflict and facilitate Owner's operations.
- C. Confine operations to areas within Contract limits indicated. Portions of site beyond areas in which construction operations are indicated are not to be disturbed.
- D. Maintenance of roads and all other features impacted by the Work shall be the responsibility of the Contractor including fugitive dust and road maintenance.

END OF SECTION 01 1100

SECTION 01 2900

APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

- 0.1 RELATED DOCUMENTS: Drawings and general provisions of Contract, including General and Supplementary Conditions, and other Division-1 Specification Sections apply to this Section.
- 0.2 SUMMARY
- 0.2.1 This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.
- 0.3 APPLICATIONS FOR PAYMENT
- 0.3.1 Contractor shall submit schedule of values prior to starting work.
- 1.3.2 Each Application for Payment shall be consistent with previous applications and payments as certified by the Engineer and paid for by the Owner.
- A. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.
- 0.3.3 Payment Application Times: The date for each progress payment is the 30th day of each month. The period of construction Work covered by each Application for Payment is the period ending 30 days prior to the date for each progress payment starting the day following the end of the preceding period.
- 0.3.4 Payment Application Forms: Use the form for Application for Payment form provided by the Resident Project Representative.
- 0.3.5 Application Preparation: Complete every entry on the form. Include notarization and execution by person authorized to sign legal documents on behalf of the Owner. Incomplete applications will be returned without action. Submit Contractor's Declaration in Section 43 of the General Conditions with each application for periodic payment.
- 0.3.6 Transmittal: Submit three (3) executed copies of each Application for Payment to the Engineer by means ensuring receipt within 24 hours.
- 0.3.7 Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Engineer.
- 0.3.8 Waivers of Mechanics Lien: With each Application for Payment, submit original waivers of mechanics lien from every entity who may lawfully be entitled to file a mechanics lien arising out of the Contract, and related to the Work covered by the payment.
- A. Waiver Forms: Sample of affidavits forms are included in this section. Submit waivers of lien on forms, and executed in a manner, acceptable to Owner.
- 1.3.9 Administrative actions and submittals that shall proceed or coincide with final application include:

- A. Warranties (guarantee) and maintenance agreements
- B. Final cleaning
- C. Contractor's Affidavit for final payment (Section 44 of the General Conditions)
- D. Application for reduction of retainage, and consent of surety
- E. Advice on shifting insurance coverage
- F. Completion of Project closeout requirements
- G. Completion of Punch List items
- H. Assurance that unsettled claims will be settled
- I. Assurance that Work not complete and accepted will be completed without undue delay
- J. Transmittal of required Project construction records to Owner
- K. Proof that taxes, fees and similar obligations, related to this project, have been paid
- L. Removal of temporary facilities and services
- M. Removal of surplus materials, rubbish and similar elements

END OF SECTION 01 2900

SECTION 01 3100

PROJECT COORDINATION

PART 1 - GENERAL

0.1 RELATED DOCUMENTS: Drawings and general provisions of Contract, including General and Supplementary Conditions, and other Division 1 Specification Sections apply to this Section.

0.2 SUMMARY

A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:

1. Coordination
2. Administrative and supervisory personnel
3. General installation provisions
4. Cleaning and protection

0.3 COORDINATION

A. Coordination: Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.

1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
2. Where installation of one part of the Work is dependent on relocation, protection or temporary installation of Work by utility company, coordinate with each entity and schedule construction activities to avoid delay.
3. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
4. Make adequate provisions to accommodate items scheduled for later installation.

B. Coordinate with Owner for installation and integration of owner furnished cameras, networking infrastructure and site security systems and Integration of the scale systems with the Owner's existing scale software.

C. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings. Prepare similar memoranda for the Owner and separate Contractors where coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of schedules
2. Installation and removal of temporary facilities
3. Delivery and processing of submittals
4. Progress meetings
5. Inspection and Testing
6. Project closeout activities

0.4 NOTIFICATION OF ENGINEER'S RESIDENT PROJECT REPRESENTATIVE:

- A. Notify the Resident Project Representative at least two (2) working days prior to commencement of construction.
- B. The Resident Project Representative shall be notified daily of construction activities.
- C. Notify Engineer when construction activities are to be suspended for any period of time.
- D. Notify Resident Engineer at least 12 hours before scheduled work stoppages. Notify Resident Project Engineer at least two work days prior to resuming work.
- E. Failure to notify Resident Engineer will result in a minimum penalty of four (4) hours of Engineer's time being charged to the Contractor.

0.5 COORDINATION OF STAKING:

- A. The Owner will perform initial layout and staking of work. The Contractor is responsible for requesting specific staking requirements and maintaining these stakes.
- B. The Resident Project Engineer will bill the Contractor hourly for re-staking. Rates will be based on the regular hourly rate for the Engineer's survey crew.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

0.1 GENERAL INSTALLATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

- B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion movement.
- E. Recheck measurements and dimensions before starting each installation.
- F. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- G. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

0.2 CLEANING AND PROTECTION

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Project Completion.
- B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Protect the completed work from adverse effects of weather.
- C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

END OF SECTION 01 3100

SECTION 01 3119

PROJECT MEETINGS

PART 1 - GENERAL

0.1 RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions, Special Provisions, and other Specification Sections apply to this Section.

0.2 SUMMARY

0.2.1 This Section specifies administrative and procedural requirements for project meetings including, but not limited to:

- A. Preconstruction Conference
- C. Coordination meetings
- D. Progress meetings

0.3 PRECONSTRUCTION CONFERENCE

0.3.1 A preconstruction conference and organizational meeting will be held at the project site or other convenient location no later than 15 days after execution of the Contract and prior to commencement of construction activities. The meeting will review responsibilities and personnel assignments.

0.3.2 Attendees: The Owner, Engineer, Prime Contractor and his superintendents, major subcontractors, utility companies, manufacturers, suppliers and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the work.

0.3.3 Agenda: Discuss items of significance that could affect progress including such topics as:

- A. Construction schedule
- B. Critical work sequencing
- C. Designation of responsible personnel
- D. Procedures for processing contract modifications.
- E. Procedures for processing applications for payment
- F. Distribution of contract documents
- G. Submittal procedures for shop drawings, product data, and samples

- H. Procedures for construction observation and staking
- I. Preparation of record documents
- J. Use of the premises
- K. Office, work, and storage areas
- L. Equipment deliveries and priorities
- M. Safety procedure
- N. Security
- O. Working hours

0.4 COORDINATION MEETINGS

- 0.4.1 Conduct project coordination meetings at regularly scheduled times convenient for all parties involved. Project coordination meetings are in addition to specific meetings held for other purposes, such as regular progress meetings and special pre-installation meetings.
- 0.4.2 Request representation at each meeting by every party currently involved in coordination or planning for the construction activities involved.
- 0.4.3 Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

0.5 PROGRESS MEETINGS

- 0.5.1 Conduct progress meetings at the project site, or designated location, at regularly scheduled intervals. Notify the Owner and Engineer of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.
- 0.5.2 Attendees: In addition to representatives of the Owner and Engineer, prime or subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings by persons familiar with the project and authorized to conclude matters relating to progress.
- 0.5.3 Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that may affect progress. Include topics for discussion as appropriate to the current status of the project.
 - A. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

B. Review the present and future needs of each entity present, including such items as:

- (1) Interface requirements
- (2) Time
- (3) Sequences
- (4) Deliveries
- (5) Off-site fabrication problems
- (6) Access
- (7) Site utilization
- (8) Temporary facilities and services
- (9) Hours of work
- (10) Hazards and risks
- (11) Quality and work standards
- (12) Change orders
- (13) Documentation of information for payment requests

0.5.4 Reporting: No later than five days after each progress meeting date, distribute copies of minutes of the meeting to each party present and to other parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

A. Schedule Updating: Revise the construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

END OF SECTION 01 3119

SECTION 01 3300

SUBMITTALS

PART 1 - GENERAL

- 0.1 RELATED DOCUMENTS: Drawings and general provisions of Contract, including General and Supplementary Conditions, Special Provisions, and other Division 1 Specification Sections apply to this Section.
- 1.2 SUMMARY
- 1.2.1 This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including;
- A. Contractor's construction schedule
 - B. Submittal schedule
 - C. Schedule of Values
 - D. Daily construction reports
 - E. Shop Drawings
 - F. Product Data
 - G. Samples
- 1.2.2 Administrative Submittals: Refer to other Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
- A. Permits
 - B. Applications for payment
 - C. Performance and payment bonds
 - D. Insurance certificates
 - E. List of Subcontractors
- 1.2.3 Inspection and test reports are included in Section "Quality Control Services."
- 1.3 SUBMITTAL PROCEDURES
- 1.3.1 Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

- A. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
 - B. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.
- 1.3.2 Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
- A. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 - B. Include the following information on the label for processing and recording action taken.
 - (1) Project name
 - (2) Date
 - (3) Name and address of Engineer
 - (4) Name and address of Contractor
 - (5) Name and address of subcontractor
 - (6) Name and address of supplier
 - (7) Name of manufacturer
 - (8) Number and title of appropriate Specification Section
 - (9) Drawing number and detail references, as appropriate
- 1.3.3 Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Engineer using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.
- A. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

- 1.4.1 Prepare a schedule listing times for starting and completion of major elements of work.
- A. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.
 - B. Coordinate the Contractor's construction schedule with the submittal schedule, progress reports, and payment requests.

- 1.4.2 Distribution: Following response to the initial submittal, print and distribute copies to the Engineer, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.
- A. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
- 1.4.3 Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.5 SUBMITTAL SCHEDULE

- 1.5.1 After development and acceptance of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for establishment of the Contractor's construction schedule.
- A. Prepare the schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:
- (1) Scheduled date for the first submittal
 - (2) Related Section and page number
 - (3) Submittal category
 - (4) Name of subcontractor
 - (5) Description of the part of the Work covered
- 1.5.2 Distribution: Following response to initial submittal, print and distribute copies to the Engineer, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.
- A. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
- 1.5.3 Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.6 SHOP DRAWINGS

- 1.6.1 Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
- 1.6.2 Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:

- A. Dimensions, elevations and quantities
- B. Identification of products and materials included
- C. Compliance with specified standards
- D. Notation of coordination requirements
- E. Notation of dimensions established by field measurement
- F. Performance characteristics and capacities
- G. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets 8-1/2" x 11" minimum size, but no larger than 36" x 48" size.
- H. Submittal: Submit three blue- or black-line prints for the Engineer's review; the reproducible print will be returned.
- I. Do not use Shop Drawings in field without an appropriate final stamp indicating action taken in connection with construction.

1.7 PRODUCT DATA

1.7.1 Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."

- A. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
 - (1) Manufacturer's printed recommendations
 - (2) Compliance with recognized trade association standards
 - (3) Compliance with recognized testing agency standards
 - (4) Application of testing agency labels and seals
 - (5) Notation of dimensions verified by field measurement
 - (6) Notation of coordination requirements
- B. Do not submit product data until compliance with requirements of the Contract Documents has been confirmed.

1.7.2 Submittals: Submit three copies of each required submittal. The Engineer will retain two and will return the other marked with action taken and corrections or modifications required. Unless

noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

- A. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
 - (6) Do not proceed with installation until a copy of Product Data, applicable to this project, is in the installer's possession.
 - (7) Do not permit use of unmarked copies of Product Data in connection with construction.

1.8 SAMPLES

- A. Mount, display, or package samples to facilitate review of qualities indicated. Tag samples and include the following:
 - (1) Generic description of the Sample
 - (2) Sample source
 - (3) Product name or name of manufacturer
 - (4) Compliance with recognized standards
- B. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit two (2) sets; one will be returned marked with the action taken.

1.9 ENGINEER'S REVIEW

- 1.9.1 Submittals forwarded without Contractor's approval stamped on submittal will be returned without review by the Engineer.
- 1.9.2 Review of sample by Engineer will be in the form of a written acceptance or rejection. A sample submittal will be retained by Engineer for comparison to finished work for determining acceptance of the work.
- 1.9.3 The Engineer will review and take appropriate action on shop drawings, product data, samples, and other submittals required by the contract documents.
 - A. This review will be only for general conformance with the design concept and general compliance with information given in the contract documents.
 - B. This review will not include quantities, dimensions, weights or gauges, fabrication process, construction methods, coordination with the work of other trades, or construction safety precautions, all of which are the sole responsibility of the Contractor.
 - C. The review will be conducted with reasonable promptness consistent with sound professional practice. Review of a specific item will not indicate acceptance of an assembly of which the item is a component.

- D. The Engineer will not review and will not be responsible for any deviations from the contract documents not clearly noted by the Contractor.
- E. The Engineer will not review partial submissions or those for which submissions for correlated items have not been received.
- F. Neither the receipt nor review of submittals by the Engineer will relieve the Contractor of responsibility for performance of the work in accordance with requirements of the contract documents.

1.10 RESUBMISSION REQUIREMENTS

- 1.10.1 Make required changes and corrections and resubmit until accepted.
- 1.10.2 Indicate changes made by circling of the affected area and a revision mark.
- 1.10.3 Resubmit in accordance with requirements for original submittal.
- 1.10.4 Resubmit new samples when requested by Engineer.

END OF SECTION 01 3300

SECTION 01 4000

QUALITY CONTROL SERVICES

PART 1 - GENERAL

- 0.1 RELATED DOCUMENTS: Drawings and general provisions of Contract, including General and Supplementary Conditions, Special Provisions, and other Division-1 Specification Sections apply to this Section.
- 0.2 SUMMARY
- 0.2.1 This Section specifies administrative and procedural requirements for quality control services.
- 0.2.2 Quality control services include inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include Contract enforcement activities performed by the Engineer.
- 0.2.3 Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
- A. Specific quality control requirements for individual construction activities are specified in the Sections that specify those activities. Those requirements, including inspections and tests, cover production of standard products, as well as customized fabrication and installation procedures.
 - B. Inspections, test and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.
 - C. Requirements for the Contractor to provide quality control services required by the Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- 0.3 RESPONSIBILITIES
- 0.3.1 The Owner will pay for inspections, tests and similar quality control services as specified and as required by governing authorities, except where they are specifically indicated to be the Contractor's responsibility, or are provided by another identified entity.
- A. The Owner will employ and pay an independent agency, acceptable to the Owner, to perform quality control testing.
 - B. Retesting: The Contractor is responsible for paying for retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements.
 - C. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include but are not limited to:

- (1) Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
- (2) Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
- (3) Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
- (4) Providing the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
- (5) Security and protection of samples and test equipment at the Project site.

0.3.2 Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections shall cooperate with the Engineer and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.

- A. The agency shall notify the Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
- B. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.
- C. The agency shall not perform any duties of the Contractor.

0.3.3 Coordination: The Contractor and each agency engaged to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition the Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

- A. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities.

0.4 SUBMITTALS

0.4.1 The independent testing agency shall submit a certified written report of each inspection, test or similar service, to the Engineer and to the Contractor who is responsible for the service. In addition, submit a certified written report of each inspection, test or similar service to the Owner.

- A. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
- B. Report Data: Written reports of each Inspection, test or similar service shall include, but not be limited to:
 - (1) Date of issue.
 - (2) Project title and number.

- (3) Name, address and telephone number of testing agency.
- (4) Dates and locations of samples and tests or inspections.
- (5) Names of individuals making the inspection or test.
- (6) Designation of the Work and test method.
- (7) Identification of product and Specification Section.
- (8) Complete inspection or test data.
- (9) Test results and interpretations of test results.
- (10) Ambient conditions at the time of sample-taking and testing.
- (11) Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements.
- (12) Name and signature of laboratory inspector.
- (13) Recommendations on retesting.

0.5 QUALITY ASSURANCE

- 0.5.1 Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State in which the Project is located.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

0.1 REPAIR AND PROTECTION

- 0.1.1 General: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies.
- 0.1.2 Protect construction exposed by or for quality control service activities, and protect repaired construction.
- 0.1.3 Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for payment quality control testing.

END OF SECTION 01 4000

SECTION 01 5000

TEMPORARY FACILITIES

PART 1 - GENERAL

- 0.1 RELATED DOCUMENTS: Drawings and general provisions of the Contract, including General and Supplementary Conditions, Special Provisions, and other Division 1 Specification Sections apply to this Section.
- 0.2 SUMMARY
- 0.2.1 This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security, and protection.
- 0.2.2 Storm sewer, sanitary sewer and water mains shall remain in full operation throughout the performance of work of the project.
- 0.2.3 Temporary construction and support facilities required include, but are not limited to:
- A. Temporary roads and drives
 - B. Sanitary facilities, including drinking water
 - C. Dewatering facilities and drains
 - D. Waste disposal services
 - E. Temporary utility services and/or pipelines
 - F. Construction aids and miscellaneous services and facilities
 - G. Environmental protection, including Soil Erosion and Sedimentation Control measures.
- 0.3 QUALITY ASSURANCE
- 0.3.1 Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to:
- A. Michigan Manual of Uniform Traffic Control Devices, as prepared by the Michigan Department of Transportation, in conjunction with the Michigan Department of State Police.
 - B. Building code requirements
 - C. Health and safety regulations
 - D. Utility company regulations
 - E. Police, fire department, and rescue squad rules
 - F. Environmental protection regulations

G. Soil erosion and sedimentation control regulations.

H. Public roadway agency requirements.

0.4 PROJECT CONDITIONS

0.4.1 Conditions of Use: Operate temporary facilities in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

PART 2 - PRODUCTS

0.1 MATERIALS

0.1.1 General: Provide new materials; if acceptable to the Engineer, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.

0.1.2 Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical, aerated re-circulation, or combustion type, properly vented and fully enclosed within a glass-fiber reinforced polyester shell or similar nonabsorbent material.

PART 3 - EXECUTION

0.1 INSTALLATION

0.1.1 Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

0.1.2 Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

0.1.3 Sewers and Drainage: Provide temporary connections to remove effluent that can be discharged lawfully.

A. Filter out excessive amounts of soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.

B. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. Following heavy use, restore normal conditions promptly.

0.1.4 Provide earthen embankments and similar barriers in and around excavations and sub-grade construction sufficient to prevent flooding by runoff of storm water from heavy rains.

3.1.5 Provide positive drainage away from prepared sub-grade surface.

- 3.1.6 Install and maintain soil erosion and sedimentation controls as required on the plans and in accordance with Wayne County Drain Commissioner (MCDC), Michigan Department of Environmental Quality (MDEQ) and the United States Army Corps of Engineers (USACE) permits.

0.2 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

- 0.2.1 Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities for easy access.

- A. Maintain temporary construction and support facilities until near Project Completion.

0.2.2 Temporary Stone Roads

- A. Provide temporary, stoned parking area and construction roads as needed to facilitate ready access from right-of-way to private properties. Roadway shall be well stoned, treated with dust palliative, and properly maintained.

- B. When directed by Engineer, remove temporary stoned areas, restore grade to original condition, repair roadway, shoulders, walks, drives and other site improvements that have been damaged and remove debris from project site.

- C. Do not allow use of areas beyond right of way or easement areas without the Owner's permission.

0.2.3 Temporary Roads and Drives - General

- A. Install temporary roads to minimize the need to rework the installations and to result in permanent roads and paved areas that are without damage or deterioration when occupied by the Owner.

- B. Extend temporary roads in and around the construction area as necessary to accommodate delivery and storage of materials, equipment usage, administration, and supervision.

- C. Maintain temporary road and coordinate activities in such a manner as to permit the use of temporary facilities by other Contractors hired by the Owner or residents.

- D. Install temporary roads and driveways and provide personnel to maintain site traffic from 7:00 am to 4:00 pm on all weekdays. After hours the site must be left in a condition where traffic can pass the work area and signed to make the drivers aware of all potential hazards including a single lane of traffic.

- 0.2.4 Dewatering Facilities and Drains: For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of jurisdictional agencies. Where feasible, utilize the same facilities. Maintain the site, excavations, trenches and construction free of water.

- 0.2.5 Barricades, Warning Signs and Lights: Comply with Michigan Manual of Uniform Traffic Control Devices. Provide structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed provide lighting, including flashing red or amber lights.

- 0.2.6 Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated, sedimented, or polluted, or that other undesirable effects might result. Avoid use of tools and equipment, which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site. Comply with all provisions of SESC Permit and joint MDEQ and USACE Permit.
- 3.2.7 Disposal Area: The Owner will provide an area for the disposal of clean, earth fill materials in the vicinity of the project area.

0.3 OPERATION, TERMINATION, AND REMOVAL

- 0.3.1 Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 - A. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation and similar facilities on a 24-hour-day basis where required to achieve indicated results and to avoid possibility of damage.
 - B. Protection: Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- 0.3.2 Termination and Removal: Unless the Engineer requests that it be maintained longer, remove each temporary facility when the need has ended, the item has been tested and accepted for use, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
 - A. Materials and facilities that constitute temporary facilities are property of the Contractor. The Owner reserves the right to take possession of project identification signs.
 - B. Remove temporary paving or surface aggregate that is not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development remove soil and aggregate fill that does not comply with requirements for fill or subsoil in the area. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances, which might impair growth of plant materials or lawns, or be otherwise unacceptable to the Owner. Repair or replace street paving, curbs, signs and sidewalks at the temporary entrances, as required by the governing authority.
 - C. At Project Completion, clean and renovate permanent facilities that have been used during the construction period including, but not limited to: pavement, walkways, utility appurtenances, and landscape areas.

END OF SECTION 01 5000

SECTION 01 6000

MATERIALS AND EQUIPMENT

PART 1 - GENERAL

- 0.1 RELATED DOCUMENTS: Drawings and general provisions of Contract, including General and Supplementary Conditions, Special Provisions, and other Division 1 Specification Sections, apply to this Section.
- 0.2 SUMMARY
- 0.2.1 This Section specifies administrative and procedural requirements governing Contractor's selection of products for use in the Project.
- 0.2.2 Administrative procedures for handling requests for substitutions made after award of the Contract are included under Section "Product Substitutions."
- 0.3 PRODUCT DELIVERY, STORAGE, AND HANDLING
- 0.3.1 Deliver, store, and handle products in accordance with manufacturer's instructions and recommendations using means and methods that will prevent damage, deterioration, and loss, including theft.
- A. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
 - B. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - C. Deliver products to site in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - D. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that they are undamaged and properly protected.
 - E. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
 - F. Store heavy items in a manner that will not endanger the supporting construction.
 - G. Store products subject to damage by the elements above ground, under cover in a weather tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.
- 0.4 SUBMITTALS: Deliver certifications of materials and products received from the manufacturer or other sources, directly to the Resident Project Engineer at the project site.

PART 2 - PRODUCTS

0.1 PRODUCT SELECTION

- 0.1.1 General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new and unused at the time of installation.
- A. Provide products complete with all accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and for the intended use and effect.
 - B. Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 - C. Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted.
 - D. Where two or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted.
 - E. When the Specifications list products or manufacturers that are available and may be incorporated in the Work but do not restrict the Contractor to use of these products only, Contractor may propose any available product that complies with Contract requirements. Secure approval of the Engineer prior to ordering materials.
 - F. Where Specifications describe a product or assembly listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
 - G. Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.
 - (1) Manufacturer's recommendations may be contained in published product literature or by the manufacturer's certification of performance.
 - H. Compliance with Standards, Codes, and Regulations: Select products that comply with applicable standards, codes, or regulations.

PART 3 - EXECUTION

0.1 INSTALLATION OF PRODUCTS

- 0.1.1 Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.
- 0.1.2 Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 01 6000

SECTION 01 7173

FIELD ENGINEERING

PART 1- GENERAL

1.1 CONTRACTOR

- A. CONTRACTOR shall inspect existing site conditions and coordinate with other activities that are occurring at the facility.
- B. CONTRACTOR shall notify OWNER of any difference in location, condition, extent, or configuration of existing conditions from those indicated wherever such difference may affect his work. CONTRACTOR shall not proceed with the work until such variation is resolved
- C. Beginning of excavation or work means acceptance of existing conditions by CONTRACTOR.
- D. CONTRACTOR shall field verify locations and elevations of existing property benchmarks. CONTRACTOR assumes the risk of utilizing existing site benchmarks.
- E. CONTRACTOR shall be responsible for laying out lines and grades from the benchmark.
- F. Where the proper fabrication or installation of any part of the work of this Contract depends on other work, verify all necessary dimensions by field measurement to ensure proper fitting together of all work of this Contract.
- G. CONTRACTOR shall preserve and maintain benchmarks and reference points established by OWNER. Should CONTRACTOR, during prosecution of the work, destroy or remove any benchmark or reference point established by OWNER, the cost to OWNER of re-establishing the benchmark or reference point will be charged to the CONTRACTOR.

PART 2- PRODUCTS

NOT USED

PART 3- EXECUTION

NOT USED

END OF SECTION 01 7173

SECTION 01 7700

PROJECT CLOSEOUT

PART 1 - GENERAL

0.1 RELATED DOCUMENTS: Drawings and general provisions of Contract, including General and Supplementary Conditions, and other Division 1 Specification Sections, apply to this Section.

0.2 SUMMARY

0.2.1 This Section specifies administrative and procedural requirements for project closeout, including but not limited to:

- A. Inspection procedures
- B. Project record document submittal
- C. Operating and maintenance manual submittal
- D. Submittal of warranties
- E. Final cleaning

0.3 COMPLETION

0.3.1 Preliminary Procedures: Before requesting inspection for certification of Project Completion, complete the following.

- A. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
- B. Advise Owner of pending insurance change-over requirements.
- C. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
- D. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include operating certificates and similar releases.
- E. Submit record drawings and similar final record information.
- F. Deliver tools, spare parts, extra stock, and similar items.
- G. Complete test operation of modified systems and equipment, and instruction of the Owner's operating and maintenance personnel.
- H. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements. Remove temporary Soil Erosion and Sedimentation Control measures.

I. Complete final clean up requirements, including touch-up painting.

0.3.2 Inspection Procedures: On receipt of a request for inspection, Engineer will either proceed with inspection or advise the Contractor of unfulfilled requirements. The Engineer will certify that Project Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

A. The Engineer will perform final inspection when requested and assured that the Work has been completed.

B. Results of the completed inspection will form the basis of requirements for final acceptance.

0.4 FINAL ACCEPTANCE

0.4.1 Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

A. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include product certifications, operations manuals, and certificates of insurance for products and completed operations where required.

B. Submit an updated final statement, accounting for final additional changes to the Contract Sum.

C. Submit Contractor Affidavit and Record Drawings.

D. Submit a certified copy of Engineer's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance and the list has been endorsed and dated by the Engineer.

E. Submit consent of surety to final payment.

F. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

0.4.2 Reinspection Procedure: The Engineer will re-inspect the work upon receipt of notice that the work, including inspection list items from earlier inspections, has been completed except items whose completion has been delayed because of circumstances acceptable to the Engineer.

A. Upon completion of reinspection, Engineer will prepare a certificate of final acceptance or advise the Contractor of work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

B. If necessary, reinspection will be repeated. The cost of reinspection shall be borne by the Contractor.

0.5 RECORD DOCUMENT SUBMITTALS

0.5.1 General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for Engineer's reference during normal working hours.

- 0.5.2 Record Drawings: Maintain a clean, undamaged set of blue- or black-line white prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross reference at corresponding location on Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
- A. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
 - B. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
 - C. Note related Change Order (Recommendation) numbers where applicable.
 - D. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
 - E. Unless otherwise directed by the Owner, upon completion, submit record drawings to Engineer for delivery to Owner.
- 0.5.3 Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction.
- A. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
 - B. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation.
 - C. Note related record drawing information and Product Data.
 - D. Upon completion of the work, submit record specifications to the Engineer for the Owner's records.
- 0.5.4 Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted.
- A. Include variations in products delivered to site, and from manufacturer's installation instructions and recommendations.
 - B. Give particular attention to concealed products and portions of the work which cannot otherwise be readily discerned later by direct observation.
 - C. Note related Change Orders and mark-up of record drawings and Specifications.
 - D. Upon completion of mark-up, submit complete set of record Product Data to the Engineer for the Owner's records.

- 0.5.5 Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work.
 - A. Complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference.
 - B. Submit to Engineer for Owner's records.
- 0.5.6 Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 2-inch, 3-ring, vinyl-covered binders with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:
 - A. Emergency instructions
 - B. Spare parts list
 - C. Copies of warranties
 - D. Wiring diagrams
 - E. Recommended "turnaround" cycles
 - F. Inspection procedures
 - G. Shop Drawings and Product Data

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

0.1 CLOSEOUT PROCEDURES

- 0.1.1 Operating and Maintenance Instructions: Where new existing equipment and/or systems are modified, arrange a meeting to provide the Owner's personnel instructions in proper operation and maintenance.
- 0.1.2 Include a detailed review of the following items:
 - A. Maintenance manuals
 - B. Record documents
 - C. Spare parts and materials
 - D. Tools
 - E. Lubricants
 - F. Hazards

- G. Cleaning
- H. Warranties
- I. Maintenance agreements and similar continuing commitments.

0.2 FINAL CLEANING

- 0.2.1 Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial cleaning and maintenance program. Comply with manufacturer's instructions.
 - A. Complete the following cleaning operations before requesting inspection for Project Completion.
 - (1) Remove labels that are not permanent labels.
 - (2) Wipe surfaces of equipment. Remove excess lubrication and other substances.
 - (3) Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface. Clean and restore adjacent roadways.
- 0.2.2 Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.
- 0.2.3 Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.
- 0.2.4 Warranty Period: Cooperate with Owner's maintenance personnel to debug equipment or correct deficiencies in workmanship or materials under warranty.
- 3.2.5 Removal of Temporary Soil Erosion and Sedimentation Control Devices and repair any damage to finish surfaces resulting from removal operations.

END OF SECTION 01 7700

**SECTION 03 3000
CAST-IN-PLACE CONCRETE**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture.
- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement.
- D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.

1.3 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Material certificates.
- C. Material test reports.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. Testing Agency Qualifications: An independent agency, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M, "Structural Welding Code - Reinforcing Steel."
- D. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.

2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- E. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- F. Preinstallation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, **Grade 60**, deformed.
 1. Galvanized Reinforcing Bars: ASTM A 767/A 767M, Class I zinc coated after fabrication and bending.
 2. Epoxy-Coated Reinforcing Bars: ASTM A 775/A 775M, epoxy coated, with less than 2 percent damaged coating in each **12-inch** bar length.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.
- C. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.
- D. Galvanized-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from galvanized-steel wire into flat sheets.
- E. Epoxy-Coated Welded Wire Reinforcement: ASTM A 884/A 884M, Class A coated, Type 1, deformed steel.
- F. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."

2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150, Type I/II.
- B. Normal-Weight Aggregates: ASTM C 33, graded.
 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Lightweight Aggregate: ASTM C 330, 1/2-inch nominal maximum aggregate size.
- D. Water: ASTM C 94/C 94M and potable.

2.4 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.5 FIBER REINFORCEMENT (not used)

2.6 WATERSTOPS (not used)

2.7 VAPOR RETARDERS (not used)

2.8 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
- F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, non-dissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
- G. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
 - 1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- H. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
 - 1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.9 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

2.10 CONCRETE MIXTURES

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
- B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.
- C. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
 - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
- D. Proportion normal-weight concrete mixture as follows:
 - 1. Minimum Compressive Strength: as specified on the drawings.

2. Maximum Water-Cementitious Materials Ratio: 6 ½ gallons of water per sack of cement.
3. Slump Limit: 4 inches (100 mm) for concrete with verified slump of 2 to 4 inches (50 to 100 mm) before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch (25 mm).
4. Air Content: 5.5 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size.
5. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch nominal maximum aggregate size.
6. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.

2.11 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.12 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.
 1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Chamfer exterior corners and edges of permanently exposed concrete.

3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 VAPOR RETARDERS (Not Used)

3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
 - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of **1/8 inch (3.2 mm)**. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut **1/8-inch- (3.2-mm-)** wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 - 1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- C. Cold-Weather Placement: Comply with ACI 306.1.
- D. Hot-Weather Placement: Comply with ACI 301.

3.7 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces exposed to public view and to be covered with a coating or covering material applied directly to concrete.
- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
 - 1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
 - 2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
 - 3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.8 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

3.9 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.
 - 4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.10 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.

3.11 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

END OF SECTION 03 3000

SECTION 10 8800

SCALES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes specifications for a fully electronic, low profile, modular type steel deck truck scale system, designed to be optionally mounted on an above grade pier and/or floating slab foundation.
- B. Equivalent design, subject to approval of Owner, can be proposed as an alternate.

1.2 ACTION SUBMITTALS

- A. Submit shop drawings including foundation plans.
- B. Manufacturer's NTEP Certificate of Conformance (COC).

1.3 MANUFACTURERS

- A. Manufacturer Qualifications: The scale including the load cells shall be NTEP certified and shall meet the requirements as set forth by the National Institute of Standards and Technology Handbook 44 current edition for Class IIIIL devices.
- B. The proposed scale foundation design shall be reviewed/ modified, if necessary, and approved by a professional engineer registered in the state of Michigan to assure that the proposed foundations meet the requirements of the proposed scale. Final foundation plans shall be approved by the Engineer.
- C. The scale manufacturer shall warrant the scale assembly including the deck and components below the deck for a period of ten years; the digital weight indicator, printer and peripheral devices shall be covered for a period of one year.
- D. The manufacturer or its local representative shall present a program of regular maintenance and calibration service. Inspection in said maintenance program shall occur a minimum of once every six months and shall comply with the guidelines set forth by the scale manufacturer, local regulations, and the current edition of the National Institute of Standards and Technology Handbook 44.

PART 2 - PRODUCTS

2.1 SCALE

- A. The scale shall be a fully electronic, low profile, steel deck design truck scale. The scale platforms, load cells, and digital indicators will be 100 percent designed, manufactured and assembled by one manufacturer located in the United States of America.
- B. The scale shall have a full scale capacity of 135 Tons with a displayed resolution of 200,000 lbs. x 20 lbs. in accordance with NIST, Class IIII devices.
- C. The scale's weighing-related electronics shall consist solely of load cells, load cell cables, and digital weight display. No other devices shall be permitted between the load cell and the digital weight display. Junction boxes, summing boards, gathering boards, gathering boxes, totalizers, external analog-to-digital converter boxes, and sectional controller boxes will not be accepted because of their significant and inherent maintenance issues.
- D. Each scale module shall be designed with a Concentrated Load Capacity (CLC) of 50 tons, as defined by NIST. When the CLC is applied at mid-span on a module, according to NIST regulations, the maximum stress of the steel shall not exceed 26,000 psi. The deflection at this loading condition shall not cause the scale to exceed the allowable accuracy tolerance as specified by NIST in Handbook 44.
- E. The scale modules will be designed as such to eliminate use of grout plates requiring setting and leveling prior to arrival of the scale at job site. A maximum of 2 drilled anchors (3/4" x 7") shall be provided for each load cell stand.
- F. The scale system shall be a full electronic design, with internal self-checking weigh-bridge. Weighbridges using bumper bolts, externally fixed check rods, or embedded bumper plates in the end walls will not be permitted.
- G. Diamond checkered steel tread plate shall be supported with a minimum of (12) 12" wide flange, 14 lbs. per foot, structural longitudinal beams, welded to top flange of beam and module end plate. Only structural wide flange beam construction shall be allowed. Weighbridge designs utilizing junior beams or bent plate shall not be permitted.
- H. The scale shall be designed to accept an average daily traffic volume of 250 vehicles per day, 365 days per year, for 20 years, assuming that 100% of the vehicles are fully loaded with the equivalent of 80,000 pounds on their dual tandem axle.
- I. Module end plates shall be a minimum 3/4" thick, and shall be reinforced on each side with longitudinal I-beams. Load cell pockets shall be constructed of 3/4" steel plate and shall be tied to the end plates using tabs and laser cutouts. Scale modules using flat welded or bolted end boxes shall not be allowed.
- J. Access covers to the load cells shall be from the top of the scale and shall be boltless in design. Cover plates will be reinforced to adequately handle axle traffic over the covers and will be kept in place with 1/2" diameter x 1" long steel dowels. Cover plates utilizing bolts of any type shall not be permitted.
- K. A 1/2" diameter steel rock guard shall be welded to the end modules.

- L. The truck scale shall be provided with a fabricated cleanout area with removable end plates at each end of the scale system.

2.2 WEIGHBRIDGE

- A. The scale weighbridge will consist of factory welded modules having a total longitudinal span of 80' and platform width of 11'. Mechanical lever systems are not acceptable.
- B. The scale weighbridge shall be capable of weighing trucks having a tandem axle weight of up to 100,000 pounds.
- C. The weighbridge shall consist of three prefabricated steel deck modules.
- D. The weighbridge shall be designed to allow access to load cell cables, base plates, and all foundation anchor bolts from the top of the scale platform.
- E. The scale shall have a maximum span deflection ratio of 1:1100 under legal highway loading at mid span of module.
- F. Scale shall be an open bottom design with a minimum clearance of 4" provided between the concrete floor and the bottom of the weighbridge. Weighbridges that utilize a sealed bottom plate for structural strength shall not be permitted.

2.3 SURFACE PREPARATION AND FINISH

- A. The entire bridge assembly shall be cleaned prior to the addition of any coatings or paint to the weighbridge modules. Steel surfaces shall be inspected prior to application of any coatings to the prepared steel surfaces. All steel surfaces shall be free of all welding gases, residue, oil, mill scale and rust.
- B. All steel elements shall be steel shot blasted to SSPC-A-SP6 standards.
- C. All non-visible steel shall be evenly spray coated with an asphalt emulsified coating.
- D. All visible steel surfaces shall receive a 3-5 mill application of a high solids urethane primer and a high solids acrylic urethane top coat to a finish of 2-3 mill thickness.

2.4 LOAD CELLS

- A. The load cell shall be constructed of stainless steel and the internal load cell electronics shall be completely encapsulated and filled with a potting compound in all voids to prevent moisture from entering the load cell causing premature failure. The load cell shall be environmentally sealed to an IP69K rating.
- B. The load cell shall not require a junction box to communicate between the load cell and scale instrument. No other devices shall be permitted between the load cell and the digital weight display. Junction boxes, summing boards, gathering boards, gathering boxes, totalizers, external analog-to-digital converter boxes,

and sectional controller boxes will not be accepted because of their significant and inherent maintenance issues.

- C. Load cells are rigidly mounted utilizing a single link suspension to provide equal and consistent and evenly distributed force to the load cell.
- D. Load Cells shall be rigidly mounted in fabricated steel stands parallel to traffic flow. Suspension system shall allow self-centering and free floating platform. Rocker column or compression type load cells requiring check rods, anti-rotation pins or bumper bolts will not be permitted.
- E. Load cells shall have a minimum capacity of 75,000 lbs. each with an overload safety factor of 150 percent.
- F. The load cell shall have a connector integral to its housing for connecting and disconnecting the load cell interface cable at the load cell. System shall be so designed as to permit a load cell cable to be replaced without either splicing the load cell cable or replacing the load cell, either of which will contribute to eventual system failure and unnecessary service costs.
- G. The load cell interface cable shall be metal braided for environmental and rodent protection. Neoprene covered load cell cable shall not be permitted.
- H. Systems utilizing proprietary, internal circuitry to convert analog to digital conversion of the load cell signal within the load cell shall not be permitted.
- I. All access to load cells will be from the top of the scale through formed boltless steel access panels. Covers should be form fitted and should be accessible without use of tools.
- J. In order to minimize maintenance issues, only a single cable shall be used to transmit data or weight signals between the weighbridge and the digital weight display.
- K. Steel conduit will be provided within the weighbridge for load cell cable runs.
- L. A flexible screw-type conduit fitting shall be provided at each load cell. Load cell cable shall be totally enclosed within permanent conduit provided within the weighbridge. Load cells using connectors of any type will not be permitted.
- M. Replacement load cells shall be available from a multitude of vendors nationally, and shall not be single sourced or of a proprietary design.
- N. Load cell stands will be flush mounted to concrete piers and anchored using wedge locks or similar bolts. A maximum of (2) 3/4" x 7" anchor bolts will be required per stand and will be included in the cost of the scale. Grout plates or embedded items in the foundation concrete will not be allowed.
- O. A 1" braided copper transient bypass cable shall be provided at each load cell from the weighbridge to the base stand.
- P. Load cells shall be warranted a full ten years against failure of all types including lightning or surge voltage

- Q. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.
- R. Deformed-Steel Welded Wire Reinforcement shall be ASTM A 497/A 497M, flat sheet.
- S. Galvanized-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from galvanized-steel wire into flat sheets.
- T. Epoxy-Coated Welded Wire Reinforcement: ASTM A 884/A 884M, Class A coated, Type 1, deformed steel.
- U. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice.

2.5 WEIGH INDICATOR

- A. The weight indicator shall comply with the appropriate specifications for a Class IIII 10,000 division weight indicator as specified by the National Institute of Standards and Technology Handbook 44 and shall have a NTEP Certificate of Conformance attesting to that compliance.
- B. The weight indicator shall be housed in a stainless steel enclosure and shall include a LCD display mounted in a location visible to the driver and in all levels of light including total darkness.

2.6 DIGITAL INSTRUMENTATION SPECIFICATION

- A. The scale instrument shall be NTEP-certified and meet or exceed all specifications set forth by NIST, Handbook 44 for Class II, III, and IIII devices. Additionally, the instrument shall meet or exceed approvals for UL, C-UL and CE. The manufacturer shall provide a Certificate of Conformance (COC) to these standards.
- B. The scale instrument shall be housed in an all stainless steel, NEMA 4X/IP66 enclosure with swing-away mounting base for ease of installation.
- C. The scale instrument shall be fully programmable and configurable according to the needs of the application.
- D. The scale display shall be a backlit LCD graphical display with minimum size of 3.4" high x 4.6" wide with characters from .25" to 1.2" high. Display must be capable of displaying alpha and numeric characters or graphic images.
- E. The instrument shall allow hook up of a QWERTY-type, computer-style keyboard.
- F. The front panel of the instrument shall have the following operational keys as standard with tactile feedback:
 - Zero • Print
 - Gross/Net • Clear
 - Tare • Decimal Point

- Units
- Numeric 0-9

- G. The instrument shall have the following custom soft keys - 5-user defined function keys:
 - Driver Number
 - Contract Number
 - Weigh In
 - Weigh Out
- H. The instrument shall have the following displayed operational annunciators:
 - Gross, Tare, Net, Zero, Motion
 - Three units of measurement
- I. The scale instrument shall have the capability of powering all load cells
- J. The scale instrument shall be designed to provide noise protection for RFI, EMI and ESD.
- K. The instrument shall have an automatic zero tracking feature that will be programmable and in compliance with NIST, Measurement Canada and OIML regulations.
- L. The instrument shall be fully programmable through the front panel.
- M. The instrument shall include as standard surge voltage protection as recommended by the manufacturer.
- N. The digital instrument shall be warranted by the manufacturer for five years from date of installation
- O. The instrument shall have a multi-level digital filtering system for environmental noise or vibration.
- P. Operating temperature for the instrument shall be 14°F to 104°F.
- Q. Scale instrument shall have the ability to be panel mounted.
- R. The instrument shall have a real time clock and battery backed feature.
- S. A/D conversion rate shall be updated at 120 times per second minimum.
- T. Multi-range/internal selection for setting two or three weight ranges with different division sizes.

2.4 GROUNDING

- A. A single-point grounding system shall be provided. Systems utilizing a multiple point ground will not be permitted.
- B. The grounding system shall conform to the manufacturer's recommendations and local codes.

2.5 FOUNDATIONS

- A. The foundation shall meet all local requirements and the minimum specifications as stated herein.
- B. The foundation shall extend to the frost line at the load cell piers.
- C. The minimum soil bearing capacity shall be 2,500 psf.

- D. The foundation shall provide a minimum of 4 inches of clearance to the weighbridge.
- E. The foundation shall be constructed of concrete with a minimum strength as specified on the drawings.
- F. The foundation shall be reinforced in all load-bearing areas. The reinforcing steel shall be 60 KSI yield strength and conform with ASTM A615 grade 60 minimum.
- G. The foundation shall be constructed such that positive drainage away from the foundation is maintained.
- H. The foundation shall be designed to include two approaches, one at each end of the scale in accordance with local regulations and guidelines of the National Institute of Standards and Technology Handbook 44, current edition. Construct approach as shown on the plans.

PART 3 - EXECUTION

- 3.1 Complete installation in accordance with project plans and specification and in compliance with Manufacture's requirements and NTEP and NIST.
- 3.2 The following warranties shall be submitted prior to acceptance of work:
 - A. Scale assembly including the deck and components below the deck for a period of ten years;
 - B. Load cells for a period of ten years against failure of all types including lightning or surge voltage;
 - C. Digital weight indicator, printer and peripheral devices for a period of five years;
 - D. The digital instrument for five years from date of installation.

END OF SECTION 10 8800

SECTION 27 0000
COMMUNICATIONS SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes specifications for a fully operational integrated communications system for the following:
 - 1. Scale,
 - 2. Video Camera system,
 - 3. Scale RFID, and
 - 4. Entrance Gate RFID.

The communication system shall be able to be integrated with the City of Ann Arbor Existing Paradigm software and the City of Ann Arbor Network, as required.

- B. Scope include providing all design, material, labor, supervision, and coordination required for a fully operational and integrated system.
- C. Scope of work includes supply and placement of kiosks and RFID readers, wiring, electrical, trenching and conduit.
- D. Scope of work include supply and configuration of all necessary system software and hardware.
- E. Scope of work includes all licenses, system installation, coordination and training for the City of Ann Arbor staff.

1.2 SUBMITTALS

- A. Submit shop drawings, specification sheets, operational and maintenance manuals as well as system configuration plans.

1.3 MANUFACTURERS

- A. Except as listed under Section 2.2, Equipment shall be designed, provided, and installed by Paradigm Software, LLC.
- B. The system shall include required licenses and training to allow for a fully integrated system.

PART 2 - PRODUCTS

2.1 The communications system shall include the following Paradigm equipment, software and licenses, all other equipment necessary for the installation of a fully operational and integrated system are considered incidental:

2.0 LN	Weigh Station Program License
1.00 EA	CompuWeigh License
1.00 FF	Insufficient Funds/Split Payments Module
1.00 FF	Alerts / Rules Module
1.00 FF	MSMQ Module (1-5 lanes)
2.00 LN	Unattended Module - (Includes RF and Lights Module)
2.00 LN	Scale Monitoring Module
2.00 LN	Video/Picture Module
2.00 LN	Driver's License Scanning Module - (Read and Store Address Only)
4.00 EA	Kiosk Enclosure (w/heater, fan, exhaust & thermostat)
4.00 EA	LCD Display - (Color 1550 NIT Direct Sun Readable)
4.00 EA	Kiosk Thermal Receipt Printer
2.00 EA	RF Junction Box
4.00 EA	4-port Extended Temperature Serial Server (Perle)
6.00 EA	Case Kiosk Thermal Receipt Paper (8 Rolls)
2.00 EA	RF Reader - (In and outbound scale for Commercial customers)
150.00 EA	RF Window Sticker (eGo Plus)
1.00 EA	Intercom Master (IP) - (Includes Master Station, Sub-Station Adapter and Transformer)
4.00 EA	Intercom Remote Horn/Station (IP) - (Includes Horn and Push Button)
2.00 EA	Barcode Scanner (in enclosure to be attached to unattended enclosure, to read Driver's License)
4.00 EA	ISS Dome Camera - (P327 LVE DN Dome, IK10 Out VF 3.5-10MM Built-In IR 5MP@30FPS W/WDR)
4.00 EA	Keypad (16-key)
4.00 EA	Swing Away Canopy for Enclosures
1.00 EA	2-port Extended Temperature Serial Server (Perle)
4.00 EA	USB to VGA Adapter
4.00 EA	Video Extender (up to 300')

2.2 CITY PROVIDED EQUIPMENT

- A. The City will provide the following:
1. Pole mount cameras and camera mounts (does not include scale kiosk cameras),
 2. Entrance gate gooseneck pedestal, intercoms, and card readers,
 3. Entrance gate RFID Reader, and
 4. Network switch, UPS, patch panels, SFP transceivers.
- B. Contractor shall coordinate with the City's IT department for the installation and configuration of all City provided equipment. A minimum notice of two weeks shall be provided in advance of the required network equipment installation. The City shall be allotted a time period of two weeks to install the fiber optic, network connections and other City provided equipment.

2.3 RESIDENTIAL SCALE TRANSACTIONS

- A. A low kiosk will be provided where a resident using the facility can scan their Driver's license to start a transaction. The system will validate that the resident address is within the City of Ann Arbor, otherwise, it will connect the resident with the City attendant through the intercom system described below. Following address validation and upon resting on the scale, the software will read the driver's license information, record the address and the weight of the vehicle, place in the hold file and take a picture of the driver. The system will display on the screen the next step in the process and will generate one ticket with a barcode for the customer to weigh out and for the compost site attendant to confirm that the resident crossed the scale. The ticket with a barcode when scanned on the outbound scale will recall the empty weight, complete the transaction and instruct the resident to leave the facility. The system shall allow retrieval of these transactions. Compilation and manipulation of the data including providing daily, weekly and monthly totals. The system should be compatible with the Paradigm Software used by the City.
- B. An intercom system shall be attached to both the inbound and outbound scale kiosks for use when help is required from onsite City staff.

2.4 COMMERCIAL SCALE TRANSACTIONS

- A. A high kiosk will be provided to process a transaction for a commercial vehicle with or without an RFID tag attached to the windshield of the truck. Upon resting on the scale, the software will record the RFID information (if attached), gross weight of the vehicle, place in the hold file and take a picture of the driver and print one ticket, if requested, for the driver's record. The display will notify the driver of the next step. To finish the transaction, the driver will enter the outbound scale, the RFID will read the windshield tag and pull the vehicle out of the hold file and grab the tare once the vehicle has stopped on the scale. For vehicles without an RFID tag, the system shall provide a barcode scan or equivalent to pull the vehicle out of the hold file. System shall have the capability to email tickets to commercial customers at the end of the day if requested.
- B. An intercom system shall be attached to both the inbound and outbound scale kiosks for use when help is required.

2.5 SCALE RFID

- A. The communications system shall include an RFID system to capture commercial truck information as required by the City. The RFID system including equipment, hoisting elements and accessories shall be provided and installed by the Contractor.

2.6 GATE RFID

- A. The City will provide the RFID reader for the access gate. The Contractor shall install the RFID reader on a pole as specified and shall coordinate with the City to integrate the gate RFID system with the City's network system. The RFID system shall allow vehicles with approved tags access to the site. The system shall also include a key pad and scan card access to be provided by the City and installed by the contractor.

2.7 CAMERAS

- A. The Contractor shall install City provided cameras and provide all work and accessories required for the installation including wiring and conduits. The installation shall be coordinated with the City IT department.

PART 3 - EXECUTION

3.1 Coordinate all work with the City of Ann Arbor IT Department.

3.2 Work shall be completed in accordance with this specifications, engineering plans, codes and approved standards to provide a fully integrated and operational communication system.

3.3 WARRANTIES

- A. Warranty all components of the communication system for five years including hardware and software.

END OF SECTION 27 0000

SECTION 31 0000

EARTHWORK

PART 1 GENERAL

1.1 Summary

- A. Perform site work, earthwork, and related work, necessary for a complete installation as shown, specified, and required. This includes, but is not limited to, the following:
 - 1. Clearing and grubbing.
 - 2. Stripping topsoil.
 - 3. Removal of obstructions, fencing, pavement, etc.
 - 4. Excavating.
 - 5. Disposing of waste material.
 - 6. Stockpiling of project-reusable material.
 - 7. Dewatering.
 - 8. Excavation protection.
 - 9. Proofrolling.
 - 10. Filling and backfilling.
 - 11. Grading.
 - 12. Aggregate roads and storage areas.
 - 13. Seeding.
- B. Requirements and recommendations for earthwork contained in the Geotechnical Engineer's report are part of the Contract Documents.

1.2 Related Work Specified Under Other Sections

- A. Mechanical Underground Utilities.
- B. Electrical Underground Utilities.
- C. Section 01 57 13 – Temporary Erosion and Sediment Control.

1.3 Referenced Standards

- A. Unless otherwise specified, the Work for this Section shall conform to the applicable portions of the following Standard Specifications:
 - 1. ASTM – ASTM International.
 - 2. AASHTO – American Association of State Highway and Transportation Officials.
 - 3. MDOT – Michigan Department of Transportation, Standard Specifications for Construction, latest edition.

1.4 Submittals

- A. Submit for review producer's laboratory test reports certifying bedding material meets requirements of the specifications.

1.5 Testing

- A. Sampling and testing of soil and aggregate materials and of compaction shall be done by an independent, well established and qualified commercial Testing Agency. The personnel shall be qualified and shall have had experience on projects equal to the complexity of this project. Upon request from the Owner, submit qualifications of the Testing Agency and include their personnel for approval prior to retaining their service.
- B. Owner shall retain the services of a qualified, unbiased, Testing Agency who will perform inspections and material testing specified herein, shown on the Design Documents, and as dictated by the governing building Code. The Owner reserves the right to request change in personnel or firm at any time.
- C. Submit proposed Contractor furnished material, including off-site borrow material, to the Testing Agency for its analysis and report, in sufficient time so as not to delay the progress of the work. The Testing Agency shall approve all fill material prior to placement and shall observe placement to ensure lift thickness is as specified.
- D. The Testing Agency shall submit, in duplicate, test reports which include tests, investigations, findings and recommendations to the Contractor and to the Owner, as soon as each report has been completed.
- E. The Testing Agency for field quality control of operations shall determine the compaction of material placed and shall conduct the following minimum number of in- place density tests after monitoring the placing and compacting of each lift.
 - 1. For Mass Filling - One test per lift of fill for each 2000 square yards.
 - 2. Pavement Subgrade - One test per final lift (subgrade) of fill or backfill within building wall lines, for each 600 square yards, both after compaction and before base construction.
 - 3. For Trenches - Three tests per lift of trench backfill for each 500 lineal feet.
- F. If compaction tests indicate that a layer has not been brought to the required compaction, re-compact the area, prior to placement of additional material, until the required compaction is obtained. If the layer has been covered by a subsequent operation, remove such material before re-compacting the defective layer.

PART 2 PRODUCTS

2.1 Materials

- A. Natural Sand Fine Aggregate
 - 1. Natural Sand Fine Aggregate material for bedding and backfill shall conform to the requirements for Fine Aggregate in Section 6 of ASTM C 33 except as follows. Material shall be natural bank run sand.
- B. Crushed Stone Bedding
 - 1. Crushed, angular, natural stone material, meeting the requirements of ASTM D 488 Size No. 57. Crushed concrete is not allowed. Material shall be at least 95% crushed.
- C. Concrete
 - 1. Concrete shall be as specified in Section 03 30 00 - Cast-in-Place Concrete.

PART 3 EXECUTION

3.1 Site Preparation

- A. Prepare and clear the site as shown and required for new construction. Clear the site, within the work area limits, as required for construction operations. Remove trees, shrubs and other vegetation not indicated to remain, and dispose of off the site.
- B. Alter, remove, or relocate existing site utilities and improvements, to the extent indicated and as required.
- C. Strip topsoil from new building area and other areas to be disturbed. Stockpile topsoil on the site where directed by the Owner for later re-use in grading of lawn areas. Remove excess stockpiled topsoil from the site at completion of the project.

3.2 Utilities and Service Demolition

- A. Do not interrupt any services to the Owner's facilities without written permission of the Owner.
- B. Provide protection from damage for such utilities and services. Provide temporary services if interruption interferes with Owner's operations.
- C. Protect utilities or services remaining in service from damage. Re-route utilities or services on a temporary basis as necessary to allow the Owner's operations as well as the operations of the Contract. Restore to original locations when conditions allow. Damages caused by the Contractor shall be repaired immediately at the Contractor's expense.
- D. The following definitions apply to work under this Section:
 - 1. Remove: Means to excavate, to remove utility or service, to permanently seal ends at disconnection points and to backfill.
 - 2. Abandon: Means to seal the ends at disconnection points and to leave utility or service in place. Where indicated on the Contract drawings or otherwise specified, fill the abandoned lines with Concrete Fill.
- E. For utilities and services to be removed from service, remove back to the source to clear the area for work of this Contract.
- F. For utilities and services to be abandoned, leave materials and equipment in place that do not interfere with operations or work of this Contract. Confirm with the Owner prior to abandonment.
- G. Permanent seals shall consist of masonry or concrete bulkhead, or plate with concrete support, for ends of utilities and services removed from service or abandoned, and for non-pressure seals on lines in service

3.3 Excavating

- A. Remove, haul, and dispose of materials and obstructions encountered. Remove obstructions within the lines of construction, or that would interfere with construction. Obstructions consist of metallic, wooden, concrete, or masonry debris, tree roots and similar items.
- B. Excavate to levels required for bottoms of footings, walls, subgrade, underfloor fills, slabs laid on ground, storage tanks and similar items, as shown. In all classes of excavation work, excavate to the extent necessary to provide excavation protection. Provide adequate space to safely permit form placing, inspection of work, support system, and other underground work adjacent to construction. Where nature of soil permits, excavate to the footing lines, otherwise, allow for form placement and removal.

- C. Underground obstructions, which are not designated in Contract Documents, or cannot be seen, evidenced, or reasonably anticipated by examination of the site, shall be removed and paid for as directed by the Owner.
- D. If, during the performance of the work, a suspected hazardous material or contaminated soil condition is encountered, immediately notify the Owner and cease further excavation and transport of excavated material until inspection and analysis are performed at the direction of the Owner.
- E. At load bearing elevations or subgrade, remove unsuitable materials disclosed below such elevations. Under footings and foundations, fill the resulting void with Concrete Fill. Under slabs and paving, fill the resulting void with Granular Fill. Footings and foundations shall bear on firm soil capable of supporting the loadings. The Testing Agency shall confirm bearing capacity. If satisfactory bearing capacity is not found at the bearing elevations, deepen, or enlarge the excavations as directed by the Architect-Engineer and Owner. Such excavation, and fill, beyond the limits shown, when authorized, will be considered as changes in the work and will be paid for by the Owner. However, if excavations are carried beyond the limits shown, without authorization, or unsatisfactory conditions occur due to Contractor's operations, the Contractor shall fill the voids with one of the materials specified above, at his own expense.
- F. Protect active utilities within excavated areas. Immediately notify the Owner of any utilities encountered that are not shown or specified.
- G. When approved by the Owner store on the project site where shown or directed, all excavated material suitable and approved for backfill, fill, and rough grading. Remove unsuitable material and excess suitable material from the project site. Provide additional fill material, if required.
- H. Excavate for all underground piping systems and utility lines, including Civil, Site, Mechanical, and Electrical systems. Trimming of trench bottom to final line and elevations, excavating for bells and bottom bedding, is specified in the Mechanical and Electrical Specification Sections.

3.4 Trench Excavation

- A. Open cut trench excavation shall include the site clearing and grubbing, the excavating of all materials encountered, the supporting and protecting of all structures and/or utilities encountered above and below the ground surface, and the removal of water from the construction site.
- B. Trenching operation shall commence at the downstream or outlet end of the new Work and proceed upstream, unless otherwise specified on the Design Documents or as directed by Architect-Engineer.
- C. Trench shall be excavated in reasonably close conformity with the lines and grades specified on the Design Documents or as established by Architect-Engineer.
- D. Excavated materials shall be temporarily stored along the trench in a manner that will not cause damage to trees, shrubs, fences, improvements, utilities, private property, public property or traffic. The excavated materials shall not be placed at such locations that will endanger the trench banks by imposing loads thereon.
- E. Trench shall be of sufficient width to provide adequate working space to permit the installation of the pipe and the compaction of the bedding material under and around the pipe. However, for rigid pipe, the width of the trench from below the pipe bedding to 12 inches above the top of the pipe shall not exceed the following dimensions:

Diameter of Pipe	Width of Trench
6-inch thru 12-inch pipe	30 inches wide
15-inch thru 36-inch pipe	outside diameter plus 16 inches
42-inch thru 60-inch pipe	outside diameter plus 20 inches
over 60-inch pipe	outside diameter plus 24 inches

- F. Support the additional load of the backfill when the maximum trench width as specified for rigid pipe is exceeded, Contractor shall install, at his expense, concrete encasement which shall completely surround the pipe and shall have a minimum thickness at any point of 1/4 of the outside diameter of the pipe or four (4) inches, whichever is greater, or at his expense, install another type bedding, approved by Architect-Engineer. Concrete encasement shall consist of 3,000 psi, minimum, strength concrete.
- G. For flexible pipe, the minimum width shall be not less than the greater of either the pipe outside diameter plus 16 inches or the pipe outside diameter times 1.25, plus 12 inches. Maximum trench width for flexible pipe shall not exceed the minimum width by more than 6 inches.
- H. To support the additional load of the backfill when the maximum trench width as specified for flexible or semi-rigid pipe is exceeded, Contractor shall install, at his expense, crushed stone pipe bedding to the full width between undisturbed trench walls or at least 2.5 pipe diameters on each side of the pipe.
- I. When through Contractor's construction procedure, or because of unsuitable existing ground conditions, it becomes impossible to maintain alignment and grade properly, Contractor, at his expense, shall excavate below the normal trench bottom grade and shall fill the void with a large size aggregate or 3,000 psi, minimum, strength concrete as approved by Architect-Engineer to ensure that the pipe when laid in the proper bedding will maintain correct alignment and proper grade.
- J. Trench excavations, including those for shafts and structures, shall be adequately braced and/or sheeted where necessary to prevent caving or squeezing of the soil.

3.5 Dewatering

- A. Keep the entire project site free draining at all times. Arrange site excavation and fill work to avoid obstructing the natural flow of water away from areas of work. If necessary, provide temporary drainage ditches, or temporary pumping. Keep excavations that are not free draining, free from water until such time that the permanent construction is in place, that backfilling is completed, and that building drains are operating in constructed areas below grade. Provide pumps, well point systems or other systems as required by the conditions. Operate pumps and other water moving systems to accomplish the above on a 24 hour basis.
 - 1. Temporary means for drainage shall be removed or filled-in when no longer required.

3.6 Excavation Protection

- A. Provide excavation protection as required to support the earth banks of all types of excavations including trenches, and to protect adjacent existing structures, services and utilities.
- B. Use angle of repose of the soil or provide an engineered support system for excavation protection.
- C. Design and provide the support system of such strength, rigidity and spacing as required to suit site conditions, and in such quantity as required to maintain the project schedule.

- D. Maintain the support system in place until immediately prior to filling or backfilling operations. Remove support system in stages as filling or backfilling progresses. Parts of the support system may be left in place up to 2 feet below new grades where so indicated or approved by the Owner.
- E. Provide shop drawings for review, of all shoring work or equivalent supporting system, sealed by a registered Professional Engineer. This review shall not relieve the Contractor from the responsibility for selection of means of protection against slides and cave-ins, and performance of the work.

3.7 Sheeting, Shoring, and Bracing

- A. Contractor shall furnish, place and maintain at all times such sheeting, shoring, and bracing of the trench and/or shaft as may be required for safety of the workmen and for protection of the new Work or adjacent structures, including pavement, curbs, sidewalks, pipe lines, conduits next to or crossing the trench, and the protection and safety of pedestrian and vehicular traffic.
- B. Contractor shall be responsible for the complete design of all sheeting, shoring and bracing Work. The design shall be appropriate for the soil conditions, shall be of such strength, quality, dimension and spacing as to prevent caving or loss of ground or squeezing within the neat lines of the excavation, and shall effectively restrain movement of the adjacent soil. Prior to installing the sheeting, shoring or bracing, Contractor shall submit Plans for this Work to Architect-Engineer for informational purposes only.
- C. Sheeting, shoring, bracing, and excavation shall conform to the current federal or state regulations for safety.
- D. Where indicated on the Plans and where necessary in the Work, install and leave sheeting, shoring, and bracing in place. No extra compensation shall be paid to Contractor for sheeting, shoring or bracing left in place.
- E. Supports for pipes, conduits, etc., crossing the trench shall conform to the requirements of the owners of such facilities, and if necessary, shall be left in place.
- F. The furnishing, placing, bracing, maintaining, and removing of sheeting, shoring, and trenching materials shall be at Contractor's expense. Contractor shall not remove the trench sheeting, shoring and bracing unless the pipe has been properly bedded, and the trench backfilled to sufficiently support the external loads. Also the sheeting, shoring, and bracing material shall not come in contact with the pipe, but shall be installed so that no concentrated loads or horizontal thrusts are transmitted to the pipe.

3.8 Pipe Bedding

- A. Install and compact in six inch layers. Particular care shall be taken to assure filling and tamping all spaces under, around, and above the top of the pipe. Work in and around pipe by hand to provide uniform support.
- B. Class I Pipe Bedding:
 - 1. Pipe shall be bedded in crushed stone bedding material placed on the trench bottom. Bedding shall have a minimum thickness beneath the pipe of four (4) inches, and shall extend up the sides of the pipe until the top of pipe is covered by a minimum thickness of 12 inches.
 - 2. Where allowable trench widths are exceeded, Class I bedding shall be used to the full width between undisturbed trench walls. Concrete cradle bedding shall not be used.
- C. Class II Pipe Bedding:
 - 1. Pipe shall be bedded in crushed stone bedding material placed on the trench bottom. Bedding

shall have a minimum thickness beneath the pipe of four (4) inches, or 1/8 of the outside diameter of the pipe, whichever is greater, and shall extend up the sides of the pipe to the horizontal centerline. Backfill from pipe horizontal centerline to a level not less than 12 inches above the top of the pipe shall be Class II granular material. This material shall be placed in 6-inch layers with each layer thoroughly compacted by mechanical means with the finished compacted material a minimum of 12 inches above the top of pipe.

2. Where allowable trench widths are exceeded, Class I bedding shall be used to the full width between undisturbed trench walls. Concrete cradle bedding shall not be used.

D. Continuous and uniform bedding shall be provided in the trench for all buried pipe.

3.9 Filling and Backfilling

A. Proofroll areas indicated to be paved or surfaced, and areas within buildings to 10 feet outside of building wall lines. Within these areas, proofroll subgrades before placing fills, proofroll subgrades of completed cut areas, and proofroll tops of completed fills. Removed soft or unstable areas disclosed by the proof-rolling and fill with Granular Fill, compacted to 95 percent Modified Proctor.

1. Proofroll with at least one pass of the equipment, with overlaps for through coverage. Use a fully loaded single axle dump truck weighing approximately 20 tons. Arrange for observation and approval of the proof rolling operations by the Testing Agency.

B. Schedule filling and backfilling operations to expedite construction progress and to maintain positive site drainage. In areas designed to have utilities, including sewers, where fill is also required, place and compact the fill prior to placement of such utilities or sewers. Backfill after walls have attained a minimum strength of 80 percent of design strength and in no case less than 7 days after placing of concrete. Backfill after work has been inspected and approved by the Owner. Backfill both sides of retaining walls at the same time. Any resultant damage to work in place shall be corrected at the Contractor's expense.

C. Spread fill and backfill in uniform layers parallel to the finish grade elevations, filling holes and low areas first. Loose measurement of each layer shall be not greater than 6 inches and as required to obtain compaction specified.

D. Compact each layer before succeeding layers are placed. Provide compaction equipment of type suited to obtain a density of not less than 95 percent compaction per ASTM D 1557 Modified Proctor.

E. Provide minimum 6-inch thick granular base course below all concrete floor slabs on grade, compacted to a minimum 95 percent Modified Proctor. Granular base shall be Michigan DOT 21AA or equivalent.

3.10 Backfilling Trenches

A. Backfill material shall be placed on sections of bedded pipes only after such pipe bedding and backfill materials have been approved by Architect-Engineer.

1. Trench backfilling shall follow the pipe laying as closely as possible. However, at no time shall the pipe laying in any trench precede backfilling of that trench by more than 100 feet, unless otherwise directed by Architect-Engineer.

- B. Backfilling shall not be done in freezing weather except by permission of Architect- Engineer. Frozen materials shall not be used in trench backfilling.
- C. Following trench backfill specifications are for use in that portion of the trench beyond the scope of the pipe bedding requirements which normally stops at a point 12 inches above the top of pipe.
 - 1. Backfill material to be placed above pipe bedding shall be free of cinders, ashes, refuse, boulders, roots, stumps, trees, timbers, brush, debris, or other extraneous materials which in the opinion of Architect-Engineer, are unsuitable.
 - 2. Rocks or stones having a dimension larger than six (6) inches shall not be placed within three (3) feet of the top of the pipe.
 - 3. Large stones may be placed in the remainder of the trench backfill only if well separated and arranged so that no interference with backfill settlement will result.
- D. The type and method of backfilling is dependent on its location and function and shall conform to the following requirements and as called for on the plans:
 - 1. Trench "A":
 - a. Trenches in greenbelt areas and all other areas except those as noted as Trench B below shall be backfilled with suitable excavated material placed in uniform layers that can be adequately compacted and tested from the surface of that layer. Each layer shall be thoroughly compacted by approved mechanical methods to a density equivalent to the undisturbed adjacent soil or 90% of its maximum unit weight which ever is less.
 - 2. Trench "B":
 - a. Trenches under road surfaces, pavement, curb, driveway, sidewalk and where the trench edge is within three (3) feet of the pavement and as noted on the plans shall be backfilled with Natural Sand Fine Aggregate, unless otherwise indicated on the Plans. The material shall be placed in uniform layers that can be adequately compacted and tested from the surface of that layer.
 - b. Trenches under pavement to be constructed in the near future, as noted or shown on the Plans, shall be backfilled with Natural Sand Fine Aggregate unless otherwise indicated on the Plans. The material shall be placed in uniform layers that can be adequately compacted and tested from the surface of that layer.
- E. Where a pipe is installed under an existing or proposed utility, the backfill between the two shall be natural bank run sand meeting the requirements of Class II granular material, unless otherwise indicated on the Plans, constructed as herein specified.
- F. Unless otherwise specified on the Plans or as directed by Architect-Engineer, the trench backfill shall be carried to the adjacent existing ground.
- G. Where any backfill or bedding as shown on the plans or specified is to be CLSM, care shall be used to avoid displacing any pipes or structures due to fluid pressure. Pipes in backfill areas may need to be secured to avoid the buoyancy effect.

3.11 Compacting Trench "B" Backfill

- A. Trench "B" backfill shall be compacted to 95% of the maximum unit weight, unless otherwise specified on the Plans or authorized by Architect-Engineer.

- B. Compaction of the backfill will not be paid for separately, but shall be considered incidental to the Work of backfilling and shall include all the Work of manipulating the soil, to obtain the specified densities. No additional compensation will be allowed for any delay required to obtain the specified moisture content or the specified density.

3.12 Field Testing

- A. During the course of the Work, Architect-Engineer may require testing for compaction or density of the backfill. Taking of samples and the testing required shall be performed by a testing laboratory suitable to Owner and approved by Architect-Engineer. The cost for testing and sampling shall be at the expense of Contractor.
- B. Maximum unit weight, when used as a measure of compaction or density of soils, shall be understood to mean the maximum unit weight per cubic foot or per cubic meter as determined by ASTM D1557, Method D.

3.13 Grading

- A. Grade areas to receive fills and backfills to levels indicated, specified, or required. Remove unsuitable material, vegetation, rubbish and debris from areas to be filled.
- B. Rough grade lawn areas. Place 6 inches, unless other thickness is noted, of Topsoil and smooth- finish grade to required elevations. Finish grade other areas within the work area limits to the finish grade elevations shown or required. Grades not otherwise indicated shall be uniform levels or slopes between given points or between given points and existing grades. Provide roundings at top and bottom of banks and at other breaks in grades. Rough grade to within 0.1 foot and finish grade to within 0.05 foot, of required slopes, grades and elevations.
- C. Protect graded areas against erosion. Prior to acceptance of the work, repair settlement or washing that may have occurred and restore grades to required elevations and slopes.

3.14 Seeding

- A. At disturbed lawn areas, after topsoiling, apply grass seed, fertilizer, and mulch per Michigan Department of Transportation (MDOT) Specification 6.53 for Class A grass seed.

3.15 Underdrains

- A. Furnish and install 6-inch diameter underdrains as required. Underdrains shall be perforated, corrugated, plastic pipe in accordance with ASTM F 405 and shall be installed per ASTM F 449. Pipe shall be laid with uniform pitch, perforations down, on 6-inch deep granular filter bed of 3/8 inch to 1/2 inch pea gravel. Extend pea gravel bed up to centerline of pipe and fill trench to 18 inches above top of pipe with 1/2 inch to 3/4 inch gravel. Width of trench for underdrains shall be 2 foot.

3.16 Defective Work

- A. Any portion of the trench backfill which is deficient in the specified density shall be corrected by methods meeting the approval of Architect-Engineer.
- B. Any extra testing or sampling required because of deficiencies shall be at Contractor's expense.

END OF SECTION 31 0000

SECTION 31 1000

SITE PREPARATIONS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section includes requirements for site preparation activities as shown on the Drawings.

1.2 REFERENCES

Michigan Department of Transportation (MDOT), Standard Specifications for Construction (2012).

1.3 SUBMITTALS

- A. Site Plan: Showing:
 - 1. Areas for temporary construction and field offices.

1.4 QUALITY ASSURANCE

- A. Secure all permits and post all bonds and deposits required to comply with the Contract Documents.

1.5 PROJECT CONDITIONS

- A. Minimize production of dust; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- B. Protect trees, shrubs, and other vegetation that are outside the limits of the Work and those that are within the limits of the Work but not designated to be removed. Repair or replace trees, shrubs, and vegetation that are designated to be protected but are damaged by Contractor operations at no additional cost to Owner.
- C. Protect existing culverts, sewers, drainage structures, manholes, water gate wells, hydrants, water mains, utility poles, overhead lines, underground conduits, underground cables, pavement and other improvements that are outside the limits of the Work and those that are within the limits of the Work but are not designated to be removed. Repair or replace structures and improvements that are designated to be protected but are damaged by Contractor operations.
- D. Maintain existing open drains, field and roadway ditches, drainage tile, sewers, enclosed drains, natural and artificial watercourses, surface drainage and other types of drainage within the limits of the Work free to discharge during excavating, backfilling and compacting operations. Immediately repair, replace, or clear drainage facility that is not designated to be abandoned but is damaged or whose drainage function is impaired by Contractor operations.

PART 2 – PRODUCTS

2.1 MATERIALS

Fill Material: As specified in Sections 31 2200 - Grading and 31 2323 - Fill.

PART 3 – EXECUTION

3.1 PREPARATION

When Work to be performed in a dry condition, provide dewatering.

3.2 EXISTING UTILITIES AND BUILT ELEMENTS

- A. Locations of existing utilities shown on the Drawings are approximate; coordinate work with the Owner; notify before starting work and comply with their requirements; obtain required permits. Ensure the utilities have been marked.
- B. Protect existing utilities to remain from damage.
- C. Unless otherwise indicated, maintain flow in existing utilities by diversion, pumping, fluming, relocation, or by other methods. At the conclusion of construction, return and reinstall diverted and relocated utilities to their original condition.
- D. Protect existing structures and other elements that are not to be removed.
- E. Remove existing signs, posts, fences, catch basin frames and grates, and manhole frames and covers within the construction path, unless noted otherwise. Store these items on the Jobsite, where designated by Owner, in reusable condition.
- F. Expose utility lines prior to excavation to determine if conflicts with the proposed improvements exist. The Contractor shall be responsible for the cost of relocating items as required to resolve conflicts. Contact the Owner of the utility for relocation.
- G. Protect existing buildings and structures within the limits of construction. If it becomes necessary to move an existing building or structure in order to proceed with construction, perform the move without damaging the building or structure. Limit the distance of the move to the minimum that will allow for construction of the improvement, or as indicated by the Owner.

3.3 ADJUST STRUCTURES

- A. Adjust structures as directed by the Owner.
- B. Properly dispose of unsuitable material.

3.4 RESTORATION IN GRASS AREAS

- A. Restore grass areas, not paved or aggregate-surfaced, with topsoil, seed and mulch, unless indicated otherwise on the Drawings.
- B. Properly dispose of excess material from the restoration operation.
- C. Furnish, place, and compact additional fill, in compliance with Section 31 2323, as needed to restore the disturbed areas to the cross sections called for on the Drawings or as determined by the Owner.

3.5 DEBRIS AND CLEAN-UP

- A. Remove debris, junk, and trash from site.
- B. Fill holes due to removal of earth in accordance with Sections 31 2200 and 31 2323.
- C. Leave site in clean condition, ready for subsequent work.
- D. Clean up spillage and wind-blown debris.

END OF SECTION 31 1000

SECTION 31 2200

GRADING

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes removal and salvage of topsoil, rough grading the site and finish grading.

1.02 SUBMITTALS

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

1.03 QUALITY ASSURANCE

- A. Perform Work in accordance with the Michigan Department of Transportation "Standard Specifications for Construction". Maintain one copy on site.

1.04 PROJECT CONDITIONS

- A. Protect above- and below-grade utilities that remain.
- B. Protect plants, lawns, rock outcroppings, and other features to remain as a portion of final landscaping.
- C. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from grading equipment and vehicular traffic.
- D. Provide temporary erosion and sediment control in compliance with Section 31 2500.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Fill Materials: See Section 31 2323.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Ensure the Owner has previously staked and flagged locations of known utilities prior to commencing work.

- C. Locate, identify, and protect utilities that remain, from damage.
- D. Remove and dispose of vegetation, brush, stones, rocks and other objectionable litter and foreign material before the ground is broken for topsoil removal.

3.03 ROUGH GRADING

- A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.
 - 1. Do not strip topsoil if weather conditions are unsuitable.
 - 2. If approved by Engineer, salvage topsoil for reuse.
 - 3. Stockpile salvaged topsoil in excess of that required for the project.
- B. Remove and dispose of material detrimental to site improvement in accordance with Section 31 1000.
- C. Do not remove topsoil when wet.
- D. Remove subsoil from areas to be further excavated, re-landscaped, or regraded. Remove subsoil parallel to proposed finished grades and to elevations that allow for thickness of topsoil and installation of site or roadway improvements. Do not over-excavate.
- E. Do not remove wet subsoil, unless it is subsequently processed to obtain optimum moisture content.
- F. When excavating through roots, perform work by hand and cut roots with sharp axe.
- G. See Section 31 2323 for filling procedures.
- H. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

3.04 SOIL REMOVAL

- A. Stockpile topsoil to be re-used on site; stockpile or remove remainder from site. Locate stockpiles as near the original location as possible.
- B. Stockpiles: Use areas designated by Owner; pile depth not to exceed 10 feet; protect from erosion; avoid diversion of storm water runoff, creating standing water, and interference of controlled irrigation.
 - 1. Do not stockpile around trunks and roots of trees to be preserved.
 - 2. Maintain stockpiled topsoil separate from stockpiled subsoil.
 - 3. Locate and retain soil materials at least 100 feet away from edge of excavations and at least 50 feet from the top of the slope of a shoreline.

4. Maintain soil erosion and sediment control measures to prevent erosion of materials off site or into drainage structures or waterways.

3.05 FINISH GRADING

A. Before Finish Grading:

1. Verify subgrade has been contoured to grades and elevations shown on the Drawings and has been compacted.

B. Remove debris, roots, branches, stones, in excess of one inch in size.

C. Perform finished grading when the ground is frost-free and weather is favorable.

D. Where topsoil is to be placed, scarify surface to depth of 3 inches.

E. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches.

F. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.

H. Lightly compact placed buffer layer or topsoil.

3.06 TOLERANCES

A. Top Surface of Subgrade: Plus 0.1 feet or minus .1 feet from required elevation.

B. Top Surface of Finish Grade: Plus or minus .1 feet.

3.07 CLEANING AND PROTECTION

A. Remove unused stockpiled topsoil and subsoil.

B. Grade stockpile area to prevent standing water.

C. Leave site clean and raked, ready to receive landscaping.

END OF SECTION 31 2200

SECTION 31 2500

EROSION AND SEDIMENTATION CONTROLS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section includes construction and maintenance of soil erosion and sediment control barriers during construction.
- B. The Erosion and Sedimentation Controls shall follow the requirements of the City of Ann Arbor, Washtenaw County and project specifications and drawings.

1.2 REFERENCES

Guidebook of Best Management Practices for Michigan Watersheds, Reprinted October 1998, Michigan Department of Natural Resources, Surface Water Quality Division.

1.3 SUBMITTALS

Contractor is responsible for obtaining a Soil Erosion Sedimentation Control Permit.

1.4 QUALITY ASSURANCE

Perform Work of this section in accordance with state and local erosion and sediment control guidelines.

1.5 DELIVERY, STORAGE, AND HANDLING

Protect materials from physical damage, or contact with other conditions or substances which may degrade the product.

1.6 SEQUENCING AND SCHEDULING

Temporary erosion control measures shall be in place and functional prior to initiation of earthwork activities.

PART 2 – PRODUCTS

2.1 STRAWBALE

- A. Wire-bound or single-tied.
- B. Securely anchored by at least 2 stakes or rebars driven through the bale 12 to 18 inches into the ground.
- C. Chinked (filled by wedging) with straw to prevent water from escaping between the bales.

2.2 SILT FENCE

- A. An assembled, ready to install unit consisting of geotextile attached to drivable posts.
- B. Geotextile: Uniform in texture and appearance and having no defects, flaws, or tears that would affect its physical properties. Contains sufficient ultraviolet ray inhibitor and stabilizers to provide a minimum 2-year service life from outdoor exposure.
- C. Net Backing: Consist of an industrial polypropylene mesh which is joined to the geotextile at both top and bottom with double stitching of heavy-duty cord.
- D. Posts: Sharpened wood approximately 2 inches square and protruding below the bottom of geotextile to allow specified embedment. Post spacing not to exceed 6 feet. Securely fasten each post to the

geotextile and new backing by staples suitable for such purpose

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that the materials are acceptable
- B. Verify that surfaces and site conditions are ready to receive work.
- C. Submit detailed written work plans describing methodologies for performing all work-related items.

3.2 PREPARATION

- A. Preserve salient natural features, keep cut-fill operations to a minimum, and ensure conformity with topography so as to create the least erosion and to adequately handle the volume and velocity of surface water runoff.
- B. Whenever feasible, retain, protect, and supplement natural vegetation.
- C. Do not damage, degrade, or in any way cause harm to any existing above ground structure or appurtenance, belowground utility, pipe, conduit, cable, conductor, or structure.
- D. Performance of temporary erosion control work does not relieve Contractor of its responsibility for preventing or minimizing the potential for erosion or siltation.
- E. Protect off-site areas from erosion due to on-site construction activities. Prevent off-site sediment transport.
- F. Minimize impacts to on-site areas not involved in construction activities.
- G. Submit detailed written work plans describing methodologies for performing all work-related items.

3.3 INSTALLATION

- A. Construct temporary erosion control barriers as required by Soil Erosion and Sedimentation Control Plan. Actual alignment and/or location of the various items are as directed by the Owner.
- B. Place straw bales in swales and ditches as necessary.
- C. Install temporary silt fencing by securing bottom edge of fence fabric in trench.
- D. Do not construct straw barriers and silt fences in flowing streams or in swales where there is the possibility of a washout.
- E. Check weekly, and after each rainfall, erosion and sediment control measures. During prolonged rainfall, daily checking is necessary.
- F. Straw bales and/or silt fence may be removed at the beginning of the work day, but replace at the end of the work day when approved by Owner.
- G. Whenever sedimentation is caused by stripping vegetation, regrading, or other development, remove it from adjoining surfaces, drainage systems, and watercourses, and repair any damage as quickly as possible.
- H. Prior to or during construction, the Owner may require the installation or construction of improvements to prevent or correct temporary conditions on site. Improvements may include berms, mulching, sediment traps, detention and retention basins, grading, planting, retaining walls, culverts, pipes, guardrails, temporary roads, and other measures appropriate to the specific condition. Keep temporary improvements in place and in operation until otherwise directed by the Owner.

- I. Pay close attention to the repair of damaged bales, end runs, and undercutting beneath bales.
- J. Unless otherwise specified on the Drawings, or directed by the Owner, remove and dispose of temporary erosion control barrier items upon completion of Work; all to the satisfaction of Engineer. All materials once removed become the property of the Contractor.

3.4 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements
- B. The Owner will inspect temporary erosion control items for proper placement and maintenance.

3.5 CLEANING

- A. Section 01 7000 - Closeout Procedure: Requirements for cleaning installed work.
- B. Clean filters of excessive silt accumulation when necessary
- C. Remove and dispose of sediment deposits when the level of deposition reaches approximately one-half the height of the barrier.
- D. Submit detailed written work plans describing methodologies for performing all work-related items.

END OF SECTION 31 2500

SECTION 32 1313

CONCRETE PAVING

PART 1 GENERAL

1.1 Summary

- A. Furnish and install concrete paving, and related work, necessary for a complete installation as shown, specified, and required.
- B. If any of this work involves placement of concrete paving on public roads, right-of- way or property, perform this work in accordance with the Specifications of Governmental Authorities having jurisdiction.
- C. The producer of the Portland cement concrete mix shall be a bulk producer regularly engaged in the production of Portland cement concrete. Ready mixed concrete shall be in accordance with ASTM C-94. A Contractor-operated batch plant is allowed when approved by the Architect-Engineer.

1.2 Related Work Specified Under Other Sections

- A. Section 03 3000 - Cast-In-Place Concrete

1.3 Submittals

- A. Submit concrete supplier's mix design information. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- B. Submit shop drawings of work not shown in standard product data
- C. Submit product data covering catalogue items. If catalogue is general in nature, indicate the specific items (and related accessories) proposed for use.
- D. Submit copies of all test reports.

1.4 References

- A. AASHTO – American Association of State Highway and Transportation Officials
- B. ASTM – American Society for Testing Materials International
- C. ACI – American Concrete Institute

1.5 Testing Agency

- A. Laboratory and field sampling and testing of materials to determine conformance with the Specifications, and to provide quality control during construction shall be done by independent, well established and qualified commercial Testing Agencies. The personnel shall be qualified and shall have had experience on projects equal to the complexity of this project.
 - 1. The Contractor shall retain an Owner approved Testing Agency for providing quality control during construction and a Testing Agency to test the proposed materials.
 - a. Submit qualifications of the Testing Agency and its personnel to the Owner for approval prior to retaining the Testing Agency. The Owner reserves the right to request a change in

personnel or firm at any time. The Owner reserves the right to retain the Testing Agency directly.

2. The Testing Agency shall submit duplicate written reports of tests, findings, investigations and recommendations to the Contractor, Architect-Engineer and Owner, as soon as each report has been completed, preferably the same day, but not more than one working day later.

1.6 Administrative Requirements

A. Pre-Installation Meeting.

1. A minimum of 14 days prior to beginning paving work, hold a meeting to determine specific project procedures and determine a complete understanding of requirements and responsibilities.
2. Review schedule of installation, installation procedures and conditions, and coordination with related work.
3. Invite representatives concerned with concrete paving to the meeting. Attendees shall include, but not be limited to, the following:
 - a. Contractor's superintendent
 - b. Testing agency responsible for concrete design mix
 - c. Testing agency responsible for quality control mix
 - d. Concrete producer
 - e. Concrete subcontractor
 - f. Architect-Engineer
 - g. Owner
4. The Contractor's superintendent shall distribute an agenda in advance and chair the meeting.
5. The Contractor shall provide minutes of the meeting to attendees. Include a statement by the admixture manufacturers that the proposed mix design and placing procedures agreed upon will produce concrete in compliance with the Contract documents.
6. Provide field service by representatives of the proposed products and equipment to assist in obtaining specified results under prevailing project site conditions.

1.7 Records

- A. The Contractor shall keep electronic data of concrete pours showing location, date, cubic yards of concrete including signed trip tickets for each truck, ambient air temperature and unusual occurrences during placement of each pour. Permit inspection of records by Owner at any time. At completion of work, submit a summary of such data electronically to the Owner.

PART 2 PRODUCTS

2.1 Materials

- A. Materials for jointed Portland cement concrete pavements, curb and gutter, sidewalks and driveways; including concrete, steel reinforcement, joint filler, sealants, and white membrane curing compound, shall be per Section 03 30 00, Cast-in-Place Concrete.
- B. Aggregate Base Course shall meet the requirements of No. 57, crushed, angular stone, per ASTM D448 unless otherwise noted on the Plans.
- C. Tie bars
 - 1. All tie bars shall be deformed and meet the requirements of ASTM 615A Grade 40 steel bars. All tie bars shall be epoxy coated in accordance with AASHTO M284.
- D. Dowel bars and load transfer assemblies.
 - 1. Dowel bars must be straight, smooth, round bars with the dimensions as shown on Drawings. Dowel bars must have minimum yield strength of 40,000 psi and minimum tensile strength of 70,000 psi. All dowels shall be epoxy coated per AASHTO M284. The ends of dowel bars shall be saw cut or sheared and free of burs.

2.2 Concrete Proportions

- A. Concrete shall be in accordance with Section 03 3000 Cast-in-Place Concrete except as otherwise shown on the Plans, noted below, or approved by the Architect-Engineer.
 - 1. The minimum flexural strength shall be 650 psi at 28 days.
 - 2. The minimum compressive strength shall be 4,500 psi at 28 days
 - 3. Water/Cement ratio shall be less than or equal to 0.45
 - 4. Proportioning shall be in accordance with ACI 301 based on the previous experience or trial mixtures.
 - 5. Cementitious Content shall be between 517 and 611 pounds per cubic yard. If pavement area is to be opened to traffic less than three days after concrete placement, the cementitious content may be increase to a maximum of 658 pounds per cubic yard
 - a. Cement
 - 1) Portland Cement: ASTM C150, Type I or Type II.
 - 2) Submit name of manufacturer and brand proposed for use and obtain acceptance of Owner's Field Representative.
 - 3) Use only one brand of cement so color of cast-in-place concrete is uniform.
 - b. Ground Granulated Blast Furnace Slag (GGBF Slag)
 - 1) Use of GGBF Slag in concrete mixes is Contractor's option unless noted otherwise.
 - 2) Conform to classification Grade 100 in accordance with ASTM C 989.

- 3) Proportion: Not more than 25 percent by weight of total cementitious content of concrete, unless noted otherwise.
 - a) Total cementitious content: Total weight of Portland cement and GGBF Slag.

c. Fly Ash

- 1) Use of fly ash in concrete mixes is Contractor's option unless noted otherwise.
 - 2) ASTM C 618, Class C or F.
 - 3) Carbon content (loss of ignition): Less than 3 percent.
 - 4) Proportion: Not more than 15 percent by weight of total cementitious content of concrete.
 - a) Total cementitious content: Total weight of Portland cement and fly ash.
6. When both GGBF Slag and Fly Ash are used in the same mix, the combined total cementitious content of these cement replacement materials shall not exceed 40 percent by total cementitious content of concrete.
 7. Mix design submittals shall include ASTM C1567 test results of the proposed blend, if aggregates being used are found to be reactive.
 8. The air content shall be 6 percent, plus or minus 1 1/2 percent.
 9. The maximum slump shall be 3 inches unless test data is submitted with the Job Mix Formula (JMF) indicating strength requirements can be met when a water reducing agent is used at a higher slump. The maximum slump with the use of a water reducing agent shall not exceed 6 inches unless authorized by the Architect-Engineer.
- B. Solar Reflectance Index (SRI) for concrete pavement shall be minimum of SRI 29, per ASTM E1980.
 - C. Minimum recycled content of concrete shall be 5 to 15 percent.

PART 3 EXECUTION

3.1 Installation – General

- A. Fine grade and compact existing subgrade and bring to required elevations and cross sections. Before placing any overlaying materials, proof-roll the compacted subgrade with a 10 ton roller. Rework any soft areas or areas unable to support the roller until the reworked subgrade is acceptable to the Testing Agency and the Architect-Engineer.
 1. Remove unsuitable soil as determined by the Architect-Engineer and backfill with similar adjacent soil or other suitable material as approved by the Architect-Engineer.
- B. Construct aggregate base per Section 31 00 00 Earthwork, compacted to 95 percent Modified Proctor per ASTM D 1557. Any areas of in-place aggregate base course that are damaged in any way shall be brought to satisfactory condition at no additional cost to the Owner.
- C. The width, thickness, and type of concrete pavement shall be specified on the Plans or as approved by the Architect-Engineer.

- D. At street intersections, curb drops and sidewalk ramps conforming to the current rules and regulations of the agency having jurisdiction shall be provided. In addition, curb drops for sidewalk and driveway approaches shall be provided as specified in locations called for on the Plans or as approved by the Architect-Engineer.
- E. Forms shall have uniform bearing on the subgrade throughout their entire length and width. Forms shall be adequately staked and braced to resist the pressure of concrete and the thrust of the equipment.
- F. Take precautions to protect the concrete from rain or mechanical damage. Protect the concrete from freezing. Extend protective coverings over edges of concrete and arrange so as not to bear on unprotected concrete edges. Remove and replace any concrete damaged in any way at no additional cost to the Owner.

3.2 Placing Concrete

- A. All concrete shall be placed on a prepared unfrozen, smooth, leveled, rolled and properly compacted base as indicated on the Plans. The surface of the subbase shall be moist with no visible water present prior to placement of the concrete.
- B. The concrete shall be spread or distributed as soon as placed. If a mechanical spreader is not used, the concrete shall be deposited in a manner that requires a minimum of re-handling to avoid segregation and separation of materials. The concrete shall be deposited to a height sufficiently above grade so that when consolidated and finished it shall conform to the required finished grades.
- C. The placing of concrete shall be continuous as much as possible between transverse joints. Whenever a temporary halt in operation occurs, the concrete and unfinished end of the slab shall be covered with wet burlap or plastic. If the interruption of Work continues for more than 20 minutes, a construction joint shall be placed.
- D. The surface of the concrete shall be floated just enough to produce a smooth surface free from irregularities. All edges and joints shall be rounded with an edger having a 1/4 inch (5 mm) radius. The surface of sidewalks, driveways and approaches shall be broomed to slightly roughen the surface.
- E. Where reinforcement is required, the sheets or mats shall be placed at the depth below the surface of the finished pavement, as shown on the Plans. Adjacent sheets or mats shall be lapped, as indicated on the Plans, and shall be fastened to each other in no less than two (2) places.
- F. Forms may be removed from freshly placed concrete after it has set for 12 hours, provided it can be done without damage. If during form removal the pavement is being damaged, the form removal shall cease until the concrete has attained greater strength. The period of time for removing forms may be increased or decreased when approved by the Architect-Engineer.
- G. After removing forms, any visible areas of honeycomb or minor defects shall be immediately filled with mortar, having one part of Portland cement and two parts fine aggregate, and shall be applied with a wooden float.

3.3 Curing

- A. After finishing operations have been completed and immediately after the free water has left the surface, the surface of the concrete (and sides if slip forming is used) shall be completely coated and sealed with a uniform layer of white membrane curing compound. The curing compound shall

not be thinned. The curing compound shall be applied at the rate of 1 gallon per 200 square feet (4 liters per 20 square meters) of surface.

3.4 Joints

- A. All longitudinal and transverse joints shall conform to the details and shall be constructed at the location as specified herein or as shown on the Plans.
- B. The expansion joints shall be placed for the full width and depth of the new Work. The expansion joints placed against any existing pavement shall be a minimum of six (6) inches (150 mm) deep but no less than the thickness of the concrete being placed.
- C. Where indicated on the plans, joints shall be filled and sealed with an approved hot poured elastic type compound. All joints shall receive a final cleaning with a jet of compressed air adequate to remove all foreign material, just prior to permanent sealing.

3.5 Protection of Work

- A. The concrete shall be protected at all times and concrete pavement shall not be opened to traffic until the concrete has reached 75% of the design flexural strength.
- B. The Contractor shall adequately protect the new concrete from the effects of rain before the concrete has sufficiently hardened. For this Work the Contractor shall have available on the job site at all times enough burlap or 6 mil thick polyethylene film to cover and protect one (1) day's work. When rain appears eminent, all operations shall stop and personnel shall begin covering. As soon as the rain ceases, the concrete shall be uncovered and the surface burlap dragged where necessary. Curing compound shall be applied to any areas where the compound has been disturbed or washed away.
- C. Cold weather concreting shall be per ACI 306R. If concrete is placed during periods where freezing weather is possible, the Contractor shall have available on the site sufficient amount of clean, dry straw or hay to cover one day's production.
 - 1. If the temperature reaches 40 degrees F (4° C) and falling, hay or straw shall be placed 12 inches (305 mm) thick, immediately after the curing compound is applied.
 - 2. If the temperature is 30 degrees F (-1° C) and falling, the curing shall be by 6 mil thick polyurethane film placed on the concrete as soon as the surface moisture has disappeared, and then covered with 12 inches (300 mm) of straw or hay.
 - 3. Insulating blankets may be used in place of hay or straw.
 - 4. Concrete shall not be placed when the temperature is predicted to be less than 25° F (-4° C) within the next 48 hours.

3.6 Field Testing

- A. The following minimum testing services shall be performed by the Testing Agency:
 - 1. Review and check-test the Contractor's proposed materials for compliance with the Specifications.
 - 2. Review and check-test the Contractor's proposed mix design as required by the Owner.
 - 3. Secure production samples of material at plants or stockpiles during the course of the work and test for compliance with the Specifications.
 - 4. Conduct strength tests of the concrete during construction as follows:

- a. Sampling: Secure composite samples per ASTM C 172 for each 100 cubic yards, or fraction thereof, of each mix design of concrete placed in one day. When the total quantity of concrete with a given mix design is less than 50 cubic yards, the strength tests may be waived by the Owner. Mold and cure 6 specimens from each sample.
 - b. Curing: Cure 5 specimens per ASTM C 31. Cure the sixth specimen with, and the same as, the concrete placed.
 - c. Testing: Test one of the ASTM C 31 cured specimens and the specimen cured with the cast concrete at 7 days for information (when high early strength concrete is used, test at 3 days). Store remaining four specimens for later testing, as directed by Owner.
 - 1) Flexural strength per ASTM 293.
 - 2) Compressive strength per ASTM C 39.
 - 3) The acceptable test results shall be the average of the compressive strengths of the set of two specimens tested at 28 days. If a specimen indicates improper sampling, molding or testing, it shall be discarded and the strength of the remaining specimen shall be considered the test result. Should both specimens in a test set show any of the above defects, the entire test shall be discarded.
 - d. Determine slump, air content and temperature for each composite sample. The Slump Test and Air Content tests shall be completed in accordance of ASTM C 143 and ASTM C 231 or ASTM C 173, respectively.
5. The strength level of concrete will be considered satisfactory so long as the averages of all sets of 3 consecutive strength test results equal or exceed the specified strength, and no individual set strength test result falls below the specified strength by more than 500 pounds per square inch for compressive strength and 75 pounds per square inch for flexural strength.
 - a. If the strength is in question, core tests shall be made at the Contractor's expense to determine the extent of deficiency.
 6. Variations in the finished surface of pavement, when checked by a 10 foot straightedge shall not exceed 1/8 inch in 10 feet. Correct the variations in the pavement in excess of 1/8 inch by grinding down adjacent high areas.
 7. If the thickness of pavement is in question after construction is completed, cores may be obtained at the Owner's direction.
 - a. Those cores exceeding the design thickness will be considered as meeting the design thickness.
 - b. When the thickness of pavement at a cored point is less than the required thickness by more than 5 percent, additional cores shall be taken, at the Contractor's expenses, on each side of such thin cores at such intervals as the Owner selects until cores are obtained which are deficient in thickness by less than 5 percent. If the average thickness of any 3 cores taken in a selected area is less than required by 5 percent or more all pavement in the cored area between the nearest joints or pavement edges will be considered thin by more than 5 percent and such pavement shall be removed and replaced with pavement of the required thickness at the Contractor's expense.

END OF SECTION 32 1313

SECTION 32 2900

SITE RESTORATION

PART 1 – GENERAL

1.1 SUMMARY

- A. Section includes
 - 1. Spreading and grading topsoil.
 - 2. Provisions for seed, mulch and fertilizer in work area.
 - 3. Restoring site to pre-construction condition in areas disturbed by Contractor's operations.

PART 2 – PRODUCTS

2.1 SEED

- A. Meet the following mixture for seed:
 - 10% Kentucky Bluegrass (*Poa pratensis*).
 - 40% Creeping Red Fescue (*Festuca rubra*).
 - 10% Fulfs Salt Grass.
 - 20% Perennial Ryegrass.
 - 20% Hard Fescue.
 - Certified 96% purity and 85% minimum germination.

2.2 MULCH

Meet the requirements of MDOT 816 for mulch.

2.3 FERTILIZER

Meet the requirements of MDOT 816 Class A for fertilizer.

PART 3 – EXECUTION

3.1 TOPSOIL PLACEMENT

- A. Place topsoil and restore previous grades.
- B. Spread topsoil to minimum depth of 6 inches.
- C. Remove unsuitable organic matter and foreign non organic material from topsoil while spreading.
- D. Place topsoil from bottom of slopes toward top.
- E. Do not place topsoil in a frozen condition, or on frozen subgrade.

3.2 SEEDING

- A. Perform seeding and mulching as specified in MDOT 816.03.E.
- B. Apply seed mix at a rate of 5 pounds per 1000 square feet.
- C. Perform seeding after May 1st and before October 10th unless approved by Owner
- D. Submit detailed written work plans describing methodologies for performing all work-related items.

3.3 FERTILIZING

- A. Apply fertilizer at a rate of 5 pounds per 1000 square feet.
- B. Submit detailed written work plans describing methodologies for performing all work-related items.

3.4 MULCHING

- A. Apply mulch at a rate of 2 tons per acre within one day after seeding.
- B. Submit detailed written work plans describing methodologies for performing all work-related items.

3.5 CLEAN-UP

- A. Remove and properly dispose of excess and waste material off site. Clean adjacent paved areas, and remove materials from gutters, curbs, roadways, and catch basins.
- B. Submit detailed written work plans describing methodologies for performing all work-related items.

3.6 INCLEMENT WEATHER

Site restoration that cannot be complete due to adverse weather conditions shall be completed once the weather improves.

3.7 MAINTENANCE

Provide care and maintenance of vegetation, including any barriers needed to prevent access by pedestrians and vehicles, until vegetation is established and accepted by Owner.

END OF SECTION

APPENDIX

Test Boring Logs TB-S1 through TB-S6



The Mannik & Smith Group, Inc.
 2365 Haggerty Road South, Canton, MI 48188
 ph: (734) 397-3100 fax: (734) 397-3131
 www.manniksmithgroup.com

CLIENT City of Ann Arbor	PROJECT NAME Landfill Scale and Entrance Improvements
PROJECT NUMBER ANNA0035	PROJECT LOCATION Ann Arbor, MI
DATE STARTED 9/10/18 COMPLETED 9/10/18	BORING COORDINATES 265124.3 N;13303604.9 E FEET
DRILLING METHOD Direct Push with 4.25 in Auger	GROUND ELEVATION 848.8 FEET
DRILLING CONTRACTOR MSG	TOTAL DEPTH 55.0 FT BACKFILL
DRILL RIG Geoprobe 3230 DT HAMMER TYPE N/A	ENGINEER ON RIG CLW CHECKED BY
DRILLER RJS	REMARKS N/A

GEOTECH STANDARD LOG - GINT STD US LAB.GDT - 10/11/18 09:51 - \\MSGFILESRVMSGDATA\PROJECTS\PROJECTS\ADMIN\GEOTECH INVESTIGATION\ANNA0035 BORING LOGS.GPJ

ELEVATION (FEET)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (FEET)	SAMPLE TYPE NUMBER	BLOW COUNTS	SPT N VALUE	RECOVERY % (RQD)	DRY DENSITY (PCF)	UNCONF. COMP. STRENGTH (PSF)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲				ATTERBERG LIMITS			
											10	20	30	40	PL	MC	LL	
846.3		Topsoil and sand mix, some organics (roots) (2.5 feet)	0	SS 1	3-18-4	22	33											
5		Stiff to very stiff, gray silty CLAY and sand, trace gravel, moist (Fill) (CL)	5	SS 2	2-3-5	8	33		6000 ^P	18								
				SS 3	2-2-3	5	56		3000 ^P									
838.8			Becomes dark brown mottled with dark gray	10	SS 4	2-5-6	11	56		4000 ^P								
15			WASTE MATERIAL (contains plastic, glass, tree debris, asphalt pieces, sand, clay and gravel)	15	SS 5	1-0-1	1	22										
20			20	SS 6	4-1-1	2	0											
25			25	SS 7	2-4-5	9	67											

LEGEND:

- WATER LEVEL AT TIME OF DRILLING 15 FEET
- WATER LEVEL AT END OF DRILLING N/A
- WATER LEVEL AFTER DRILLING N/A

D = UCS TEST PERFORMED ON DISTURBED SAMPLE

P = POCKET PENETROMETER TEST

T = TORVANE SHEAR TEST



(Continued Next Page)



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PROJECT NUMBER ANNA0035 **PROJECT LOCATION** Ann Arbor, MI
DATE STARTED 9/10/18 **COMPLETED** 9/10/18 **BORING COORDINATES** 265124.3 N;13303604.9 E FEET
DRILLING METHOD Direct Push with 4.25 in Auger **GROUND ELEVATION** 848.8 FEET
DRILLING CONTRACTOR MSG **TOTAL DEPTH** 55.0 FT **BACKFILL** _____
DRILL RIG Geoprobe 3230 DT **HAMMER TYPE** N/A **ENGINEER ON RIG** CLW **CHECKED BY** _____
DRILLER RJS **REMARKS** N/A

GEOTECH STANDARD LOG - GINT STD US LAB.GDT - 10/11/18 09:51 - \\MSGFILESRV\MGDATA\PROJECTS\PROJECTS\ADMIN\GEOTECH INVESTIGATION\ANNA0035 BORING LOGS.GPJ

ELEVATION (FEET)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (FEET)	SAMPLE TYPE NUMBER	BLOW COUNTS	SPT N VALUE	RECOVERY % (RQD)	DRY DENSITY (PCF)	UNCONF. COMP. STRENGTH (PSF)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲				ATTERBERG LIMITS						
											10	20	30	40	PL	MC	LL				
813.8		WASTE MATERIAL (contains plastic, glass, tree debris, asphalt pieces, sand, clay and gravel) (continued)	25								◇ UNCONF. COMP. STRENGTH (PSF) ◇	2000	4000	6000	8000	□ DRY DENSITY (PCF) □	100	110	120	130	
			30	SS 8	7-13-11	24	22														
			35	MC 9			20														
808.8		Medium dense, gray SAND and gravel, trace trash material, moist (SW)																			
			40	SS 10	6-7-10	17	44														
		Very dense, gray silty SAND, contains slight odor, wet (SM)																			
			45	SS 11	27-28-26	54	56														
		contains trace clay																			
			50	SS 12	25-27-30	57	56														

LEGEND:
 ▽ WATER LEVEL AT TIME OF DRILLING 15 FEET **D = UCS TEST PERFORMED ON DISTURBED SAMPLE**
 ▽ WATER LEVEL AT END OF DRILLING N/A **P = POCKET PENETROMETER TEST**
 ▽ WATER LEVEL AFTER DRILLING N/A **T = TORVANE SHEAR TEST**



(Continued Next Page)



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DRILLING CONTRACTOR MSG **TOTAL DEPTH** 55.0 FT **BACKFILL** _____
DRILL RIG Geoprobe 3230 DT **HAMMER TYPE** N/A **ENGINEER ON RIG** CLW **CHECKED BY** _____
DRILLER RJS **REMARKS** N/A

GEOTECH STANDARD LOG - GINT STD US LAB.GDT - 10/11/18 09:51 - \\MSGFILESRVMSGDATA\PROJECTS\PROJECTS\ADMIN\ANNA0035\BORING LOGS.GPJ

ELEVATION (FEET)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (FEET)	SAMPLE TYPE NUMBER	BLOW COUNTS	SPT N VALUE	RECOVERY % (RQD)	DRY DENSITY (PCF)	UNCONF. COMP. STRENGTH (PSF)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲				ATTERBERG LIMITS				
											10	20	30	40	PL	MC	LL		
793.8		Very dense, gray silty SAND, contains slight odor, wet (SM) (continued)	50								◇ UNCONF. COMP. STRENGTH (PSF) ◇				□ DRY DENSITY (PCF) □				
											2000	4000	6000	8000	100	110	120	130	
			55	SS 13	30-30-30	60	56												
		Bottom of borehole at 55.0 feet.																	

LEGEND:
 WATER LEVEL AT TIME OF DRILLING 15 FEET **D = UCS TEST PERFORMED ON DISTURBED SAMPLE**
 WATER LEVEL AT END OF DRILLING N/A **P = POCKET PENETROMETER TEST**
 WATER LEVEL AFTER DRILLING N/A **T = TORVANE SHEAR TEST**





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PROJECT NUMBER ANNA0035 **PROJECT LOCATION** Ann Arbor, MI
DATE STARTED 9/11/18 **COMPLETED** 9/11/18 **BORING COORDINATES** 265126.8 N;13303651.4 E FEET
DRILLING METHOD Direct Push with 4.25 in Auger **GROUND ELEVATION** 849.4 FEET
DRILLING CONTRACTOR MSG **TOTAL DEPTH** 55.0 FT **BACKFILL** _____
DRILL RIG Geoprobe 3230 DT **HAMMER TYPE** N/A **ENGINEER ON RIG** CLW **CHECKED BY** _____
DRILLER MCW **REMARKS** N/A

GEOTECH STANDARD LOG - GINT STD US LAB.GDT - 10/11/18 09:51 - \NMSGFILES\SRVMSGDATA\PROJECTS\PROJECTS\ADMIN\GEOTECH INVESTIGATION\ANNA0035 BORING LOGS.GPJ

ELEVATION (FEET)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (FEET)	SAMPLE TYPE NUMBER	BLOW COUNTS	SPT N VALUE	RECOVERY % (RQD)	DRY DENSITY (PCF)	UNCONF. COMP. STRENGTH (PSF)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲				ATTERBERG LIMITS		
											10	20	30	40	PL	MC	LL
848.7		Topsoil (8 in)	0														
845.9		Very loose, brown Silty SAND, trace organics and trash material, damp, (Fill) (SM)		SS 1	1-1-1	2	3										
		Very loose to medium dense, brown mottled with gray clayey SAND/silty CLAY, some silt, trace gravel and stones, moist (Fill) (SC)	5	SS 2	1-5-6	11	39										
		Becomes gray		SS 3	0-0-1	1	8										
				10	SS 4	4-5-7	12	50			13						
835.9		WASTE MATERIAL (contains plastic, glass, tree debris, brick fragments, asphalt pieces, sand, clay and gravel)	15	SS 5	6-5-7	12	61										
			20	SS 6	5-13-22	35	28										
			25	SS 7	1-2-6	8	17										

LEGEND:
 WATER LEVEL AT TIME OF DRILLING N/A **D = UCS TEST PERFORMED ON DISTURBED SAMPLE**
 WATER LEVEL AT END OF DRILLING N/A **P = POCKET PENETROMETER TEST**
 WATER LEVEL AFTER DRILLING N/A **T = TORVANE SHEAR TEST**



(Continued Next Page)



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DRILLING METHOD <u>Direct Push with 4.25 in Auger</u>	GROUND ELEVATION <u>849.4 FEET</u>
DRILLING CONTRACTOR <u>MSG</u>	TOTAL DEPTH <u>55.0 FT</u> BACKFILL _____
DRILL RIG <u>Geoprobe 3230 DT</u> HAMMER TYPE <u>N/A</u>	ENGINEER ON RIG <u>CLW</u> CHECKED BY _____
DRILLER <u>MCW</u>	REMARKS <u>N/A</u>

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											10	20	30	40	PL	MC	LL				
800.9		WASTE MATERIAL (contains plastic, glass, tree debris, brick fragments, asphalt pieces, sand, clay and gravel) (continued)	25								◇ UNCONF. COMP. STRENGTH (PSF) ◇	2000	4000	6000	8000	□ DRY DENSITY (PCF) □	100	110	120	130	
			30	SS 8	6-6-8	14	33														
			35	SS 9	1-2-2	4	17														
			40	SS 10	18-12-17	29	17														
			45	SS 11	25-27-27	54	22														
			50	SS 12	27-29-28	57	44														
		Very dense, gray silty SAND, trace gravel, moist (SM)																			

LEGEND:

WATER LEVEL AT TIME OF DRILLING <u>N/A</u>	D = UCS TEST PERFORMED ON DISTURBED SAMPLE
WATER LEVEL AT END OF DRILLING <u>N/A</u>	P = POCKET PENETROMETER TEST
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DRILLING METHOD <u>Direct Push with 4.25 in Auger</u>	GROUND ELEVATION <u>849.4 FEET</u>
DRILLING CONTRACTOR <u>MSG</u>	TOTAL DEPTH <u>55.0 FT</u> BACKFILL _____
DRILL RIG <u>Geoprobe 3230 DT</u> HAMMER TYPE <u>N/A</u>	ENGINEER ON RIG <u>CLW</u> CHECKED BY _____
DRILLER <u>MCW</u>	REMARKS <u>N/A</u>

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											10	20	30	40	PL	MC	LL
794.4		Very dense, gray silty SAND, trace gravel, moist (SM) <i>(continued)</i>	50								◇ UNCONF. COMP. STRENGTH (PSF) ◇ 2000 4000 6000 8000				□ DRY DENSITY (PCF) □ 100 110 120 130		
			55	SS 13	30-30-32	62	33				>>>						
		Bottom of borehole at 55.0 feet.															

LEGEND:

▽ WATER LEVEL AT TIME OF DRILLING <u>N/A</u> ▽ WATER LEVEL AT END OF DRILLING <u>N/A</u> ▽ WATER LEVEL AFTER DRILLING <u>N/A</u>	D = UCS TEST PERFORMED ON DISTURBED SAMPLE P = POCKET PENETROMETER TEST T = TORVANE SHEAR TEST
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PROJECT NUMBER ANNA0035	PROJECT LOCATION Ann Arbor, MI
DATE STARTED 9/11/18 COMPLETED 9/11/18	BORING COORDINATES 265179.2 N;13303648.2 E FEET
DRILLING METHOD Direct Push with 4.25 in Auger	GROUND ELEVATION 849.5 FEET
DRILLING CONTRACTOR MSG	TOTAL DEPTH 55.0 FT BACKFILL
DRILL RIG Geoprobe 3230 DT HAMMER TYPE N/A	ENGINEER ON RIG CLW CHECKED BY
DRILLER MCW	REMARKS N/A

GEOTECH STANDARD LOG - GINT STD US LAB.GDT - 10/11/18 09:51 - \MSGFILES\SRVMSGDATA\PROJECTS\PROJECTS\ADMIN\GEOTECH INVESTIGATION\ANNA0035 BORING LOGS.GPJ

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											10	20	30	40	PL	MC	LL
848.9		Topsoil (8 in)	0														
		Very loose brown SAND, some gravel, trace organics, damp (Fill) (SP)		SS 1	1-1-2	3	22										
846.0		Stiff, gray silty CLAY, some sand, trace gravel, moist (Fill) (CL)	5	SS 2	1-3-8	11	56		8000 ^P								
		Becomes very soft, contains no organics		SS 3	1-0-1	1	44		4000 ^P								
841.0		Stiff, gray sandy CLAY, trace silt and gravel, moist (Fill) (CL)	10	SS 4	5-8-4	12	39		6000 ^P								
839.5		WASTE MATERIAL (contains plastic, wood debris, sand, clay and gravel), moist															
			15	SS 5	7-6-5	11	17										
			20	SS 6	6-4-23	27	0										
			25	SS 7	5-4-4	8	22										

LEGEND:

- ▽ WATER LEVEL AT TIME OF DRILLING N/A
- ▽ WATER LEVEL AT END OF DRILLING N/A
- ▽ WATER LEVEL AFTER DRILLING N/A

D = UCS TEST PERFORMED ON DISTURBED SAMPLE

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T = TORVANE SHEAR TEST



(Continued Next Page)



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DRILLING METHOD Direct Push with 4.25 in Auger **GROUND ELEVATION** 849.5 FEET
DRILLING CONTRACTOR MSG **TOTAL DEPTH** 55.0 FT **BACKFILL** _____
DRILL RIG Geoprobe 3230 DT **HAMMER TYPE** N/A **ENGINEER ON RIG** CLW **CHECKED BY** _____
DRILLER MCW **REMARKS** N/A

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											10	20	30	40	PL	MC	LL				
802.0		WASTE MATERIAL (contains plastic, wood debris, sand, clay and gravel), moist (continued)	25								◇ UNCONF. COMP. STRENGTH (PSF) ◇	2000	4000	6000	8000	□ DRY DENSITY (PCF) □	100	110	120	130	
			30	SS 8	4-2-5	7	28														
			35	SS 9	5-1-8	9	11														
		Becomes wet	40	SS 10	15-18-9	27	8														
			45	SS 11	26-24-28	52	11														
			50	SS 12	30-35-37	72	39														

LEGEND:
 ▽ WATER LEVEL AT TIME OF DRILLING N/A **D = UCS TEST PERFORMED ON DISTURBED SAMPLE**
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 ▽ WATER LEVEL AFTER DRILLING N/A **T = TORVANE SHEAR TEST**



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DRILLING METHOD Direct Push with 4.25 in Auger **GROUND ELEVATION** 849.5 FEET
DRILLING CONTRACTOR MSG **TOTAL DEPTH** 55.0 FT **BACKFILL** _____
DRILL RIG Geoprobe 3230 DT **HAMMER TYPE** N/A **ENGINEER ON RIG** CLW **CHECKED BY** _____
DRILLER MCW **REMARKS** N/A

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											10	20	30	40	PL	MC	LL				
794.5		Very dense, gray silty SAND, moist (SM) (continued)	50								◇ UNCONF. COMP. STRENGTH (PSF) ◇	2000	4000	6000	8000	□ DRY DENSITY (PCF) □	100	110	120	130	
			55	SS 13	27-32-40	72	50														
		Bottom of borehole at 55.0 feet.																			

LEGEND:
 WATER LEVEL AT TIME OF DRILLING N/A **D = UCS TEST PERFORMED ON DISTURBED SAMPLE**
 WATER LEVEL AT END OF DRILLING N/A **P = POCKET PENETROMETER TEST**
 WATER LEVEL AFTER DRILLING N/A **T = TORVANE SHEAR TEST**






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PROJECT NUMBER ANNA0035 **PROJECT LOCATION** Ann Arbor, MI
DATE STARTED 9/11/18 **COMPLETED** 9/11/18 **BORING COORDINATES** 265268.0 N;13303754.9 E FEET
DRILLING METHOD Direct Push with 4.25 in Auger **GROUND ELEVATION** 850.3 FEET
DRILLING CONTRACTOR MSG **TOTAL DEPTH** 10.0 FT **BACKFILL** _____
DRILL RIG Geoprobe 3230 DT **HAMMER TYPE** N/A **ENGINEER ON RIG** CLW **CHECKED BY** _____
DRILLER MCW **REMARKS** N/A

GEOTECH STANDARD LOG - GINT STD US LAB.GDT - 10/11/18 09:51 - \\MSGFILESRVMSGDATA\PROJECTS\PROJECTS\ADMIN\GEOTECH INVESTIGATION\ANNA0035 BORING LOGS.GPJ

ELEVATION (FEET)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (FEET)	SAMPLE TYPE NUMBER	BLOW COUNTS	SPT N VALUE	RECOVERY % (RQD)	DRY DENSITY (PCF)	UNCONF. COMP. STRENGTH (PSF)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲				ATTERBERG LIMITS		
											10	20	30	40	PL	MC	LL
849.6		Concrete (8 in)	0														
847.8		Medium dense, gray crushed CONCRETE, some sand, moist (Fill)		SS 1	4-5-8	13	39										
		Very loose to loose, gray clayey SAND, trace concrete, brick fragments, gravel, and sand, moist (Fill) (SC)	5	SS 2	2-1-3	4	56										
				SS 3	0-0-0	0	33			19							
840.3				10	SS 4	0-5-4	9	61									
		Bottom of borehole at 10.0 feet.															

LEGEND:
 ▽ WATER LEVEL AT TIME OF DRILLING N/A **D = UCS TEST PERFORMED ON DISTURBED SAMPLE**
 ▽ WATER LEVEL AT END OF DRILLING N/A **P = POCKET PENETROMETER TEST**
 ▽ WATER LEVEL AFTER DRILLING N/A **T = TORVANE SHEAR TEST**





The Mannik & Smith Group, Inc.
 2365 Haggerty Road South, Canton, MI 48188
 ph: (734) 397-3100 fax: (734) 397-3131
 www.manniksmithgroup.com

CLIENT City of Ann Arbor **PROJECT NAME** Landfill Scale and Entrance Improvements
PROJECT NUMBER ANNA0035 **PROJECT LOCATION** Ann Arbor, MI
DATE STARTED 9/11/18 **COMPLETED** 9/11/18 **BORING COORDINATES** 265315.7 N;13303793.2 E FEET
DRILLING METHOD Direct Push with 4.25 in Auger **GROUND ELEVATION** 851.8 FEET
DRILLING CONTRACTOR MSG **TOTAL DEPTH** 10.0 FT **BACKFILL** _____
DRILL RIG Geoprobe 3230 DT **HAMMER TYPE** N/A **ENGINEER ON RIG** CLW **CHECKED BY** _____
DRILLER MCW **REMARKS** N/A

GEOTECH STANDARD LOG - GINT STD US LAB.GDT - 10/11/18 09:51 - \NMSG\FILESRV\MMSGDATA\PROJECTS\PROJECTS\PROJECTS\ADMIN\GEOTECH INVESTIGATION\ANNA0035 BORING LOGS.GPJ

ELEVATION (FEET)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (FEET)	SAMPLE TYPE NUMBER	BLOW COUNTS	SPT N VALUE	RECOVERY % (RQD)	DRY DENSITY (PCF)	UNCONF. COMP. STRENGTH (PSF)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲				ATTERBERG LIMITS		
											10	20	30	40	PL	MC	LL
851.2		Concrete (8 in)	0														
		Stiff, gray mottled with brown silty CLAY, some sand, trace gravel, contains slight odor, damp (Fill) (CL) Very Loose, gray SAND, some gravel, trace trash, wet (Fill) (SP)		SS 1	10-5-7	12	22		9000 ^P								
			5	SS 2	5-6-6	12	56		4000 ^P								
844.3				SS 3	1-2-3	5	67		4000 ^P								
841.8				SS 4	1-2-2	4	100										
		Bottom of borehole at 10.0 feet.	10														

LEGEND:
 ▽ WATER LEVEL AT TIME OF DRILLING 8 FEET **D = UCS TEST PERFORMED ON DISTURBED SAMPLE**
 ▽ WATER LEVEL AT END OF DRILLING N/A **P = POCKET PENETROMETER TEST**
 ▽ WATER LEVEL AFTER DRILLING N/A **T = TORVANE SHEAR TEST**





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CLIENT City of Ann Arbor	PROJECT NAME Landfill Scale and Entrance Improvements
PROJECT NUMBER ANNA0035	PROJECT LOCATION Ann Arbor, MI
DATE STARTED 9/11/18 COMPLETED 9/11/18	BORING COORDINATES 265346.3 N;13303885.3 E FEET
DRILLING METHOD Direct Push with 4.25 in Auger	GROUND ELEVATION 852.0 FEET
DRILLING CONTRACTOR MSG	TOTAL DEPTH 10.0 FT BACKFILL
DRILL RIG Geoprobe 3230 DT HAMMER TYPE N/A	ENGINEER ON RIG CLW CHECKED BY
DRILLER MCW	REMARKS N/A

GEOTECH STANDARD LOG - GINT STD US LAB.GDT - 10/11/18 09:51 - \NMSGFILES\SRVMSGDATA\PROJECTS\PROJECTS\ADMIN\GEOTECH INVESTIGATION\ANNA0035 BORING LOGS.GPJ

ELEVATION (FEET)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (FEET)	SAMPLE TYPE NUMBER	BLOW COUNTS	SPT N VALUE	RECOVERY % (RQD)	DRY DENSITY (PCF)	UNCONF. COMP. STRENGTH (PSF)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲				ATTERBERG LIMITS			
											10	20	30	40	PL	MC	LL	
851.3		Concrete (8 in)	0															
		Stiff to very stiff, brown and gray silty CLAY, some sand, trace gravel, damp (Fill) (CL)		SS 1	6-5-6	11	67		6500 ^P									
				5	SS 2	1-1-2	3	67		3000 ^P								
			Contains plastic debris		SS 3	2-3-15	18	50		1000 ^P								
842.0			10	SS 4	4-5-15	20	17		7000 ^P									
		Bottom of borehole at 10.0 feet.																

LEGEND:

- ▽ WATER LEVEL AT TIME OF DRILLING N/A
- ▽ WATER LEVEL AT END OF DRILLING N/A
- ▽ WATER LEVEL AFTER DRILLING N/A

D = UCS TEST PERFORMED ON DISTURBED SAMPLE

P = POCKET PENETROMETER TEST

T = TORVANE SHEAR TEST



ATTACHMENTS

- City of Ann Arbor Prevailing Wage Declaration Form
- City of Ann Arbor Living Wage Forms
- City of Ann Arbor Vendor Conflict of Interest Disclosure Form
- City of Ann Arbor Non-Discrimination Ordinance Notice and Declaration Form
- Sample Prevailing Wage Form – MDOT Certified Payroll Form

**CITY OF ANN ARBOR
LIVING WAGE ORDINANCE DECLARATION OF COMPLIANCE**

The Ann Arbor Living Wage Ordinance (Section 1:811-1:821 of Chapter 23 of Title I of the Code) requires that an employer who is (a) a contractor providing services to or for the City for a value greater than \$10,000 for any twelve-month contract term, or (b) a recipient of federal, state, or local grant funding administered by the City for a value greater than \$10,000, or (c) a recipient of financial assistance awarded by the City for a value greater than \$10,000, shall pay its employees a prescribed minimum level of compensation (i.e., Living Wage) for the time those employees perform work on the contract or in connection with the grant or financial assistance. The Living Wage must be paid to these employees for the length of the contract/program.

Companies employing fewer than 5 persons and non-profits employing fewer than 10 persons are exempt from compliance with the Living Wage Ordinance. If this exemption applies to your company/non-profit agency please check here No. of employees__

The Contractor or Grantee agrees:

- (a) To pay each of its employees whose wage level is not required to comply with federal, state or local prevailing wage law, for work covered or funded by a contract with or grant from the City, no less than the Living Wage. The current Living Wage is defined as \$13.61/hour for those employers that provide employee health care (as defined in the Ordinance at Section 1:815 Sec. 1 (a)), or no less than \$15.18/hour for those employers that do not provide health care. The Contractor or Grantor understands that the Living Wage is adjusted and established annually on April 30 in accordance with the Ordinance and covered employers shall be required to pay the adjusted amount thereafter to be in compliance with Section 1:815(3).

Check the applicable box below which applies to your workforce

Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage without health benefits

Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage with health benefits

- (b) To post a notice approved by the City regarding the applicability of the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.
- (c) To provide to the City payroll records or other documentation within ten (10) business days from the receipt of a request by the City.
- (d) To permit access to work sites to City representatives for the purposes of monitoring compliance, and investigating complaints or non-compliance.
- (e) To take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee covered by the Living Wage Ordinance or any person contracted for employment and covered by the Living Wage Ordinance in order to pay the living wage required by the Living Wage Ordinance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services or agrees to accept financial assistance in accordance with the terms of the Living Wage Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Living Wage Ordinance, obligates the Employer/Grantee to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract or grant of financial assistance.

Company Name

Street Address

Signature of Authorized Representative

Date

City, State, Zip

Print Name and Title

Phone/Email address

**CITY OF ANN ARBOR
LIVING WAGE ORDINANCE**

RATE EFFECTIVE APRIL 30, 2019 - ENDING APRIL 29, 2020

\$13.61 per hour

If the employer provides health care benefits*

\$15.18 per hour

If the employer does **NOT** provide health care benefits*

Employers providing services to or for the City of Ann Arbor or recipients of grants or financial assistance from the City of Ann Arbor for a value of more than \$10,000 in a twelve-month period of time must pay those employees performing work on a City of Ann Arbor contract or grant, the above living wage.

ENFORCEMENT

The City of Ann Arbor may recover back wages either administratively or through court action for the employees that have been underpaid in violation of the law. Persons denied payment of the living wage have the right to bring a civil action for damages in addition to any action taken by the City.

Violation of this Ordinance is punishable by fines of not more than \$500/violation plus costs, with each day being considered a separate violation. Additionally, the City of Ann Arbor has the right to modify, terminate, cancel or suspend a contract in the event of a violation of the Ordinance.

* Health Care benefits include those paid for by the employer or making an employer contribution toward the purchase of health care. The employee contribution must not exceed \$.50 an hour for an average work week; and the employer cost or contribution must equal no less than \$1/hr for the average work week.

The Law Requires Employers to Display This Poster Where Employees Can Readily See It.

**For Additional Information or to File a Complaint contact
Colin Spencer at 734/794-6500 or cspencer@a2gov.org**



Vendor Conflict of Interest Disclosure Form

All vendors interested in conducting business with the City of Ann Arbor must complete and return the Vendor Conflict of Interest Disclosure Form in order to be eligible to be awarded a contract. Please note that all vendors are subject to comply with the City of Ann Arbor's conflict of interest policies as stated within the certification section below.

If a vendor has a relationship with a City of Ann Arbor official or employee, an immediate family member of a City of Ann Arbor official or employee, the vendor shall disclose the information required below.

1. No City official or employee or City employee's immediate family member has an ownership interest in vendor's company or is deriving personal financial gain from this contract.
2. No retired or separated City official or employee who has been retired or separated from the City for less than one (1) year has an ownership interest in vendor's Company.
3. No City employee is contemporaneously employed or prospectively to be employed with the vendor.
4. Vendor hereby declares it has not and will not provide gifts or hospitality of any dollar value or any other gratuities to any City employee or elected official to obtain or maintain a contract.
5. Please note any exceptions below:

Conflict of Interest Disclosure*	
Name of City of Ann Arbor employees, elected officials or immediate family members with whom there may be a potential conflict of interest.	<input type="checkbox"/> Relationship to employee <hr/> <input type="checkbox"/> Interest in vendor's company <input type="checkbox"/> Other (please describe in box below)

*Disclosing a potential conflict of interest does not disqualify vendors. In the event vendors do not disclose potential conflicts of interest and they are detected by the City, vendor will be exempt from doing business with the City.

I certify that this Conflict of Interest Disclosure has been examined by me and that its contents are true and correct to my knowledge and belief and I have the authority to so certify on behalf of the Vendor by my signature below:		
Vendor Name	Vendor Phone Number	
Signature of Vendor Authorized Representative	Date	Printed Name of Vendor Authorized Representative

Questions about this form? Contact Procurement Office City of Ann Arbor Phone: 734/794-6500, procurement@a2gov.org

CITY OF ANN ARBOR NON-DISCRIMINATION ORDINANCE

Relevant provisions of Chapter 112, Nondiscrimination, of the Ann Arbor City Code are included below.
You can review the entire ordinance at www.a2gov.org/humanrights.

Intent: It is the intent of the city that no individual be denied equal protection of the laws; nor shall any individual be denied the enjoyment of his or her civil or political rights or be discriminated against because of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight.

Discriminatory Employment Practices: No person shall discriminate in the hire, employment, compensation, work classifications, conditions or terms, promotion or demotion, or termination of employment of any individual. No person shall discriminate in limiting membership, conditions of membership or termination of membership in any labor union or apprenticeship program.

Discriminatory Effects: No person shall adopt, enforce or employ any policy or requirement which has the effect of creating unequal opportunities according to actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight for an individual to obtain housing, employment or public accommodation, except for a bona fide business necessity. Such a necessity does not arise due to a mere inconvenience or because of suspected objection to such a person by neighbors, customers or other persons.

Nondiscrimination by City Contractors: All contractors proposing to do business with the City of Ann Arbor shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the guidelines of this section. All city contractors shall ensure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate inequality based upon any classification protected by this chapter. All contractors shall agree not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of any applicable protected classification. All contractors shall be required to post a copy of Ann Arbor's Non-Discrimination Ordinance at all work locations where its employees provide services under a contract with the city.

Complaint Procedure: If any individual believes there has been a violation of this chapter, he/she may file a complaint with the City's Human Rights Commission. The complaint must be filed within 180 calendar days from the date of the individual's knowledge of the allegedly discriminatory action or 180 calendar days from the date when the individual should have known of the allegedly discriminatory action. A complaint that is not filed within this timeframe cannot be considered by the Human Rights Commission. To file a complaint, first complete the complaint form, which is available at www.a2gov.org/humanrights. Then submit it to the Human Rights Commission by e-mail (hrc@a2gov.org), by mail (Ann Arbor Human Rights Commission, PO Box 8647, Ann Arbor, MI 48107), or in person (City Clerk's Office). For further information, please call the commission at 734-794-6141 or e-mail the commission at hrc@a2gov.org.

Private Actions For Damages or Injunctive Relief: To the extent allowed by law, an individual who is the victim of discriminatory action in violation of this chapter may bring a civil action for appropriate injunctive relief or damages or both against the person(s) who acted in violation of this chapter.

THIS IS AN OFFICIAL GOVERNMENT NOTICE AND
MUST BE DISPLAYED WHERE EMPLOYEES CAN READILY SEE IT.

MICHIGAN DEPARTMENT OF TRANSPORTATION CERTIFIED PAYROLL

COMPLETION OF CERTIFIED PAYROLL FORM FULFILLS THE MINIMUM MDOT PREVAILING WAGE REQUIREMENTS

(1) NAME OF CONTRACTOR / SUBCONTRACTOR (CIRCLE ONE) (2) ADDRESS

(3) PAYROLL NO. (4) FOR WEEK ENDING (5) PROJECT AND LOCATION (6) CONTRACT ID

(a)	(b)	(c)	(d) DAY AND DATE							(e)	(f)	(g)	(h)	(i)	(j) DEDUCTIONS						(k)
															TOTAL HOURS ON PROJECT	PROJECT RATE OF PAY	PROJECT RATE OF FRINGE PAY	GROSS PROJECT EARNED	GROSS WEEKLY EARNED	TOTAL WEEKLY HOURS WORKED ALL JOBS	
EMPLOYEE INFORMATION	WORK CLASSIFICATION	Hour Type	HOURS WORKED ON PROJECT							TOTAL HOURS ON PROJECT	PROJECT RATE OF PAY	PROJECT RATE OF FRINGE PAY	GROSS PROJECT EARNED	GROSS WEEKLY EARNED	TOTAL WEEKLY HOURS WORKED ALL JOBS	FICA	FEDERAL	STATE	OTHER	TOTAL DEDUCT	TOTAL WEEKLY WAGES PAID FOR ALL JOBS
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00

Date _____

I, _____ (Name of Signatory Party) _____ (Title)

do hereby state:

(1) That I pay or supervise the payment of the persons employed by

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

_____ from the full _____ (Contractor or Subcontractor)

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

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

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

(4) That:

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

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

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

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

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION

REMARKS:

NAME AND TITLE	SIGNATURE

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 231 OF TITLE 31 OF THE UNITED STATES CODE.