CITY OF ANN ARBOR
INVITATION TO BID

New Farmers Market Enclosure

ITB No. 4454

Due Date: Tuesday, September 27th at 2:00 p.m.

Parks and Recreations Services Unit
Community Services Area

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
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City of Ann Arbor Non-Discrimination Ordinance Notice and Declaration Form

NOTICE OF PRE-BID CONFERENCE

A pre-bid conference for this project will be held on **Tuesday, September 13th at 10:00 a.m.** at **the Ann Arbor Farmers Market, 315 Detroit Street, Ann Arbor, MI 48104**

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 Clarification on ITB Specifications

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 **Monday, September 19th by 3 p.m.** and should be addressed as follows:

> Specification/Scope of Work questions emailed to Keith Kohler, Kohler Architects at kkohler@kohlerarchitect.net and Amy Kuras, Park Planner at akuras@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 Amy Kuras, Park Planner, at akuras@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 **Tuesday, September 27 at 2:00 p.m. EST.** 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 **two (2)** Bid copies in a sealed envelope clearly marked: **ITB No. 4454, New Farmers Market Enclosure.**

Bids must be addressed and delivered to:

City of Ann Arbor
Procurement Unit,
c/o Customer Services, 1st Floor
301 East Huron Street
P.O. Box 8647
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.

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 sixty (60) 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-2, Article III of the Contract. If these time requirements can not 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-3 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-2, 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 documentary proof of compliance when requested.

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

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.

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.

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: **New Farmers Market Enclosure, ITB 4454**

Base Bid

For the entire work outlined in these documents for **the New Farmers Market Enclosure**, complete as specified, using equipment and materials only of the type and manufacturers where specifically named.

_____ ($_____)

Alternate Bids

Alternate #C-1 – to be ADDED to the base bid to mill approximately 2 inches of existing asphalt, haul excess material and cap with new bituminous asphalt (as described on the civil drawings CE2-CE4A) and related work complete.

_____ ($_____)

Alternate #C-2 – to be ADDED to the base bid to provide and install raceways as shown on CE-6 for future fiber optics.

_____ ($_____)

Alternate #A-2 – To be ADDED to the base bid to install the Pre-Engineered Metal Building Clerestory and related work complete.

_____ ($_____)

BID FORM

Section 2 - Material and Equipment 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.

Item Number	Description	Add/Deduct Amount

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-2, 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:

The list of subcontractors must be submitted with this bid and confirmed/verified no later than 24 hours after bid opening. Included with the list shall be the Contractor's guaranteed maximum percentage of mark-up values on change orders and all items required in Art 16. Special requirements of the specifications.

Subcontractor (Name and Address)	Work	Amount

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 references from similar project completed within the past 5 years.

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 _____, 2016, 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 **Community Services Area**

Project means **New Farmers Market Enclosure, ITB 4454**

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 _____ ( ) 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 $_____ 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) _____ 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 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)	(Name of Principal)
By _____	By _____
(Signature)	(Signature)
Its _____	Its _____
(Title of Office)	(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)	(Name of Principal)
By _____	By _____
(Signature)	(Signature)
Its _____	Its _____
(Title of Office)	(Title of Office)
Approved as to form:	Name and address of agent:
_____	_____
Stephen K. Postema, City Attorney	_____
	_____

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."

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 l3. 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 l80 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 l0 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

CITY OF ANN ARBOR
PREVAILING WAGE DECLARATION OF COMPLIANCE

The "wage and employment requirements" of Section 1:320 of Chapter 14 of Title I of the Ann Arbor City Code mandates that the city not enter any contract, understanding or other arrangement for a public improvement for or on behalf of the city unless the contract provides 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. Where the contract and the Ann Arbor City Code 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. Further, to the extent that any employees of the contractor providing services under this contract are not part of the class of craftsmen, mechanics and laborers who receive a prevailing wage in conformance with section 1:320 of Chapter 14 of Title I of the Code of the City of Ann Arbor, employees shall be paid a prescribed minimum level of compensation (i.e. Living Wage) for the time those employees perform work on the contract in conformance with section 1:815 of Chapter 23 of Title I of the Code of the City of Ann Arbor.

At the request of the city, any contractor or subcontractor shall provide satisfactory proof of compliance with this provision.

The Contractor agrees:

(a) To pay each of its employees whose wage level is required to comply with federal, state or local prevailing wage law, for work covered or funded by this contract with the City,

(b) To require each subcontractor performing work covered or funded by this contract with the City to pay each of its employees the applicable prescribed wage level under the conditions stated in subsection (a) or (b) above.

(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.

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 in accordance with the terms of the wage and employment provisions of the Chapter 14 of the Ann Arbor City Code. The undersigned certifies that he/she has read and is familiar with the terms of Section 1:320 of Chapter 14 of the Ann Arbor City Code and by executing this Declaration of Compliance obligates his/her employer and any subcontractor employed by it to perform work on the contract to the wage and employment requirements stated herein. The undersigned further acknowledges and agrees that if it is found to be in violation of the wage and employment requirements of Section 1:320 of the Chapter 14 of the Ann Arbor City Code it shall has be deemed a material breach of the terms of the contract and grounds for termination of same by the City.

_____
Company Name

_____
Signature of Authorized Representative Date

_____
Print Name and Title

_____
Address, City, State, Zip

_____
Phone/Email address

Questions about this form? Contact Procurement Office City of Ann Arbor Phone: 734/794-6500

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 $12.93/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 $14.43/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 (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

_____
Signature of Authorized Representative Date

_____
Print Name and Title

_____
Address, City, State, Zip

_____
Phone/Email address

Questions about this form? Contact Procurement Office City of Ann Arbor Phone: 734/794-6500

CITY OF ANN ARBOR
LIVING WAGE ORDINANCE

RATE EFFECTIVE APRIL 30, 2016 - ENDING APRIL 29, 2017

$12.93 per hour	$14.43 per hour
If the employer provides health care benefits*****	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.	( ) Relationship to employee _____ ( ) Interest in vendor's company ( ) 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
DECLARATION OF COMPLIANCE

Non-Discrimination Ordinance

The "non discrimination by city contractors" provision of the City of Ann Arbor Non-Discrimination Ordinance (Ann Arbor City Code Chapter 112, Section 9:158) requires all contractors proposing to do business with the City to treat employees in a manner which provides equal employment opportunity and does not discriminate against any of their employees, any City employee working with them, or any applicant for employment on the basis 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. It also requires that the contractors include a similar provision in all subcontracts that they execute for City work or programs.

In addition the City Non-Discrimination Ordinance requires that all contractors proposing to do business with the City of Ann Arbor must satisfy the contract compliance administrative policy adopted by the City Administrator. A copy of that policy may be obtained from the Purchasing Manager

The Contractor agrees:

(a) To comply with the terms of the City of Ann Arbor's Non-Discrimination Ordinance and contract compliance administrative policy.

(b) To post the City of Ann Arbor's Non-Discrimination Ordinance Notice in every work place or other location in which employees or other persons are contracted to provide services under a contract with the City.

(c) To provide documentation within the specified time frame in connection with any workforce verification, compliance review or complaint investigation.

(d) To permit access to employees and work sites to City representatives for the purposes of monitoring compliance, or investigating complaints of non-compliance.

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 in accordance with the terms of the Ann Arbor Non-Discrimination Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Non-Discrimination Ordinance, obligates the Contractor 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.

_____
Company Name

_____
Signature of Authorized Representative Date

_____
Print Name and Title

_____
Address, City, State, Zip

_____
Phone/Email address

Questions about the Notice or the City Administrative Policy, Please contact:
Procurement Office of the City of Ann Arbor
(734) 794-6500

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/departments/city-clerk

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 has a grievance alleging a violation of this chapter, he/she has 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 alleged discriminatory action to file a complaint with the city's Human Rights Commission. If an individual fails to file a complaint alleging a violation of this chapter within the specified time frame, the complaint will not be considered by the Human Rights Commission. The complaint should be made in writing to the Human Rights Commission. The complaint may be filed in person with the City Clerk, by e-mail (hrc@a2gov.org), by phone (734-794-6141) or by mail (Ann Arbor Human Rights Commission, PO Box 8647, Ann Arbor, MI 48107). The complaint must contain information about the alleged discrimination, such as name, address, phone number of the complainant and location, date and description of the alleged violation of this chapter.

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.

DETAILED SPECIFICATIONS FOR

NEW FARMERS MARKET ENCLOSURE

315 DETROIT STREET, ANN ARBOR, MI 48104

FOR

ANN ARBOR PARKS & RECREATION SERVICES

301 EAST HURON STREET, ANN ARBOR, MI 48107

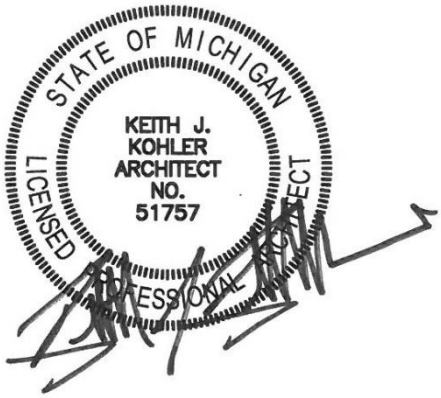
ITB No. 4454

SET #_____

SEPTEMBER 6, 2016

KOHLER
ARCHITECTURE, INC.
WWW.KOHLERARCHITECT.NET
1118 WEST FRONT ST., MONROE, MI. 48161
PH:(734)242-6880 FX:(734)242-6883

#1627



DECA, INC.
ELECTRICAL/MECHANICAL ENGINEERS
415 CONANT ST.
MAUMEE, OH 43537
PHONE: (419) 891-0022
FAX: (419) 891-0026

ZEIMET WOZNIAK & ASSOCIATES
CIVIL ENGINEERS
55800 GRAND RIVER AVE. STE.100
NEW HUDSON, MI 48162
PHONE: (248) 437-5099
FAX: (248) 437-5222

LKL ENGINEERS LTD.
STRUCTURAL ENGINEERS
2735 N. HOLLAND-SYLVANIA RD.
SUITE A-2
TOLEDO, OH 43615
PHONE: (419) 578-0195

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DIVISION #1

GENERAL DATA

1.1 SPECIAL CONDITIONS

A. PROJECT MANUAL:

1. All work shall be performed under this contract as described in this project manual as prepared by Kohler Architecture, Inc. Included, but not limited to are; Kohler Architecture Title Sheet, Kohler Architecture Index, Specifications - All Divisions, Drawings, etc.

B. DEFINITIONS:

1. Architect - Shall be interpreted to mean Kohler Architecture Inc. or their authorized representative.

2. Contractor - Shall be interpreted to mean the Prime Contractor who has a direct contract with the Owner. (General Contractor)

3. Owner - Shall be interpreted to mean City of Ann Arbor.

4. Sub-contractor - Shall be interpreted to mean any person or entity who has a direct contract with the Prime Contractor, either supplying labor or materials.

   The Prime Contractor shall employ only (1) Sub-Contractor/Supplier for each trade/category of work for the entire contract, or in the case of multiple building/sites, (1) Sub-Contractor/Supplier in each trade/category for all sites/buildings. This improves coordination and project scheduling, reduces shop drawing and payroll reviews, and standardizes materials and installation.

5. Substantial Completion - Shall be defined to mean when the Architect establishes in writing, based on his knowledge, observations and beliefs, that all necessary components are installed for the project to be acceptable for the Owner's intended use and beneficial occupancy, including the Contractor obtaining governing agency approvals (City and/or Township) on all permits issued on this project. The project must meet substantial completion no later than the date established elsewhere, unless amended by change order.

6. Final Completion - Shall be defined to mean when all work, including completion of all punch list items, paper work has been submitted (guarantees, final waivers, as-builts, etc.) and the Architect approves the Contractor's final certificate for payment.

C. EXAMINATION OF SITE, MEASUREMENTS & LEVELS:

1. Bidders shall visit the site of the work, compare the drawings and specifications with any work in place, and inform themselves of all conditions, including other work, if any, being performed. Failure to visit the site will in no way relieve the successful bidders from the necessity of furnishing any materials or performing any work that may be required to complete the work in accordance with the contract documents without additional cost to the Owner.

2. Each Contractor shall be responsible for the correct installation of his work to comply with the plans and specifications.

D. CONTRACTOR SUBMITTALS:

1. All submittals shall be signed or initialed and dated by the Contractor prior to acceptance by the Architect. Submittals shall be in complete packages and include all necessary information for review before the Architect can process to the Owner. Any submittal package received by the Architect that is incomplete will not be reviewed and will be sent back to the Contractor for re-submittal.

2. Shop Drawing Submittals - <u>All</u> must be submitted and reviewed prior to ordering that particular item, and starting <u>any</u> physical work on the job site unless other arrangements are made with the Architect in advance.

   a) Six (6) copies of shop drawings/data sheets, including materials safety data sheets for each material per Division 1.1, B-10 of specifications. Note: All project shop drawings of similar items shall be submitted as a complete package to allow for one coordinated review of all related components at same time.

3. Electronic Daily Field Reports - The Contractor shall keep an accurate daily record of all work performed on site. These reports are to be emailed to the Owner and Architect on a daily basis. Field reports may be hand written (See sample form at the end of this division), scanned, and sent in .pdf format; or from electronic project management software (i.e. Raken, FieldLens, or others). Included should be, but not limited to, date, weather, sub-contractors / crews present and number of personnel, deliveries, equipment on site, site visitors, work performed, delays, and sufficient photos to show all activities performed in that days work.

3. As-Builts - The Contractor shall keep an accurate record of all deviations from the contract drawings and specifications. He shall neatly and correctly enter in pencil any deviations on the drawings affected and shall keep drawings available for inspection. Extra set of transparencies will be furnished for this purpose. Give to the Architect at completion.

4. Manuals & Brochures - The Contractor shall submit in duplicate to the Architect at completion, maintenance manuals, instructions, parts, etc., of all items installed as part of this work. Include all warranties, application for extended warranties, etc. These items shall be submitted as shop drawings.

E. PRE-CONSTRUCTION MEETING:

1. An architectural pre-construction meeting will be held by the Architect after contract award to review all schedules, purchase orders, and details of the work. This must be done before any physical work begins - estimated time is 2-3 weeks after contract award. Invited to attend are the Prime Contractors, Owner's Representatives and the Architect/Engineer. Also the Contractor shall have present his Foreman, or Superintendent who will be in charge of the job and any Sub-Contractors that are deemed major contributions to the work.

   The Contractor shall have the following written information for distribution at this meeting.

   a) Weekly bar graph of the anticipated progress of work.

   b) List of all Suppliers, Sub-Contractors, with phone numbers and addresses.

   c) List of all shop drawings to be submitted. Include spec data sheets, color samples, picture cuts, samples, etc. (See Shop Drawing Schedule at end of Instructions to Bidders.)

   d) Copies of purchase orders and written confirmation from Supplier/Sub-Contractor.

   e) Insurance certificates (if not already submitted with bonds and contracts).

   f) Permit applications, or copies of permits, or submit a written letter to the Architect with date, inspector's name and phone number from the Governing Building Authority stating that permits will not be required.

F. LAYOUT:

1. The Contractor shall immediately locate all general reference points and take such action as is necessary to prevent their destruction; lay out his work and be responsible for all lines, elevations and measurements of buildings, grading, paving, utilities and other work executed by him under the contract. He must exercise proper precautions to verify figures shown on drawings before laying out work and will be held responsible for any error resulting from his failure to exercise such precaution.

G. SPECIAL CLARIFICATIONS:

1. Approved Substitutions - The proposal shall be based only upon the furnishing of all materials and/or equipment and accessories as specified by manufacturer or trade names throughout the various specification headings. Where the phrase "approved substitute" and/or "approved equal" appears, the Contractor may, if he desires, request approval from the Owner and Architect in a manner as stated in Instructions to Bidders. Requests must be made a minimum of ten (10) days prior to bid due date. The acceptance of such substitutes, which the Architect and Owner believe to be in the Owner's best interests, will be made prior to bid opening. If no such substitutions are accepted at that time, the Contractor shall furnish only those materials and/or equipment specifically named. Contractor shall submit all pertinent data, manufacturer's specifications, picture cuts, etc., as required by the Architect/Owner for proper evaluation.

   SUBSTITUTIONS - The following is a list of manufacturers or trade names of substitute materials and equipment, which the undersigned submit for consideration, guaranteeing the same to conform to exact requirements of the specifications. The additions, deductions or no-charge figures indicated are separate from and not part of the proposal. **A tentative list shall be submitted with bid and confirmed/verified no later than 24 hours after bid opening.**

Item	Substitute Mfr. | Trade Name	Add	Deduct	No Charge
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

2. Manufacturer's Specifications - All materials, items, equipment, etc., shall be installed in accordance with the manufacturer's specifications and recommendations when not otherwise specified. These specifications do not replace or override any installation manuals/directions. The installer shall provide all materials and perform all work that is needed for this application, whether specialized to this installation or not, as required and/or recommended by the manufacturer so as not to void any warranties and functions properly so that each component becomes part of the entire assembly.

   Where a material or installation is specified in these specifications and is in conflict with manufacturer's recommendations, the Contractor shall immediately notify the Architect before proceeding with the work. Failure to do so will place full responsibility upon the Contractor performing the work.

3. Methods of Construction - The Contractor takes full responsibility and liability for the means and methods of construction to perform the work under this contract. The timing, scheduling and skill of workers and suppliers shall be coordinated prior to beginning any work. The type of equipment, installation, sequence, temporary provisions, etc., all as required to produce the finished product for a first class installation shall be determined by the Prime Contractor. Any delays, errors, omissions or any other problems caused to the job by a change in Sub-contractors or suppliers, bad scheduling, lack of supervision, material deliveries, etc., shall be borne by the Prime Contractor.

4. Changes - These drawings and specifications are provided to give the Contractor an understanding of the systems and materials to be installed under this contract. Where the scope of work or details are in conflict with job conditions, the manufacturer's specifications, manufacturer's guarantee, etc., they shall be modified as required by the Contractor. The Architect shall be notified prior to any change. When these details exceed the manufacturer's requirements and the guarantee, no change shall be made, unless so directed by the Owner or Architect, and the work shall be performed in strict accordance to these drawings and specifications.

   When a change is initiated either by the Owner, Contractor or Architect, the Contractor shall submit a cost breakdown of the change for approval by the Architect and Owner, before proceeding with the work. Any change in completion date shall also be documented. A formal Change Order, signed by the Owner, Contractor and the Architect will follow to authorize the work to be done and the contract amount and/or completion date to be changed. A Change Order must be fully executed before including on pay requests.

   To insure the intent of the contract documents are being complied with and since the Architect is not providing full time inspection/observation services, the Contractor shall perform the following:

   a) On all demolitions, removals, excavations or existing concealed conditions, the Contractor shall certify that conditions found were as anticipated, or as specified in the contract documents. If the above conditions are closed-up, covered, or back-filled prior to notifying the Architect or prior to his scheduled inspection, the Contractor shall document with photos, measurements and/or sketches how the concealed conditions were constructed.

   b) Should the Contractor become aware of any deviations, unusual circumstances, cause for extra work, or other reasons he feels may have an affect, or cost change on this contract, he shall immediately notify the Architect for directions.

   c) Contractor's failure to notify the Architect/Owner, prior to performing the additional work, accepts full responsibility for any extra costs, delays or non-acceptance by the Owner or Architect that may be produced or incurred to the contract.

5. Discrepancies - Should the contract documents disagree (drawings and specifications), the better quality or larger quantity of materials or work shall be included in the bid and unless otherwise ordered in writing, shall be furnished by the Contractor.

6. Standard Codes - Reference made to standard specifications or codes refer to latest edition unless otherwise noted. Such reference includes current addenda and errata, if any. All work shall meet or exceed all zoning and code requirements, including the Michigan Building Code, or as adopted by the local building authority, and State Fire Marshal.

7. Organization - The organization of the specifications into Divisions, Sections and Articles, and the arrangement of drawings shall not control the Contractor in dividing the work among Sub-contractors or in establishing the extent of work to be performed by any trade.

8. Materials - Shall be new. Seconds or damaged materials will be rejected by the Architect, who reserves the right to disapprove and reject any materials proposed or installed, which in his opinion fail to meet quality standards specified. Contractor shall, at his expense, remove and replace with approved materials, any rejected materials.

9. Labor - As noted elsewhere, it is the Prime Contractor's responsibility to keep the job moving according to the progress schedule and meet completion dates specified or stated in the Bid Proposal. Whether Workers/Sub-Contractors/Suppliers are union or non-union, default, quit, fail to perform, it is the Prime Contractor's responsibility to work out problems that may occur to keep on schedule and prevent any damages, delays, or disturbances caused to the Owner and/or job site.

H. DAMAGE & REPAIRS TO SITE & BUILDING:

1. The site, building and furniture or equipment, including such items as walls, ceilings, floors, roofs, trees, drives, walks, curbs, gutters, paving, grade areas, etc., cut up or damaged during construction of this project shall be repaired or replaced in a neat and workmanlike manner, to the satisfaction of the Owner and Architect, by the Contractor responsible.

2. The Contractor shall be responsible for the security, watertightness and systems operation of the building in areas of this work. Any vandalism, water damage, theft, electrical/mechanical damages, etc., to the building or its components or any stored or installed materials as part of this work, or furniture and equipment (ceilings, floors, walls, desks, computers, books, papers, etc.) shall become the Contractor's responsibility to restore (replace or repair) all items to their same condition as when the work started. Included, but not limited to, shall be all additional costs for Architects, Attorneys and Owner's staff time to clean up, document and resolve any damages or issues.

I. CLEANING UP & FINAL ACCEPTANCE BY OWNER:

1. Section 39 of General Conditions shall be supplemented as follows:

   "In addition to the removal of rubbish and leaving the work areas clean, the Contractor shall clean all work, wash floors, vacuum carpet, wash glass, remove all stickers, replace broken glass, remove stains, spots, marks, dust and dirt from all decorated work and finishes; including all existing work affected by this operation, including site areas. All damage to

lawns, walks, pavement, building and building elements, etc., caused from equipment, trash containers, vehicles, or other operations in performing this work shall be repaired. **This facility (building & site) shall be ready for Owner's occupancy and use at completion - Owner's furnishings excluded.**

2. **On a daily basis**, all rubbish and debris shall be cleaned up and placed in a dumpster on the job site to be removed/replaced as needed to a licensed disposal site. **Note:** Contractor shall remove and install temporary fencing every Friday as indicated on sheet CE-7. The building site shall be kept neat and organized, so that work and safety of all trades is not affected. Submit written documentation, manifests, logs, etc. of all debris removal at completion of job.

3. Materials used as part of this work shall be neatly stored and properly protected in an organized manner, so they do not interfere with the work, safety of all trades and hazard or damage to the site/building. Vandalism arising from improperly stored materials to the Owner's site/building shall be borne by the Contractor.

4. It shall be the Prime Contractor's responsibility to clean-up and co-ordinate work areas so that each trade can perform their work safely and efficiently or direct and enforce that each Sub-Contractor conforms to these same requirements.

5. Should the Contractor fail to clean-up debris caused from his operations and properly store and remove from site on a daily basis, the Owner in a safety/emergency situation without notice to the Contractor may elect to clean up debris with their own work force. At other times the Owner will give Contractor advance notice. All costs incurred by the Owner due to Contractor's neglect will be documented and deducted against the final contract amount due to the Contractor.

6. If this contract involves construction of a new building, remodeling, or additions the scope of clean up shall be more than the normal removal of rubbish and leaving the work areas clean. The Contractor shall clean all new work, wash floors, vacuum carpet, wash glass, remove all stickers, replace broken glass, remove stains, spots, marks, dust and dirt from all decorated work and finishes, including all existing work affected by this operation, including tenants furnishings, contents and personal belongings. All damage to lawns, walks, pavement, vehicles or other operations in performing this work shall be repaired or replaced to an equal, or better condition than before the damage occurred. The project shall be ready for Owner's occupancy and use when completed.

J. CUTTING & PATCHING:

1. The Prime Contractor shall be responsible for coordinating all cutting and patching of built work that needs to be modified for missed items, errors, defects, etc., as caused by his own Employees or Sub-contractors. He shall coordinate with related trades and Sub-Contractors and work out all details and scheduling. The Prime Contractor shall coordinate with the responsible party for the problem and extra work and shall resolve all costs to correct, without additional charge to the Owner.

K. TEMPORARY FACILITIES:

1. Enclosures - Contractor is responsible for any damage to all materials, stored or built into this work under this contract, due to elements of the weather, vandalism, theft, fire, etc. No open areas of work shall be left open during non-working hours or inclement weather. Contractor is responsible for all damages caused due to this contract, to all materials, whether existing or incorporated into this work.

2. Storage - Each Contractor shall provide / erect a materials storage shed, properly covered, locked, etc., as required. Contractor is responsible for stored materials. Stolen, damaged or destroyed materials shall be replaced at the Contractor's expense.

3. Field Office - The Prime Contractor shall provide a mobile trailer unit for use by all Sub-Contractors as a general office (not for storage). Shall be equipped with telephone, heat, lights, etc. Contractor shall maintain at this office a complete set of contract documents, with bulletins, change orders, shop drawings, schedules, Sub-Contractor's list, etc. All costs associated with providing and maintaining the field office shall be by the General Contractor. It's location, as well as the location of storage trailers, general site storage, workers parking, general rigging/staging area will be determined at the pre-construction meeting to the satisfaction of the Owner. Electric usage will be paid for by Owner. Heater to be non-electric type with electric blower only. Telephone hook-up, usage and any charges shall be by the General Contractor.

4. Toilet Facilities - Prime Contractor shall be responsible for providing, maintaining and keeping clean a self-contained toilet facility on site in close proximity to the work.

5. Miscellaneous - Contractor shall provide all temporary drainage, drains, sumps, walkways, railings, etc., as required for proper execution of work and as required to meet all codes and ordinances.

6. Debris Removal - All debris resulting from this work shall be cleaned up at end of each day's work and hauled away from job upon completion to a licensed disposal site. Prime Contractor shall provide a dumpster as required for use by all Sub-Contractors and pay for all usage/dump charges.

7. Removal - Temporary facilities shall be removed when no longer required, or at completion and site restored to original condition.

8. Exits - Provide temporary ladders, railings, etc., as required for emergency use during construction. Proper exiting of building shall be maintained at all times.

9. Temporary Heat - Contractor shall provide and maintain all temporary heating and ventilating units during construction as required to properly execute this contract. All fuels used shall be paid for by the Contractor. (No electric units)

10. Barricades - Provide all necessary barricades, fencing, flagmen, etc., to properly control and assure the safety of workers and the public during this work.

11. Water - The Prime Contractor shall provide all water required for construction use, drinking, etc., and coordinate requirements with Sub-Contractors. Note: The tap and metering of the fire hydrant may be used, but all at the Prime Contractor's cost - installation, usage bills and removal.

12. Electrical - The Electrical Contractor shall provide temporary power to the site, necessary building lights and outlets for others to connect. The Prime Contractor shall coordinate among all Sub-Contractors and pay all usage bills. See Electrical Division for other requirements.

13. Telephones – Contractor is not to use Owner's general telephones.

14. Fencing - General Contractor is to secure the contract limits of this work with snow type fencing or better as needed to secure the construction site off limits to unauthorized people. Safety to the public is of utmost importance. All ladders, scaffolding, doors, windows, entries, and other attractive/inviting items shall be secured during non-working hours.

15. Road Access - Maintenance

a) Contractor shall keep the Owner's roads free of construction spillages and debris at all times. Repair damage caused to these roads by contract-related construction vehicles by replacing damaged pavement and curbing to match existing construction.

b) Construct and maintain temporary earth ramps for access and egress of heavy construction and delivery vehicles to below grade (excavated) areas of the construction site.

c) Contractor may use designated areas of Owner's parking facilities for passenger vehicles only. Heavy construction equipment will not be permitted on Owner's parking facilities. Maintain and repair any damage caused by use of Owner's parking facilities. Maintain parking area for construction vehicles as designated by the Owner.

L. MISCELLANEOUS COSTS:

1. The Prime Contractor shall secure and pay for the building permit based on the work of all Contractors, along with all costs for inspections, plan review fees, approvals, etc. Sub-contractors shall secure same related permits as required by code. Upon completion, submit all occupancy permits, approvals, etc. It is the Prime Contractor's responsibility to pick up all costs and coordinate the Sub-permits, should the Sub-Contractors under his control fail to do so. All permits, including electrical/mechanical, shall be secured from the City of Ann Arbor at the web link below.

www.a2gov.org/departments/planning-development/building/permits/Pages/default.aspx

2. Contractor, Sub-Contractor and Supplier shall include in his bid and contract price any Michigan sales and use taxes, currently imposed by legislative enactment.

3. Utilities - All costs, tap-in fees, back-charges, permits, inspections and approvals shall be included in the Bid by the Prime Contractor. Each Sub-Contractor shall be responsible for their related trade, or as noted herein, or under their specialized division. It shall be the Prime Contractor's responsibility to pick-up all costs and coordinate with the Sub-Contractors if they should fail in their responsibility. The intent is to eliminate any extra cost to the Owner for utilities during the course of construction.

a) Electric - the Electrical Contractor shall be responsible and include all power company's back-charge and utility company's work in the bid for all secondary and primary wiring, poles, transformers, meter, meter socket, etc. For either temporary or final service the Prime Contractor shall be responsible for all usage bills, until acceptance by the Owner, or substantial completion.

Electrical Contractor to be responsible for labor and materials for final hook-up of all electrical equipment as supplied under Electrical Division, Mechanical Division, or Equipment Division as furnished by Prime Contractor, unless noted otherwise in specific Divisions, such as overhead door operators. Included are lights, fans, heaters, motors, etc. Other equipment as supplied by the Owner will be hooked-up by the Owner.

(Detroit Edison, Ann Arbor, Michigan – Steve McClear, 734-397-4115); stephen.mcclear@dteenergy.com

b) Storm, Sanitary, Water Main - The Prime Contractor shall be responsible and include all costs for permits, inspections, approvals, labor and material for the complete storm drainage system. Included shall be the soil erosion permit, inspections, approvals and compliance as required by the City of Ann Arbor.

c) Road Right-Of-Way - The Prime Contractor shall be responsible and include all costs in his bid for performing all work in the right-of-way. Included shall be permits, inspections, barricades, approvals, bonds, clean up, etc., as required by the City of Ann Arbor.

M. ARCHITECT'S BASIC AND ADDITIONAL SERVICES

1. The Architect will schedule and conduct a pre-construction meeting before work starts. See Division #1.1, Special Conditions for details.

2. The Architect will schedule a conduct a weekly construction progress meeting at the job site with the Owner and Contractor present to address progress and any construction concerns.

3. The Architect will make job site visits on a scheduled basis (approximately one per week), during the course of construction. He shall be provided with access to all areas of work to insure construction is proceeding in accordance with the contract documents. The Contractor shall schedule all sample mock-ups, questions regarding the project, any special meetings for Architect's review and approval during this scheduled visits.

4. The Contractor is responsible to notify the Architect 48 hours in advance for the following special visits:

   a) First day of job set-up to review material storage placements & general layout

   b) All excavations prior to backfill or concrete placement & during testing, after demolition, but before new materials are installed, to view concealed job conditions.

   c) To review/approve all samples of construction before Contractor continues with the work. Sample areas may be described in other Divisions of the Specifications - this may also include special visits by manufacturers of systems.

   d) When observations/reviews/approvals are made by representatives of Manufacturers and Suppliers

   e) The Contractor shall submit a notice of completion letter to the Architect in writing when all work is complete and ready for a punch list. Under the normal services, the Architect will make (1) punch list visit, (1) re-punch and (1) random final check. The initial punch list will be made by the Architect in the presence of the Contractor and the Owner to determine what items may need corrections and if the project is substantially complete. One weeks advance notice is required.

   The punch list will be written up by the Architect and describe general and/or specific items in general locations. It is the Prime Contractor's responsibility to also make a list of his own, dealing with the specifics and translate them to the proper Sub-Contractors

   If the Architect arrives at the job site and the project is not done and ready for a punch list, but rather a "to do list", the Architect has the right to leave and will only return when notice of completion is again received in writing. This process will use up (1) of the normal punch/re-punch visits

   The first re-punch and the final random re-punch visit shall again be requested in writing, similar in format to the initial punch list.

   Note: If the Contractor fails to complete all punch list items within the (3) punch/re-punch visits allowed, the costs for all additional punch list visits will be deducted from the final cost amount due to the Contractor to cover any Architect's, Owner's, or Attorney's additional services at their regular billing rate until the work is accepted by the Architect and Owner.

5. The punch and re-punch list includes physical items in the field requiring completion, as well as paper work items that must be submitted prior to job "close-out" and "final completion" as noted in the General/Special Conditions. Final payment can only be considered once <u>all</u> items are completed to the satisfaction of the Owner/Architect.

   The Contractor should review the Special Conditions for any applicable liquidated damages that apply for failure to meet "Substantial" or "Final completion" dates. In addition to these costs, or in the event that liquidated damages are not part of this contract, the Contractor is responsible to reimburse the Owner for the direct costs incurred for additional time by the Architect, Administrative/Custodial Staff, Attorney, etc., when the project goes beyond the established dates and the cause of the delay is not beyond his control.

6. The Contractor will be responsible to pay for all additional Architectural services, including all special visits requested by the Contractor to resolve problems that are due to the lack of performance by the Contractor. Examples of certain circumstances which will cause the Contractor to incur additional Architectural service fees include, but are not limited to the following:

   a) Shop drawing submittals that are rejected due to being incomplete or for submitting on materials other than as specified and noted on the Bid Proposal Form.

   b) Contractor elects to use more than (1) Sub-Contractor for any trade that results in duplicate shop drawing submittals.

c) Contractor requests a punch list in writing and Architect finds the work incomplete.

d) Contractor installs other than approved materials, resulting in additional time incurred by Architect.

e) Contractor changes Project Superintendent or Project Manager or fails to have Project Superintendent present on job when visited by the Architect, which requires Architect to educate new Project Superintendent to job status or repeat instructions.

f) Contractor's layout or installation is found to be significantly different than the design or shop drawings and the Architect is required to review, approve, or make extensive revisions.

g) Contractor's failure to promptly correct or make good any problem that is part of this contract work and falls under the Contractor's responsibility to properly work as intended, either during the course of construction, or during the close-out period, all of which requires additional time by the Architect for reviews, observations, etc.

h) All Architect's/Engineer's time to close out the project beyond the thirty (30) days after substantial completion, including making phone calls, writing letters, reviewing documents, special close-out meetings, etc., unless a time extension has been approved with a signed change order.

Note: All additional time required by the Architect to resolve any of the above items will be back-charged against the contract amount based on the Architect's current hourly rate and made payable to the Architect by the Owner. The Contractor shall be informed by the Architect within ten (10) days of any incident of any intent to invoke back-charges for additional Architectural services. It shall be the Contractor's responsibility to request in writing any estimates of additional costs to be incurred. Contractor's failure to respond to the estimate in a timely manner will be interpreted as Contractor's acceptance of all additional Architectural services for back-charges as summarized by the Architect.

N. CONSTRUCTION SCHEDULE

As part of the Proposal Form, and on a separate document to be submitted with the Proposal Form, the Contractor shall provide the following items:

1. **Construction Schedule** - in a weekly bar chart format (Gant Chart) which outlines the following minimum requirements for this project:
   a. Contract Award Date: (Anticipated November 2016)
   b. Pre-Construction Meeting Date
   c. Physical Construction Start Date (Contracts, Bonds & Insurance must be signed and submitted)
   d. List the anticipated Start and Completion Dates for the following items:
      1) Mobilize job trailers and set up on site
      2) Start Site Drainage
      3) Concrete Foundations
      4) Underground Utilities
      5) Concrete Flatwork
      6) Masonry
      7) Structural Steel / Metal Building
      8) Metal Building Roof, Siding, Insulation
      9) Metal Studs / Drywall
      10) Doors / Frames / Windows
      11) Plumbing
      12) HVAC
      13) Electrical
      14) Finishes
      15) Site Pavements
   e. List the anticipated dates of Major Milestones of Construction, including the following:
      1) Building Enclosure
      2) Interior Rough-In
      3) Ready for Punch List
      4) Substantial Completion
      5) Final Certificate of Occupancy
      6) Final Completion (Project Close-Out)

2. **Contractor’s Corporate Safety Plan** - Submit a written description explaining safety practices and procedures.

3. **Subcontractor Coordination Methods** - Submit a written description of methods for coordinating subcontractors and major material suppliers.

CONTRACTOR'S DAILY FIELD REPORT

DATE COPIED TO ARCHITECT _____

(INCLUDE ENTIRE ACTIVITIES PER DAY)

CONTRACTOR: _____ FIELD REPORT NUMBER: _____

PROJECT: _____ ARCHITECT'S PROJECT NUMBER _____

DATE:_____ TIME _____ TEMP RANGE: _____ WORK HOURS:____A.M. TO ____ P.M.

PERCENT COMPLETE:_____ CONFORMANCE WITH SCHEDULE (+,-) _____

CREW (LIST SUBS, NUMBER OF WORKERS & TRADE CLASSIFICATIONS)

MATERIAL DELIVERIES / REMOVALS:

SITE VISITORS:

HEAVY EQUIPMENT OR SPECIAL EQUPMENT USED:

WORK PERFORMED:

ITEMS TO VERIFY:

INFORMATION OR ACTION REQUIRED:

ATTACHMENTS:

REPORTED BY: _____ PAGE _____ OF _____ PAGES

DIVISION 2

SITE WORK

2.0 GENERAL

A. SCOPE:

1. This Division includes providing and installing all materials, labor, equipment, etc., as herein specified or as shown on the drawings. Applicable portions of Division #1 form a part of this Division.
2. Contractor shall clean up and remove all debris from the premises caused by his operation.
3. Submit six (6) copies of shop drawings to the Architect for review of all materials before fabrication or installation. Included shall be aggregate base course mix design, asphalt paving mix designs, storm and sub-drainage systems materials data, etc. Submit spec data sheets of all materials to be used. No materials containing asbestos or lead shall be used.
4. All work shall be of the highest quality performed by experienced workmen of each trade.
5. Contractor shall conform to all rules, standards, permits, inspections, etc., as required by all Utility Companies, City of Ann Arbor, Road and Drain Commissions, etc., and perform all work per their standards.
6. Provide and maintain suitable temporary fences, barricades, lights, warnings, etc., for protection of public, Owner's employees, and others having access to the site.
7. Contractor shall keep clean and adequately protect all streets, walks, etc., from damage due to work or trucking.
8. The Contractor shall be responsible for the protection of trees, curbs, lawn areas, etc. At completion of the work, any damaged trees, lawns, curbs, etc., shall be replaced and/or restored to their original condition, including sodding and seeding, to the satisfaction of the Owner and Architect.
9. Contractor shall locate all underground utilities by contacting "Miss Dig" or responsible Utility Company at least 72-hours prior to beginning work.
10. Include all tap-in fees, permit costs, inspection fees and other related costs in performing the work.
11. Materials and installation shall be as per line and grade delineated and described on the drawings.
12. Coordinate any utility service downtime schedule with the Owner.
13. The Contractor at completion shall provide a complete "As Built" survey of the site within the contract limits, verifying all grades, inverts and elevations are within acceptable limits of design drawings, showing all changes, dimensioning and locating all underground utilities, manholes, catch basins, storms, sanitary water, gas, electricity. This shall be signed and dated by the Contractor, documenting the information is correct.
14. All pavement, walks, curbs and other hard materials shall be saw cut in straight perpendicular/parallel lines in regular geometric patterns. Walk sections and other similar work shall be removed back to nearest control joint for replacement of the full section.
15. Work includes, but is not limited to the following:
    a) Site clearing, grubbing, tree and stump removal.
    b) Erosion control.
    c) Top soil stripping, stockpiling, fine grading of topsoil.
    d) Excavating, filling, backfilling, compaction, fine grading, etc., under building, walks, and landscape areas.
    e) General layout, grades, dimensions, etc.
    f) Provide new fill from off site as required to produce finish grades.
    g) Underground drainage.
    h) Bituminous asphalt paving.
    i) Permeable brick paving.
    j) Landscaping.
16. Related work specified in other Divisions:
    a) Concrete curbs, walks, slabs, etc. - see Concrete Division
    b) Excavating & backfilling for mechanical and electrical services.

2.1 EARTH WORK

A. CLEARING & REMOVAL:

1. Coordinate with Owner prior to any removal of all trees, stumps/roots, shrubs, etc., in area affecting new work. Protect all existing that are to remain. Areas of removed tree stumps/roots to be backfilled and compacted with granular 2NS sand as noted elsewhere.

2. Remove from site all miscellaneous concrete, stone fill, rocks, etc., that affects the scope of this work or as shown on the drawings. Remove clay, sand and sub-soils from contract area and deposit on site in another area as directed by Owner.

3. Contract limits shall include all land within the property lines, including public right-of-ways and as affected to perform this work.

B. SURFACE STRIPPING:

1. Strip soil from contract limit areas to required depth from the areas to be occupied by the building and paving/walk areas, which will be disturbed by the work under this contract.

C. EXCAVATION:

1. If suitable bearing is not encountered at the depth indicated on drawings for foundation, the Contractor shall immediately notify the Architect. He shall not proceed further until instructions are given and necessary measurements made for purpose of establishing additional volume of excavation (see testing).

2. Shore and brace excavations as required to prevent cave in. Remove shoring as backfilling progresses, but only when permanent supports are in place.

3. Place footings and foundations upon undisturbed and firm bottoms. Fill any excess cuts under footings with concrete.

4. Do not place footings or slabs on frozen ground. Protect bottoms of trenches and excavations with straw or other suitable materials.

D. BACKFILLING & ROUGH GRADING:

1. Before placing fill, remove all debris subject to termite attack, rot or corrosion and other deleterious materials from area to be backfilled. Deposit backfill in layers not more than 8" thick. All fill material shall be reasonably free from roots, plaster, bats and frozen or otherwise unsuitable material. Stones larger than 4" shall not be permitted in the upper 6" of fill. Compact fill in layers. The finished sub-grade shall be brought to elevations indicated and sloped to drain water from building to match flush with existing grades.

2. Provide all cutting, filling and grading necessary to bring areas to the required sub-levels.

3. C.I.P. (Compact in Place) Fill - Shall be thoroughly compacted to 95% of its maximum unit weight as determined by the AASHTO T-180 test as indicated on plans or specified herein.

4. Fill at asphalt drive areas shall be thoroughly compacted to 95% of its maximum unit weight as determined by the AASHTO T-180 test. Existing soils within the paving limits (upper 12") shall be compacted to a minimum of 95% relative density before placing and compacting new fill.

5. Fill occurring under supported concrete entrance platforms shall be loose forming, not tamped. Fill under other slabs shall be thoroughly compacted to 95% of its maximum unit weight. Existing soils within the building limits (upper 12") shall be compacted to a minimum of 95% relative density before placing and compacting new fill.

6. Sub-grade (new and existing) shall be tested and approved by an independent Soils Engineer before placing of concrete slabs, paving, footings, etc. The Contractor shall utilize the same testing company who performed the soils report in this manual or one who will support the same findings/recommendations. This Contractor shall pay for all fees, inspections, reports, compaction tests, etc. and submit all reports verbally, followed in writing, to the Architect before placing additional fill or new work. Lifts shall be limited to 8" maximum. Testing shall include all existing and new fill (stone and sand). Footing bearing tests to be minimum of 3,000 lbs. per square feet.

   Footing Bearing Tests - At each wall location, approximately every 20 lineal feet, depending on soil type changes. Critical locations to be at all columns, major beam bearing points, and against existing building.

   Building Slab Density Tests – Shall be taken at approximately 15’ x 15’ grid starting against inside of walls, at all corners, under thickened slabs and other critical areas.

   Paving Stone Density Tests - Approximately every 500 S.F., at edges, around catch basins, over utility trenches, major drive lanes, cut outs, patches, etc.

   Testing of Sub-Base (Top of Stripped Soils) & Any New Fill (Sand/Stone) - Shall be made in every cut out area (1 of 2 points) and in other areas at the minimum rate of 1 for every 500 S.F. of paving surface. The actual locations in the field

shall be as recommended and/or selected by the testing company and in any questionable areas as requested by the Architect/Owner. The testing and/or re-testing shall occur until the specifications are met and until the Testing Engineer submits report, stating that the surface is suitable for the next phase of work.

Density tests shall be taken by the testing lab using a calibrated nuclear densometer registered for the soils/fill type and density based on actual proctor.

In lieu of, and in conjunction with the nuclear densometer, the stripped cut base (natural soils) and the new stone base may be proofed rolled with a 20 to 30 ton hard rubber tired vehicle in the presents and direction of the testing lab technician.

E. FINISH GRADING:

1. Finish grades shall correspond with existing grades, unless otherwise indicated.

2. All grading shall be uniform, without dips and areas to pond water

F. MATERIALS:

1. Porous Fill - Shall be make-up fill under slabs within building line. Provide make up fill of clean granular 2NS sand, compacted and tested in maximum 8" lifts from top of stripped soil to underside of stone fill. Provide minimum 4", #21A Michigan Series Crushed Stone, compacted and tested below all slabs within building line.

2. Porous Fill (Sand) - Shall be Class 2 NS yellow bank sand, meeting ASTM C-33 compacted and tested in maximum 8" lifts from bottom of excavation to within 4" of finished grade (4" top soil required).

3. Porous Base on Site, Within Asphalt Drive, Cut-Out Areas - Provide minimum 6", #21-AA Michigan Series Crushed Stone, compacted and tested in 6" lifts.

4. Stabilized Concrete Backfill (Ready Mixed Flowable Fill, RFF) - Shall consist of a mixture of 1,700 lbs. fly ash (dry weight), meeting ASTM C-618, 90 lbs., Type I Cement, meeting ASTM C-150 and 100-120 gallons of water for a 1.29 water-cement ratio and a minimum of 50 psi compressive strength at 28 days, similar to M-Crete as distributed by Messina Concrete Inc., of Monroe, MI. The flowable fill mixture shall be delivered to the job site in a revolving drum mixer truck and the temperature of the mix shall be at least 50^0F. when placed. Submit mix design as shop drawing to the Architect.

5. Stone Bedding - Porous fill for pipe bedding shall be M.D.O.T. #25-A C.I.P. 6" minimum thickness under pipe, 6" minimum width both sides, with 6" minimum cover over pipe.

G. REMOVAL OF DEBRIS & EXCESS MATERIALS:

1. All debris (trees, stumps, roots, paving, rocks, stone, concrete, etc.) shall be entirely removed from the premises.

2. Good excavated materials remaining at completion of work (clay, sand, topsoil -no trees, roots, limbs, etc.), shall be deposited in areas on site as directed by Owner. If no areas are available on site for distribution, Contractor shall remove.

2.2 DRAINAGE

A. SCOPE:

1. Provide and install all materials, equipment, permits, fees, etc., for storm system outside of building as shown on drawings or specified herein.

2. Work includes, but not limited to the following:

   a) Storm drainage system with all tile, catch basins, grates, covers, etc., outside of building. Include PVC downspout risers, cleanouts, etc.

   b) Branch lines, fittings, etc. for downspout drainage.

   c) Included shall be all excavating, backfilling, grading, concrete work, etc.

B. MATERIALS:

1. Storm Sewer - To be PVC Type PSM, ASTM.D - 3034 SDR35 pipe and fittings. PVC SDR35 pipe to be used for branch lines serving building roof drainage around building, as noted on drawings. Joints shall be sealed with an elastomeric gasket conforming to ASTM D-1869, C-361 and C-443. Sizes shall be as shown on drawings.

2. Downspout Riser - Downspout risers off 6" main extension line shall be 4" diameter with "T" and clean out at grade. Terminate with 4" diameter well cap at height above grade as noted on drawings, approximately 6". Well cap shall be white, PVC, similar to P1906, P1926, P1946 as manufactured by Plastic Trends and distributed by Peerless Supply, Monroe, MI., or equal for proper size of 3” x 4” or 4” diameter aluminum downspout connection and offset.

3. Catch Basins - Shall be masonry type throughout, or pre-cast in yard areas only per M.D.O.T. Specifications. Grates and frames to be cast iron as manufactured by East Jordan, or equal. Install pre-cast grade "A" concrete bottoms. Install masonry curved bricks or pre-cast sections as required and as shown on drawings, in full bed of mortar per M.D.O.T.

Specifications. Joints shall be completely filled with bituminous compound. Frame and grate unless noted elsewhere shall be "East Jordan" #1040, with type M, flat radial grate, or equal, unless noted otherwise. Set frames and covers in full bed of stiff mortar.

4. Porous Fill - Pipe shall not be backfilled until inspections and tests have been performed. Backfill materials shall be free of rocks, debris and other foreign materials. Backfill in trench bottom to ¼ diameter of new pipe shall be #25A stone deposited in layers of 6" and properly graded to uniformly support pipe. From top of pipe bedding to underside of paving to be #21A stone compacted in 6" lifts to 95% maximum unit weight as specified under earthwork.

5. Concrete/Reinforcing & Masonry/Mortar - See Other Divisions.

C. EXCAVATION:

1. Do all excavations of whatever substances encountered to depths indicated.

2. Excess materials not suitable for backfill shall be removed from site.

3. Grade the bottom of trenches accurately. Grade to provide a uniform bearing support for each section of pipe. Shore and brace sides of excavations as required.

4. Trenches shall not be backfilled until inspections and tests have been performed.

5. Backfill materials shall be free of rocks, debris and other foreign materials. Backfill in trench bottom to 6" above pipe shall be #25A stone or fine gravel.

D. INSTALLATION:

1. Lay pipe true to line and grade to form smooth uniform invert - bell end to be up grade. Clear interior of pipe of all debris as pipe is laid.

2. Deflections from straight lines or grade between centerline made necessary by vertical or horizontal curves shall not exceed manufacturer's recommendations. If exceeded, provide special bends.

3. Field cutting of pipe shall be done only with proper tools for clean, straight ends.

4. Special care in layout and installation is required per installing downspout risers. Riser to clear footing and be tight to brick at grade. Anchor PVC standpipes to building wall below grade with stainless steel straps and anchors.

5. Install all catch basins with masonry curved bricks in full bed of mortar per MDOT Specifications. Set catch basin sections as shown on drawings. Masonry catch basins shall be completely parged with 1/2" cement mortar plaster coat inside and out. Joints shall be completely filled with bituminous compound. Set frames and covers in full bed of stiff mortar at elevations noted - Grout solid around drain tiles. Option is to install pre-cast type of same size.

6. On branch sewer lines as for the roof water system, all connections to other lines shall be made with "Y" fittings to direct flow - no "T" fittings. Use offset double "Y" fittings at juncture of two branches to main outlet. Provide and install sleeves through all porch/apron slab footings/foundations.

2.3 PAVING - BITUMINOUS

A. GENERAL:

1. Work includes all labor, material and equipment necessary for placing of on-site bituminous paving, including any stone base and removal of existing materials - all as specified herein. See other Divisions of specifications where applicable.

2. Apply prime and tack coats only when ambient temperature is above 50 degrees F. and when temperatures has not been below 35 degrees F. for 12 hours immediately prior to application. Do not apply when sub-grade or base is wet, or contains an excess of moisture. Install bituminous paving only when atmospheric temperature is above 40 degrees F. and when base is dry.

3. Unless otherwise noted all work shall conform to Michigan Department of Transportation (MDOT) 2003 Standard Specifications. Where possible a minimum slope shall be kept to 1% (1/8" per foot.) No ponding of water shall occur.

4. Submit material mix designs to Architect for review as shop drawings.

5. Work includes, but not limited to is the following:
   a) Fine grading of sub-grades, primer, stone base course, asphalt leveling course and asphalt wearing course, in thickness' as indicated on plans.
   b) Striping - All new and existing paving areas (see drawings).

6. Related work specified elsewhere is:
   a) Excavating, filling of sub-grade.
   b) Concrete curbs, slabs, etc.

c) Storm drainage.

B. MATERIALS:

1. Stone Base Course - Shall be Michigan Series #21AA, in minimum thickness when compacted as indicated on plans. Crushed concrete is not acceptable.

2. Bituminous Primer Coat - Shall be MC-30 or MC-70.

3. Bond Coat - Shall be SS-1H.

4. Asphalt Base Course - Shall be Michigan Series #13A, minimum thickness as shown on plans.

5. Asphalt Wearing Course - Shall be Michigan Series #13A - minimum thickness as shown on plans.

6. Line/Striping - Shall be Sherwin-Williams Promar Alkyd Traffic Marking Paint, or equal - yellow color. Handicap space lines, related walkways and handicap symbol shall be blue.

C. INSTALLATION:

1. Fine grade and compact sub-grade all new and existing to within paving limits. Compact top 12" to at least 95% maximum unit weight per AASHTO T-180 test. All soft and yielding material and other portions of the sub-grade, which will not be compacted readily when rolled or tamped, shall be removed and replaced with suitable material.

2. Install minimum 8" layer, or as indicated on plans, of #21AA stone base course and compact and test to at least 95% maximum unit weight.

3. Apply prime coat over stone base course at a rate not less than .25 to .33 gallons/sq. yd.

4. Install asphalt base course in compacted thickness as indicated on plans spread and roll to uniform smooth, dense surface, with edges formed true to straight lines, or radius as shown. Compact with a (8) ton double drum roller or equal until there is no movement underneath.

5. Install a tack or bond coat of SS-1H between courses at a rate of .05 to .10 gallons/sq. yd. before installing wearing course. No dirt, dust, oil, etc. shall exist.

6. Install asphalt wearing course in compacted thickness as indicated on plans over bond coat. Stagger seam joints minimum of 6" from base course joints, or install wearing course perpendicular to base course. Spread and roll to a uniform smooth surface, same as base course.

7. Protect paving from driving for a minimum of 24 hours after completion, if asphalt, and until results of test breaks and/or testing allows, if concrete.

8. Install final striping in accordance with manufacturer's recommendations. Lines shall be 4" wide and per drawing.

D. INSPECTION:

1. The Contractor shall be responsible for notifying the Architect by phone forty-eight hours in advance of starting work. The sub-base must be inspected and approved by the Paving Contractor and the Architect prior to placing of aggregate or asphalt courses. The sub-base shall be fine graded to the shape indicated on the drawings and compacted to not less than 98% maximum unit weight. The Contractor shall employ an independent soil Engineer/Testing Laboratory to verify compaction results and pay fees. Approval by the Architect or his authorized representative shall not relieve the Contractor of his responsibility to verify the minimum compaction required, as well as the elevations of the sub-base to be within the acceptable tolerances to insure the minimum thickness of stone/asphalt as specified 1/8"+-.

2. Testing of sub-base (top of stripped soils) and any new fill (sand/stone) shall be made in every cut out area (1 or 2 points) and in other areas at the minimum rate of 1 for every 500 S.F. of paving surface. The actual locations in the field shall be as recommended and/or selected by the testing company and in any questionable areas as requested by the Architect/Owner. The testing and /or re-testing shall occur until the specifications are met and until the Testing Engineer submits report stating that the surface is suitable for the next phase of work.

3. Density tests shall be taken by the testing lab using a calibrated nuclear densometer registered for the soils/fill type and density based on actual proctor.

   In lieu of, and in conjunction with, the nucular densimeter, the striped sub base (native soils) and new stone base may be proofed rolled with a 20 to 30 ton hard rubber tired vehicle in the presence and direction of the testing lab technician.

4. The Contractor shall supply to the Architect copies of all delivery tickets and/or product data and test results on all materials used in the construction of this paving work.

E. SMOOTHNESS REQUIRED:

1. After final rolling of the first paving course, the surface will be inspected and checked by the Architect longitudinally, using a 10' straight edge at selected locations. The variation shall be 1/4" for 1st course. It will again be checked upon final course. Final variation shall be 1/8" in 10'.

2. No water ponding shall occur. All allowed variations as noted above shall have an opening that allows the water to drain off the paving. All water must evaporate and drain away within a twenty-four period of raining. The Contractor shall flood the final surface with Owner/Architect present, if natural rain does not occur to test the drainage.

3. All repairs, patches filling low areas, etc., shall be done prior to striping. High areas shall be heated with torches and re-rolled. Minor low areas shall be filled with a sandy-slurry mix.

F. GUARANTEE:

1. Furnish written guarantee on Paving Contractor's letterhead for paving to Owner to remedy defects or failures due to faulty materials or workmanship within two years of final payment. Shall be signed by an officer of the company. See Instructions To Bidders for sample.

2. Paving guarantee shall include coverage against the paving to develop irregular stress cracks, popping, alligatoring, adhesion cracks, seam opening, edge failures, settlement and becoming soft under normal temperatures.

2.4 LANDSCAPING

A. GENERAL:

1. All work shall be in compliance with these specifications and those as set up by the American Association of Nurserymen and the American Standard for Nursery Stock, and with American Sod Producers Association.

2. Substitutions - These will be permitted only upon submission of proof that specified plants are not obtainable and with the authorization of the Architect to provide for the use of the nearest equivalent. Size and variety of plants. All requests for price adjustments due to substitutions will be submitted in writing to the Architect for approval, along with a request for use of the substitution.

3. Submittals - Contractor shall submit to the Architect a complete list, specs., of all materials and seed/fertilizer to be used for review prior to beginning the work as shop drawing submittal

4. Layout of Work - It shall be the responsibility of this Contractor to stake out plant locations in close conformity with the locations, which are designated on the drawings. After the staking has been completed. The Contractor shall contact the Architect for adjustment and approval of the staked locations.

5. Extent of Work:

   See drawings for extent of work to be planted.

B. SOIL PREPARATIONS:

1. Preparations - Planting area required to be free of all matter of debris that might interfere with installation of soil and plant materials.

C. MATERIALS:

1. Soil mix furnished for raingarden shall be natural, fertile, friable soil obtained from natural well drained areas and possessing characteristics of representative productive soil in vicinity. Shall be easily worked. Soil shall not be excessively acid, alkaline or contain toxic substances harmful to plant growth. Soil shall be without admixtures of subsoil and shall be cleaned, reasonably free from clay, lumps, stones, stumps, roots or similar substances 1" or larger in diameter, or other objects which might be a hindrance to planting operation. Finely rake to finished elevations shown.

2.5 PAVING - CONCRETE

A. GENERAL:

1. Work includes all labor, material and equipment necessary for placing of on-site concrete paving, including any fill, demolition and removal of existing materials -all as specified herein. See other Divisions of specifications where applicable.

2. Unless otherwise noted all work shall conform to requirements as described in Division #3. (Where possible a minimum slope shall be kept to 1% (1/8" per foot.) No ponding of water shall occur.

3. Submit material mix designs to Architect for review as shop drawings.

4. Work includes, but not limited to is the following:
   a) Fine grading of sub-grades, fill, compaction, testing
   b) New Concrete Paving

5. Related work specified elsewhere is:
   a) Excavating, filling of sub-grade

b) Concrete curbs, slabs, etc.

c) Bituminous paving

B. MATERIALS:

1. Concrete - See Division #3, 4,000 PSI air entrained, thickness as shown on plans, without steel or mesh reinforcing.

C. INSTALLATION:

1. Fine grade and compact sub-grade all new and existing to within paving limits. Compact top 6" to at least 95% unit weight per AASHTO T-180 test. All soft and yielding material and other portions of the sub-grade, which will not be compacted readily when rolled or tamped, shall be removed and replaced with suitable material.

2. Unless noted otherwise concrete work shall conform to Division #3.

3. Do not allow rain to fall on wet concrete. Protect finish during setting up/curing period against all elements, including weather and physical abuse and vandalism. Provide security guard as required. De-faced concrete will not be accepted.

4. Finished concrete shall be smooth and hard and free from trowel marks or holes. All slabs must be free from irregularities, waviness, rough spots and any other defects, with maximum variation of 1/8" in 10' diameter.

5. Finish exterior walks, drives and platforms with magnesium trowel and give a lightly broomed, non-slip finish.

6. Perform all right-of-way work as required per City of Ann Arbor standards.

7. Control and expansion joints shall be as shown on drawings, approximately square in shape. No triangular shapes are allowed. All control joints shall be tooled while concrete is green, followed by sawing to produce depth of 1/4 of slab thickness.

8. Protect paving from driving until results of test breaks and testing lab allow.

9. Install final striping in accordance with manufacturer's recommendations. Lines shall be 4" wide and per drawing.

D. INSPECTION:

1. The Contractor shall be responsible for notifying the Architect by phone forty-eight hours in advance of starting work. The sub-base must be inspected and approved by the Paving Contractor and the Architect prior to placing of concrete. The sub-base shall be fine graded to the shape indicated on the drawings and compacted to not less than 98% maximum unit weight. The Contractor shall employ an independent soils Engineer/Testing Laboratory to verify compaction results and pay fees. Approval by the Architect or his authorized representative shall not relieve the Contractor of his responsibility to verify the minimum compaction required, as well as the elevations of the sub-base to be within the acceptable tolerances to insure the minimum thickness of concrete as specified 1/8"+-.

2. Testing of sub-base (top of stripped soils) and any new fill (sand/stone) shall be made in every cut out area (1 or 2 points) and in other areas at the minimum rate of 1 for every 500 S.F. of paving surface. The actual locations in the field shall be as recommended and/or selected by the testing company and in any questionable areas as requested by the Architect/Owner. The testing and /or re-testing shall occur until the specifications are met and until the Testing Engineer submits report stating that the surface is suitable for the next phase of work.

3. The Contractor shall supply to the Architect copies of all delivery tickets and/or product data and test results on all materials used in the construction of this paving work.

E. SMOOTHNESS REQUIRED:

1. After installation, the surface will be inspected and checked by the Architect longitudinally, using a 10' straight edge at selected locations. Final variation shall be 1/8" in 10'.

2. No water ponding shall occur. All allowed variations as noted above shall have an opening that allows the water to drain off the paving. All water must evaporate and drain away within a twenty-four hour period of raining. The Contractor shall flood the final surface with Owner/Architect present, if natural rain does not occur to test the drainage.

3. All areas ponding water shall be removed and replaced.

F. GUARANTEE:

1. Furnish written guarantee on Paving Contractor's letterhead for paving to Owner to remedy defects or failures due to faulty materials or workmanship within two years of final payment. Shall be signed by an officer of the company.

2. Paving guarantee shall include coverage against flaking, spauling of top surface, edge failures, and irregular settlement/slab shifting and cracking.

2.6 PAVING - PERMEABLE BRICK

A. GENERAL:

1. Work includes all labor, material and equipment necessary for placing of brick unit pavers including any fill, demolition and removal of existing materials - all as specified herein. See other Divisions of specifications where applicable.
2. Unless otherwise noted all work shall conform to requirements as described in Division #3. (Where possible a minimum slope shall be kept to 1% (1/8" per foot.) No ponding of water shall occur.
3. Submit material samples and mix designs to Architect for review as shop drawings.
4. Work includes, but not limited to is the following:
   a) Fine grading of sub-grades, fill, compaction, testing
   b) New brick paving

B. MATERIALS:

1. Brick Unit Pavers - Shall be "Eco-Classic" Permeable Brick Pavers rated for heavy duty traffic as manufactured by Fendt Products laid in a herringbone pattern laid 45 degrees to the curb. Color as determined by the Owner.
2. Crushed Stone Chips - Shall be sound, fine, washed, crushed stone or gravel appropriated for setting-bed.
3. Aggregate Base - Shall be MDOT #7A washed aggregate (crushed concrete is not acceptable). Thickness as shown on the plans.
4. Aggregate Subbase - Shall be MDOT #6A crushed aggregate (crushed concrete is not acceptable). Thickness as shown on the plans.
5. Reinforcing Grid - Shall be Tensar TX-130S Triaxial Geogrid.
6. Geofabric - Shall be non-woven, needle-punched fabric, 4.5 oz/yd minimum, manufactured for subsurface drainage applications.

C. INSTALLATION:

1. Do not use unit pavers with chips, cracks, voids, discoloration, or other defects that might be visible or cause staining in finished work.
2. Mix pavers for several pallets or cubes as they are placed in order to produce uniform blend of colors and textures.
3. Cut pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut unit to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.
4. Tolerances: Do not exceed 1/16-inch unit-to-unit offset from flush (lippage) nor 1/8-inch in 24 inches from level, or indicated slope, for finished surface of paving.

D. AGGREGATE SETTING-BED APPLICATION:

1. Compact soil subgrade to a minimum of 95% maximum unit weight per AASHTO T-180 test.
2. Proof-roll the prepared subgrade to identify soft pockets and areas of excessive yielding. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting with compacted backfill as directed by the Owner/Architect.
3. Place drainage geofabric and geogrid over prepared subgrade.
4. Place aggregate subbase and base, compact by tamping with plate vibrator.
5. Place drainage geofabric over compacted base, overlapping ends and edges at least 12 inches.
6. Place leveling course and screed to required thickness, taking care that the moisture content remains constant and density is loose and uniform until pavers are set and compacted.
7. Set pavers being careful not to disturb leveling course. If pavers have spacers bars, place pavers hand tight against spacer bars. Use string lines to keep straight lines.
8. Vibrate pavers into leveling course. Use vibrator with neoprene mat on face of plate or other means as needed to prevent cracking and chipping of pavers. Perform at least three passes across paving with vibrator.
9. Before ending each day's work and when rain interrupts work, cover pavers that have not been compacted and cover leveling course on which pavers have not been set with non-staining plastic sheets to protect them.
10. Spread crushed stone ships and fill joints after vibrating pavers into place. Vibrate pavers and add crushed stone chips until joints are completely filled. Remove excess material.
11. Do not allow traffic on installed pavers until joints are filled.
12. Repeat joint-filling process 30 days later.

E GUARANTEE:

1. Furnish written guarantee on Paving Contractor's letterhead for paving to Owner to remedy defects or failures due to faulty materials or workmanship within two years of final payment. Shall be signed by an officer of the company.
2. Paving guarantee shall include coverage against flaking, spauling of top surface, edge failures, and irregular

settlement/slab shifting and cracking.

2.7 EROSION CONTROL

A. GENERAL:

1. Control runoff, soil erosion, and sedimentation. No sediment should leave the site.
2. Prevent wind erosion. No visible emissions (dust) should leave the site.
3. Comply with City of Ann Arbor Soil Erosion and Sedimentation Control Procedures.

B. PREPARATION:

1. Where the following events result in the need for additional or modified soil erosion and sedimentation control installations to meet the objective of the referenced procedures, provide remedial installations on a timely basis.

   a) Unanticipated alterations to the construction schedule.
   b) Unanticipated site conditions except Acts of God such as a tornado or fire.

2. Install temporary erosion and sedimentation control measures prior to or upon commencement to earthwork activities.

   a) Install and entrance anti-tracking pad with a minimum of 50 feet in length. A geotextile filter fabric should be placed under six inches of limestone aggregate.
   b) Install temporary inlet protection at all adjacent and down-gradient storm water inlets, catch basins and manholes that may be impacted.
   c) Install silt fence with stakes on the side down gradient from the disturbed area. Toe in six inches of the fencing material.
   d) Place stockpiles and other spoil piles away from the drainage system to minimize sediment transport. Keep as few stockpiles as possible during the course of the project. If the stockpile and/or spoil pile must remain on-site overnight, or if the weather conditions indicate the chance for precipitation, then:
      1) Cover the pile with water repellent material to prevent erosion, or
      2) Install silt fencing around the base of the pile to prevent transport of sediment to the storm water system and wet the pile as needed to prevent wind erosion, or
      3) Apply other control methods as appropriate to the site.
   e) Where runoff enters the existing storm water system, protect the storm system from sedimentation. Temporary inlet protection must prevent the release of sediment and allow for proper drainage.
      1) Use of burlap is not acceptable as a SESC measure.
      2) Use silt sacks for drain protection. Based on site conditions select regular or high flow silt sacks as appropriate.

3. Utilize a water truck as needed for dust control.

4. Utilize a sweeping machine to remove sediment tracked onto the pavement on a daily basis at minimum. Use sweeper more frequently as dictated by site conditions.

5. Maintain erosion and sedimentation controls on a daily basis until the contract has been completed and accepted. Maintenance shall include:

   a) Repair of damaged installations.
   b) Replacement of lost soil erosion and sedimentation control measures.
   c) Periodic removal of collected silt and sedimentation as required or directed to maintain effectiveness of the silt traps, filters and basins.

6. Correct non-conforming soil erosion and sedimentation control worn on a timely basis within 24 hours, if Waters of the State are being impacted or within five days if not impacting Waters of the State.

7. Complete permanent soil erosion control measures for all slopes, channels, ditches, or any disturbed land area within five calendar days after final grading or the final earth change has been completed. Maintain temporary control measures until permanent soil erosion control measures are in place and the area is stabilized.

C. CLEAN UP:

1. Remove temporary erosion control measures after permanent soil erosion measures are in place and the area is stabilized, unless ordered by the Owner's Representative to remain in place. Care shall be taken during removal to prevent soil erosion and sedimentation.

2.8 WOOD FENCING

A. MATERIAL:

1. All wood shall be suitable for exterior usage. Fence to be of height, length, configuration, etc. as detailed and located on drawings. Minimum height for mechanical unit enclosure is (4) feet.

2. All posts used in the construction of this fence shall be 4" x 4" square, or as shown on the drawings. Posts shall be spaced not exceeding 8'-0" apart. Shall be wolmanized or chemically treated with retention in pounds of CCA per C.F. of 60 #/C.F.

3. All framework (stringers) used in the construction of this fence shall be dimensional 2" x 4" of rough sawn cedar. Two stringers or horizontals required for 4' Ht. fence; 3 stringers for 6' Ht. Stringers shall be located approximately 6" from top and bottom of fence height and at center of fence height, when (3) are required.

4. All fence boards (pickets) shall be approximately 7/8" thick rough sawn cedar, 6'-0" height and approximately 6" wide with square edge.

5. Anchors, spacers, nuts, bolts, etc., shall be hot dipped galvanized, in sizes and types as recommended by the fence manufacturer, or as follows: #6 Box nails for pickets to stringers- 2 nails at each stringer, 1/2 " diameter lag bolt and washer for stringers to posts - 1 per stringer - 5"/long (thru picket and rail and 2-1/2" penetration into post (2-1/2 + 2-1/2).

6. Gate Hardware (Ornamental) – Decorative gate hardware shall include 6” length steel ornamental, self-latching, gravity type thumb latch pull for single acting gates swinging in or out, with matching pull and hinges. Gate latching action shall be slide bolt locking with integral padlock hasp. Hinges shall be 8” length ornamental tee hinge. All decorative hardware finishes shall be black, USIB, for exterior durability. Gate latch to be #CD3065, pull #CD3060, hinge #CE3092, all as manufactured by Hager or approved equal. Provide and install all corrosion resistant fasteners and hardware in accordance with manufacturer’s printed instructions and adjust for proper operation. Padlock to be provided and installed by others. Gate latch must be operable from both sides when padlock is removed.

B. INSTALLATION:

1. Set all line and end posts in 12" diameter concrete footings, 3'-6" minimum below grade, with post bottoms extending a minimum of 3" below bottom of concrete into new stone for thru drainage.

2. Pickets shall be held straight on bottom & top and secured to horizontal stringers. Stringers to be laid flat with 1-1/2" between backs of pickets. Pickets to be staggered holding approximately 5" between boards (1x6's) with space on one side centered on picket on opposite side. This will produce 1/2" overlap on each side of picket from board on opposite side.

3. Pre-assemble pickets to stringers as much as possible to form fence sections (8' maximum length) before setting posts in ground and concrete. Verify all pieces for proper fit. Pickets of (1) fence section shall meet the matching picket of another fence section to form a neat outside corner, which covers the corner post from visibility.

4. Anchor all fence sections to posts with lag bolts for easier future removal. Lag bolts to penetrate picket and stringer with head of bolt and washer visible from outside of fence.

5. Set all fence sections level on top and let distance from bottom of pickets to grade vary 4" to 6". If necessary to step fence sections, consult with architect before proceeding.

6. Close off all fence ends against posts with picket to cover ends of stringers.

7. On straight runs, butt stringers together & lag bolt each to post. End of fence section to have last picket extend 1/2 picket width (3-1/2 to 4") beyond stringer with other fence end the reverse. Install (2) lag bolts thru same picket to anchor both fence sections to same post.

8. Fence to be stained by painter - see paint division.

DIVISION 3

CONCRETE

3.0 GENERAL

A. SCOPE:

1. Under this Division shall be providing and installing all materials as herein specified or as shown on drawings or required for a complete installation.

2. Submit six (6) sets of shop drawings to the Architect for approval of any reinforcing steel requiring special bending or fabrication not otherwise shown on the drawings. Submit spec data sheets of all materials to be used (concrete mix, curing agents, special equipment, etc.). No materials containing asbestos shall be used.

3. Work includes, but is not limited to the following:
   a) Interior and exterior concrete slabs, concrete walks, concrete curbs, etc.
   b) Foundations, footings, etc.
   c) Concrete ramps, stairs, etc.
   d) Board Formed Architectural concrete walls
   e) Make provisions for and properly build in all sleeves, pipes, vapor barrier, insulation and other items furnished by other trades, as specified under other Sections of the specifications.
   f) Install metal guard posts, slab nosing angles and other items furnished by others.
   g) See Mechanical Division for housekeeping pads, gas meter pads, etc.
   h) See Electrical Division for transformer pads, light post bases, etc.

4. Related work specified elsewhere:
   a) Excavation, fill, compaction, etc.
   b) Thermal perimeter insulation and vapor barrier.
   c) Metal form work/decking
   d) Sign footings
   e) Paving - Concrete type

B. MOCK-UP

1. Construct and erect a mock-up panel for architectural concrete surfaces indicated to receive special treatment or finish as a result of form liner panels. Include inside and outside corners, panel joints, all panel types, etc.

2. Construct at least one month before start of other concrete work to allow concrete to cure before observation.

3. Provide mock-up sufficient in size to illustrate full range of treatment, illustrating methods of obtaining consistent visual appearance, including each forming and finishing condition required on project using materials, workmanship, joint treatment, form ties, curing method, and patching techniques (voids, chips, tie holes) to be used throughout the project.

4. If the Owner and/or Architect reject the sample due to defects, flaws, etc. in initial concrete finish, Contractor will at his own cost, construct an additional mock-up to show corrections in concrete pour, technique, finish.

3.1 FORMWORK & ACCESSORIES

A. MATERIALS:

1. Lumber used in forms for exposed surfaces shall be dressed to a uniform width and thickness and shall be free from loose knots or other defects. Joints in forms shall be horizontal or vertical. Undressed lumber may be used for rough work or unexposed work.

2. Expansion joint to be fiberboard impregnated with not less than 35% nor more than 50% of asphalt by weight. Joint material to be full thickness of slab or joint and 1/4" thick interior and 1/2" thick exterior.

3. Form Ties: Factory fabricated, internally disconnecting ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
   a) Furnish internally disconnecting ties that will leave no metal closer than 1-1/2 inches from the architectural concrete surface. All exposed tie holes to be patched with an approved patching compound. Supply sample at mock-up.

4. Perimeter Insulation - See Division #7

5. Under Slab Vapor Barrier - See Division #7

B. INSTALLATION:

1. Forms shall conform to the same shapes, lines and dimensions of the concrete as indicated on the drawings. If the nature of the soil will permit, trenches for wall footings may be cut to accurate sizes and side form omitted where the earth will properly contain the concrete. Conform with requirements/recommendations of ACI 347 for formwork.

2. Joints:

   a) Construction joints to be installed with keys or dowels as shown on drawings. Reinforcing steel to continue across joint. Bond shall be with adhesive as manufactured by Sika Corporation.

   b) Control joints to be installed at maximum 12' in slabs 4' to 5' in walks, or where shown on drawings. Exterior control joints shall be hand tooled into green concrete - **NO** saw cut joints. Interior control joints to be sawed while concrete is still green. Shall be maximum 3/16" wide and minimum 1/4 slab thickness depth.

   c) Expansion and isolation joints to be set where all horizontal surfaces abut vertical surfaces and in horizontal surfaces. Joint material to extend through full slab thickness. Reinforcing is not to extend through joint. Install at 20' intervals in walks, curbs, floor slabs, at all change of directions in walks, and where shown on drawings. Joints at exterior slabs/walks against buildings shall be held down 1/2” and caulked. See Sealants.

3.2 ARCHITECTURAL FORM LINERS:

A. GENERAL:

1. Section includes:

   a) Plastic form liners

2. Related work specified elsewhere:

   a) Cast In Place Concrete.

3. Submittals:

   a) Manufacturers installation instructions and Product Data indicating compliance with specifications.

   b) Shop drawings indicating form liner layout and termination details. Indicate back-up, rustication, reveal, and chamfer strip locations. Include jointing, form tie location and pattern of placement.

   c) Architects review for aesthetic criteria. Contractor responsible for design of form work and back-up of form liner for structural stability and sufficiency.

   d) Samples: 24 inch by 24 inch of each pattern indicated.

4. Delivery, Storage, and Handling

   a) Inspect the materials upon delivery to assure that specified products have been received.

   b) Store liners in closed shipping crates until needed on work site; protect from sunlight, dirt, debris.

   c) Once attached to form work, store form liners on edge. Avoid striking face with heavy, sharp, or heated objects that could cause permanent damage.

B. PRODUCTS:

1. Manufacturers:

   a) Acceptable Manufacturer: Symons Corporation, Des Plaines, IL 60017-5018. Tel: (847) 298-3200

   b) Requests for substitutions will be considered in accordance with provisions in the General Conditions.

2. Materials:

   a) SBS Plastic: Polystyrene

   b) Form Release: As recommended by manufacturer for plastic liners.

   c) Caulking, Adhesive or Solvents: As recommended by manufacturer for plastic liners.

   d) Staples: 9/16” or 3/4” depending on pattern thickness.

   e) Nails: Sporadically placed nail heads, purposely left un-sunk, TBD w/ Architect at Mock up.

3. Products:

   a) 4 Inch Variable Depth Cedar - or - 6 Inch Wide Cedar for Horizontal texture pattern. (Supply samples for both. Final selection will be made at Mock up.)

   b) 4Inch Variable Depth Cedar - or - 2 Inch Wide Aged Wood for Vertical texture pattern. (Supply samples for both. Final selection will be made at Mock up.)

C. EXECUTION:

1. Architectural form liners can be attached to modular forming systems, job-built plywood forms, or pre-cast beds.

2. Concrete mix design (workability, pressure, color, set, and strength) will affect the use of form liners. Place concrete using a pump or conveyor with a drop chute to avoid segregation. Place in two foot lifts and do not move material horizontally (uncontrolled horizontal movement may result in flow lines visible in the finished surface). Thoroughly vibrate concrete to achieve good consolidation and eliminate entrapped air thereby minimizing voids. Internally vibrate through previous lifts to avoid lift lines Avoid vibrator contact with the form liner.

3. When required, create reveal lines by fastening Rustication strips to formwork within tolerances indicated.

4. Work Action Kote form release into all areas of form liner, especially pattern recesses.

5. Attachment – Handset systems; Plastic Form Liners:

   a) Apply foam tape to plate or sill supporting formwork to prevent grout leakage at base of plastic form liner.

   b) Assemble and brace the architectural side of the formwork first; attach form liner before setting ties or opposite formwork side.

   c) Apply foam tape to back side of form liner along all edges; allow foam tape to extend beyond the edge when the form liner will be jointed.

   d) Work with one sheet at a time; position form liner against formwork so that edges, pattern, and joints are square.

   e) Staple form liner on 3 inch centers and around all tie locations; using adequate electrical power, drive staple heads flush with surface.

   f) Position foam tape behind the joint of two pieces and press down firmly.

   g) Insert grout seal blocks as required to seal tie holes, fill voids in boxouts and open ended patterns, or support especially deep patterns.

6. Attachment – Gangform Systems; Plastic Form Liners:

   a) Level and square formwork so that attachment can be made in a horizontal plane; mark dimensions so that edges, patterns, and joints are square.

   b) If required, attach strongbacks to the formwork holding the form liner.

   c) Apply foam tape to back side of form liner along all edges; allow foam tape to extend beyond the edge when the form liner will be jointed.

   d) Work with one sheet at a time; position form liner against formwork so that edges, pattern, and joints are square.

   e) Staple form liner on 3 inch centers and around all tie locations; using adequate electrical power, drive staple heads flush with surface.

   f) Position foam tape behind the joint of two pieces and press down firmly; make attachment.

   g) Insert grout seal blocks as required to seal tie holes, fill voids in boxouts and open ended patterns, or support especially deep patterns.

3.3 <u>REINFORCING</u>

A. MATERIALS:

1. Bars shall be of quality and character meeting the requirements of the latest Standard Specifications for Billet Steel Reinforcing Bars of ASTM A-615, Grade 60. Size shall be hereafter specified or as noted on drawings.

2. Welded wire fabric for concrete reinforcement shall conform to the requirements of the Standard Specifications for Cold-Drawn Steel Wire for Concrete Reinforcement (ASTM Designation A-185). Shall be size as noted on drawings.

3. Metal accessories, including spacers, tees and other devices necessary for properly placing, spacing, supporting and fastening reinforcing in place. Accessories shall be placed in accordance with the CRSI Code unless otherwise noted.

B. FABRICATION & DETAILING OF REINFORCING:

1. Reinforcement shall be carefully formed to dimensions on the plans and as recommended in "Details & Detailing of Concrete Reinforcement" (ACI SP-66. Placement of bars shall conform to latest CRSI "Recommended Practice for Placing Reinforcement Bars"), details and detailing of concrete reinforcing ACI 315, and guide for concrete floor and slab construction ACI 302.1-R.

2. Metal reinforcement shall not be bent or straightened in a manner that will injure the material. Bars with kinks or bends not shown on the plans shall not be used.

3. Unless otherwise noted, lap continuous bars 36 diameters, but in any case not less than 15". Horizontal bars shall continue around corners minimum of 15" unless otherwise noted. Provide corner bars equivalent in size and number to horizontal bars at corners and wall footings and lap with horizontal reinforcement.

C. INSTALLATION:

1. Reinforcement shall be free from rust, scale and oil, and shall be accurately positioned and secured against displacement by using annealed wire of not less than No. 16 Ga., or suitable clips at intersections and shall be supported in a manner that will keep all metal away from the exposed surface of the concrete.

2. The minimum concreted cover shall be: for concrete exposed to the weather 1-1/2” for #5 and smaller, 2” for #6 and larger; 3" for concrete on or below ground; 3/4" in slabs on grade, walls and joists, and 1-1/2” for beams, girders and columns.

3. Lap mesh a minimum of one grid spacing (plus 2") and insure that mesh is completely embedded in the concrete approximately 2" from the bottom of the slab.

4. Dowel concrete foundation walls to concrete entrance aprons and footings minimum of 24 bar diameters into each wall and footing at 24" O.C. with (1) - #5 unless noted otherwise on the plans.

5. Dowel all exterior concrete slabs/walks into concrete porches and aprons with #4-bars 24” O.C. unless noted otherwise.

6. Provide reinforcement in top of interior wall footings centered under door and other openings equivalent in size and number to bottom reinforcement and 4 feet longer than opening.

7. Minimum reinforcement unless noted otherwise:

   a) Walls 8” or less in thickness: #5 at 12” each way centered in wall.

   b) Walls thicker than 8”: #5 at 12” each way in each face.

   c) Slabs on grade or slabs on joists: 6” x 6” W 2.9 x W 2.9 W.W.F.

3.4 CAST IN PLACE CONCRETE

A. MATERIALS:

1. Interior cement shall be Portland - ASTM C-150, Type 1. Exterior cement shall be same with Air-Entraining Admixture, Type 1A, for exterior walks, slabs, etc.

2. Concrete aggregates shall conform to standard specifications for concrete aggregates, ASTM C-33. To consist of crushed stone, gravel or slag. The maximum size of aggregate shall not be larger than 3/4 of the minimum clear spacing between reinforcing bars.

3. Sand to consist of clean, hard, durable, un-coated grains free from salt, loam and clay. Sand shall be M.D.O.T., Class 2 NS, meeting A.S.T.M. C-33.

4. Admixtures, Plasticizers, or Micro-Silica, as recommended by manufacturer for Board Formed walls.

5. Water shall be clean and fit to drink

6. Vapor Barrier - See Division #7

7. Mix Design - Submit design mix for approval before concrete is installed.

8. Curing Agent - See Item E - Finishes.

9. Water Stops – Multi-ribbed, key way design and others as detailed on drawings, for non-limited movement as manufactured by Bometals, Inc., Powder Springs, GA, 800-862-4835 or approved equal.

B. STRENGTH & PROPORTIONING CONCRETE:

1. Concrete for all parts of work shall be homogeneous, and when hardened, shall have required strength, resistance to deterioration, durability, resistance to abrasion, watertightness, appearance and other specified properties.

2. Proportioning of concrete shall be in accordance with applicable sections of ACI 301, with regard to type of concrete.

3. Minimum compressive strengths at 28 days: building footings, foundation walls and interior slabs shall be 4,000 PSI; (exterior slabs, walks, integral footings and curbs shall be 4,000 PSI air entrained – 4% - 6% air).

C. MIXING, PLACING & CURING:

1. Mixing, placing and curing shall conform to ACI 301, ACI 305-R hot weather concreting, and ACI 306-R (cold weather concreting) and ACI 304-R (measuring, mixing and placing). Ready mixed concrete may be used and shall be mixed and delivered in accordance with ASTM 094-55T. Delivery tickets shall be recorded for inspection showing batch No., mix admixtures, time, water content, etc. Submit copies to Architect.

2. The Contractor shall notify the Architect of any concrete placement within twenty-four hours in advance. Failure to do so will result in concrete removal and replacement at the Contractor's expense.

3. Before concrete is placed, all equipment for mixing and transporting concrete shall be cleaned, all debris shall be removed from spaces to be occupied by the concrete, forms shall be thoroughly wetted and oiled, water shall be

removed from excavations, and all work to be built into the concrete shall be in place, inspected and approved by the Architect.

4. Concrete shall be handled from the mixer to the place of final deposit as rapidly as possible by methods, which shall prevent the separation or loss of ingredients.

5. Concrete shall be thoroughly compacted, spaded and/or rodded.

6. Weather Conditions:

   a) Concrete shall not be placed during rain, sleet or snow, to avoid adding to the water content or damage surface finish.

   b) Below mean daily temperature of 40 degrees F.; concrete temperature as placed shall be 50 degrees F.; above mean daily temperature of 90 degrees F.; the concrete temperature shall not be allowed to exceed 90 degrees F.

7. Curing:

   a) Protect concrete against rapid drying and keep moist for a least six days after pouring, and cement finishes shall be sprayed during the curing period as frequently as drying conditions may require, and if necessary, protect by suitable temporary coverings.

   b) When the mean daily temperature is below 40 degrees F., the concrete shall be cured with temperatures between 50 degrees F. - 70 degrees F.

   c) Protect finished work from traffic for five days.

   d) Install a curing and sealing agent on all exterior concrete.

D. TESTING:

1. General Contractor shall include in bid costs to take slump and break (compression) tests by an approved testing laboratory. Shall include three 6" diameter x 12" cylinders per test. Tests shall be made in accordance with ACI Specifications. Test should be every 50 cubic yards and every days pour. One cylinder to remain in field and cured for twenty-eight days under same conditions as concrete in place. Others to be laboratory cured. One break at seven days, two break at twenty-eight days.

2. Cylinders that do not meet design strength will result in the concrete being replaced or required additional testing at the Contractor's expense to assure the questioned concrete meets design specifications.

E. FINISHES & SPECIAL INSTALLATION:

1. All exposed vertical surfaces and walls on exterior of building to be board formed with form liner panels. (See Div. 3.2)

2. Screed floors to proper level, float and trowel. After floating to proper level, allow concrete to stand until all water sheen has disappeared. Do finish troweling with steel trowel after concrete is so hard that no mortar accumulates on the trowel and a ringing sound is produced as the trowel is drawn over the surface.

3. Finished floor shall be smooth and hard and free from trowel marks or holes. All floors must be free from irregularities, waviness, rough spots and any other defects, with maximum variation of 1/8" in 10' diameter.

4. Finish exterior walks and platforms with magnesium trowel and give a lightly broomed, non-slip finish.

5. Control joints to be installed at maximum 12' in slabs 4' to 5' in walks, or where shown on drawings. Exterior control joints shall be hand tooled into green concrete - **NO** saw cut joints. Interior control joints to be sawed while concrete is still green. Shall be maximum 3/16" wide and minimum 1/4 slab thickness depth.

6. Building entrance slabs shall be 6" thick with #4 bars l2" on center each way over metal decking formwork. Rub any exposed edge surfaces.

7. All exposed surfaces when forms are stripped shall be sealed with a light cement sand mixture. Thoroughly wet surfaces and rub with burlap to fill all air pockets and voids. **NO** voids or honey-combing on exposed surfaces.

8. Install a curing and sealing agent on all exterior concrete. Curing agent to be clear, as manufactured by Euclid, or W.R. Meadows, water base/resin solids - non-toxic, or approved equal.

9. Chamfer all exposed Horizontal edges 3/4” x 45 degrees.

F. COLD WEATHER CONCRETE:

1. Contractor shall exercise precautions as outlined in ACI 306-R for concrete installed in cold weather. Included is all heating equipment, fiberglass insulation, visqueen, etc., as required to thoroughly protect the concrete.

2. The Contractor shall notify the Architect of any concrete placement within twenty-four hours in advance. Failure to do so will result in concrete removal and replacement at the Contractor's expense.

G. HOUSE KEEPING PADS:

1. As specified in the Mechanical Division and noted on drawings, shall be installed in sizes and locations as coordinated with equipment to be supported. Forms shall be set and Contractor shall receive Architect's approval prior to pouring concrete.

2. Dowels shall be drilled into structural slab. Diameter shall be tight to drive in a #4 (1/2") re-bar. Dowels shall extend a minimum of 3" into structural slab and 3" into housekeeping pad. Space approximately 2' x 2' on center, holding a minimum of 6" from edges. Finish shall be troweled smooth – same as floor. Rub edges.

DIVISION 5

METALS

5.0 GENERAL

A. SCOPE:

1. The work under this Division shall include providing and installing all steel including beams, columns, angles, plates, lintels, hangers, incidental items, and as specified herein.

2. Submit six (6) sets of shop drawings to the Architect for review of all metal work. Shop drawings shall clearly show spacing and size, type number, length and all construction accessories. Any errors in dimensions shown on shop drawings shall be the responsibility of the Contractor.

3. All steel beams, miscellaneous steel, etc., shall have one heavy coat of rust inhibitive paint applied in the shop. It shall be clean of all rust, scale, sand and other foreign matter before painting. Patch paint in the field in case of damage due to welding, installation, etc. Note: any concealed lintels/beams built into masonry or concrete, shall be field painted with (2) coats of alkyd paint before installation.

4. Steel fabricator to design beam connections for reactions indicated or where not indicated, one half of total uniform load capacity of a simple beam for span given as specified in latest AISC Manual of steel construction. Design connections of bracing members for member forces indicated, or where not indicated, for the full tensile and compressive capacities of the bracing member.

5. Submit spec data sheets on all materials used (paint coatings, etc.). Materials containing asbestos shall not be used.

6. See painting, Division #9, for complete painting of exposed steel members.

7. See Pre-engineered Metal Building, Div. 13 for metal building components.

5.1 STRUCTURAL METAL FRAMING (Other than metal building)

A. MATERIALS:

1. Structural steel shall conform to the latest edition of Specifications for Structural Steel Buildings allowable stress and plastic design, AISC; allowable stress design of single-angle members, AISC; structural joints using ASTM A325 or A 490 bolts, RCSC; standard code of practice, AISC.

2. Structural steel shapes/materials shall conform to:

   Wide Flange Shapes – ASTM A992

   Angles, Channels, Plates, Bars – ASTM A36

   Structural Tubing – ASTM A500, Grade B

   Structural Pipe – ASTM A53, Grade B, Type E or S

   High Strength Bolts – ASTM A325

   Anchor Bolts – ASTM A307 or A36

3. Members shall be of dimensions and weights shown on drawings. Substitutions of other sections may be made, subject to the Architect's approval and provided that no change is made to architectural design and that the substituted sections are at least equal to the original design in strength and stability.

4. Furnish angle lintels for new doors, windows, miscellaneous openings, mechanical equipment and duct openings as noted on drawings or required to complete this work.

B. INSTALLATION:

1. Fabricate and erect structural steel in accordance with current edition of Specifications adopted by the American Institute of Steel Construction. Do all punching and drilling of steel required for attachment of other materials thereto.

2. Provide all hangers, attachments, etc., in connection with lintels and other structural steel.

3. Connections, except as otherwise noted or shown, shall be riveted or welded; field connections may be bolted, unless otherwise noted. Bolted field connections for main members only shall be made with 3/4" ASTM A325 high strength bolts and shall conform to the "Specifications for Structural Joints, using ASTM A325 or A490 Bolts". All other connections may be made with 3/4" standard machine bolts meeting ASTM A307. Shop connections may be riveted, welded or bolted with high strength bolts. Beams shall frame into the side of columns, unless shown otherwise on plans.

5.2 MISCELLANEOUS METAL

A. MATERIALS:

1. Provide any miscellaneous angles as required for installation of work by other trades. Included are clip angles, closure

plates, nosings, brackets for securing unlike materials, etc.

2. See other divisions such as mechanical and electrical for fixture mounting brackets/rails, and/or guard posts to protect transformers, switchgear, fire hydrants, etc. Mechanical/Electrical Contractors to be responsible for their own, but may contract with this contractor for providing/installing.

3. Coordinate with Pre-Engineered Metal Building supplier, if miscellaneous metals are needed to fasten conventional materials to Pre-Engineered Metal Building components.

B. INSTALLATION:

1. Fabricate and install metal work with sharp lines, angles, true and plumb-weld all connections, not otherwise shown, and fill smooth for painting any exposed surfaces.

2. Installation of metal shall be compatible with the adjacent materials. Provide any necessary spacers, isolators, shims, anchors, etc.

3. Turn over to Masonry/Concrete Contractor all metal items required to be installed into their work. Provide all templates, instructions, and other data to insure proper installation.

4. All members shown or required to have anchors embedded in masonry or concrete (floor nosings, door jambs, cantilevered beams, etc.) shall be shop assembled and welded. Unless noted otherwise, minimum anchors shall be 1/2" diameter x 12" with hooked end at 16" on center and back welded full circumference of anchor.

5.3 STEEL CON-FORM DECKING

A. MATERIALS:

1. The steel form deck for porches shall be as manufactured by a member of the Steel Deck Institute. Deck shall be designed, fabricated and erected in accordance with the "Basic Design Specifications", as adopted by the Institute, unless otherwise specified herein.

2. Deck shall be formed of galvanized steel (conforming to ASTM A-525), 1-5/16" and 3” interlocking wide rib deck profile to be with maximum flat area on bottom side (opposite of roof decking) to maximize amount of concrete for greatest concrete deck strength. Capable of supporting a total dead load of 70 psf, without producing a deflection greater than 1/240 of the clear span. (20 Ga. to 5’, 18 Ga. to 7’ span, and 16 Ga. To 10’ span)

B. INSTALLATION:

1. Steel deck units shall bear on concrete foundation walls a minimum 3". Vertical re-steel from footing to extend through deck and bent over. Deck shall be cut short of outside footing/foundation fact to allow concrete slab to seal off against exposure to earth.

2. Provide a minimum of 4” void between earth and underside of metal deck.

5.4 DECORATIVE METAL RAILINGS – ALUMINUM RAILING FRAME AND ALUMINUM WIRE MESH INFILL

A. GENERAL

1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

2 SUMMARY

A. This Section includes the following:
   i. Component Aluminum railings
   ii. Infill system for component aluminum railings
   iii. Swing Gates with drop bolt-locking device or post-locking device.

3 PERFORMANCE REQUIREMENTS

A. All railings shall be supplied to conform to applicable sections of the following codes:
   i. International Building Code
   ii. ADAAG

B. Structural Performance: Provide railings capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
   i. Handrails:
      a. Uniform load of 50 lbf/ ft. applied in any direction.
      b. Concentrated load of 200 lbf applied in any direction.
      c. Uniform and concentrated loads need not be assumed to act concurrently.
   ii. Top Rails of Guards:
      a. Uniform load of 50 lbf/ ft. applied in any direction.
      b. Concentrated load of 200 lbf applied in any direction.
      c. Uniform and concentrated loads need not be assumed to act concurrently.
   iii. Infill Area of Guards:
      a. Horizontal concentrated load of 50 lbf applied to 1 sq. ft. at any point in system, including panels, intermediate rails, balusters, or other elements composing infill area. Load on infill area need not be assumed to act concurrently with loads on top rails.

C. Thermal Movements: Provide exterior railings that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
   i. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

D. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

4 SUBMITTALS

A. Product Data: For the following:
   i. Manufacturer's product lines of mechanically connected railings.
   ii. Grout, anchoring cement, and paint products.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
   i. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Samples for Initial Selection: For products involving selection of color, texture, or design.

D. Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.

E. Qualification Data: For professional engineer.

F. Product Test Reports: Supplier shall submit calculations and test reports for complete system, including railing and infill panels. Calculations and test reports shall be stamped by a licensed PE. Test reports shall be in accordance with ASTM E 935.

5 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of railing through one source from a single manufacturer.

B. Mock-up Panel: one section of railing system for verification.
   i. Approximate Size: ¼ to ½ full size using full size components.
   ii. Approved mockups may become part of the completed Work if undamaged at time of Substantial Completion.
   iii. Approval of mockups does not constitute approval of deviations from the Contract Documents unless such deviations are specifically approved by architect in writing.

6 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication and indicate measurements on Shop Drawings.

7 COORDINATION AND SCHEDULING

A. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to project site in time for installation.

B. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

PART 2 - PRODUCTS

1 MANUFACTURERS

A. Basis-of-Design Railing Product: Subject to compliance with requirements, provide Interna-Rail® aluminum component railing as manufactured and assembled by Hollaender Manufacturing, Kane Innovations or an approved equivalent. Single source manufacturer is required. Welded railing will not be accepted.

2 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails, unless otherwise indicated.

3 ALUMINUM

A. Aluminum, General: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of alloy and temper designated below for each aluminum form required.

B. Extruded Bars and Tubing: ASTM B 221, Alloy 6063-T5/T52, 6005-T5
Provide 1 ½ in IPS, (1.90 in OD) Standard Weight (Schedule 40) pipe for rails, Schedule 80 for posts, Schedule 10 for pickets, unless otherwise indicated

C. Extruded Structural Pipe and Round Tubing: ASTM B 429, Alloy 6061-T6.
Provide 1 ½ in IPS, (1.90 in OD) Standard Weight (Schedule 40) pipe for rails, Schedule 80 for posts, unless otherwise indicated

D. Drawn Seamless Tubing: ASTM B 210, Alloy 6063-T832

E. Plate and Sheet: ASTM B 209, Alloy 6061-T6

F. Die and Hand Forgings: ASTM B 247, Alloy 6061-T6

G. Base Flange Castings: ASTM B 26/B 26M, Alloy Almag 535

H. Panel Clips and Structural Fasteners: Alloy 6063-T6.

4 STEEL

A. Perforated Sheet: ASTM A1008.

5 FASTENERS

A. General: Provide the following:
i. Aluminum Railings: Alloy steel fasteners with JS-600 zinc plating.

B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.

C. Structural Fasteners for Interconnecting Railing Components:

i. Rails shall be attached to posts by means of tee fittings equipped with anodized aluminum, tubular rivet nut and stainless steel socket head cap screw. All structural fasteners such as tee fittings shall be machined from 6063-T6 aluminum alloy. The fitting shall be internally connected to the rail by means of an internal dual tang that is expanded with a stainless steel, internal /external, reverse knurl, cup point socket head set screw. This combination shall prevent any loosening of the system due to changes in temperature or vibration. Systems using pop rivets or adhesives will not be accepted.

D. Fasten infill panels to rails and posts with Hollaender model 145 panel clips, machined from 6063-T6 aluminum alloy. Secure the infill panels in the panel clips with reverse-knurl cup-point set screws. Fasten panel clips to rails and posts with ¼ - 20 sheet metal screws.

E. Anchors: Provide concrete adhesive anchors where indicated or necessary.

6 INFILL FOR RAILINGS

A. Panel:

i. Woven Aluminum Wire Mesh infill panel: minimum .250 in dia, aluminum alloy A1350-H9.
ii. Pattern: 2" square.
iii. Frame: aluminum U-channel, minimum 11 ga, x 1 in, corners welded and ground smooth. To assure minimum maintenance and maximum corrosion protection, bottom channel of frame shall have 3 drainage holes to evacuate water.
iv. Coating
   a. Entire panel shall be powder coated with Silver powder coat, or equivalent powder coat color of architect's choice. Powder to be TGIC Polyester, minimum AAMA 2604.
v. Panels to be attached to railing using Hollaender #145 panel retainers and ¼ - 20 screws, with appropriate slot width for panel thickness, and set screw for final tightening of panel within retainer slot.

7 HANDRAIL FOR ADA APPLICATIONS OR STAIRS (AS REQUIRED)

i. Ramps that have a drop off of 30 inches or more on the side require guardrail, per above spec. Ramps with a rise greater than 6 inches shall have handrails on both sides.
ii. Stairways shall have handrails on both sides.
iii. Handrail will be attached to the guardrail sections using Hollaender model 85 adjustable brackets.
iv. Handrail will be installed at a height of 34 – 38 inches above ramp surface or stair tread nosings.
v. Handrail will be anodized aluminum 6063 Sch. 40, 1 ½ in IPS nominal (1.90 in. OD) and shall have a continuous surface. Where necessary, lengths of the handrail will be spliced using Hollaender Model 70ES-8 internal locking splices.
vi. Handrails shall return to a wall, guard or walking surface. If returning to the guard, Hollaender model 185 post return swivel shall be used to connect the end of the handrail to the guardrail post.

8 MISCELLANEOUS MATERIALS

A. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

9 FABRICATION

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

D. Form work true to line and level with accurate angles and surfaces.

E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items. Welding will not be accepted.

G. Connections: Fabricate railings with non-welded connections, unless otherwise indicated. Welding will not be accepted.

H. Non-welded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
   i. Fittings to be of the internal double tang type activated by a reverse knurl cup point set screw. Reverse knurl is required to ensure that screw does not come loose under vibration. Plain cup point screws will not be accepted. Fittings to be fastened to pipe by means of a 5/16 in. tubular rivet nut and socket head cap screw.

I. Form changes in direction as follows:
   i. By flush bends or by inserting prefabricated flush-elbow fittings.

J. Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

K. Close exposed ends of railing members with prefabricated end fittings.

L. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.

M. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work, unless otherwise indicated. Flanges to be sand cast from aluminum alloy 535 with anodized finish and fastened directly to the post by means of two reverse knurl cup point set screws.

N. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

10 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.

D. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

11 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Unless indicated otherwise, provide aluminum pipe with the following finish:
   i. Anodized Finish: AA-M10C22A41 (Architectural class, .7 mil thickness or greater)

12 STEEL FINISHES

A. Wire Mesh Infill Panel:
   i. Primer/Corrosion Protection – PPG Powercron 8000 or approved equal, applied in four-step process.
   ii. Finish: Powder coat
      a. Color: as selected by Architect from manufacturer's full line. Powder coat to be TGIC-Polyester, min. AAMA 2603.

PART 3 - EXECUTION

1 EXAMINATION

A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements have been clearly marked for installer. Locate reinforcements and mark locations if not already done.

2 INSTALLATION, GENERAL

A. Fit exposed connections together to form tight, hairline joints.

B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
   i. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
   ii. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
   iii. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

C. Corrosion Protection: Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

D. Adjust railings before anchoring to ensure matching alignment at abutting joints.

E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3 RAILING CONNECTIONS

A. Non-welded Connections: Use mechanical joints for permanently connecting railing components. Use wood blocks and padding to prevent damage to railing members and fittings.

B. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond joint on either side, fasten internal sleeve securely to 1 side, and locate joint within 6 inches of post.

4 ANCHORING RAILING ENDS

A. Anchor railing ends to concrete and masonry with round flanges connected to railing ends and anchored to wall construction with anchors and bolts.

B. Anchor railing ends to metal surfaces with flanges bolted to metal surfaces and connected to railing ends using non-welded connections.

5 ATTACHING HANDRAILS TO WALLS

A. Attach handrails to wall with wall brackets. Provide brackets with 1-1/2-inch clearance from inside face of handrail and finished wall surface.

B. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.

C. Secure wall brackets to building construction as indicated, or if not indicated, as follows:
   i. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
   ii. For hollow masonry anchorage, use toggle bolts.
   iii. Provide blocking between studs in stud wall construction.

6 ADJUSTING AND CLEANING

A. Clean aluminum and stainless steel by washing thoroughly with clean water and soap and rinsing with clean water.

7 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

DIVISION 6

WOOD & PLASTIC

6.0 GENERAL

A. SCOPE:

1. This Division includes providing and installing all materials for rough and finish carpentry as specified herein, shown on the drawings, or required for a complete installation.

2. Contractor shall submit color samples of all materials requiring selection.

3. All finish materials shall be installed under conditions of temperature and humidity closely approximating those, which will exist when the building is occupied. Proper on site storage shall be provided. Cover to protect from rain all lumber. All trim finish flooring, etc., shall be stored inside building minimum of 48 hours before installing.

4. Submit six (6) sets of shop drawings for cabinets, built-ins, etc., to the Architect for review prior to fabrication or installation. Shall show materials, sizes, construction, clearances, built-in hardware, erection details, etc.

5. Submit spec data sheets for materials used (wood, glues, paints, laminates, etc.). Materials containing asbestos shall not be used.

6. Finish work shall be installed with close miters, coped at angles, full lengths where possible, and secured with finishing nails, screws and glue. Set all fasteners for putty.

7. Work included, but not limited to the following:

   a) Temporary work

   b) Railings, handrails, etc.

8. Work related, but specified elsewhere:

   a) Hollow Metal doors and hardware

   b) Form work for concrete

   c) Wood fencing

   d) Metal stud framing

6.1 TEMPORARY & ROUGH-IN WORK

A. MATERIALS:

1. Rough lumber shall be grade #2 or better, dressed four sides, of spruce, pine, douglas fir, or equal, in shapes and sizes as required.

2. Structural lumber shall be grade #2 or better kiln dried, 1,000 psi bending, unless noted elsewhere (spruce/pine/fir).

3. Treated wood for all plates and members against masonry, or in contact with, on or below earth, or subject to moisture shall be 1,200 psi construction grade treated as manufactured by Continental Wood Preservers, Inc., or equal.

4. Adhesive for wood floor shall be water resistant and weatherproof, non-toxic, non-flammable and non-combustible, equal to "PL Premium Adhesive".

5. Nails for rough framing shall be standard #8 and #16 penny coated, installed per code requirements for particular application, as well as recommended by the lumber manufacturer and American Plywood Association. Screws for interior wood sub-flooring shall be tempered phillips head, self-tapping deck screws - blued finish. Exterior to be stainless steel or epoxy coated finish. All metal supports/fasteners, including trusses and fasteners that come in contact with the treated wood shall be corrosion resistant such as stainless steel, epoxy coated steel and as approved by the treated wood manufacturer.

6. See Thermal & Moisture Division for exterior wall insulation.

7. Exterior Anchors – Bolts for anchoring treated framing to posts shall be stainless steel ½" diameter minimum thru bolts and nuts with washers both sides – minimum of two bolts per board width per post. Decking, railings, pickets and all other members shall be anchored with approved hot dipped galvanized deck screws – minimum of (2) screws per board width per joist. Screws shall penetrate into substrate minimum of 1" to 1-1/4" depth. Pre-drill members as required, to eliminate splitting of wood.

B. INSTALLATION:

1. Install all temporary guardrails, walks, forms, bracing, shoring, etc., as required for the work or safety.

2. Install any necessary temporary enclosures for door openings, barricades, etc., to close off work for security or

moisture/temperature protection.

3. See Concrete Division #3 for formwork.

4. Framing shall be as size shown on drawings. Provide not less than 3" bearing on masonry or 2" on wood and metal.

5. Set metal studs 16" on center, unless specified otherwise.

6. Provide cut or ripped members for fascia framing, aluminum back-up, etc., as required for proper dimensioning.

7. Provide all necessary framing around door openings, ductwork, registers, vents, etc. Included are nailers and blocking for drywall, handrails, etc.

DIVISION #7

THERMAL & MOISTURE PROTECTION

7.0 GENERAL

A. SCOPE OF WORK:

1. The work under this Division shall include all labor, tools and materials required to furnish and install all materials herein specified or as indicated on drawings. Instructions to Bidders and Division #1 become a part of this division.

2. Remove all debris caused by operations under this Division, including demolition materials. Remove and clean all tar drippings, excess sealant, etc., from adjacent surfaces.

3. "R" Values - Where a thickness and "R" Value is specified, the "R" Value shall govern if there is a discrepancy.

4. Contractor shall submit color samples of all materials requiring selection.

5. Contractor shall submit shop drawings of all prefabricated items, roofing layouts with seam direction and size of sheets, spec data information, material safety data sheets, samples, etc. Refer to Division #1 for detailed pre-construction submittals.

7.1 WATERPROOFING & DAMP PROOFING

A. MATERIALS:

1. Vapor Barrier Under Concrete Slab & in Crawl Spaces - Visqueen polyethylene film 6 mil (.006") thick, as manufactured by the Visking Co., or approved substitute.

2. Vapor Barrier in Interior and Exterior Wall and Ceiling Cavities – See “Insulation”.

3. Damp Proofing – Seal all blocks below grade on exterior side with 3/8" parge coating of portland cement mortar. Above and below grade shall in addition be sealed with asphaltic waterproofing compound. No voids or pores shall be visible. Asphaltic Damp Proofing shall be emulsion type asphalt-base, clay emulsion with fibers equal to "Sealmastic, Type 2" in brush-on or spray grade per ASTM D 1227, Type I and Federal Specifications SS-R-1781, as manufactured by W.R. Meadows, Inc., or “Hydrocide 700B” as manufactured by Sonneborn, both as distributed by Kuhlman Concrete.

4. Foundation Insulation - See this Division under Insulation.

5. Wall & Ceiling Insulation & Vapor Barrier – See this Division under Insulation and Division #7 Pre-Engineered Building Insulation system.

B. INSTALLATION:

1. Floor Vapor Barrier - Install directly below the concrete floor in width as wide as practicable, lapped at least 6" with the top lap placed in direction of spreading of concrete. Seal around all pipes and other projections piercing vapor barrier. It is suggested that pipe screeds on concrete leveling pads be used for striking off concrete to grade, as no screed stakes will be permitted to puncture vapor barrier. Spot tape in place to prevent movement while installing concrete.

2. Exterior Wall Penetrations – At all exterior wall penetrations of duct work, conduits, etc., flash per Metal Building Manufacturers recommendations.

7.2 SEALANTS

A. MATERIALS:

1. The following types shall be used in locations noted. Color of all shall be as selected by the Architect:
   a) General Exterior - One part polyurethane sealant equal to Vulkem 116, or Tremco Dymonic.
   b) General interior - Acrylic latex paintable sealant caulking equal to Tremco #834.
   c) Compression Joints - one part, butyl #440 Tape, 1/16" or 1/8" by 3/8" or 1/2" wide in Grey or Black color as manufactured by Tremco.
   d) Asphalt Compatible – Sealtight pointing mastic, available in 29 oz. cartridges as manufactured by W.R. Meadows.

2. Primer - A quick drying clear primer as recommended by manufacturer shall be used where required.

3. Filler Material - Polyurethane foam rod stock, non-gassing, open-cell, equal to Tundra Foam, as manufactured by Industrial Thermo Polymers Limited, 2316 Delaware Avenue, Suite 216, Buffalo, NY 14216 (800-387-3847) and as distributed by Allstate Caulking Supply, Livonia, MI (734-266-1831). Size shall be such that when compacted, it equals 2/3 of its original width, or as recommended by the sealant manufacturer. Tundra foam rod stock is black (ebony) color, compatible with hot pour and cold applied sealants.

B. INSTALLATION:

1. All surfaces must be clean and dry, free of dust, loose mortar and other foreign matter. Wire brush joints in concrete and masonry and airblow or vacuum clean any protective coating on building material that will be sound and a brush coat of primer applied to such porous surfaces and allowed to dry before sealant is applied.
2. Joints deeper than 1/2" shall be built up to a depth of 3/8" below adjacent surfaces with approved compacted filler material prior to applying sealant.
3. Prime all surfaces where required and as recommended by the sealant manufacturer with type as they recommended.
4. Sealant shall be installed in strict conformance with the manufacturer's recommendations. Compounds shall generally be applied by means of a handgun. Use special nozzles as required for hard to apply areas. Exercise extreme care to prevent smearing on adjacent surfaces. A full head of sealant shall be applied into joint under sufficient pressure to fill all voids and joints solidly, drawing nozzle across sealant to leave a slightly concave surface.
5. Neatly tool joints to slightly concave surface, using tooling agent recommended by sealant manufacturer. Repair any air pockets exposed by tooling. Tool so as to compress material and improve adhesion to surfaces joined. Sealant bead shall be of width/depth and cross section as recommended by manufacturer.
6. Sealed joints shall not be touched, washed, or otherwise disturbed for 48 hours, to allow sealant to cure.
7. Final appearance of joint shall be without sags, ripples, globs and waviness. It shall be a straight, uniform sized, continuous flow of material. Work in and blend where one stroke flow ends and other begins.
8. Joints shall be caulked before painting adjacent work. Do not paint over any sealant unless allowed by manufacturer.
9. When concrete walks abut vertical walls and aprons, the expansion joint material is to be held down ½" and sealed flush with polyurethane sealant to not pond water.
10. Caulk all joints as called for on the drawings, or specified herein as required to complete the work including, but not limited to, caulking of the following:
    a) Exterior heads and jambs of door frames.
    b) At intersections of aluminum work with other materials, etc.
    c) Under exterior door/window thresholds – full bed.
    d) Perimeter of louvers and grills at masonry or aluminum.
    e) Window frames (interior and exterior).
    f) Wall control and expansion joints.
    g) Counter backsplashes, plumbing fixtures, and miscellaneous trim - all against abutting walls.
    h) Conditions as noted for pre-engineered metal building – see Division 13.
    i) Refer to drawings for other locations.
    j) Joints of exterior slabs/walks against buildings and in structural slabs/aprons/porches.
    k) In between lap joints of sills, flashing drips, 'Z' flashing and similar items.

C. GUARANTEE:

1. General Sealants Warranty - Submit a written warranty signed by the sealant manufacturer and applicator. Both shall guarantee prompt repair of defective sealant work for the manufacturer's standard warranty period. Nothing in the above shall alter or waive any of the guarantees or legal remedies, which the Owner may have under law, but shall be an addition to them.

7.3 INSULATION

A. MATERIALS:

1. Foundation wall insulation (below slab) shall be 2" x 24" of rigid polystyrene (R-5/inch) as manufactured by Dow, or equal. Foundation wall insulation below floor in crawl space to be (2) layers of 1" thickness x 24" - stagger all joints.
2. Wall/Ceiling –insulation – see Division 13 Pre-Engineered Metal Building.

B. INSTALLATION:

1. Install all insulation as recommended by the manufacturer without misses.
2. Below slab insulation shall be installed prior to compacting floor sub-base. Temporarily secure to wall with approved adhesive or anchors until floor sub-base. Off-set of insulation to clear obstructions shall be properly lapped with full thickness of material.
3. Contractor to call for and receive Architect's inspection/approval of all insulation before covering up.

7.4 PRE-ENGINEERED BUILDING INSULATION SYSTEM

A. GENERAL:

1. This section includes insulation system for the new pre-engineered metal building.

2. See Division #13 for Pre-Engineered Metal Building.

3. References:
   a) ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
   b) ASTM E 96 – Standard Test Method for Water Vapor Transmission of Materials in Sheet Form (Procedure B).
   c) ASTM C 665 – Standard Specifications for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
   d) NFPA 255 – Standard Method of Test of Surface Burning Characteristics of Building Materials
   e) UL 723 - Tests for Surface Burning Characteristics of Building Materials.
   f) ASTM C 1136 – Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.

4. Design Requirements:
   a) Thermal Resistance of Installed Insulation System ; R-Value of 19 for ceilings and R-Value of 13 for walls.
   b) Insulating system shall have a continuous vapor barrier as described below.

5. Submittals:
   a) Submit under provisions of Division #13
   b) Manufacturer's data sheets on each product to be used, including:
      i) Preparation instructions and recommendations.
      ii) Storage and handling requirements and recommendations.
      iii) Installation instructions.
   c) Shop Drawings: Indicate locations of connections and attachments, general details, anchorages and methods of anchorage and installation.
   d) Verification Samples: For each finish product specified, two samples, minimum size of 6 inches square or long, representing actual products required for this project.
   e) Manufacturer's certificate: Certify products meet of exceed specified products.

6. Quality Assurance:
   a) Manufacturer's Qualifications: Company specializing in manufacturing product systems specified in this section with a minimum five years documented experience.
   b) Installer Qualifications: Company specializing in performing work of this sectio9n.
   c) Insulation system components to include a ten-year limited material warranty.

7. Delivery, Storage, and Handling:
   a) Store products in manufacturer's unopened packaging until ready for installation.
   b) Store products indoors and protect from moisture, construction traffic and damage.

8. Project Conditions:
   a) Maintain environmental conditions, (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. PRODUCTS:

1. Manufacturers:

   a) Laminated Fiberglass: Owens-Corning Fiberglas, NAIMA 202, "Certified R" metal building insulation.
   b) TIMA Insignia and Insulation Thickness: Ink-jet printed on fiberglass.

A. Back-Fill Insulation: Owens-Corning Fiberglas unfaced "Pink Metal Building Insulation Plus".

B. Roof Insulation:
   1. Nominal Thickness: 6 inches.
   2. Certified R-Value: 19

C. Wall Insulation:
1. Nominal Thickness: 4 inches.
2. Certified R-Value: 13

D. Roof and Wall Insulation Facing: PSK Light Duty (WMP-VR).
1. 0.0015-inch-thick, UV-stabilized, white polypropylene laminated to 11-pound Kraft paper, reinforced with glass-fiber scrim, in white.
2. Adhere facing to Owens-Corning Fiberglas “Certified R”, NAIMA 202, fiberglass blanket.
3. Assembly of Insulation Blanket and Facing:
   a. Flame Spread Rating: Less than 25.
   b. UL Label: Submit as specified in Submittals article of this section.
   c. Perm Rating: 0.09.

C. INSTALLATION:

GENERAL:

1. Install pre-engineered building insulation in accordance with manufacturer’s installation instructions and the approved shop drawings.

7.5 SNOW GUARDS

a) GENERAL

1. SUMMARY
   a) Section Includes:
      i) Snow guards for metal roofs.
      ii) Non-penetrating attachment system.
      iii) Color-matched metal strips
   b) Related Sections:
      i) Division #1: Administrative, procedural, and temporary work requirements.
      ii) Division #13: Metal Roof Panels
      iii) Division #7 - Roof Accessory Attachment System.

2. REFERENCES
   a) Aluminum Association (AA) - Aluminum Standards and Data, 2003 Edition.
   b) ASTM International (ASTM):
      i) B85-03 - Standard Specification for Aluminum-Alloy Die Castings.
      ii) B221-04a - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

3. SYSTEM DESCRIPTION
   a) Attachment system to provide attachment to standing seam metal roofs:
   b) With only minor dimpling of panel seams.
   c) Without penetrations through roof seams or panels.
   d) Without use of sealers or adhesives.
   e) Without voiding roof warranty

4. Loading: Design snow guard system to resist minimum in-service vector load of 338 pounds per linear foot of eave.

5. Factor of safety: Utilize a factor of safety ≥ 2 to determine allowable loads from ultimate tested clamp tensile load values.

6. Locations of snow guards to be continuous on roof in rows directly above overhead doors and directly above and a minimum of six feet beyond the edges of exterior man doors on both sides.

b) SUBMITTALS

1. Submittals for Review:
   a) Shop Drawings: Show locations of snow guards on roof and attachment spacing.
   b) Product Data: Include product description and installation instructions.

c) Samples:

i) Clamp samples.

ii) 24 inch long cross member samples including color-matched metal strip, splice connector, and other hardware.

2. Quality Control Submittals:

a) Test results: Results of product tensile load testing, issued by a recognized independent testing laboratory, showing ultimate load-to-failure value of attachment.

3. Sustainable Design Submittals:

a) Regionally manufactured products: Certify location of material manufacturer and distance from manufacturer to project site.

4. Closeout Submittals:

a) Certification: Installer's certification that snow guard system was installed in accordance with manufacturer's instructions and approved Shop Drawings.

c) PRODUCTS

1. MANUFACTURERS

a) Contract Documents are based on S-5! ColorGard by Metal Roof Innovations, Ltd.

2. COMPONENTS

a) Clamps:

i) Manufactured from 6061-T6 aluminum extrusions conforming to ASTM B221 or aluminum castings conforming to ASTM B85 and to AA Aluminum Standards and Data.

ii) Clamp model: No. S-5-U.

iii) Set screws: 300 Series stainless steel, 18-8 alloy, 3/8 inch diameter, with round nose point.

iv) Attachment bolts: 300 Series stainless steel, 18-8 alloy, 10 mm diameter, with flat washers.

b) Cross Members:

i) Manufactured from 6061-T6 alloy and temper aluminum extrusions conforming to ASTM B221 and AA Aluminum Standards and Data.

ii) Receptacle in face to receive color-matched metal strips.

iii) Provide splice connectors ensuring alignment and structural continuity at end joints.

c) Color Strips: Same material and finish as roof panels; obtained from roof panel manufacturer.

d) Snow and Ice Clips: Aluminum, with rubber foot, minimum 3 inches wide.

D. EXECUTION

1. EXAMINATION

a) Prior to beginning installation, verify that:

i) Panel seaming is complete.

ii) Panel attachment is sufficient to withstand loads applied by snow guard system.

Installation will not impede roof drainage.

2. PREPARATION

a) Clean areas to receive attachments; remove loose and foreign matter that could interfere with installation or performance.

3. INSTALLATION

a) Install system in accordance with manufacturer's instructions and approved Shop Drawings.

b) Place clamps at maximum 32 inches on center or as required by in-service loads.

c) Place clamps in straight, aligned rows.

d) Place both set screws on same side of clamp.

e) Tighten set screws to manufacturer's recommended torque. Randomly test set screw torque using calibrated torque wrench.

f) Insert color-matched metal strips into cross members, staggering strips to cover cross member joints.

g) Attach cross members to clamps; tighten bolts to manufacturer's recommended torque.

h) Install splice connectors at cross member end joints.

i) Do not cantilever cross members more than 4 inches beyond last clamp at ends.

j) Install one SnoClip per panel between panel seams.

DIVISION #8

DOORS, WINDOWS & GLASS

8.0 GENERAL

A. SCOPE:

1. This Division includes providing and installing all materials as herein specified.

2. Submit six (6) copies of shop drawings to the Architect for review of all work before fabrication or installation.

3. All pre-manufactured components such as doors/frames/hardware shall be factory assembled as much as practical. Final field assembly and installation shall be by a factory authorized installer. Should the Contractor elect to install components with other than factory authorized installers, he shall submit a letter at completion from the pre-manufactured component supplier that they have inspected the completed installation and certify that the final assembly has been installed and adjusted within the requirements acceptable of the component manufacturer.

8.1 ALUMINUM DOOR FRAMING SYSTEMS

A. TUBULAR FRAMING:

1. Exterior Frames - Shall be and dark bronze (duranodic) finish. Tubelite "Versa-Therm", Kawneer "451", or equal, systems of 1-3/4" x 4-1/2 as indicated on the plans, (thermal break frames) extruded of 6063-T5 aluminum alloy sections. No projecting glass stops - recessed 1-5/16" glass pocket. 125" minimum wall thickness and type 6063-T5 aluminum alloy .625" high applied stops with screws and weather-stripping. Frame members are to be box type with four (4) enclosed sides. Open back framing will not be acceptable. Each hinge jamb to have 3/16" thick steel reinforcing, running the full height of the frame. Continuous gear hinges shall be mounted directly into this channel for concealed anchor installation when in the closed position. - Aluminum reinforcing at frames is not acceptable.

2. Caulk joints before assembling frame members. Secure joints with fasteners and provide a hairline butt joint appearance. Pre-fit doors to frame assembly at factory prior to shipment. Field fabrication of framing using "stick" material is not acceptable.

3. Applied stops for side, transom and borrowed lites and panels, with fasteners exposed on interior or unsecured portion only. Pre-machine and reinforce frame members for hardware in accordance with manufacturer's standards and the approved hardware schedule. Factory install hardware.

4. Exterior Glass - Shall be 1" insulated units consisting of 1/4" grey tinted float glass inboard lite and 1/4" clear float glass outboard lite, as manufactured by PPG, LOF, Guardian Industries, or approved equal. Glass shall be warranted by the manufacturer against factory defects under normal conditions for a period of not less than ten (10) years. Note: Any glass in doors or within 4' of door shall be safety/tempered glazing in same color and insulated style.

5. Anchors appropriate for wall conditions to anchor framing to wall materials. A minimum of five anchors up to 7'-4" on jamb members, and one additional anchor for each foot over 7'-4". Secure head and sill members of transom, sidelites and similar conditions.

6. Factory pre-assemble frames to the greatest extent possible, and mark frame assemblies according to location.

B. ALUMINUM FINISHES:

1. All aluminum framing shall have clear anodized surfaces.

C. INSTALLATION:

1. Doors, Glass, Aluminum Frames and finish hardware shall be installed by workers experienced in the installation of this type of door and framing systems.

2. Comply with manufacturer's recommendations and specifications for the installation of the doors and frames. Factory install hardware on doors.

3. Set units plumb, level and true to line, without warp or rack of doors or frames. Anchor securely in place. Separate aluminum and other metal surfaces with bituminous coatings or other means as approved by Architect.

4. Set thresholds in a bed of mastic and back seal.

5. Clean surfaces promptly after installation of doors and frames, exercising care to avoid damage to the protective coatings.

6. Ensure that the doors and frames will be without damage or deterioration (other than normal weathering) at the time of acceptance.

7. Provide Owner with all adjustment tools and instruction sheets. Arrange an in-service session to Owner at Owner's convenience. Provide a minimum one-year written warranty on all labor related to this section. Any workmanship, which

is defective or deficient, shall be corrected to the Owner's satisfaction and at no additional cost to the Owner.

8.2 ALUMINUM PLANK DOORS

A. MATERIALS:

1. Aluminum Plank Doors - Shall be 1-3/4" tubular shaped sections that interlock a minimum of 3/8" and form a 1/4" thick vertical reinforcement every 4", with a minimum wall thickness of .100", with .187" minimum at lock and hinge stiles, of 6063-T5 alloy and have a fluted #10 pattern extruded in door sections. Joinery shall be a minimum of (3) 3/8" diameter cadmium plated steel rods per door, located near top, bottom and center of doors. Doors to be insulated with urethane boardstock. Finish of doors to be Dark Bronze anodize. Doors to be glazed with 1" insulated units consisting of 1/4" grey tinted float glass inboard lite and 1/4" clear float glass outboard lite, as manufactured by PPG, LOF, Guardian Industries, or approved equal. safety glass (24"x 36" lite per door), set in extruded glazing channels, removable from the inside with a minimum wall thickness of .080", as manufactured by Cross Aluminum Products, Niles, MI 49047, (269) 697-8340 or Thompson Aluminum Door Company, Mishawaka, Indiana, 46544, (574) 255-3578.

2. Frames to 1-3/4"x 4-1/2" as indicated on plans, with each hinge jamb to have a 3/16" thick steel channel reinforcing, running the full height of the frame. Continuous hinges shall be mounted directly into this channel (as manufactured by Tubelite, Kawneer, or approved equal). Aluminum reinforcing at frames is not acceptable.

3. Exterior doors to be weather stripped on the sides. Frame joints to be mechanically jointed and fitted to hairline joints.

4. Finish - All exposed aluminum shall be Clear anodized finish conforming to the Aluminum Association's standards.

8.3 DOORS & FRAMES

A. MATERIALS:

1. HOLLOW METAL - Work shall be as manufactured by Steelcraft, or equal, of sections and construction as standard of the industry, or with exceptions as specified herein. Provide all labeled assemblies as noted on drawings.

2. INTERIOR HOLLOW METAL DOORS - Shall be of flush construction. Doors shall be made of 16 Ga. cold-rolled galvanized steel, 1-3/4". Doors shall be reinforced, stiffened, sound deadening and insulated with honeycomb type core, completely filling inside of doors and laminated to both inside faces of panels. Doors shall have continuous vertical mechanical interlocking joints at lock and hinge edges. Doors shall have beveled (1/8" in 2") hinge and lock edges. Top and bottom steel reinforcing channel shall be spot welded within the doors. Hinge reinforcings shall be 8 Ga. for 1-3/4" doors. Lock reinforcings shall be 16 Ga. and closer reinforcings shall be 8 Ga. for 1-3/4" doors. Adequate reinforcing shall be provided for all hardware as required for high frequency use and hardware as specified. Doors to be shop primed, ready for field painting.

3. DRYWALL FRAMES - Shall be manufactured from 16 Ga. cold-rolled steel, wrap around type, formed to the manufacturer's contour shown on plans with double return back bends to prevent cutting into gypsum board surface. Frames shall be knocked down, designed to be securely installed in rough openings after wall-board is applied. Frame jamb and head connection to be neat flush miter, with head securely locked to top of jamb. Mitered corners shall be reinforced with concealed corner clip, to provide a firm interlock of jamb to head. Frames shall be supplied with factory installed rubber bumpers, (3) per strike jamb and (2) per head for pair of doors. Frames for 1-3/4" doors shall have 8 Ga. steel hinge reinforcings. Strike reinforcing shall be 16 Ga. and prepared for ANSI 115.1 Universal Strike.

B. INSTALLATION:

1. See Door Schedule for Door sizes.

2. All doors and frames shall be field painted by others - see Division #9. Caulk entire perimeter - see Sealant Division.

8.4 HARDWARE

A. GENERAL:

1. Requirements of Regulatory Agencies:

   a) Furnish finish hardware to comply with the requirements of laws, codes, ordinances, and regulations of the governmental authorities having jurisdiction where such requirements exceed the requirements of the Specifications.

   b) Furnish finish hardware to comply with the requirements of the regulations for public building accommodations for physically handicapped persons of the governmental authority having jurisdiction and to comply with Americans with Disabilities Act.

   c) Provide hardware for fire-rated openings in compliance with NFPA 80 and local building code requirements. Provide only hardware, which has been tested and listed by UL for types and sizes of doors required, and complies with requirements of door and door frame labels.

d) Where emergency exit devices are required on fire-rated doors that carry supplementary marking on the doors UL labels indicating "fire door to be equipped with fire exit hardware", provide UL label on exit devices indicating "Fire Exit Hardware".

4. Hardware Supplier:

a) Shall be an established firm dealing in contract builders' hardware. He must have an adequate inventory qualified personnel on staff and be located within 50 miles of the project. Only domestic manufacturers are acceptable, the distributor must be a factory authorized dealer for all materials required. Supplier shall be or have in employment an Architectural Hardware Consultant. (AHC)

5. Manufacturer:

a) Obtain each type of hardware (latch and locksets, hinges, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.

6. Hardware Schedule:

a) Submit minimum of six (6) Hardware Schedules to allow the Architect to retain two copies for his use, plus the number of copies required by the Contractor for his distribution and use.

b) Shop drawings to include a preface sheet listing category, only and manufacturer's names of items being furnished along with the following: Hardware location, opening description, product data, key schedule, special wiring for door locks, drawing elevations, miscellaneous detail drawings, warranties of individual manufacturer's, etc.

B. MATERIALS:

1. General:

a) Furnish each category with the products of only one manufacturer unless specified otherwise, this requirement is mandatory whether various manufacturers are listed or not.

b) Provide the products of manufacturer designated or if more than one manufacturer is listed, the comparable product of one of the other manufacturers listed. Where only one manufacturer or product is listed, "no substitution" is implied.

2. All machine screws, wood screws, machine bolts, lag screws, expansion shields, etc., necessary to properly attach hardware to work shall be provided. Installation shall be appropriate for the use required.

3. Should items of hardware not listed hereinafter be required for completion of the work, the Contractor shall provide same, such items are to be of a type and quality suitable to the service required.

Manufacturers of Hardware List	Approved Substitutes
Hinges - Select	None
Note: Confirm All Clearances with Hinge Manufacturer	
Exit Devices - Von Duprin	None
Cylinders - Schlage	None
Closers - LCN	None
Locksets - Schlage	None
Flat Goods - Rockwood	Any B.H.A. Member
Thresholds - Pemko	National Guard
Door Bottoms - Pemko	National Guard
Door Tops - Pemko	National Guard
Kickplates	Any B.H.A. Member

C. INSTALLATION:

1. General:

a) Install hardware according to manufacturer's installations and to manufacturer's template dimensions. Attach all items of finish hardware to doors, frames, walls, etc. with fasteners furnished and required by the manufacture of the item.

(1) Reinforced hollow metal doors frames and reinforced aluminum door and frames: drilled and tapped machine screws.

(2) Continuous gear hinges attached to hollow metal doors and frames and aluminum doors and frames: 12-24 x 1/2" #3 Phillips Keenform self-tapping. Use #13 or 3/16 drill for pilot.

b) Install weatherstrip gasket prior to parallel arm closer bracket, rim exit device or any stop mounted hardware. Gasket

to provide a continuous seal around perimeter of door opening. Allow for gasket when installing finish hardware. Door closers will require special templating. Exit devices will require adjustment in backset.

2. Final Adjustment:

a) Provide the services of a representative to inspect material furnished and its installation and adjustment, to make final hardware adjustment, and to instruct the Owner's personnel in adjustment, care and maintenance of hardware.

b) Locksets, closers and exit devices shall be inspected by the factory representative and adjusted after installation and after the HVAC system is in operation, to insure correct installation and proper adjustment in operation. The manufacturer's representative shall prepare a written report stating compliance, and also recording locations and kinds of noncompliance. The original report shall be forwarded to the Architect with copies to the Contractor, hardware distributor, hardware installer and building owner.

D. HARDWARE SETS:

SET #1 - Doors #01, #02 (Enclosure to Exterior)

2-Hinges	SL 11HD AL
1-Exit Device	98EO US26D
1-Lockset	Schlage ND80RD RHO 626
1-Cylinder	
2-Closers	LCN 4030 H ST 180 AL
2-Kichplates	8”x2” LDW US32D
1-Threshold	Pemko 271A x Width of 2 Doors
1-Door Top	National Guard 16 AL x Width of 2 Doors
2- Sweeps	Pemko 368 N D
2- Floor Stops	Ives FS17 US26D
2- Kick Down Holders	Ives FS452-4 US26D

*Balance of weather stripping by door and frame manufacturer

SET #2 - Doors #19, #20 (Enclosure to Closet, Electric)

6- Hinges	BB1279 4-1/2”x 4-1/2” US26D
1-Lockset	Schlage ND80PD 8RO 626
1-Cylinder	
1 Set Flush Bolts	Ives FB61P Top & Bottom US32D
2-Kichplates	8”x2” LDW US32D
2-Wall Stops	Ives WS 490-1/2 B26D

8.5 ALUMINUM FIXED WINDOWS

A. GENERAL:

1. Scope - Furnish all material to remove existing sash and glazing, and replace with new replacement window system. All material to be in accordance with the following plans and specifications.

2. General: Except as otherwise indicated, provide window units complying with requirements of AAMA Classification "AW" grade windows. Windows for this project will be rated a minimum of AW90 for full size test units per AAMA/WDMA/CSA 101/I.S.2/A440-05 to withstand a design pressure of 90 psf minimum.

3. Fixed Aluminum Windows or Panel Frames (F): Except for guardians (if any), or special provisions as indicated for maintenance, cleaning, and removal, no operating hardware or equipment is required.

a. Glazing: Inside glazed window with an exterior flat-face glazing return.

b. Snap on sloped beads are not permitted.

2. Manufacturer - Series 1500 Fixed window as manufactured by Graham Architectural Products, 1551 Mount Rose Avenue, York Pennsylvania 17403-2909, (717) 849-8100. List the name of the window manufacturer on the Proposal Form.

3. An approved equal to the Graham Architectural Products Window specified herein is Series S-3900 as manufactured by EFCO Corp.,1000 County Road, Monett, MO 65708, (800) 221-4169.

B. PERFORMANCE REQUIREMENTS:

1. Requirements for aluminum windows, terminology and standards of performance, and fabrication and workmanship are those specified and recommended in AAMA/WDMA/CSA 101/I.S.2/A440-05 and applicable general recommendations published by AAMA. Conform to more stringent of specified AAMA standards and following:

a. Air Infiltration Test: Not exceed 0.01 cubic feet per minute per square foot of window area when tested at a pressure of 6.24 psf. Perform tests in accordance with ASTM E 283.

b. Water Resistance Test: Subject window unit to a water resistance test in accordance with ASTM E 547 with no water passing the interior face of the window frame and no leakage as defined in the test method. Mount the glazed unit in its vertical position continuously supported around the perimeter. When a static pressure of 15.00 pounds per square foot has been stabilized, apply five gallons of water per square foot of window area to the exterior face of the unit for a period of 15 minutes.

c. Uniform Load Deflection Test: ASTM E 330 at 90 pounds per square foot: No member deflection more than 1/175 of its span. Maintain test load for a period of 10 seconds resulting in no glass breakage, permanent damage of fasteners, hardware parts, support arms, actuating mechanisms or any other damage causing the window to be inoperable.

d. Uniform Load Structural Test: Apply a minimum exterior and interior uniform load of 135 pounds per square foot to the entire outside surface of the test unit. Maintain this test load for a period of 10 seconds. Results: No glass breakage, permanent damage of fasteners, or any other damage causing the window to be inoperable. And no permanent deformation of any frame or vent member in excess of 0.2 percent of its span.

e. Condensation Resistance Factor: Test in accordance with AAMA 1503 standards and tests of thermal performance resulting in a CRF of no less than 72 using Clear-Clear insulating glass.

f. "U" Value Tests: (Co-efficient of Heat Transfer): Thermal Transmittance of Conduction with a 15 mph perpendicular dynamic wind: 0.55 BTU/hr/ft^2/F with clear-clear glass and 0.34 BTU/hr/ft^2/F using clear-Low E insulating glass.

g. Testing: Where manufacturer's standard window units comply with requirements and have been tested in accordance with specified AAMA/WDMA/CSA 101/I.S.2/A440-05 tests, provide certification by AAMA certified independent laboratory showing compliance with such tests. Submit copy of the test report signed by the independent laboratory.

C. MATERIALS

1. Aluminum Extrusions: Alloy and temper recommended by window manufacturer for strength, corrosion resistance and application of required finish, but not less than 22,000 psi ultimate tensile strength, a yield of 16,000 psi. Comply with ASTM B 221.

2. Fasteners: Aluminum, stainless steel, or other materials warranted by manufacturer to be non-corrosive and compatible with aluminum window members, trim, anchors and other components of window units.

a. Do not use exposed fasteners on exterior except where unavoidable. Match finish of adjoining metal.

b. Provide non-magnetic stainless steel, tamper-proof screws for exposed fasteners, where required, or special tamper-proof fasteners.

c. Locate fasteners so as not to disturb the thermal barrier construction of windows.

3. Anchors, Clips And Window Accessories: Depending on strength and corrosion-inhibiting requirements, fabricate units of aluminum, non-magnetic stainless steel or hot-dip zinc coated steel or iron complying with ASTM A 123.

4. Compression Glazing Strips And Weatherstripping: At manufacturer's option, provide neoprene gaskets complying with ASTM D 2000 Designation 2BC415 to 3BC415, PVC gaskets complying with ASTM D2287, or expanded neoprene gaskets complying with ASTM C 509, Grade 4.

5. Sealant:

a. Unless otherwise indicated for sealants required within fabricated window units, provide elastomeric type as recommended by window manufacturer for joint size and movement, to remain permanently elastic, non-shrinking and non-migrating. Provide product complying with AAMA Specification 803 and 808.

b. Refer to Division 7 for perimeter sealants between window units and surrounding construction.

D. FABRICATION AND ACCESSORIES

1. General: Provide manufacturer's standard fabrication and accessories which comply with specifications. Include complete system for assembly of components and anchorage of window units and provide complete pre-glazing at the factory.

2. Window Material:

a. Windows and Muntin Bars: Aluminum.

b. Secondary Members (friction tabs, shoes, weatherstripping guides, etc.): Aluminum or a material compatible with aluminum.

c. Main Frame: Nominal thickness of not less than 0.080 inches.

d. Main Frame Sill: Nominal thickness of not less than 0.080 inches.

e. Standard wall thickness tolerance: In accordance with the Aluminum Association.

3. Master Frame: Not less than 4-1/2 inches in depth. Provide continuous mid jamb aluminum thermally broken shim support for jamb extrusions.

4. Thermal Barrier: Provides a continuous uninterrupted thermal barrier around the entire perimeter of the frame and all sash and shall not be bridged by any metal conductors at any point.

5. Construction:

   a. Assembly: Fabricate butt joints of the main frame butt type, coped and joined neatly and secured by means of screws anchored in integral ports. Seal main frame on the outside with a narrow joint sealant meeting AAMA 803 specification for narrow joint sealants.

   b. Mullions - Other structural members: When mullion units occur, whether they are joined by integral mullions, independent mullions or by a combination of frame members, the resulting members must be capable of withstanding the load outlined under Uniform Load specified load requirements, without deflecting more than 1/175th of its span. When independent or integral mullions are used to join windows, the mullions shall contain a thermal barrier as specified. Evidence of compliance may be by mathematical calculations.

   c. Glazing:

      1. Glaze all units with insulated panels as follows:

         a) Typical Insulated Panel: Overall thickness of 1 inch.

         b) Primary Sealant: Polyisobutylene applied to the edge of the spacer.

         c) Secondary Sealant: Silicone.

      2. Glaze units to allow for panel replacement without the use of special tools.

      3. Setting blocks on all four sides of each lite at quarter points.

   d. Unit Glazing: Inside bead glazed and weeped to allow excess water to drain away from the glazing material. Marine glazing is unacceptable.

E. ALUMINUM WINDOW FINISHES

1. Provide manufacturer's standard 2 coat Fluoropolymer 70% Kynar baked on, electrostatically applied enamel coating. Color to be selected from manufacturer's standard colors as selected by the Architect, applied over manufacturer's standard substrate preparation including cleaning, degreasing, and chromate conversion coating. Finish shall meet or exceed AAMA 2605.

   a. Color: to be selected by Architect – Contractor to submit color samples for approval.

F. CASING COVER SYSTEM: (Panning, Trims, Receptors, Mullions, Sills etc.)

1. Exterior Casing Covers (Panning, Receptors, Subsills, Sills): Provide extruded prime alloy aluminum 6063-T5 no less than nominal 0.078 inch wall thickness. Casing covers of less than 2 inches in depth from the window frame may be of 0.062 inch wall thickness. Provide aluminum sections of one piece designed to lock around the entire window frame for a weathertight connection.

2. Sub-sill/Flashing to extend beyond wall face and return down with rain drip.

3. Secure the casing cover section at the corners with stainless steel screws in integral screw ports with the joints back sealed using a compatible sealant.

4. Exposed screws, fasteners or pop rivets are not acceptable on the exterior of the casing cover system.

5. Exterior mullion covers: Extruded aluminum shape to provide rigidity, no less than nominal 0.062 inch wall thickness. Seal against the casing cover sections with continuous bulbous vinyl weatherstrip interlocked within the mullion cover

6. Interior trim:

   a. Interior Trim, Closures and Angles: As detailed, of extruded shapes no less than 0.062 inch nominal wall thickness.

   b. Snap Trim: Apply in full length without splices and attach with clips spaced no more than 18 inches on center. Clips shall be no less than 3 inches long. No exposed screws will be allowed on interior trim.

G. INSTALLATION:

1. Installer must examine conditions, under which work is to be installed or erected, and notify contractor and architect in writing of conditions detrimental to proper completion of work. Qualified installation personnel to ensure proper installation techniques must supervise contractor's installation crew. Supervision means on-site, full time during the entire project. Comply with manufacturer's specification and recommendations from installation of window units, hardware, operators, and other component of work. Set units plumb, level, and true to line, without warp or crack of frames or sash. Anchor securely in place. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action. Set sill members and other members in bed of compound or with joint filler or gaskets, provide weather tight

construction. Refer to sealant section for compounds, fillers and gaskets to be installed with window units. Coordinate installation with flashing and other components of work.

2. Do not remove existing windows until new replacements are available and ready for immediate installation. Do not leave any openings uncovered at end of working day, during wind-driven precipitation or during excessively cold weather. Remove existing work carefully; avoid damage to existing work to remain.

3. The window shall be installed square, plumb and level in a secure and workmanlike manner, without distortion of the windows and shall make final adjustments for proper operation of sashes and to assure neat and weathertight construction in accordance with the manufacturer's instructions. A permanent weathertight joint shall be made at the junctions of the sill and side frame members and head and side frame members of the master frame with a grade of sealant that shall meet the requirements of AAMA 803.3. Windows shall be properly caulked with a compound meeting AAMA 803.3 "Specifications for Exterior Perimeter Sealing Compounds" for use with "Architectural Aluminum" to accomplish a thoroughly weathertight installation around the perimeter of the window master frame. Master frame shall be insulated in a way that shall prohibit passage of cold air between window unit and existing structure.

4. Wedge fiberglass insulation between frames of new windows and construction to remain, or between frames and new receptor as applicable. Compress fiberglass to no less than 50 percent of original thickness.

H. ADJUST AND CLEAN

1. Adjust hardware to provide tight fit at contact points and at weatherstripping, for smooth operation and weathertight closure.

2. Clean aluminum surfaces promptly after installation of windows, exercising care to avoid damage to protective coatings and finishes. Remove excess glazing and sealant compounds, dirt, and other substances. Lubricate hardware and moving parts.

3. Clean glass promptly after installation of windows. Remove glazing and sealant compound, dirt and other substances.

8.6 OVERHEAD DOORS

A. MATERIALS:

1. Furnish and install upward-acting, sectional, overhead Wayne/Dalton, Model #452, "Aluminum Full View" insulated overhead doors as manufactured by Wayne-Dalton Corporation, Inc., Lewisville, TX, sold and distributed by Darkinson Doors, Toledo, OH (419) 478-1000 or Crawford Doors, Monroe, MI (313) 241-5630.

2. Door Assembly:

a) Stile and rail assembly of aluminum alloy 6063-T6, 1-3/8 inch thick stiles and rails, joined with self-tapping screws.

b) Rails: Top and bottom rails with 3-1/2 inches wide, lower intermediate rail 1-3/8 inches, upper rail 1-5/8 inches, minimum wall thickness0.062 inch

c) Provide with polyurethane filled rails and stiles w/ R-value up to 3.91

d) Stiles: Top, bottom, and end stiles are 3-1/2 inches wide, center stile 3 inches wide, minimum wall thickness 0.062 inch.

e) Springs: Standard cycle spring: 10,000 cycles

f) Glazing: 1/2 inch Clear Tempered Insulated glass

g) Finish and Color: Anodized Finish: Clear anodized

h) Wind load Design: Provide to meet the Design/Performance requirements specified

i) Hardware: Galvanized steel hinges and fixtures. Ball bearing rollers with hardened steel races

j) Weather stripping: Flexible bulb-type strip at bottom section, Flexible Jamb seals

k) Track: Provide 3” Vertical lift, and Follow roof slope as indicated. Horizontal track shall be reinforced with continuous angle of adequate length and gauge to minimize deflection.

l) Electric Motor Controls: Push-button and key operated control stations with open, close, and stop buttons

m) Entrapment Protection: Photoelectric sensors monitored to meet UL 325/2010

n) Wiring Connections: 115 volts, single phase, 60 Hz.

3. Installation: Install overhead doors and track in accordance with approved shop drawings and the manufacturer's printed instructions. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance. Anchor assembly to wall construction and building framing without distortion or stress. Securely brace door tracks suspended from structure. Secure tracks to structural members only. Fit and align door assembly including hardware. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components. Instruct Owner’s personnel in proper operating procedures and maintenance schedule.

4. Adjusting: Test for proper operation and adjust as necessary to provide proper operation without binding or distortion. Adjust hardware and operating assemblies for smooth and noiseless operation.

5. The work under this Division shall be installed by mechanics skilled in the trade and under the supervision of an accredited representative of the manufacturer. Work shall be in accordance with the Architect's drawings, shop drawings and shall provide for smooth and easy opening and closing of doors, tight fit against jambs, heads and sills and secure attachment to the work of other trades.

6. The Door Contractor shall furnish to the Owner, a two year written guarantee that all work under this Division is in accordance with the contract documents, that is free from defects in workmanship and materials and that the Contractor will promptly make good, without further cost to the Owner, any defects that may appear within the warranty period. Turn over all manufacturers' warranties on doors.

8.7 ELECTRIC DOOR OPERATORS

A. GENERAL:

1. Work Included - Provide CSA listed UL 325 2010 tested and approved electric door operator assembly of size and capacity recommended by door manufacturer. External entrapment device monitoring built in to control circuit complete with electric motor and factory pre-wired motor controls, mechanical brake. Conduit and wiring to motor and accessories required for proper operation by others.

2. Related Work - Door preparation, miscellaneous or structural metal work, field electrical wiring, wire, conduit, fuses and disconnect switches are in the Scope of Work of other divisions or trades.

B. PRODUCT:

1. General - The electric operator will be a Micanan Model PRO-J as manufactured by Micanan Systems Inc., or approved equal.

2. Supply Micanan Model Pro-J, industrial duty, belt drive jackshaft operator(s) in 1/2 HP (Doors 15 – 18), and 3/4 HP (all other O.H. doors) single phase.

3. Electric Motor: Motor shall be high starting torque, 1725 RPM continuous duty, instant reversible, industrial type, capacitor start (1-phase), protected by an external reset overload device (1-phase).

4. Control Circuit: 24V NEC class 2 Circuit with a 40VA transformer, 24V fused control circuit to protect against short circuit.

5. Motor Starter, Controls, Enclosures: Motor control circuit shall incorporate the SMART 10.0 control logic board or an across the line magnetic reversing starter electrically and mechanically interlocked, motor controls shall be in Nema-1 enclosure. Controls and control enclosure shall conform to ANSI/NEMA ICS 1, ICS 2, and ICS 6. A Nema-1 key operated 3 button control station OPEN/CLOSE/STOP and Micanan compatible monitored photocells shall be provided as standard equipment.

6. Frame and Reduction: Speed reduction shall be heavy duty 5L V-belt, second and third stage reduction #41 roller chain and sprockets, operator shall utilize #50 roller chain and sprockets on final drive. All shafts shall be coated in black oxide for maximum corrosion resistance, permanently lubricated and sealed ball bearings on all drive shafts. All drive sprockets drilled, pinned and set with locktite. Operator shall be capable of driving door at a speed of 8" – 10" per second.

7. Adjustable Clutch: Operator shall be equipped with an adjustable friction clutch to prevent door and operator damage.

8. Emergency Operation: Equipped with a floor level emergency disconnect with electrical cut-out switch for manual operation.

9. Mechanical Brake: Equipped with mechanical brake to stop and hold the door in position. Solenoid brake optional.

10. Limit Switches: Fully adjustable, rotary driven linear type limit switch mechanism shall synchronize the operator with the door. Low friction oil impregnated powder metal limit cams fitted on threaded steel shaft, rotating on oilite self-lubricating bronze bushings. The motor shall be removable without affecting the limit switch settings.

11. Chain hoist shall consist of chain pocket wheel, chain guard and smooth hand chain.

12. Entrapment Protection: The control system shall have provisions to connect factory entrapment protection devices (electric sensing edge) (pneumatic sensing edge) (photoelectric sensor) or to provide constant contact control operation in lieu of such devices

C. EXECUTION:

1. Install the motor operator in accordance with Micanan Systems instruction and standards and in compliance with applicable federal, state or local regulations.

2. Warranty: Micanan Systems warrants that its operators shall be free of any defects in materials and workmanship for a period of 2 years.

DIVISION 9

FINISHES

9.0 GENERAL

A. SCOPE:

1. This Division includes providing and installing all materials as herein specified, or as shown on the drawings, or required for a complete installation.

2. Contractor shall submit color samples of all materials requiring selection and review installation with project Architect/Engineer/Owner prior to beginning work and review/resolve all details that may be affected by job conditions and other trades, including submitting any layouts, recommended changes, shop drawings, samples, seam/joint spacings, or any other information which will describe the work to the fullest extent possible.

3. Clean all surfaces in an approved manner recommended by the manufacturer, ready for the Owner's occupancy.

4. Finish Contractor shall notify Architect of any defects in sub-base. Starting work shall imply acceptance.

5. Only experienced workmen shall install work. All finish materials shall be installed under conditions of temperature and humidity closely approximating those, which will exist when the building is occupied. Same conditions must exist until materials are properly cured.

6. Submit spec data sheets of all materials stating that they are free of all hazardous/asbestos materials and meet the Federal American Disability Act.

7. All finish materials and/or their adhesives for securing to substrates, shall meet the ADA (American Disability Act) as passed July 1991 and effective January 1992 in regards to elimination of toxic/allergic chemical contamination via direct vapors/fumes or when in contact with normal spilled materials and cleaning agents.

9.1 GENERAL PAINTING

A. PAINT MATERIALS:

1. All paint shall be delivered to site in manufacturer's sealed containers. Products used shall be as manufactured by Sherwin Williams and purchased locally, unless cost dictates otherwise.

2. Materials shall be the "top of the line" quality of each manufacturer used. Materials shall meet all State requirements for flame spread, smoke density, and fuel contribution. A notarized affidavit certifying this rating must be given to the Architect.

B. INSTALLATION:

1. Preparation of Surfaces:

   a) General - Before painting, remove hardware, accessories, plates, lighting fixtures and similar items, or provide ample protection of such items. Upon completion of each space, replace above items. Use only skilled mechanics for removing and connection of above items.

   b) All hairline cracks, splits, gouges, scratches and alligatored surfaces shall be spackled with Durabond 90, following manufacturer's recommendations. Prime these areas with a heavy-duty primer similar to Sherwin Williams Prep Rite High Build Latex Primer, B28W601 (1-4 Mills Dry).

2. Application:

   a) All paint shall be installed in strict conformance with manufacturer's specifications. Surface to be painted shall be clean, dry, smooth and adequately protected from weather. Temperature shall be above 50 degrees F.

   b) Finished work shall be uniform, of approved color, smooth and free from runs, sags, defective brushing, clogging, or excessive flooding.

   c) Small cracks, holes and other imperfections in masonry surfaces, which show up after primer-sealer has been applied to the surface shall be filled with an approved spackling compound before application of second coat.

d) Paint or finish all work specified herein and all work customarily painted for appearance or protection, as well as other specified items of work scheduled to be painted in room finish schedule.

e) Contractor shall acquaint himself with all divisions of the specifications, as he shall paint or finish to completion all materials requiring painting or finishing which are left un-finished. Certain prime painting is called for in the work of other trades. Any priming, shop or field coats specified in other divisions are in addition to the number of coats specified hereinafter.

f) The types of paint and minimum number of coats required in the various listed surfaces shall be as follows: Provide and install as many additional coats as required to provide uniform color, sheen and finish, even though the manufacturer's minimum dry fill thickness has been met.

g) Leave with owner at job completion all cans of paint for future touch up.

h) All patch painting shall be done in neat logical configurations, stopping at logical break points, such as inside or outside corners, at change of materials, or as directed by the Owner/Architect.

C. SCOPE OF WORK:

1. This Contractor shall paint all exterior and interior building materials as required for a finished installation or as noted on drawings.

2. Items included, but not limited to, shall be:

a) All Closet walls, H.M. doors & frames, etc. in areas of this work.

b) Overhead door heads and side jambs.

c) All exposed un-painted metal building materials not covered by liner panel.

d) All finish work not factory or shop painted.

e) Interior steel doors and frames and window frames.

f) Sealing of exposed interior concrete floors.

g) Staining of wood fence trash enclosure.

D. MATERIALS AND COATINGS – SHERWIN WILLIAMS

Interior Drywall - Paint

1 Coat - SW Prep Rite 200 Latex Primer B28W200 (1.2 Mills Dry)

2 Coats – SW Pro Mar 200 Alkyd Semi Gloss, B34 Series (1.7 Mills Dry/Coat)

Exterior Ferrous Metal - Paint

1 Coat - SW Kem Kromik Universal Metal Alkyd Primer B50Z Series (3Mills Dry)

2 Coats – SW Industrial Alkyd Enamel Gloss B54Z Series (2 Mills Dry/Coat)

Interior Ferrous Metal – Paint

1 Coat - SW Kem Kromak Universal Alkyd Metal Primer B50Z Series (3Mills Dry)

2 Coats – SW Industrial Alkyd Enamel Gloss B54Z Series (2 Mills Dry/Coat)

Exterior Galvanized Metal – Paint

1 Coat – SW Galvite HS (3-4.5 Mills Dry/Coat)

2 Coats – SW Industrial Enamel B 54 Series Gloss (2-4 Mills Dry/Coat)

Interior Galvanized Metal – Paint

1 Coat – SW Galvite HS (3-4.5 Mills Dry/Coat)

2 Coats – SW Industrial Enamel B 54 Series Gloss (2-4 Mills Dry/Coat)

Interior Concrete Floor - Sealer

2 Coats EUCOPOXY TUFCOAT (2 Part Epoxy Clear or Colored Semi-Gloss Coating)

Shall be as manufactured by the Euclid Chemical Co., Cleveland, OH. Color to be clear or solid color as selected. Sealer shall be installed after all major work is complete and when floor is completely dry. Thoroughly clean concrete floor of all grease, oil, dirt, etc., so once sealed, a uniform appearance is achieved. Refer to manufacturer's recommendations for cleaning and if floor is acid cleaned, properly neutralize per

manufacturer's recommendations before installing sealer.

Exterior Wood – Solid Color Stain (Fencing/Gates)

2 Coats – SW Acrylic Wood Scapes Solid Color Stain (2 Mills Dry/Coat)

9.2 METAL STUDS

A. MATERIALS:

1. Interior Metal studs shall be standard screw studs, galvanized 22 Ga., 3-5/8 x 1-1/4", as manufactured by Dale-Incor, Unimast, National Gypsum, Harrison, or approved equal.
2. Interior Metal track shall be standard screw stud track, galvanized 22 Ga., 3-5/8" x 1-1/4". All tracks shall be as manufactured by Dale-Incor, Unimast, National Gypsum, Harrison, or approved equal.
3. Exterior Metal studs shall be structural weight studs, galvanized 20 Ga., 5-1/2 x 1-1/2", as manufactured by Dale-Incor, Unimast, National Gypsum, Harrison, or approved equal.
4. Interior Metal track shall be structural stud track, galvanized 20 Ga., 5-1/2" x 1-1/2". All tracks shall be as manufactured by Dale-Incor, Unimast, National Gypsum, Harrison, or approved equal.
5. See Division #7 for insulation and elsewhere for drywall.
6. Vertical Deflection – Where non-bearing walls extend from floor to roof deck, use special top channel, as manufactured by "Fire Trak Corp., to allow vertical movement and be fire stopped.

B. INSTALLATION:

1. This Contractor to layout entire floor plan with temporary anchored runner channels, identifying all openings, corners, angles, etc., for Architect/Owner review and approval before proceeding further.
2. Align floor and ceiling tracks to assure plumb partitions. Secure track with suitable fasteners at a maximum of 24" on center.
3. Position studs in track on 16" centers unless noted otherwise by rotating into place for a friction fit. Secure studs located adjacent to doors, partition intersections and corners with 3/8" pan head Type S screws, driven through both flanges of studs and tracks, or by using a stud clincher.
4. Anchor all walls properly to existing walls and structure with diagonal bracing, cross members, etc., for proper support.
5. See plans for wall heights – some to be full height from floor to floor/roof, floor to ceiling, floor to above ceiling, etc.
6. Frame in all specialty items: soffits, bulkheads.

9.3 DRYWALL

A. MATERIALS:

1. Drywall to be 5/8" thickness Fire Rated Type X, unless otherwise noted on drawings, by 48" wide as manufactured by USG.
2. Tape shall be high strength paper tape. Fasteners, anchors, expansion joints, corners, tape, adhesives and all other related accessories as standard of the trade. "J" molds, beads, expansion joints, etc., shall be galvanized metal. Control joints to be zinc #093. Corners to be made with USG paper face metal trim.
3. Wet or possible moist areas to be 5/8" moisture resistant drywall. See drawings. Included, but not limited are showers, toilets, lockers, coaches' offices, concessions, etc.
4. Framing/ceiling suspension system - see elsewhere.
5. Mud/Joint compound to be conventional medium weight. No lightweight materials are acceptable.
6. Adhesive shall be panel type adhesive, water resistant, weatherproof, non-toxic, non-flammable, non-combustible equal to "PL Premium Adhesive" and as approved by the drywall manufacturer.

B. INSTALLATION:

1. Install gypsum board as shown on the drawings and in strict conformance with manufacturer's specifications. Protect from weather and damage. Installation shall be a 1st class job. Install with adhesive and screws. Hold drywall up from floor 1/2"+-.

2. All ends and edges of board shall occur over nailing member. Seal all gaps against adjacent existing materials (head, sill, etc.) with sealant - see Division #7.

3. Apply a uniform thin layer of joint compound to all joints and angles to be reinforced. Immediately apply joint tape centered over joint and seated into compound. Sufficient compound (approximately 1/64" to 1/32") must remain under the tape to provide proper bond. Follow immediately with a thin skim coat to embed tape, but not to function as a second coat. The tape or embedding coat must be thoroughly dry prior to application of second coat.

4. Apply second coat of joint compound over embedded coat fill panel taper flush with surface; cover tape and feather out at least 3" beyond the first coat. On joints with no taper, cover tape and feather out at least 4" on either side of the tape. Allow second coat to dry thoroughly prior to application of finish coat.

5. On all exposed drywall, whether scheduled for paint or finishing or not, install a finish coat of compound evenly over and extend at least 2" beyond second coat on all joints and feather to a smooth uniform finish. This step is not necessary for drywall above suspended ceilings. Do not allow finish joint to protrude beyond the plane of the surface. Where necessary, sand lightly between coats and the final application of compound to provide a smooth surface, ready for decoration. When sanding, take care not to roughen face paper. Globs, misses gaps, etc., will not be accepted. The taping and spackling of drywall in un-exposed areas (above acoustical suspended ceilings) shall be finished the same as exposed areas, excluding the skim coat.

6. After all irregularities have been eliminated and the joint treatment surfaces sanded, apply a thin skim coat of joint compound to the entire surface of the board that is exposed to the occupied space that is scheduled for paint or finishing (above ceilings excluded). Caution should be taken to eliminate laps or tool marks in the skim coating operation. The entire surface shall be lightly sanded as required to assure a smooth and even surface. An optional method is to install a prime coat of "Sheetrock First Coat", as manufactured by USG.

7. The final drywall finish shall be the highest level/quality (Level 5 or better) as established by the Gypsum Association, Washington D.C., publication G-214 and as updated/amended.

7. Install all control joints and expansion joints in locations as required, recommended manufacturer and as noted and field verified in the field with Architect. Adjust location, provide proper ceiling\wall backing and add additional joints as required to insure proper movement of wall/ceiling without cracking.

8. Install full height plastic "J" trim on drywall edges where interior walls abut other materials.

9. Refer to related mechanical/electrical drawings and drywall around all ductwork, grilles, openings, sleeves, etc. that occur in the drywall work either in exposed or unexposed locations. Seal drywall work tight to the passage of air. Special areas subject to movement are to be sealed with sealant or fire safing insulation/materials.

9.4 VINYL BASE

A. MATERIALS:

1. Vinyl base in Closet areas shall be as manufactured by Armstrong, VPI, Kentile, Azrock, or equal, 4" high. (1) color will be selected from the manufacturer’s standard colors.

2. To be cove base.

3. Adhesive shall be as recommended by manufacturer.

B. INSTALLATION:

1. Nail or use special contact cement on all vinyl base returns of 4" or less.

2. Install base on all walls, etc., for a uniform appearance.

3. Cut base in height to fit as required for special areas/patched work.

DIVISION 10

SPECIALTIES

10.0 GENERAL

A. SCOPE:

1. This Division includes providing and installing all materials as shown on drawings, as specified herein, or as required for a complete installation.

2. Contractor shall submit to the Architect six (6) copies of the shop drawings for review before fabrication and installation.

3. Submit material safety data sheets for all materials used, (insulating materials, paint coatings, fabric finishes, etc.). Materials containing asbestos shall not be used.

4. All pre-manufactured components, such as wall panels/doors/frames/hardware, etc., shall be factory assembled as much as practical. Final field assembly and installation shall be by a factory authorized installer. Should the Contractor elect to install components with other than factory authorized installers, he shall submit a letter at completion from the pre-manufactured component supplier that they have inspected the completed installation and certify that the final assembly has been installed and adjusted within the requirements acceptable of the component manufacturer.

5. Contractor shall submit color and/or material finish samples of all materials requiring selection.

10.1 SIGNS

A. MATERIALS:

1. Exterior Parking Signs - Shall be 1/8" aluminum, with baked enamel and engineer grade reflective sheeting vinyl. Signs to comply with all state, County and Federal Regulations, including ADA. Exterior sign posts for signs requiring posts shall be round galvanized steel - minimum 2" diameter, unless otherwise noted. Set in concrete footings a minimum of 3' below grade. Signs to be guaranteed against cracking, fading or peeling.

(1) Required - Van Accessible Handicap Sign - Blue and White (See Drawing CE-4)

2. Construction Sign – Adhesive Vinyl Print mounted on MDO, (Medium Density Overlay) plywood sign, ¾”x 6'x 8' size, as shown on attached sketch. Provide and install immediately upon contract award and prior to start of work. Verify colors, final graphics, names, etc., with Owner and Architect prior to fabricating. See sketch of sign at end of this Division.

B. INSTALLATION:

1. Exterior parking signs shall be installed on posts as called for on drawings. If shown to be installed in paving, neatly drill to install concrete footing. Top of footing to be flush with paving surface or grass.

2. Exact location of all signs shall be field verified with the Owner/Architect in the field prior to installation.

NEW FARMERS MARKET ENCLOSURE

AT ANN ARBOR FARMERS MARKET

315 DETROIT STREET, ANN ARBOR, WASHTENAW COUNTY, MI

FOR ANN ARBOR PARKS & RECREATION SERVICES

Parks&Recreation
CITY OF ANN ARBOR

Ann Arbor farmers market
great produce and more since 1919

CONTRACTOR NAME

TO BE DETERMINED

KOHLER ARCHITECTURE

WWW.KOHLERARCHITECT.NET
734.242.6880

1" 7'-10" 1"

1" 3'-8" 1" 1'-0" 1" 1'-0" 1" 6'-0"

3'-0"

CONSTRUCTION SIGN

SCALE: 3/4" = 1'-0"

DIVISION #13

SPECIAL CONSTRUCTION

13.0 GENERAL

A. SCOPE:

1. Work covered by this specification and design drawings shall include all labor, materials, equipment and services necessary for the complete installation of the work herein specified. The Contractor shall secure all permits and inspections required, including all tests, final certifications, and approvals and shall pay all fees for same.

2. Submit shop drawings for approval to the Architect/Engineer for all equipment and materials. A minimum of six (6) copies, or sets are required.

3. The Contractor shall be responsible for maintenance of equipment and systems until final acceptance by Owner, and shall insure protection of equipment during delivery, storage, installation and testing.

4. Confer with other Contractors and furnish such information that all will be able to install their work with least possible interference or delay.

5. The Contractor shall guarantee in writing to the Owner that work herein shall be free from defects in workmanship and materials and that if during a period of one year after date of certificate of completion and final payment of this project, any such defects appear, he shall remedy same without any cost to Owner.

6. Contractor shall furnish all required labor, materials and equipment to perform all tests required in accordance with the latest provisions of the state building and local codes that apply. Defective work or material shall be replaced to allow inspection and tests to be repeated.

13.1 PRE-ENGINEERED METAL BUILDING

A. GENERAL

1. This section specifies a rigid frame type, clear span, metal building system. Drawings and other specification sections may apply to this section.

2. The metal building manufacturer shall provide Architectural/Engineering Michigan sealed drawings in order to obtain all necessary construction permits and be responsible for the design of all primary and secondary building components.

3. The base specification described in this division referring to the pre-engineered metal building for the purposes of establishing the standard for construction required are based on “Butler Manufacturing Company, Kansas City, MO. (www.butlermfg.com – Sales; 1-816-968-4775, Engineering; 1-816-968-4735.)

4. Other metal building manufacturers of pre-engineered systems may be considered as approved substitutes providing all conditions of this specification are met. It is the contractor’s responsibility to verify that all aspects of the metal building that is proposed to be used, meets or exceeds the specification as described herein. Refer and follow the procedure as listed in the Special Conditions, Division 1.1, item F-1, titled Approved Substitutions for all metal buildings not meeting these specifications.

5. The structural design of the foundations as described on the drawings as part of this bid package have been prepared using the “Butler Metal Building Company’s” loads and framing system. This contractor is responsible to verify any changes required should another metal building be proposed and result in different loading conditions requiring a re-design of the foundations. Include in the bid cost any additional engineering fees that will be required by the project Architect to revise the drawings for the proposed metal building.

6. All structure, wall/roof framing and panels and all other components for the base building, clerestory addition (See Alternate A-1), drive thru vendor canopy, overhangs, soffits, etc., shall be designed and provided by the pre-engineered building manufacturer for a complete building assembly, as noted on drawings. Also provide siding/roofing panels for other areas noted on drawings, such as architectural columns and arch, electric and closet enclosure wall panels, etc.

7. Included in this division is all clips, supports, closures, trim, back-up materials behind siding, etc. for all accessories as provided and installed by others, i.e., architectural columns and arch, mechanical and electrical fixtures / fittings, doors/windows, etc. Coordinate with other divisions and trades.

8. The attached Drawings are “descriptive” in practice, pending submittal and acceptance of Metal Building Manufacturer as selected by successful bidder, and approved by the Architect/Owner. Metal Building Manufacturer to engineer building system as required to erect building in accordance with the general design as indicated on the drawings. Modifications to structural framing, wall / roof panels and other building components, including final details, to be discussed and approved by the Architect and Manufacturers Building Engineer prior to shop drawing approval.

9. Metal Building Manufacturer shall supply associated bidders with a preliminary set of building drawings, to be included with the bid proposal, indicating the general design of the building system can be met.

10. See Division #3 for concrete foundations.

11. See Division #7 for wall and ceiling insulation systems.

12. See Division #8 for doors, windows & glass.

B. APPLICABLE PUBLICATIONS:

1. American Institute of Steel Construction (AISC): "Manual of Steel Construction".

2. American Iron and Steel Institute (AISI): "Cold-Formed Steel Design Manual", 1986 Edition.

3. American Society for Testing and Materials (ASTM):

   a) A36-88 Structural Steel

   b) A446-87 Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dipped Process, Structural Quality

   c) A463-88 Steel Sheet, Cold Rolled, Aluminum Coated Type 2

   d) A792-86 Steel Sheet, Aluminum-Zinc Alloy-Coated by the Hot-Dip Process

   e) A570-88 Steel, Sheet and Strip, Hot Rolled, Structural Quality

   f) A572-88 High Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality

   g) A307-88 Carbon Steel Bolts

   h) A325-80 High Strength Bolts for Structural Joints

4. Underwriters Laboratories (UL): "Tests for Wind-Uplift Resistance pf Roof Assemblies - UL 580"

5. American Welding Society's (AWS) "Standard Code for Arc and Gas Welding in Building Construction"

6. Metal Building Manufacturers Association (MBMA): "Low Rise Building Systems Manual"

C. QUALITY ASSURANCE:

1. The metal building system shall be designed, engineered and fabricated by a building manufacturer who has been regularly engaged for at least twenty (20) years in the design, engineering and fabrication of the type and quality herein specified.

2. Unless otherwise noted, all materials in this Division shall be furnished by the building manufacturer.

3. The building manufacturer shall be certified for AISC's Quality Certifications, Category MB Program (Metal Building Members Association – mbma@mbma.com, Cleveland, Ohio, Phone 216-241-7333). This project shall be engineered and fabricated to meet the requirements of this certification.

4. All structural mill sections and welded plate sections shall be designed in accordance with the AISC's "Manual of Steel Construction".

5. All cold formed steel structural members shall be designed in accordance with the 1986 edition AISI's "Cold Formed Steel Design Manual".

6. All roof and wall panels shall be designed in accordance with the AISI's "Cold Formed Steel Design Manual".

7. Welded connections shall comply with the American Welding Society's (AWS) "Standard Code for Arc and Gas Welding in Building Construction" for welding procedures.

D. RECEIVING, STORAGE & HANDLING OF MATERIALS ON JOB SITE:

1. All materials shall be unloaded, handled, hauled and delivered to storage by competent workmen in a manner, which will prevent bends, dents, scratches or other damage. Damaged materials shall be rejected and promptly replaced. All materials shall be properly stored and protected from weather damage.

2. All shipments must be thoroughly checked by the consignee. If shortage or damage is found, a notation must be placed on the bill of lading and must be confirmed by the carrier.

3. Primed Materials - Upon receipt, all bundles of primed material shall be stored on blocking at an angle sufficient to allow any trapped water to drain and should be protected from the weather by covers allowing air circulation. Water, ice and snow should not be allowed to collect and remain thereon.

4. Roof & Wall Panels - Bundles of panels shall be inspected for moisture upon receipt. If moisture is present, dry the panels and, if possible, store them in a warm, dry place. The panel bundles shall be elevated and sloped in a manner to allow moisture to drain. Cover all bundles with a tarp or plastic, leaving air spaces for adequate air circulation.

E. BUILDING SYSTEM:

1. General

a) The Base design of the building structural system shall be a clear-span rigid frame with straight columns and roof beams; with a gable roof.

b) The Alternate design (See Alternate A-1) of the building structural system shall be a clear-span rigid frame with straight columns and roof beams; with a gable roof and integral clerestory above.

c) The design of the drive thru vendor canopy structural system shall be a clear-span rigid frame with straight columns and roof beams; with a gable roof. Design roof frame system to support a future eave hung canvas enclosure system, full height, to grade (See Drawings).

d) Actual building length shall be structural line to structural line and shall be the same as nominal - i.e., the number of bays times length of bays.

e) Actual building width shall be structural line to structural line and shall be the nominal building width.

f) The roof shall have a minimum slope of 3" in 12".

g) All components and parts of the structural system shall be as indicated on the drawings and/or specifications

i). All components and parts shall be clearly marked and erection drawings shall be supplied for identification and assembly of the parts.

ii). All drawings shall carry the stamp of a professional engineer registered in the State of Michigan

h) Field modification of parts shall be in accordance with the best standard procedures, require the approval of the manufacturer, and shall be the responsibility of the building erector.

i) Foundations

i). Foundations including anchor bolt embedment length shall be adequately designed by a competent engineer, retained by other than the building manufacturer, in accordance with the best recommended practices for the specific soil conditions of the building site.

ii). All reactions for the proper design of foundations shall be supplied by Butler Manufacturing Company.

iii). Anchor bolt diameter shall be as specified by Butler Manufacturing Company's standard anchor bolt layout drawings.

iv). Anchor bolts shall be supplied by the contractor, not the building manufacturer.

j) Building shall be produced in a manufacturing facility that is certified by the American Institute of Steel Construction - Category MB.

2. Structural Steel Design

a) All structural mill sections or welded-up plate sections shall be designed in accordance with the 1989 AISC “Specification for the Design, Fabrication and Erection of Structural Steel for Buildings," and all cold-formed steel structural members shall be designed in accordance with the 1986 AISI "Specification for the Design of Cold-Formed Steel Structural Members."

b) The structural system will be designed in accordance with a specified building code. (Refer to Design Loads and Building Codes.)

3. Primary Framing

a) Rigid Frames

i). Frames shall consist of welded-up plate section columns and roof beams complete with necessary splice plates for bolted field assembly.

ii). All base plates, cap plates, compression splice plates and stiffener plates shall be factory welded into place and have the connection holes shop fabricated.

iii). Columns and roof beams shall be fabricated complete with holes in webs and flanges for the attachment of secondary structural members and bracing except for field work as noted on manufacturer's erection drawings.

iv). All bolts for field assembly of frame members shall be A-325 high strength bolts as indicated on erection drawings.

b) Endwall Structurals

i). The endwall structurals shall be cold-formed channel members designed in accordance with the 1986 AISI Specification or welded-up plate sections designed in accordance with the 1989 AISC Specification.

ii). Endwall frames shall consist of endwall corner posts, endwall roof beams and endwall posts as required by design criteria.

1) All splice plates and base clips shall be shop fabricated complete with bolt connection holes. All base plates, cap plates, compression splice plates and stiffener plates shall be factory welded into place and have the connection holes shop fabricated.

2) Beams and posts shall be shop fabricated complete with holes for the attachment of secondary structural members except for field work as noted on manufacturer's erection drawings.

iii). Intermediate frames shall be substituted for endwall roof beams when specified.

iv). Necessary endwall posts and holes for connection to the intermediate frame used in the endwall shall be shop fabricated.

v). Note – west end wall to be clear span, rigid frame to allow for future building expansion.

4. Secondary Structural Members

a) Roof Purlins (<=32') and Wall Girts

i). Purlins and girts shall be "Z" shaped, precision roll formed.

ii). Girts shall be 8-1/2" or 10" "Z" shaped sections.

iii). Purlins shall be 8-1/2" or 10" deep "Z" shaped sections.

iv). Outer flange of all girts shall contain factory-punched holes for panel connections. Optional girts are also acceptable without factory punched holes for panel connections.

v). Outer flange of purlins shall contain factory-punched holes for panel connections. Optional purlins are also available without factory punched holes for panel connections on ribbed roof systems only.

b) Eave Struts

i). Eave Struts shall be factory pre-punched 8-1/2", 10", or 11-1/2" deep "C" sections.

c) Bracing

i). Bracing shall be located as indicated on drawings.

ii). Diagonal bracing shall be hot-rolled rod of size indicated on drawings, and attached to columns and roof beams as shown on the drawings.

iii). Optional fixed base wind posts or pinned base portal frames may be substituted for wall rod bracing on buildings as required.

iv). Flange braces, purlin braces, etc., when required, shall be cold formed and installed as indicated on drawings.

5. Welding

a) Welding procedure, operator qualifications and welding quality standards shall be in accordance with the American Welding Society structural welding code. Inspection other than visual inspection as defined by AWS paragraph 6.9, shall be identified and negotiated prior to bidding.

b) Certification of welder qualification shall be supplied when requested.

c) Welding procedure, operator qualifications and welding quality standards shall be in accordance with the Canadian Welding Bureau CSA Standards when required.

6. Structural Coating

a) General

i). All structural steel shall be coated as temporary protection against ordinary atmospheric conditions. Subsequent finish, painting, if required, shall be performed in the field by others.

ii). Prior to coating all steel shall be cleaned of loose rust, loose mill scale, dirt and other foreign material. Unless otherwise specified, the fabricator shall not sand blast, flame clean or pickle prior to coating.

b) Primary Frames

i). Clean all steel per SSPC-SP2.

ii). Apply one coat of Butler Gray water reducible alkyd primer formulated to equal or exceed the performance requirements of Federal Specification TT-P-664D and SSPC Paint-25. Apply by spray or dip method to a minimum coating thickness of 1.0 mil.

c) Secondary Structurals

i). The steel goes through an alkaline cleaning section to remove the rolling oils, dirt, and iron fines and other surface contaminants that are on the sheet surface.

ii). Through the hot dipped process apply a zinc coating per ASTM A653 G-30 specification then apply one coat of clear acrylic finish. The acrylic coated galvanized steel will equal or exceed the performance requirements of Federal Specification TT-P-664D and SSPC Paint-25 (purlins and girts).

F. Exterior Metal Wall System: Butler Manufacturing™ "Shadowall™" wall system.

1. Wall System Design: Design wall panels in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.

2. Wall Panels:
   a) Roll-formed panels, 3 feet wide with 4 major corrugations, 1-7/16 inches high, 12 inches on center, with 2 minor corrugations between each of the major corrugations entire length of panel.
   b) One piece from base to building eave.
   c) Each Panel Corrugation: Fastener alignment groove to center fastener within corrugation.
   d) Exposed Panel Side Laps: Hemmed to eliminate raw cut panel edge.
   e) Upper End of Panels: Fabricate with mitered cut to match corrugations of "Butlerib®II" roof panels of 1/2 inch to 12 inches and square cut for all other roof panels and slopes.
   f) Factory punch or field drill wall panels at panel ends and match factory-punched or field-drilled holes in structural members for proper alignment.
   g) Panel Material and Finish:
      i) Paint with exterior colors of "Butler-Cote™" finish system, full-strength, 70 percent "Kynar 500" or "Hylar 5000" fluoropolymer (PVDF) coating.
      ii) PVDF Coating Warranty: Metal building system manufacturer shall warrant coating for 25 years for the following.
         1. Not to peel, crack, or chip.
         2. Chalking: Not to exceed ASTM D 4214, #8 rating.
         3. Fading: Not more than 5 color-difference units, ASTM D 2244.

3. Fasteners:
   a) Wall Panel-to-Structural Connections: Torx-head "Scrubolt™" or Torx-head self-drilling screws.
   b) Wall Panel-to-Panel Connections: Torx-head self-drilling screws.
   c) Fastener Locations: Indicated on erection drawings furnished by metal building system manufacturer.
   d) Exposed Fasteners: Factory painted to match wall color.

4. Accessories:
   a) Accessories (i.e., louvers, windows, doors, clerestory): Standard with metal building system manufacturer, unless otherwise noted and furnished as specified.
   b) Location of Standard Accessories: Indicated on erection drawings furnished by metal building system manufacturer.

G. Exterior Metal Wall System: Butler Manufacturing™ "Fluted StylWall II and Flat StylWall®II" wall system.

1. Wall System Design: Design wall panels in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.

2. Wall Panels:
   a) 16 inches wide with interlocking joints.
   b) Roll-form panels with alternating 4-inch by 7/16-inch box corrugations with hidden joint concealing fasteners between panels.
   c) Roll-form panels to provide hidden joint concealing fasteners between panels.
   d) One piece from base to top of wall with a maximum length of 40'-0".
   e) Both Ends of each panel: Square cut and un-punched.
   f) Panel Material and Finish:
      i) 24-gauge galvanized steel, ASTM A 653, G90.
      ii) Embossed finish.
      ii) Panel Exterior: Pre-finished with "Butler-Cote™" finish system, full-strength, 70 percent "Kynar 500" or "Hylar 5000" fluoropolymer (PVDF) coating.
      iii) PVDF Coating Warranty: Metal building system manufacturer shall warrant coating for 25 years for the following.
         4. Not to peel, crack, or chip.
         5. Chalking: Not to exceed ASTM D 4214, #8 rating.

6. Fading: Not more than 5 color-difference units, ASTM D 2244.

3. Fasteners:

a) Base, Top, and Girt Connections: Self-drilling sheet metal screws.

b) Reinforcement clip: Use in conjunction with self-drilling sheet metal screws at wall panel to structural conections.

c) Panel to Panel Fasteners: Not required. Make connections from outside, hidden in panel joint, eliminating exposed fasteners.

4. Accessories:

a) Accessories (i.e.,louvers, doors, windows, clerestory): Standard with metal building system manufacturer, unless otherwise noted and furnished as specified.

b) Location of Standard Accessories: Indicated on erection drawings furnished by metal building system manufacturer.

H. Interior Metal Wall and Ceiling Liner System: Butler Manufacturing™ "Butlerib II™" wall system.

1. Wall System Design: Design wall panels in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.

2. Wall Panels:

a) Roll-formed panels, 3 feet wide with 4 major corrugations, 1-1/2 inches high, 12 inches on center, with 2 minor corrugations between each of the major corrugations entire length of panel.

b) One piece from base to building eave.

e) Upper End of Panels: Fabricate with mitered cut to match corrugations of "Butlerib®II" roof panels of 1/2 inch to 12 inches and square cut for all other roof panels and slopes.

f) Factory punch or field drill wall panels at panel ends and match factory-punched or field-drilled holes in structural members for proper alignment.

g) Panel Material and Finish:

i) Paint with exterior colors of "Butler-Cote™" finish system, full-strength, 70 percent "Kynar 500" or "Hylar 5000" fluoropolymer (PVDF) coating.

ii) PVDF Coating Warranty: Metal building system manufacturer shall warrant coating for 25 years for the following.

7. Not to peel, crack, or chip.

8. Chalking: Not to exceed ASTM D 4214, #8 rating.

9. Fading: Not more than 5 color-difference units, ASTM D 2244.

3. Fasteners:

a) Wall Panel-to-Structural Connections: Torx-head "Scrubolt™" fasteners.

b) Wall Panel-to-Panel Connections: Torx-head self-drilling screws.

c) Fastener Locations: Indicated on erection drawings furnished by metal building system manufacturer.

d) Exposed Fasteners: Factory painted to match wall color.

4. Accessories:

a) Accessories (i.e., louvers, windows, doors, clerestory): Standard with metal building system manufacturer, unless otherwise noted and furnished as specified.

b) Location of Standard Accessories: Indicated on erection drawings furnished by metal building system manufacturer.

I. Metal Roof System: Butler Manufacturing "MR-24®" roof system.

1. Roof System Design:

a) Design roof panels in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.

b) Design roof paneling system for a minimum roof slope of 1/4 inch in 12 inches.

c) Design roof paneling system to support design live, snow, and wind loads.

d) Endwall Trim and Roof Transition Flashings: Allow roof panels to move relative to wall panels and/or parapets as roof expands and contracts with temperature changes.

2. Roof System Performance Testing:

a) UL Wind Uplift Classification Rating, UL 580: Class 90.

b) Structural Performance Under Uniform Static Air Pressure Difference: Test roof system in accordance with ASTM E 1592.
c) Roof system has been tested in accordance with U.S. Army Corps of Engineers Unified Facilities Guide Specification Section 07 61 13.
d) FM Global (Factory Mutual):
   i) Roof system has been tested in accordance with FMRC Standard 4471 and approved as a Class 1 Panel Roof.
   ii) Metal Building System Manufacturer: Provide specific assemblies to meet required wind rating in accordance with FM Global.
   iii) Installation modifications or substitutions can invalidate FM Global approval.

3. Roof Panels:

a) Factory roll-formed, 24 inches wide, with 2 major corrugations, 2 inches high (2-3/4 inches including seam), 24 inches on center.
b) Flat of the Panel: Cross flutes 6 inches on center, perpendicular to major corrugations in entire length of panel to reduce wind noise.
c) Variable Width Panels:
   i) For roof lengths not evenly divisible by the 2'-0" panel width, factory-manufactured variable-width (9-inch, 12-inch, 15-inch, 18-inch, and 21-inch-wide) panels shall be used to ensure modular, weathertight roof installation.
   ii) Minimum Length: 15 feet.
   iii) Supply maximum possible panel lengths
d) Panel Material and Finish:
   i) 24-gauge galvanized steel, G90 coating, ASTM A 653, G90.
   ii) Paint with exterior colors of "Butler-Cote™" finish system, full-strength, 70 percent "Kynar 500" or "Hylar 5000" fluoropolymer (PVDF) coating.
   iii) PVDF Coating Warranty: Metal building system manufacturer shall warrant coating for 25 years for the following.
      1) Not to peel, crack, or chip.
      2) Chalking: Not to exceed ASTM D 4214, #8 rating.
      3) Fading: Not more than 5 color-difference units, ASTM D 2244.
e) Use panels of maximum possible lengths to minimize end laps.
f) Extend eave panels beyond structural line of sidewalls.
g) Factory punch panels at panel end to match factory-punched holes in eave structural member.
h) Panel End Splices: Factory punched and factory notched.
i) Panel End Laps: Locate directly over, but not fastened to, a supporting secondary roof structural member and be staggered, to avoid 4-panel lap-splice condition.
j) End Laps: Floating. Allows roof panels to expand and contract with roof panel temperature changes.
k) Self-Drilling Fasteners: Not permitted.
l) Ridge Assembly:
   i) Design ridge assembly to allow roof panels to move lengthwise with expansion and contraction as roof panel temperature changes.
   ii) Factory punch parts for correct field assembly.
   iii) Install panel closures and interior reinforcing straps to seal panel ends at ridge.
   iv) Do not expose attachment fasteners on weather side.
   v) Use lock seam plug to seal lock seam portion of panel.
   vi) High-Tensile Steel Ridge Cover: Span from panel closure to panel closure and flex as roof system expands and contracts.

4. Provision for Expansion and Contraction:

a) Provision for Thermal Expansion Movement of Roof Panels: Clips with movable tab.
   i) Stainless Steel Tabs: Factory centered on roof clip when installed to ensure full movement in either direction.
   ii) Maximum Force of 8 Pounds: Required to initiate tab movement.
   iii) Each Clip: Accommodates a minimum of 1.25-inch movement in either direction.
b) Roof: Provide for thermal expansion and contraction without detrimental effects on roof panels, with plus or minus 100-degree F temperature difference between interior structural framework of building and of roof panels.

5. Fasteners:

a) Make connections of roof panels to structural members, except at eaves, with clips with movable stainless steel tabs, seamed into standing seam side lap.
b) Fasten panel clips to structural members with "Scrubolt™" fasteners in accordance with erection drawings furnished by metal building system manufacturer, using factory-punched holes in structural members.
   i) Fasteners: Metal-backed rubber washer to serve as torque indicator.

c) Exposed fasteners penetrating metal roof membrane at the following locations do not exceed the frequency listed:
   i) Basic Panel System: 0 per square foot.
   ii) High Eave Trim, No Parapet: 2 per linear foot.
   iii) Exterior Eave Gutter: 2 per linear foot.
   iv) Panel Splices: 2 per linear foot.
   v) Gable Trim: 0 per linear foot.
   vi) High Eave with Parapet: 0 per linear foot.
   vii) Ridge: 0 per linear foot.
   viii) Low Eave Structural: 1.5 per linear foot.

6. Accessories:

a) Accessories (i.e., ventilators, clerestory, gutters, fascia): Standard with metal building system manufacturer, unless otherwise noted and furnished as specified.
b) Exterior Metal Coating on Gutters, Downspouts, Gable Trim, and Eave Trim: "Butler-Cote™ " finish system, full-strength, 70 percent "Kynar 500" or "Hylar 5000" fluoropolymer (PVDF) coating.
c) Location of Standard Accessories: Indicated on erection drawings furnished by metal building system manufacturer.
d) Material used in flashing and transition parts and furnished as standard by metal building system manufacturer may or may not match roof panel material.
   i) Parts: Compatible and not cause corrosive condition.
   ii) Copper and Lead Materials: Do not use with Galvalume panels.

7. Gutters & Downspouts

a) Gutters shall be Butler wide contour type and shall be fabricated from 26 gage galvanized steel, ASTM Specification A924, G90 coating, latest issue.
b) Gutter shall have a factory finished paint application and shall be supported by plain or painted galvanized steel hanger from the roof panel.
c) Preformed corner closure shall be installed to match the contour configuration of the gable trim and gutter
d) Preformed weather seal shall be installed to completely fill roof corrugation void prior to installation of the gutter.
e) Preformed steel wall closure shall be installed to close corrugation in wall panel prior to installation of gutter and shall be 26 gage galvanized steel, factory painted.
e) Downspouts shall be of the same material and finish as the gutters, 4 inch diameter and spaced not more than 25 feet on center below the gutters.

J. Metal Roof System: Butler Manufacturing "Butlerib®II" roof system.

1. Roof System Design:
   a) Design roof panels in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.
   b) Design roof paneling system for a minimum roof slope of 1/2 inch in 12 inches.
   c) Design roof paneling system to support design live, snow, and wind loads.
2. Roof System Performance Testing:
   a) UL Wind Uplift Classification Rating, UL 580: Class 90.
   b) Structural Performance Under Uniform Static Air Pressure Difference: Test roof system in accordance with ASTM E 1592.
   c) FM Global (Factory Mutual):
      i) Roof system has been tested in accordance with FMRC Standard 4471 and approved as a Class 1 Panel Roof.
      ii) Metal Building System Manufacturer: Provide specific assemblies to meet required wind rating in accordance with FM Global.
      iii) Installation modifications or substitutions can invalidate FM Global approval.
3. Roof Panels:
   a) General:
      i) Factory roll-formed to provide width coverage of 3 feet.
      ii) Four major corrugations spaced 12 inches on center.
      iii) Each Major Corrugation: 1-1/2 inches high, 2-7/8 inches wide, tapering 1-9/32 inches wide at top, with no intermediate minor corrugations.
      iv) In Panel Flat: Two additional minor corrugations, 1 inch wide, 1/8 inch high, spaced 4 inches on center, between major corrugations.
   b) Roof Panel Side Laps:
      i) Overlap 1 major corrugation.
      ii) One of the Outboard Corrugations: Formed as overlapping corrugation.
      iii) Other Outboard Corrugation: Formed as underneath corrugation.

1) Full corrugation to provide bearing support to side lap.
2) Formed with continuous-length sealant groove.

c) Roof Panel End Laps:
i) 6 inches.
ii) Supply maximum possible panel lengths, up to 38'-9", to minimize panel end laps.
iii) Factory punch roof panel end laps (top panel with a round hole and bottom panel with a slotted hole) to provide for expansion and contraction and panel alignment.
iv) Design end laps to occur over and be fastened to secondary structural members

d) Ridge Panels:
i) One-piece, factory formed to match roof slope.
ii) Ridge Panel Cross Section: Match roof panels.
iii) Ridge Panel Splices: Occur over first purlin on either side of building center.

e) Eave Panels: Extend beyond building structural line.

f) Factory punch roof panels at panel ends to match factory-punched or field-drilled holes in structural members to ensure proper alignment.

g) Panel Material and Finish:
i) 26-gauge or 24-gauge steel coated both sides with layer of Galvalume aluminum-zinc alloy (approximately 55 percent aluminum, 45 percent zinc) applied by continuous hot-dip method.
ii) Minimum 0.55-ounce coated weight per square foot as determined by triple-spot test, ASTM A 792.

h) Panel Material and Finish:
i) 26-gauge or 24-gauge painted Galvalume aluminum-zinc alloy (approximately 55 percent aluminum, 45 percent zinc), ASTM A 792.
ii) Paint with exterior colors of "Butler-Cote™" finish system, full-strength, 70 percent "Kynar 500" or "Hylar 5000" fluoropolymer (PVDF) coating.
iii) PVDF Coating Warranty: Metal building system manufacturer shall warrant coating for 25 years for the following.
1) Not to peel, crack, or chip.
2) Chalking: Not to exceed ASTM D 4214, #8 rating.
3) Fading: Not more than 5 color-difference units, ASTM D 2244.

i) Panel Material and Finish: Special materials, gauges, or colors as applicable for custom designs.

4. Provision for Expansion and Contraction:
a) Optional Factory-Punched Roof Panels: 5/16-inch by 3/4-inch-slotted holes at upper end and 5/16-inch diameter holes at lower end.
b) Slotted Holes: Permit thermal movement of panels without detrimental effect on roof panels.

5. Fasteners:

a) Fastener Locations and Quantities: Indicated on erection drawings furnished by metal building system manufacturer.
b) Panel-to-Structural Connections: Type 410 stainless steel "Scrubolt™" fasteners, 3/8-inch hex head, with 3/4-inch OD aluminum-backed EPDM washers.
c) Panel-to-Panel Connections: #14-14 by 7/8-inch stainless steel 3/8-inch hex-head mini-point self-drilling screws, with 5/8-inch OD aluminum-backed EPDM washers.

6. Accessories:

a) Accessories (i.e., ventilators, skylights, eave and gable trim, gutters, jacks, and curbs): Standard with metal building system manufacturer, unless otherwise noted and furnished as specified.
b) Metal Coating on Gutters, Downspouts, Gable Trim, and Eave Trim: "Butler-Cote™ " finish system, full-strength, 70 percent "Kynar 500" or "Hylar 5000" fluoropolymer (PVDF) coating.
c) Location of Standard Accessories: Indicated on erection drawings furnished by metal building system manufacturer.

7. Gutters & Downspouts

a) Gutters shall be Butler wide contour type and shall be fabricated from 26 gage galvanized steel, ASTM Specification A924, G90 coating, latest issue.

b) Gutter shall have a factory finished paint application and shall be supported by plain or painted galvanized steel hanger from the roof panel.

c) Preformed corner closure shall be installed to match the contour configuration of the gable trim and gutter

d) Preformed weather seal shall be installed to completely fill roof corrugation void prior to installation of the gutter.

e) Preformed steel wall closure shall be installed to close corrugation in wall panel prior to installation of gutter and shall be 26 gage galvanized steel, factory painted.

d) Downspouts shall be of the same material and finish as the gutters, 4 inch diameter and spaced not more than 25 feet on center below the gutters.

K. INSTALLATION:

1. ERECTION – STRUCTURAL STEEL FRAMING SYSTEM

a) Erect structural steel framing system in accordance with the Drawings and metal building system manufacturer's erection drawings.

b) Field Modifications:

i) Require approval of metal building system manufacturer.

ii) Responsibility of building erector.

c) Fixed Column Bases: Grout flush with floor line after structural steel erection is complete.

2. INSTALLATION – METAL ROOF SYSTEM

a) Metal Roof System Installation: Butler Manufacturing™ "MR-24®" roof system.

i) Install roof system in accordance with metal building system manufacturer's instructions at locations indicated on the Drawings.

ii) Install roof system weathertight.

i) Position panel clips by matching hole in clip with factory-punched holes in secondary structural members.

ii) Position and properly align panels by matching factory-punched holes in eave structure member and by aligning panel with panel clip.

iii) Field seam panel side laps by self-propelled and portable electrical lock-seaming machine. Machine field forms the final 180 degrees of a 360-degree Pittsburgh double lock. Factory apply side lap sealant.

iv) Roof Panel End Laps: Minimum of 6 inches, sealed with sealant (weather sealing compound), and fastened together by clamping plates.

1. Sealants: Contain hard nylon beads, which prevent mastic from flowing out due to clamping actions.

2. Join panel laps by 2-piece clamped connection consisting of a bottom reinforcing plate and a top panel strap.

3. Locate panel end laps directly over, but not fastened to, supporting secondary roof structure member and stagger, to avoid 4 panel lap-splice condition.

4. Minimum blanket insulation thickness: 2 inches.

3. INSTALLATION – METAL ROOF SYSTEM

a) Metal Roof System Installation: Butler Manufacturing™ Butlerib® II roof system.

b) Install roof system weathertight.

c) Factory cut-to-length roof panels in accordance with erection drawings furnished by metal building system manufacturer.

d) Position and align roof panels to hold 3-foot module throughout building length.

i) Position and align optional factory-punched roof panels by matching factory-punched holes in panels with factory-punched holes in roof structural members.

e) Install side laps with minimum of 1 full corrugation.

f) End Laps:

i) Minimum of 6 inches.

ii) Fasten together over and to structural members.

g) Panel Side and End Laps: Seal with "Panlastic" sealant to prevent entry of capillary moisture.

4. INSTALLATION – METAL WALL SYSTEM

a) Metal Wall System Installation: Butler Manufacturing™ "Shadowall™" and "Butlerib II" wall system.

i) Install wall system in accordance with metal building system manufacturer's instructions at locations indicated on the Drawings.

ii) Install wall system weathertight.

iii) Verify structural system is plumb before wall panels are attached.

iv) Align and attach wall panels in accordance with erection drawings furnished by metal building system manufacturer.

v) Install side laps with minimum of 1 full corrugation.

vi) Seal wall panels at base with metal trim and foam or rubber closures.

vii) Exterior Trim: Apply same finish as exterior color of wall panels, except the following:

b) Gutters, Downspouts, Eave Trim, Gable Trim, Door-Side Flashings, and Header Flashings: Paint with exterior colors of "Butler-Cote™" finish system, full-strength, 70 percent "Kynar 500" or "Hylar 5000" fluoropolymer (PVDF) coating in standard color of metal building system manufacturer.

c) Flashings, Trim, Closures, and Similar Items: Install as indicated on erection drawings furnished by metal building system manufacturer.

5. INSTALLATION – METAL WALL SYSTEM

a) Metal Wall System Installation: Butler Manufacturing™ "Stylwall™" wall system.

i) Install wall system in accordance with metal building system manufacturer's instructions at locations indicated on the Drawings.

ii) Install wall system weathertight.

iii) Verify structural system is plumb before wall panels are attached.

iv) Seal wall panels with molded foam closure block that fits panel configuration at top and bottom of wall panels.

v) Exterior trim: Match exterior color and embossing of all wall panel systems except the following:

1. Gutters, Downspouts, Eave trim, Gable Trim, and Base Trim: Galvanized steel factory painted with Butler-Cote finish system, full strength, 70 percent "Kynar 500" or "Hylar 5000" fluoropolymer (PVDF) coating.

2. Windows: Factory paint aluminum extrusions (thermally broken).

3. Interior Trim: Painted.

4. Flashings, Trim, Closures, and Similar Items: Install as indicated on erection drawings furnished by metal building system manufacturer.

DIVISION #17

ALTERNATES

17.0 GENERAL

A. SCOPE:

1. This Division includes the work that is to be deducted or added to the Base Proposal for various items, including all labor and materials herein described.

2. See other related Divisions for the scope of work, type of materials, etc., if not specified herein.

3. The order of the Alternates are not listed in priority. The number of Alternates accepted will be determined by the Owner that serves their best interest.

4. The Alternate work herein is bound by the same conditions and requirements in the main sections of these specifications as governs all other trade divisions. Included shall be Index, Advertisement for Bids, Instructions to Bidders, Bid Proposal Form, General and Special Conditions, etc.

17.1 ALTERNATE A-1

A. SCOPE:

1. State on the Bid Proposal Form the amount to be added to the Base Bid.

2. Work includes, but is not limited to the following:

   a) The addition of the clerestory to the roof of the base building.

   b) Included shall be all primary and secondary framing components, metal siding and roofing as supplied by Metal Building Mfr., (4) 16' x 4' O.H. doors and operators, flashings, and misc. components required for modification (s) to base building.

   c) Addition shall be warranted by Metal Building Manufacturers Factory Warranty.

   d) If applicable, and acceptable by Metal Building Mfr., Contractor may opt to construct Clerestory from "conventional" materials in lieu of Pre-engineered components. Factory warranty must remain in place for pre-engineered components and assembly.

17.2 ALTERNATE C-1

A. SCOPE:

1. State on the Bid Proposal Form the amount to be added to the Base Bid.

2. Work includes, but is not limited to the following:

   a) Mill approximately 2 inches of existing asphalt, haul excess material and cap with new bituminous asphalt (as described on the civil drawings) and related work for a complete installation.

17.3 ALTERNATE C-2

A. SCOPE:

1. State on the Bid Proposal Form the amount to be added to the Base Bid.

2. Work includes, but is not limited to the following:

   a) Install empty raceways, backfill and related work (as described on civil drawings) for a complete installation.

Information To Build On

Engineering • Consulting • Testing

GEOTECHNICAL EXPLORATION AND ENGINEERING REPORT

FOR THE PROPOSED:

FARMER'S MARKET RENOVATION PROJECT
CITY OF ANN ARBOR
WASHTENAW COUNTY, MICHIGAN

GEOTECHNICAL EXPLORATION AND ENGINEERING REPORT FOR THE PROPOSED FARMER'S MARKET RENOVATION PROJECT CITY OF ANN ARBOR, WASHTENAW COUNTY, MICHIGAN

EXECUTIVE SUMMARY

A geotechnical exploration and engineering report of the subsurface soil conditions has been completed for proposed Farmer's Market renovation project in the city of Ann Arbor, Washtenaw County, Michigan. The project includes the reconstruction of the existing parking lot. A total of six borings have been drilled to depths of approximately 10 to 15 feet below the existing grades. Selected soil samples were tested in the laboratory.

PSI had intended to perform Boring B-5 to a depth of 15 feet. However, upon encountering spoon and auger refusal on an apparent cobble or boulder, Boring B-5 was terminated at an approximate depth of 11½ feet.

Approximately 12 inches of sand and gravel fill was encountered at the location of Boring B-4. At the remaining boring locations, approximately 3 to 4 inches of asphalt pavement was encountered. At the location of Boring B-1, the pavement was underlain by approximately 10 inches of aggregate base material. Below the aggregate base material at the location of Boring B-1, below the sand and gravel fill at B-4 and below the surficial pavement at the remaining boring locations, clayey sand/sandy clay fill material with varying amounts of organics was encountered to depths of about 3 to 6 feet. The fill was underlain by apparently native granular soils with varying amounts of silt to the final explored depths of Borings B-1, B-3 and B-5, and to depths of 8 to 9 feet within the remaining borings. The granular soils were underlain by silty clay to the final explored depths of the borings.

The driller looked for indications of groundwater seepage both during and after the drilling operations. The test borings were reported as dry both during and after drilling.

The existing ground surface elevations were presented on the site plan prepared by Beckett & Raeder, Inc. and provided to PSI for our use during this exploration. We anticipate less than 1 foot of cut and 1 foot of fill may be required to achieve finished grade across the parking lot.

Based on the subsurface conditions encountered during our drilling operations, it appears some of the existing soils may be suitable for conventional asphalt or mortared brick pavement support following proper subgrade preparation activities described in this report. The fill materials encountered within Borings B-2 and B-5 are not considered suitable for direct pavement support. It must be understood that the risk of differential settlement, potentially damaging the pavement section, may occur as a result of leaving uncontrolled fill in place, particularly if buried topsoil is present below the fill. If the owner is unwilling to accept this risk, the fill should be entirely removed. To better characterize the fill and determine if the fill was placed over topsoil, test pits could be performed.

Alternatively, we understand that the use of pervious pavement (mortarless brick pavement on a flexible base) is being considered, which will allow for both surface and subsurface drainage. If mortarless brick pavement is utilized, we anticipate some or all of the existing fill materials will be removed from the site during construction of the recharge bed. Depending on the stormwater runoff rates for this site and the thickness of the recharge bed, the clayey sand fill and sandy clay fill may reduce infiltration rates to an unacceptable level. If mortarless brick pavement is utilized, a contractor with experience in mortarless brick pavement construction should be retained by The City of Ann Arbor.

Typically, brick pavement construction takes more time than conventional asphalt pavement construction. Depending on the drainage requirements of this site and the proposed construction schedule, consideration could be given to a combined pervious pavement/conventional pavement system. With this alternative, pervious pavement strips would be constructed along the perimeter and at the low points of the proposed parking lot. The ratio of pervious pavement to conventional pavement should be determined by the project Civil Engineer based on site-specific hydrological factors.

Recommendations related to earthwork and construction considerations are included in this geotechnical report. **The owner/designer should not rely solely on this executive summary and should read and evaluate the entire contents of the geotechnical report prior to utilizing our recommendations in preparation of design/construction documents.**

GEOTECHNICAL EXPLORATION AND ENGINEERING REPORT FOR THE
PROPOSED FARMER'S MARKET RENOVATION PROJECT
CITY OF ANN ARBOR, WASHTENAW COUNTY, MICHIGAN

1.0 PROJECT INFORMATION

1.1 Project Authorization

Professional Service Industries, Inc. (PSI) has completed a geotechnical exploration for the proposed Farmer's Market renovation project in the City of Ann Arbor, Washtenaw County, Michigan. Mr. Nicholas Hutchinson, P.E., Project Engineer of The City of Ann Arbor gave verbal authorization for this project on August 31, 2007.

1.2 Project Description

Project information and a site plan presenting the existing site conditions and the proposed boring locations were provided by The City of Ann Arbor. Additional project information was provided to PSI by Ms. Theresa Curanovic, P.E., Project Engineer of Beckett & Raeder, Inc. The project includes the reconstruction of the existing parking lot. The pavement surface may consist of conventional hot mix asphalt or brick pavement. Alternately, the use of pervious pavement consisting of mortarless brick pavement is being considered for this site.

The existing ground surface elevations were presented on a site plan prepared by Beckett & Raeder, Inc. and provided to PSI for our use during this exploration. The finished grade of the parking lot was not available at the time of this report. We anticipate less than 1 foot of cut and 1 foot of fill may be required to achieve finished grade across the parking lot.

The geotechnical evaluations presented in this report are based on the available project information and the data obtained from the subsurface exploration described in this report. If any of the noted information is considered incorrect or is changed, we recommend PSI be informed so that we may modify the recommendations presented in this report, if appropriate. PSI will not be responsible for the implementation of its recommendations when it is not notified of changes in the project.

1.3 Purpose and Scope of Services

The purpose of this study was to explore the subsurface conditions at the site and develop design criteria for pavement support at the proposed project. Our scope of services included drilling six soil test borings, selected laboratory testing, an engineering evaluation of the data generated and preparation of a geotechnical report. This report briefly outlines the testing procedures, presents available project information, describes the site and subsurface conditions and provides recommendations regarding the following:

- Earthwork considerations for site development.
- Criteria for pavement subgrade preparation.

- Recommendations for asphalt pavement sections based on an estimated CBR value.
- Comments regarding geotechnical factors that will impact earthwork construction and performance of the proposed pavement sections.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands or hazardous or toxic materials in the soil, bedrock, surface water, groundwater or air on, below or around this site. Any statements in this report or on the boring logs regarding odors, colors and unusual or suspicious items or conditions are strictly for informational purposes. Prior to development of any site, an environmental assessment is advisable.

2.0 SITE AND SUBSURFACE CONDITIONS

2.1 Site Location and Description

The proposed site is located between Fourth Avenue and Detroit Street, north of Catherine Street in the city of Ann Arbor, Washtenaw County, Michigan. The Farmer's market address is 315 Detroit Street. The parking lot is currently covered with asphalt pavement with an area of gravel on the west side of the lot. The existing ground surface of the site was relatively level with a visually estimated maximum elevation difference of less than two feet.

2.2 Field and Laboratory Services

As requested, the subsurface conditions at the proposed site were explored with six test borings drilled to depths of approximately 10 to 15 feet below the existing grades. The boring depths and locations were selected by Beckett & Raeder, Inc. The borings were marked in the field by PSI personnel by measuring distances from known reference points indicated on the previously referenced site plan provided to PSI. Underground utilities at or near the boring locations were cleared before drilling operations by "Miss Dig," Michigan's one call service for the verification of underground utilities.

PSI had intended to perform Boring B-5 to a depth of 15 feet. However, upon encountering spoon and auger refusal on an apparent cobble or boulder, Boring B-5 was terminated at an approximate depth of 11½ feet. The drilling operations were completed on September 6, 2007. The test borings were drilled with a CME-75 rotary drill rig using 3¼-inch diameter hollow-stem augers. Standard Penetration Tests (SPT) were conducted and soil samples were obtained at regular intervals during the drilling process. Drilling and sampling techniques were performed in general accordance with ASTM standards and procedures.

Surface elevations at the test boring locations were estimated from spot elevations and 1-foot contour intervals shown on the "Soil Boring Request" plan prepared by Beckett & Raeder, Inc. Measurements of ground elevations at the boring locations were not included in our

scope of work. If more accurate elevations at the boring locations are necessary for design purposes, actual field measurements by a professional surveyor are recommended. All references to depths are from the existing ground surface unless otherwise noted.

Selected soil samples were tested in the laboratory to determine soil properties for our evaluation. Laboratory testing was performed in general accordance with ASTM procedures. Upon completion of the laboratory testing, all samples were placed in storage at the PSI Plymouth Township facility. Unless otherwise requested in writing, the samples will be discarded after 60 days from the submission of this report.

2.3 Subsurface Conditions

Approximately 12 inches of sand and gravel fill was encountered at the location of Boring B-4. At the remaining boring locations, approximately 3 to 4 inches of asphalt pavement was encountered. At the location of Boring B-1, the pavement was underlain by approximately 10 inches of aggregate base material. A generalized description of the soils encountered in the test borings, proceeding downward from the bottom of the surficial pavement and sand and gravel fill, is as follows:

Stratum 1: Fill. Below the aggregate base material at the location of Boring B-1, below the sand and gravel fill at B-4 and below the surficial pavement at the remaining boring locations, clayey sand/sandy clay fill material with varying amounts of organics was encountered to depths of about 3 to 6 feet. Laboratory testing indicated that the fill material encountered within Borings B-2 and B-4 had an organic content in the range of 3.7 to 4.7 percent. The moisture contents of the tested soil samples ranged from 7 to 24 percent. The soils appeared to be in a moist condition when examined in the laboratory.

Stratum 2: Sand. Below Stratum 1, apparently native granular soils of varying gradation with varying amounts of gravel and silt were encountered to the final explored depths of Borings B-1, B-3 and B-5, and to depths of 8 to 9 feet within the remaining borings. Standard Penetration Resistance (N) values ranged from 4 to in excess of 50 blows per foot, indicating loose to very dense relative densities. The moisture content of the tested soil samples ranged from 3 to 13 percent. The soils appeared to be in a moist condition when examined in the laboratory.

Stratum 3: Silty Clay. Below Stratum 2, silty clay was encountered to the final explored depths of Borings B-2, B-4 and B-6. Standard Penetration Resistance (N) values ranged from 20 to 72 blows per foot. Calibrated penetrometer tests indicate that the unconfined compressive strength of the tested samples was in excess of 4.5 tons per square foot (tsf), indicating a hard consistency. The moisture content of the tested soil samples was in the range of 9 to 14 percent. The soils appeared to be in a moist condition when examined in the laboratory.

The subsurface description above is generalized to highlight the major subsurface stratigraphic features and material characteristics. The boring logs, included in the appendix,

should be reviewed for specific information at each boring location. This information includes soil descriptions, stratification, penetration resistance, location of the samples and laboratory test data. Given the limited number of widely spaced borings performed at this site, pavement thickness, topsoil thickness and fill thickness is anticipated to vary across the site.

The stratification shown on the boring logs represents the conditions only at the actual boring locations. It is possible that variations, including undocumented fill soils, may occur and should be expected at other locations. The stratification represents the approximate boundary between differing subsurface materials; the actual transition may be gradual. Water level information obtained during field operations is also shown on the logs.

2.4 Groundwater Information

The driller looked for indications of groundwater seepage both during and after drilling. The test borings were reported as dry both during and after drilling.

Expect the prevailing groundwater level to vary due to changes in precipitation, evaporation, surface run-off and other factors. The groundwater levels discussed herein and shown on the boring logs represent the conditions at the time of the measurements.

Groundwater monitoring wells are required to accurately define the position and fluctuation of the groundwater table. However, the installation of such monitoring wells was not included in the scope of services for this project. Boreholes were backfilled with augered soil after completion of drilling for safety purposes. Borings performed through existing asphalt pavement were also patched with a cold bituminous mixture. We recommend that the contractor verify the actual groundwater and seepage conditions at the construction areas at the time of the excavation and construction activities and if necessary, propose his groundwater control methods for the Engineer's approval.

3.0 EVALUATION AND RECOMMENDATIONS

PSI has performed the analysis based on the information developed during this exploration. The resulting recommendations are given in the following sections. If the assumptions or understandings are not correct or if conditions during construction are significantly different from those found in the site exploration, PSI must be contacted immediately.

Prior to site grading activities, existing underground utilities should be identified and rerouted or properly abandoned in place, if necessary.

Uncontrolled fill containing trace amounts to some organics was encountered within the test borings to approximate depths of 3 to 6 feet. Based on the subsurface conditions encountered during our drilling operations, it appears some of the existing soils may be suitable for conventional pavement support following proper subgrade preparation activities described in Section 3.1 of this report. However, the fill materials encountered within

Borings B-2 and B-5 are not considered suitable for direct pavement support. It must be understood that the risk of differential settlement, potentially damaging the pavement section, may occur as a result of leaving the organic-containing soil in place. If the owner is unwilling to accept this risk, the fill should be entirely removed.

Alternately, if pervious pavement (mortarless brick pavement on a flexible base) is utilized, we anticipate some or all of the existing fill materials will be removed from the site during construction of the recharge bed. Subgrade preparation recommendations for pervious pavement are given in Section 3.3 of this report.

If pervious pavement is utilized, a contractor with experience in pervious concrete pavement or porous asphalt pavement construction should be retained by The City of Ann Arbor.

Although not encountered in the soil borings, underground obstructions, old structures or utilities may be encountered elsewhere within the site areas. These conditions, if encountered, may require special construction considerations. If any buried utilities or structures are revealed during earthwork, PSI should be contacted for additional recommendations. Any excavation near an existing structure or utility should be performed with utmost care and with supervision of the geotechnical engineer.

3.1 Site Preparation for Conventional Pavement

At the start of earthwork operations, the existing pavement, gravel, vegetation and any other deleterious materials are to be stripped from the proposed pavement area. It is not unusual for fill thickness to vary within the site area from that encountered at the boring locations. The depth of unsuitable soil removal should be determined by a representative of PSI at the time of stripping and rough grading.

As mentioned previously, uncontrolled fill containing trace amounts to some organics was encountered within the test borings to approximate depths of 3 to 6 feet. If the owner is willing to assume the risks in doing so, some or all of the fill could be left in place for support of the pavements. In the areas of on-grade structures, such as sidewalks and pavement, there is a risk of poor performance when these or other similar structures are supported on uncontrolled, non-engineered fill and/or organic soils. Settlement of the fill could result in sidewalk or pavement cracking, faulting and distress.

Several options are available for support of the proposed floor slab and pavement at this site. Due to the amount of organics observed within the fill at the locations of Borings B-2 and B-5, only Options 1 and 2 presented below should be considered in the vicinity of those borings.

Option No. 1 consists of removing the near-surface uncontrolled fill throughout the parking and drive areas and backfilling with a clean engineered fill. The pavement section could then be grade supported directly on the newly placed and properly compacted clean engineered fill. **Option No. 2** consists of grade supporting the pavement on newly placed and properly compacted clean engineered fill following a partial depth undercut of the near surface

uncontrolled fill. **Option No. 3** consists of grade supporting the pavements directly over the existing fill materials following proofrolling of the exposed subgrade. Each option is associated with a different level of risk concerning pavement performance. The final choice of subgrade preparation alternative should be based on the relative economic and engineering advantages of each.

Option No. 1, which includes mass over-excavation and replacement of the existing fill with clean engineered fill, is relatively costly but provides a high level of confidence regarding pavement performance. Options No. 2 and No. 3, outlined above, include pavements constructed with all or a portion of the existing fill left in place below the pavements. If Option No. 2 is selected, partial depth undercutting should extend to a sufficient depth to provide a minimum of 18 to 24 inches of properly compacted engineered fill and a minimum of 4 inches of aggregate base materials beneath the pavement. For Options No. 2 and No. 3, the exposed surface, following site stripping or undercutting, should be proofrolled/proof compacted with a large, smooth-drummed vibratory roller or heavy rubber-tired vehicle, prior to placement of any engineered fill or base course aggregate. The proofrolling/proof compaction process will improve the density of the existing near-surface fill material and any soils disturbed during site stripping. The compaction should continue until no additional densification is observed with additional passes. Areas that exhibit instability or are observed to rut or deflect excessively under the moving load should be further undercut, stabilized by aeration, drying (if wet) and undergo additional compaction to attain a stable finished subgrade. The proofrolling/proof compacting and undercutting activities should be performed during a period of dry weather and should be witnessed by a competent soil technician.

The risk of poor pavement performance can be reduced but not completely eliminated by partial depth undercutting and replacement of the uncontrolled fill, proofrolling/proof compacting of the uncontrolled fill in-place and/or by the removal of deleterious materials and re-compaction of the existing near-surface uncontrolled fill below the proposed pavement. A risk remains of poor pavement performance due to the inherent uncertainty associated with supporting at-grade structures over existing uncontrolled fill, which the Owner must recognize and accept if Options No. 2 or No. 3 are adopted. If the Owner is unwilling to accept this risk, then the uncontrolled fill should be removed in its entirety from below the pavements.

3.2 Engineered Fill Placement and Compaction

After subgrade preparation and observation have been completed for the conventional pavement construction, any fill placement required to bring the site to the final grade may begin. The first layer of fill should be placed in a relatively uniform horizontal lift and should be adequately keyed into the stripped and scarified subgrade soils. Fill materials should be free of debris, frozen soil, organic or other deleterious materials.

On-site excavated soils should be tested to verify their suitability for use as an engineered fill material. The existing fill soils are not considered suitable for reuse as engineered fill, due to the presence of organics.

It is recommended that granular engineered fill have a maximum particle size less than three inches and a maximum of 7 percent passing the Number 200 sieve. Cohesive fill materials should have a liquid limit less than 40 and plasticity index less than 20.

If a cohesive soil is used as fill, close moisture content control will be required to achieve the recommended degree of compaction. It should be noted that wet cohesive soils are difficult to compact and that the specified compaction may not be achieved. Wet cohesive soils may require drying or mixing with dry soil to facilitate compaction. If water must be added to dry soil, it should be uniformly applied and thoroughly mixed into the soil by disking or scarifying.

Fill should be compacted to at least 95% of the Modified Proctor maximum dry density as determined by ASTM D 1557. The subgrade soils should be scarified and compacted to not less than 95% of its maximum dry density for a minimum depth of 12 inches below the final subgrade level. Fill materials should be placed in maximum loose lifts of 8 inches and should be compacted within the range of ±3% of the optimum moisture content value.

Each lift of engineered fill should be tested by a PSI representative prior to placement of subsequent lifts. One test per 2,500 square feet of parking area should be tested for each lift unless otherwise specified by the engineer. Care should be taken to apply adequate compaction effort throughout the fill.

3.3 Site Preparation for Pervious Pavement

We understand that the use of pervious pavement (mortarless brick pavement on a flexible base) is being considered, which will allow for both surface and subsurface drainage. If mortarless brick pavement is used, we anticipate some or all of the existing fill materials will be removed from the site during construction of the recharge bed.

The recharge bed excavations should be extended a minimum of 18 inches below the proposed bottom of the pervious pavement. Typically for pervious pavement, it is recommended that the thickness of the overall pavement section (pavement and recharge bed) exceed the depth of frost penetration. Frost penetration depth at this site is anticipated to be 42 inches below the ground surface. The actual thickness of the recharge bed should be determined by the Civil Engineer based on hydrological factors and anticipated stormwater management requirements. The bottom of the recharge bed should be level to allow for even distribution of the stormwater. PSI understands that pervious pavement construction requires that the exposed subgrade of the recharge bed should not be over compacted, because compaction will reduce the soil's infiltration rates. Therefore, care should be taken to avoid construction traffic on the exposed subgrade soils.

Once the recharge bed has been excavated, a non-woven geotextile fabric should be placed over the exposed subgrade soils. Following the installation of the geotextile fabric, aggregate base placement can begin. The aggregate base material should consist of an open-graded aggregate with a maximum particle size of 2 inches and not more than 5 percent passing the Number 200 sieve. The aggregate base should be placed in maximum loose lifts of 8 inches and should be within the range of ±3% of the optimum moisture content

value. The aggregate base should be compacted to a degree where the void space within the stone is approximately 20 to 40 percent.

A geotextile fabric should be placed over the recharge bed prior to placing the sand setting bed for the brick pavers to prevent migration of the sand setting bed into the aggregate base. The sand setting bed should be a minimum of 1 inch thick and should conform to ASTM C33 specifications.

Depending on the stormwater runoff rates for this site and the thickness of the recharge bed, the clayey sand fill and the sandy clay fill layers may reduce infiltration rates to an unacceptable level. If the clayey fill materials reduce the infiltrates to unacceptable levels, the fill should be removed and replaced with clean, granular material such as MDOT Class II.

3.4 Pavement Recommendations

Typically, brick pavement construction takes more time than conventional asphalt pavement construction. Depending on the drainage requirements of this site and the proposed construction schedule, consideration could be given to a combined pervious pavement/conventional pavement system. With this alternative, pervious pavement strips would be constructed along the perimeter and at the low points of the proposed parking lot. The ratio of pervious pavement to conventional pavement should be determined by the project Civil Engineer based on site-specific hydrological factors.

3.4.1 Conventional Pavement

The pavement subgrade soils should be prepared as indicated in Section 3.1 of this report. Following these recommendations, we believe the native soil, treated existing soil and/or engineered fill will be adequate to support the conventional pavement.
Long-term pavement performance will typically be a function of the quality of the subgrade at the time of construction, and the quality, thickness and strength of the pavement section. The most critical portion of the subgrade is the upper 3-foot section. This zone provides the primary strength needed for support of the pavement section. Poorer soil conditions at depth may lead to general pavement subsidence, however, generally will not lead to direct pavement failure, provided a highly stable 3-foot thick subgrade layer is present or constructed.

A flexible pavement design has been determined utilizing the DARWin Pavement Design and Analysis System. This program embodies the methodology of the 1993 AASHTO Guide for the Design of Pavement Structures. In order to perform this pavement analysis, PSI has assumed that the recommendations contained in Section 3.1, Option 3 of this report will be employed, except in the vicinity of Borings B-2 and B-5, where Option 2 is assumed.

At the time of this report, no design parameters or traffic volume data were available. For the purpose of this analysis, PSI has estimated these parameters. The design parameters used in the pavement design include an "effective" roadbed resilient modulus of 4,000 psi

and an 18-kip ESAL over the initial performance period of 50,000. The estimated effective resilient modulus takes into account the effects of subgrade weakening during the spring thaw.

For the anticipated soil conditions and traffic loads, we have calculated minimum required design structural numbers of 2.84 for the flexible pavement sections. Based on these structural numbers, we recommend the following pavement section:

Table 1: Conventional Flexible Pavement Section

Pavement Material	Structural Coefficient	Drainage Coefficient	Section Thickness (Inches)	Structural Number
Bituminous Surface Course (MDOT 13A)	0.44	1.0	1.5	0.66
Bituminous Leveling Course (MDOT 13A)	0.44	1.0	2.0	0.88
Aggregate Base Course (MDOT 21AA Limestone)	0.14	0.8	12.0	1.34
				Total SN = 2.88

The design presented above assumes a high quality, high stability plant mix with Marshall mix design properties and aggregate gradation meeting or exceeding the requirements of MDOT 20AA, as outlined in the MDOT Standard Specification Section 501. The crushed aggregate base course should conform to the requirements of MDOT 21AA.

As an alternate to the conventional flexible pavement design, a conventional rigid pavement design has been determined utilizing the "AASHTO Guide for Rigid Pavement Design." We have assumed Portland cement concrete pavement would be used, with proper joint spacing and adequate reinforcing steel. Design parameters used in the pavement design include an effective modulus of subgrade reaction of 100 psi per inch and an 18-kip ESAL over the initial performance period of 50,000 for the concrete pavement.

For the anticipated soil conditions and loads, we have calculated a minimum required concrete pavement thickness. If a rigid pavement section is selected, we recommend the following pavement section:

Table 2: Heavy-Duty Rigid Pavement Section	
Pavement Material	**Section Thickness (inches)**
Type I Portland Cement Concrete (MDOT Grade P-1)	5.0
Aggregate Base Course (MDOT 3G or 6AA)	6.0

A rigid pavement section should be considered for all truck loading and unloading areas. Concrete design parameters include a 28-day mean modulus of rupture of 600 psi and a 28-day mean elastic modulus of slab of approximately 3,600,000 psi. The concrete mix design should consist of a minimum 6-sack, normal weight concrete with a minimum 28-day compressive strength of 4,000 psi when tested in accordance with ASTM C39. The concrete should contain an air entrainment mixture to resist the effects of freezing and thawing. The pavement should contain a wire mesh reinforcement in the bottom third of the pavement section and should be suitably doweled at construction joints to permit the proper transfer of loads. The design of joints, joint spacing, doweling and steel/wire mesh reinforcement was not included in our scope of services, but should conform to the applicable City of Ann Arbor requirements.

It should be recognized that all pavements require regular maintenance and occasional repairs to keep the pavements in a serviceable condition. Of particular value is a timely sealing of joints and cracks, which if left un-repaired can allow water to enter the pavement section and cause rapid deterioration of the pavement during freeze-thaw cycles. The need for such maintenance and repair is not necessarily indicative of premature pavement failure. However, if appropriate maintenance and repairs are not performed on a timely basis, the serviceable life of the pavement can be reduced significantly.

The pavement surface should be adequately sloped to promote good surface drainage and to reduce water infiltration into the aggregate base course. In down grade areas, the aggregate base course should extend through the slope area to allow any water entering the base course a path to exit.

3.4.2 Pervious Pavement

In order to perform pervious pavement analysis, PSI has assumed that the recommendations contained in Section 3.3 of this report will be employed.

A mortarless brick pavement design has been determined utilizing the DARWin Pavement Design and Analysis System. The estimated design parameters presented in Section 3.4.1 of this report were utilized for the mortarless brick pavement design. It should be understood that the majority of the structural support in a mortarless brick pavement section will come from the recharge bed aggregate layer. Based on the previously mentioned structural numbers, we recommend the following pavement section:

Table 3: Mortarless Brick Pavement Section				
Pavement Material	**Structural Coefficient**	**Drainage Coefficient**	**Section Thickness (Inches)**	**Structural Number**
Brick Paver Course	0.30	1.0	2.75	0.82
Sand Setting Bed	0.11	1.0	1.0	0.11
Recharge Bed Aggregate Base	0.14	1.2	18.0 (minimum)	3.02
				Total SN = 3.95

The mortarless brick pavement system will be placed over recharge bed aggregate, the actual thickness of which should be designed by the project Civil Engineer based on hydrological requirements, frost considerations and other factors.

4.0 CONSTRUCTION CONSIDERATIONS

It is recommended that PSI be retained to provide observation and testing of construction activities involved in the earthwork and related activities of this project. PSI cannot accept any responsibility for any conditions that deviate from those described in this report, nor for the performance of the pavement section if not engaged to also provide construction observation and testing for this project.

4.1 Moisture Sensitive Soils/Weather Related Recommendations

Once the existing pavement and gravel is stripped from the site, every effort should be made to keep the subgrade soils dry. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities. In addition, soils that become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. It will, therefore, be advantageous to perform earthwork and construction activities during dry weather.

4.2 Drainage and Groundwater Recommendations

The test borings were reported as dry both during and after drilling. It is possible that seasonal variations will cause fluctuations of the water table at the time of construction. Any water accumulation should be removed from excavations.

Should excessive and uncontrolled amounts of seepage occur, the geotechnical engineer should be consulted. Water should not be allowed to collect on prepared subgrades of the construction area either during or after construction.

Positive site surface drainage should be provided to reduce infiltration of surface water around the perimeter of the parking lot. The grades should be sloped away from the perimeter of the parking lot and surface drainage should be collected and discharged such that water is not permitted to infiltrate any backfill or below the proposed parking areas.

4.3 General Safety Recommendations

Typically, soils penetrated by augers can be removed with conventional earthmoving equipment (backhoe and/or trencher). However, subsurface excavation equipment varies, and field refusal conditions may vary as well. In previously developed areas, the presence of underground objects, such as uncontrolled fill, foundations, old basement or septic tanks should be anticipated. Therefore, it is possible that difficult excavation conditions may be encountered at the proposed site location between the boring locations. Excavation near any existing structure or utility should be performed with utmost care and with supervision of geotechnical engineer representative. Locations of all underground utilities within the proposed site must be verified by the contractor prior to excavation.

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P." This document was issued to better insure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be utility trenches or excavations, be constructed in accordance with the new MIOSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable and safe temporary excavations and should shore, slope or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person," as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination or excavation depth, including utility trench excavation depth, exceed those specified in local, state and federal safety regulations.

All earthwork operations should be conducted in accordance with the project specifications and under the supervision of a representative of the geotechnical engineer. We are providing this information solely as a service to our client. PSI does not assume responsibility for construction site safety or the contractor's or other parties' compliance with local, state and federal safety or other regulations.

5.0 REPORT LIMITATIONS

The recommendations submitted in this report are based on the available subsurface information obtained by PSI and the project information furnished by Mr. Nicholas Hutchinson, P.E., Project Engineer of The City of Ann Arbor and Ms. Theresa Curanovic, P.E., Project Engineer of Beckett & Raeder, Inc. If there are any revisions to the plans for this project, or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be notified immediately to determine if changes in the site preparation recommendations are required. If PSI is not notified of such changes, PSI will not be responsible for the impact of those changes on the project.

The geotechnical engineer warrants that the findings, recommendations, specifications or professional advice contained herein have been made in accordance with generally accepted professional engineering practices in the local area. No other warranties are implied or expressed.

After the plans and specifications are completed, the geotechnical engineer should be retained and provided the opportunity to review the final plans and specifications to verify that our engineering recommendations have been properly incorporated into the design documents. At that time, it may be necessary to submit supplementary recommendations. If PSI is not retained to perform these functions, PSI will not be responsible for the impact of these conditions on the project.

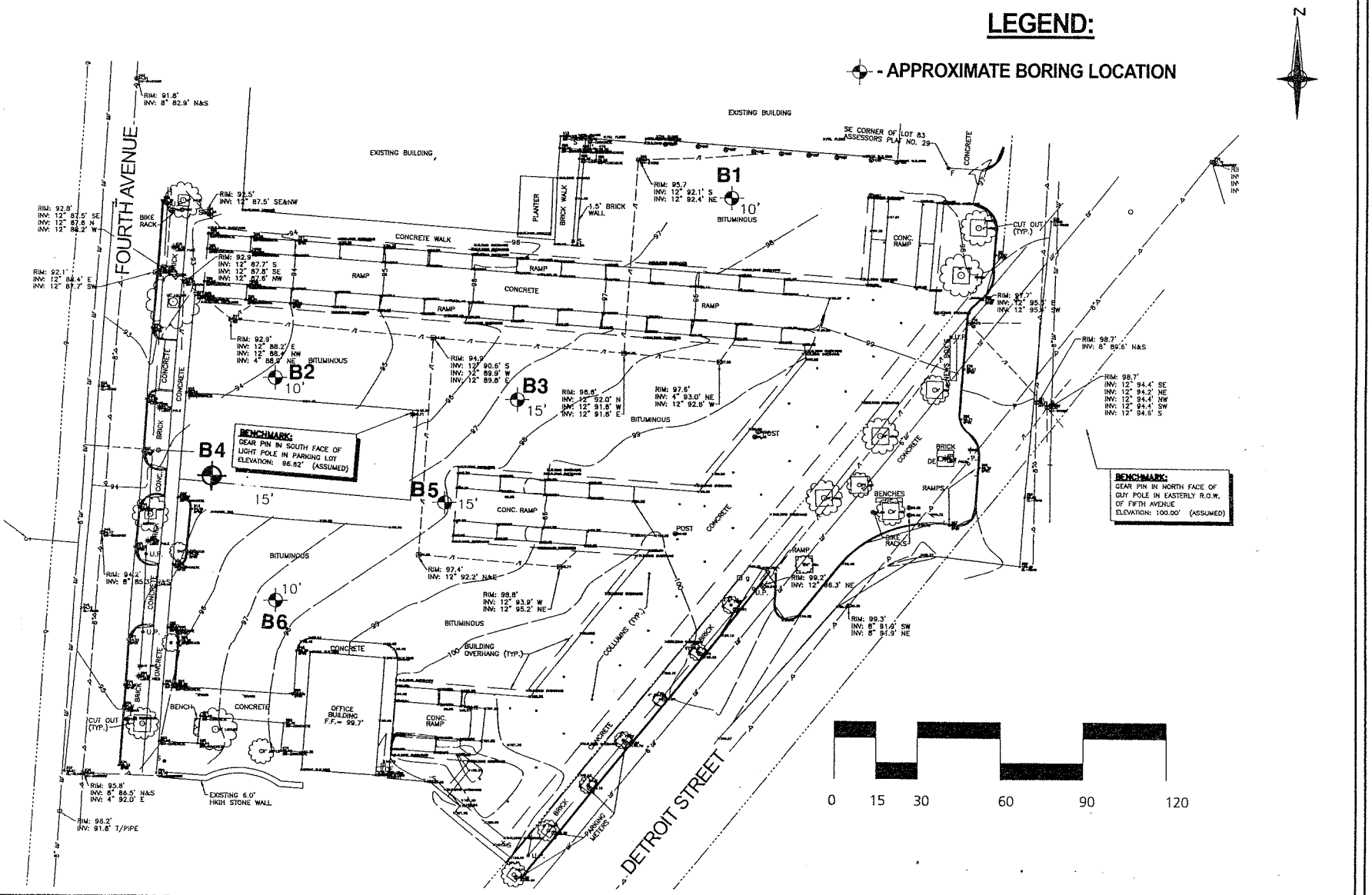
This report has been prepared for the exclusive use of The City of Ann Arbor and their authorized representatives for the specific application to the proposed Farmer's Market renovation project in the city of Ann Arbor, Washtenaw County, Michigan.

FARMER'S MARKET RENOVATION PROJECT
CITY OF ANN ARBOR, WASHTENAW COUNTY, MICHIGAN

Photograph No. 1
Approximately 5 feet north of Boring B-2, facing south.

Photograph No. 2
From Boring B-6, facing northeast.

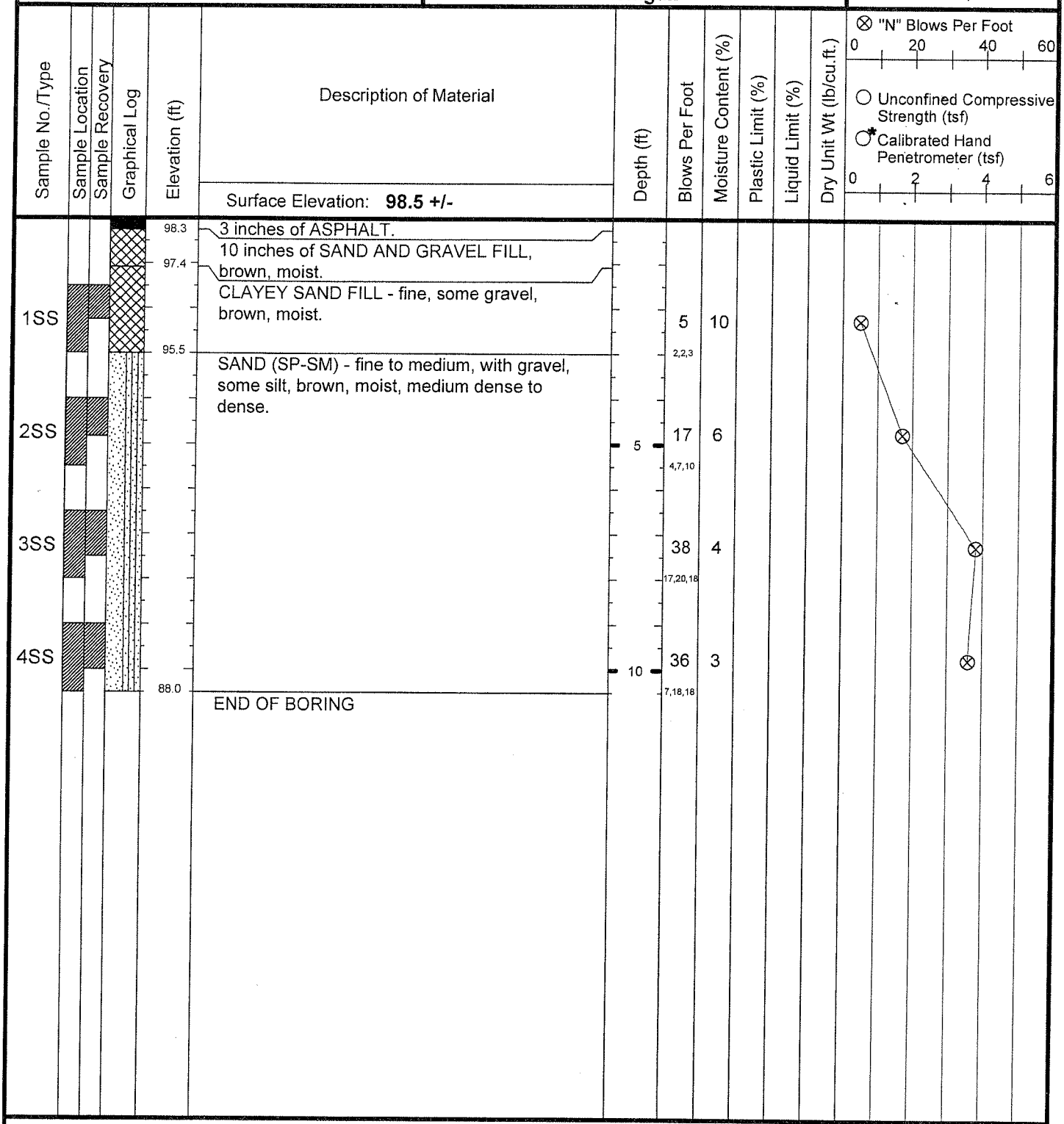
Professional Service Industries, Inc.



PROJECT NAME:	BORING LOCATION PLAN	PROJECT NUMBER:	DRW. NO.
FARMER'S MARKET RENOVATION PROJECT CITY OF ANN ARBOR, WASHTENAW COUNTY, MICHIGAN	*REPRODUCED FROM A SITE PLAN PREPARED BY BECKETT & RAEDER, INC. AND GIVEN TO PSI FOR USE IN THE SOIL EXPLORATION AND REPORT*	379-70032	1
		DATE: September 13, 2007 Scale: As shown	

Client: City of Ann Arbor	PSI Project #: 379-70032	Boring Log Number: B-1
	Sheet: 1 of 1	
Project: Farmer's Market Renovation Project	Location: City of Ann Arbor, Washtenaw County, Michigan	

Professional Service Industries, Inc.



Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

▽ Water Level While Drilling Dry	Boring Started: 9/6/2007	Completed: 9/6/2007		Engineer: TMM
▼ Water Level At Completion Dry	Drilling Method: 3-1/4 inch HSA		Office: Plymouth	Drawn By: TMM
Dry Collapse @ 7' 6" After Completion	Driller: J. A.	Drill Rig: CME-75	Hole Depth (ft): 10.5	Approved:
	Note: Boring backfilled with soil and patched with cold bituminous patch.			

Client: City of Ann Arbor	PSI Project #: 379-70032	Boring Log Number: B-2	psi
	Sheet: 1 of 1		Professional Service Industries, Inc.
Project: Farmer's Market Renovation Project	Location: City of Ann Arbor, Washtenaw County, Michigan		

Surface Elevation: 94 +/-

Sample No./Type	Elevation (ft)	Description of Material	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Dry Unit Wt (lb/cu.ft.)
1SS	93.7	3-1/2 inches of ASPHALT.						
		CLAYEY SAND FILL - fine to medium, some gravel, trace to some organics, dark brown, moist.		11 (3,4,7)	11			
	91.0	Organic Content = 4.7%						
2SS		SAND (SP-SM) - fine to medium, with gravel, some silt, brown, moist, loose to medium dense.	5	4 (1,2,2)	3			
3SS				26 (7,12,14)	4			
	85.5	SILTY CLAY (CL) - few gravel, trace sand, occasional silt partings, mottled brown and gray, moist, hard.						
4SS			10	29 (7,14,15)	11			
	83.5	END OF BORING						

"N" Blows Per Foot: 0 20 40 60

Unconfined Compressive Strength (tsf)

Calibrated Hand Penetrometer (tsf): 0 2 4 6

4.5+

Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

Water Level While Drilling Dry

Water Level At Completion Dry

Dry Collapse @ 7' After Completion

Boring Started: 9/6/2007	Completed: 9/6/2007		Engineer: TMM
Drilling Method: 3-1/4 inch HSA		Office: Plymouth	Drawn By: TMM
Driller: J. A.	Drill Rig: CME-75	Hole Depth (ft): 10.5	Approved:

Note: Boring backfilled with soil and patched with cold bituminous patch.

Client: City of Ann Arbor	PSI Project #: 379-70032	Boring Log Number: B-3
	Sheet: 1 of 1	
Project: Farmer's Market Renovation Project	Location: City of Ann Arbor, Washtenaw County, Michigan	

Professional Service Industries, Inc.

Surface Elevation: 97.5 +/-

Sample No./Type	Sample Location	Sample Recovery	Graphical Log	Elevation (ft)	Description of Material	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Dry Unit Wt (lb/cu.ft.)
				97.3	3 inches of ASPHALT.						
1SS					CLAYEY SAND FILL - fine, some gravel, trace organics, brown, moist.		3 (1,1,2)	10			
				93.5							
2SS					SAND (SP-SM) - fine to coarse, with gravel, some silt, occasional cobbles, brown, moist, medium dense to very dense.	5	15 (3,6,9)	8			
3SS							53 (18,26,27)	3			
4SS						10	56 (14,30,26)	13			
5SS							65 (27,35,30)	3			
6SS							50+				
						15	(35,50/2")				
				82.0	END OF BORING						

"N" Blows Per Foot: 0 20 40 60

Unconfined Compressive Strength (tsf)

Calibrated Hand Penetrometer (tsf): 0 2 4 6

Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

▽ Water Level While Drilling Dry	Boring Started: 9/6/2007	Completed: 9/6/2007	Engineer: TMM
▼ Water Level At Completion Dry	Drilling Method: 3-1/4 inch HSA	Office: Plymouth	Drawn By: TMM
Dry Collapse @ 10' After Completion	Driller: J. A.	Drill Rig: CME-75	Hole Depth (ft): 15.5
	Note: Boring backfilled with soil and patched with cold bituminous patch.		Approved:

Client: City of Ann Arbor	PSI Project #: 379-70032 Sheet: 1 of 1	Boring Log Number: B-4	Professional Service Industries, Inc.
Project: Farmer's Market Renovation Project	Location: City of Ann Arbor, Washtenaw County, Michigan		

Sample No./Type	Sample Location	Sample Recovery	Graphical Log	Elevation (ft)	Description of Material	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Dry Unit Wt (lb/cu.ft.)
					Surface Elevation: 95 +/-						
				94.0	12 inches of SAND AND GRAVEL FILL, fine to coarse, brown, moist.						
1SS					SANDY CLAY FILL - few gravel, trace organics, occasional sand seams, dark brown, moist. Organic Content = 3.7%		4 (2,2,2)	9			
2SS				89.0		5	4 (1,2,2)	13			
3SS					SAND (SP-SM) - fine, some gravel and silt, brown, moist, medium dense.		17 (5,7,10)	9			
4SS				86.0	SILTY CLAY (CL) - few gravel, trace sand, occasional silt partings, brown, moist, hard.	10	20 (7,8,12)	14			
5SS				84.0	SILTY CLAY (CL) - few gravel, trace sand, frequent sand and silt partings, mottled brown and gray, moist, hard.		72 (25,32,40)	9			
6SS				81.0	SILTY CLAY (CL) - few gravel, trace sand, frequent sand and silt partings, gray, moist, hard.	15	43 (12,18,25)	9			
				79.5	END OF BORING						

"N" Blows Per Foot: 0 20 40 60

Unconfined Compressive Strength (tsf)

Calibrated Hand Penetrometer (tsf): 0 2 4 6

4.5+ 4.5+ 4.5+

Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

Water Level While Drilling Dry

Water Level At Completion Dry

Dry Collapse @ 10' 6" After Completion

Boring Started: 9/6/2007	Completed: 9/6/2007		Engineer: TMM
Drilling Method: 3-1/4 inch HSA		Office: Plymouth	Drawn By: TMM
Driller: J. A.	Drill Rig: CME-75	Hole Depth (ft): 15.5	Approved:
Note: Boring backfilled with soil unless otherwise noted.			

Client: City of Ann Arbor	PSI Project #: 379-70032	Boring Log Number: B-5	Professional Service Industries, Inc.
	Sheet: 1 of 1		
Project: Farmer's Market Renovation Project	Location: City of Ann Arbor, Washtenaw County, Michigan		

Sample No./Type	Sample Location	Sample Recovery	Graphical Log	Elevation (ft)	Description of Material	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Dry Unit Wt (lb/cu.ft.)
					Surface Elevation: 98 +/-						
				97.7	4-1/4 inches of ASPHALT.						
1SS					CLAYEY SAND FILL - fine, some gravel and organics, occasional pieces of brick, dark brown, moist.		4 (1,2,2)	7			
				94.0							
2SS					SAND (SP-SM) - fine to coarse, with gravel, some silt, frequent cobbles, occasional clay lenses, brown, moist, dense to very dense.	5	9 (2,4,5)	6			
3SS							38 (15,20,18)	5			
4SS						10	56 (32,38,18)	5			
5SS				86.3			50+ (50/5")	5			
					END OF BORING						
					Note: Boring terminated at an approximate depth of 11' 8" upon encountering spoon and auger refusal on an apparent cobble or boulder.						

"N" Blows Per Foot: 0 20 40 60

Unconfined Compressive Strength (tsf)

Calibrated Hand Penetrometer (tsf): 0 2 4 6

Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

▽ Water Level While Drilling Dry	Boring Started: 9/6/2007	Completed: 9/6/2007	Engineer: TMM
▼ Water Level At Completion Dry	Drilling Method: 3-1/4 inch HSA	Office: Plymouth	Drawn By: TMM
Dry Collapse @ 8' 6" After Completion	Driller: J. A. / Drill Rig: CME-75 / Hole Depth (ft): 11.7		Approved:
	Note: Boring backfilled with soil and patched with cold bituminous patch.		

Client: City of Ann Arbor	PSI Project #: 379-70032	Boring Log Number: B-6
	Sheet: 1 of 1	
Project: Farmer's Market Renovation Project	Location: City of Ann Arbor, Washtenaw County, Michigan	

Professional Service Industries, Inc.

Sample No./Type	Sample Location	Sample Recovery	Graphical Log	Elevation (ft)	Description of Material	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Dry Unit Wt (lb/cu.ft.)
					Surface Elevation: **97.5 +/-**						
				97.2	4-1/4 inches of ASPHALT.						
1SS					CLAYEY SAND FILL - fine, some gravel, trace organics, mottled brown and dark brown, moist.		10 (3,4,6)	4			
				93.5							
2SS					SAND (SP) - fine to coarse, some gravel, trace silt, frequent cobbles, brown, moist, dense to very dense.	5	34 (9,15,19)	11			
3SS							55 (21,30,25)	5			
				89.5	SILTY CLAY (CL) - few gravel, trace sand, occasional silt partings, brown, moist, hard.						
4SS						10	20 (18,12,8)	14			
				87.0	END OF BORING						

"N" Blows Per Foot: 0 20 40 60

Unconfined Compressive Strength (tsf)

Calibrated Hand Penetrometer (tsf): 0 2 4 6

4.5+

Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

Water Level While Drilling Dry

Water Level At Completion Dry

Dry Collapse @ 6' After Completion

Boring Started: 9/6/2007	Completed: 9/6/2007		Engineer: TMM
Drilling Method: 3-1/4 inch HSA		Office: Plymouth	Drawn By: TMM
Driller: J. A.	Drill Rig: CME-75	Hole Depth (ft): 10.5	Approved:

Note: Boring backfilled with soil and patched with cold bituminous patch.

GENERAL NOTES

SAMPLE IDENTIFICATION

The Unified Soil Classification System is used to identify the soil unless otherwise noted.

SOIL PROPERTY SYMBOLS

N:	Standard Penetration Resistance "N": Blows per foot of a 140-pound hammer falling 30 inches on a 2 inch O.D. split-spoon
Qu:	Unconfined Compressive Strength, TSF
Qp:	Pocket penetrometer value, unconfined compressive strength, TSF
Mc:	Water Content, %
LL:	Liquid Limit, %
PI:	Plasticity Index, %
γd:	Dry Density, PCF
▼:	Observed groundwater level at time noted after completion of boring

DRILLING AND SAMPLING SYMBOLS

SS:	Split-Spoon – 1 3/8" I.D., 2" O.D., except where noted
ST:	Shelby Tube – 3" O.D., except where noted
AU:	Auger Sample
DB:	Diamond Bit
CB:	Carbide Bit
WS:	Washed Sample

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATIONS

NON-COHESIVE SOILS	RELATIVE DENSITY, %	SPT, N BLOWS PER FOOT
Very Loose	0 – 15	0 – 4
Loose	15 – 35	4 – 10
Medium	35 – 65	10 – 30
Dense	65 – 85	30 – 50
Very Dense	85 – 100	Over 50

COHESIVE SOILS	Qu – (TSF)	SPT, N BLOWS PER FOOT
Very Soft	0 – 0.25	0 – 2
Soft	0.25 – 0.50	2 – 4
Medium Stiff	0.50 – 1.00	4 – 8
Stiff	1.00 – 2.00	8 – 15
Very Stiff	2.00 – 4.00	15 – 30
Hard	Over 4.00	Over 30

PARTICLE SIZES

Boulders		Over 12 in. (305 mm)
Cobbles		3 in. (76 mm) – 12 in. (305 mm)
Gravel –	Coarse	3/4 in. (19 mm) – 3 in. (76 mm)
	Fine	0.19 in. (4.75 mm) – 3/4 in. (19 mm)
Fines –	Silt	0.0002 in. (0.005 mm) – 0.0029 in. (0.075 mm)
	Clay	Less than 0.0002 in. (0.005 mm)
Sand –	Coarse	0.079 in. (2 mm) – 0.19 in. (4.75 mm)
	Medium	0.017 in. (0.425 mm) – 0.079 in. (2mm)
	Fine	0.0029 in. (0.075 mm) – 0.017 in. (0.425 mm)

SOIL CONSTITUENTS

Trace	Less than 5%
Few (Gravel & Cobbles)	Less than 5%
Some	5 – 12%
With	12 – 30%

COM*check* Software Version 4.0.4.1

Interior Lighting Compliance Certificate

Project Information

Energy Code:	90.1 (2007) Standard
Project Title:	New Farmer's Market Enclosure
Project Type:	New Construction

Construction Site:
315 Detroit Street
Ann Arbor, MI 48107

Owner/Agent:
Keith Kohler
Kohler Architecture, Inc
1118 West Front Street
Monroe, MI 48161
734-242-6880

Designer/Contractor:
Martin Braun
Design Engineers & Consulting Associates
415 Conant Street
Maumee, OH 43537

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B X C)
1-Retail	3841	1 .50	5762
		Total Allowed Watts =	5762

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
1-Retail				
LED 1: A: LED PENDANT: Other:	1	16	59	944
			Total Proposed Watts =	944

Interior Lighting PASSES: Design 84% better than code

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 90.1 (2007) Standard requirements in COM*check* Version 4.0.4.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Martin M. Braun, PE — Name - Title


Signature

08-31-2016 — Date

COMcheck Software Version 4.0.4.1

Exterior Lighting Compliance Certificate

Project Information

Energy Code:	90.1 (2007) Standard
Project Title:	New Farmer's Market Enclosure
Project Type:	New Construction

Construction Site:
315 Detroit Street
Ann Arbor, MI 48107

Owner/Agent:
Keith Kohler
Kohler Architecture, Inc
1118 West Front Street
Monroe, MI 48161
734-242-6880

Designer/Contractor:
Martin Braun
Design Engineers & Consulting Associates
415 Conant Street
Maumee, OH 43537

Allowed Exterior Lighting Power

A Area/Surface Category	B Quantity	C Allowed Watts / Unit	D Tradable Wattage	E Allowed Watts (B X C)
Main entry/exit	6 ft of door	30	Yes	180
Other entry/exit	6 ft of door	20	Yes	120
Plaza area	532 ft2	0.2	Yes	106
Stairway	41 ft2	1	Yes	41
Walkway >= 10 feet wide	455 ft2	0.2	Yes	91
Parking area(s)	6392 ft2	0.15	Yes	959
			Total Tradable Watts (a) =	1497
			Total Allowed Watts =	1497
			Total Allowed Supplemental Watts (b) =	75

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.

(b) A supplemental allowance equal to 75 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

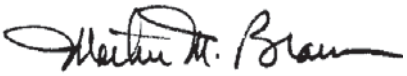
Proposed Exterior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Main entry/exit (6 ft of door width): Tradable Wattage				
LED 1: F: LED Other Fixture Unit 25W:	1	1	27	27
Other entry/exit (6 ft of door width): Tradable Wattage				
LED 1 copy 1: F: LED Other Fixture Unit 25W:	1	1	27	27
Plaza area (532 ft2): Tradable Wattage				
LED 1 copy 2: F: LED Other Fixture Unit 25W:	1	1	27	27
Stairway (41 ft2): Tradable Wattage				
LED 5: G: LED Linear 8W:	1	1	8	8
Walkway >= 10 feet wide (455 ft2): Tradable Wattage				
LED 5 copy 1: G: LED Linear 8W:	1	3	8	24
Parking area(s) (6392 ft2): Tradable Wattage				
LED 1 copy 3: F: LED Other Fixture Unit 25W:	1	5	27	135
			Total Tradable Proposed Watts =	248

Exterior Lighting PASSES: Design 84% better than code

Exterior Lighting Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 90.1 (2007) Standard requirements in COM*check* Version 4.0.4.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Martin M. Braun		08-31-2016
Name - Title	Signature	Date

COM*check* Software Version 4.0.4.1

Inspection Checklist

Energy Code: 90.1 (2007) Standard

Requirements: 100.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
4.2.2 [PR4][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E1.1, E3.1
8.4.1.1, 8.4.1.2 [PR6][2]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the electrical systems and equipment and document where exceptions are claimed. Feeder connectors sized in accordance with approved plans and branch circuits sized for maximum drop of 3%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E1.1, E3.1

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
9.4.1.1 [EL1][2]	Automatic controls to shut off all building lighting installed in buildings >5,000 ft2.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E1.1, E3.1
9.4.1.2 [EL2][2]	Independent lighting controls installed per approved lighting plans and all manual controls readily accessible and visible to occupants.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E1.1, E3.1
9.4.1.3 [EL3][2]	Automatic lighting controls for exterior lighting installed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E1.1, E3.1
9.4.1.4 [EL4][1]	Separate lighting control devices for specific uses installed per approved lighting plans.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E1.1, E3.1
9.4.2 [EL5][3]	Ballasted one and three lamp fixtures with >30 W/lamp have two lamp tandem wired ballasts when >=2 fixtures in same space on same control.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E1.1, E3.1
9.4.3 [EL6][1]	Exit signs do not exceed 5 watts per face.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E1.1, E3.1
9.4.4 [EL7][1]	Exterior grounds lighting over 100 W provides >60 lm/W unless on motion sensor or fixture is exempt from scope of code or from external LPD.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E1.1, E3.1
9.6.2 [EL8][1]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E1.1, E3.1

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
8.7.1 [FI16][3]	Furnished as-built drawings for electric power systems within 30 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
8.7.2 [FI17][3]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
9.2.2.3 [FI18][1]	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Interior Lighting fixture schedule for values.*
9.4.5 [FI19][1]	Exterior lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Exterior Lighting fixture schedule for values.*

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

COMcheck Software Version 4.0.4.1
Mechanical Compliance Certificate

Project Information

Energy Code:	90.1 (2007) Standard
Project Title:	New Farmer's Market Enclosure
Location:	Ann Arbor, Michigan
Climate Zone:	5a
Project Type:	New Construction

Construction Site:
315 Detroit Street
Ann Arbor, MI 48107

Owner/Agent:
Keith Kohler
Kohler Architecture, Inc
1118 West Front Street
Monroe, MI 48161
734-242-6880

Designer/Contractor:
Martin Braun
Design Engineers & Consulting Associates
415 Conant Street
Maumee, OH 43537

Mechanical Systems List

Quantity	System Type & Description
8	IH-1 (Unknown): Heating: 1 each - Unit Heater, Electric, Capacity = 21 kBtu/h No minimum efficiency requirement applies Fan System: None
2	UH-2 (Unknown): Heating: 1 each - Unit Heater, Electric, Capacity = 17 kBtu/h No minimum efficiency requirement applies Fan System: UH-1 | Main -- Compliance (Motor nameplate HP method) : Passes Fans: FAN 1 Supply, Constant Volume, 1320 CFM, 0.1 motor nameplate hp

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 90.1 (2007) Standard requirements in COM*check* Version 4.0.4.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Ryan D. Gramling - Designer — Name - Title

Signature

9/2/16 — Date

COM*check* Software Version 4.0.4.1

Inspection Checklist

Energy Code: 90.1 (2007) Standard

Requirements: 100.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
4.2.2, 6.4.2 [PR2][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** Will comply
4.2.2, 7.4.1 [PR3][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the service water heating systems and equipment and document where exceptions to the standard are claimed. Hot water system sized per manufacturer's sizing guide.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** Will comply
6.7.2.4 [PR5][1]	Detailed instructions for HVAC systems commissioning included on the plans or specifications for projects >=50,000 ft2.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. **Location on plans/spec:** Building less than 50,000 sq ft

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
6.4.3.8 [FO9][3]	Freeze protection and snow/ice melting system sensors for future connection to controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. **Location on plans/spec:** None of these systems on project

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.4.1.4, 6.4.1.5 [ME1][2]	HVAC equipment efficiency verified. Non-NAECA HVAC equipment labeled as meeting 90.1.	Efficiency:____	Efficiency:____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Mechanical Systems list for values.*
6.4.3.4.1 [ME3][3]	Stair and elevator shaft vents have motorized dampers that automatically close.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. **Location on plans/spec:** None of these systems on project
6.4.3.4.2, 6.4.3.4.3, 6.4.3.4.4 [ME4][3]	Outdoor air and exhaust systems have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Check gravity dampers where allowed.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** None of these systems on project
6.4.3.4.5 [ME5][3]	Ventilation fans >0.75 hp have automatic controls to shut off fan when not required.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** None of these systems on project
6.4.3.9 [ME6][1]	Demand control ventilation provided for spaces >500 ft2 and >40 people/1000 ft2 occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** None of these systems on project
6.4.4.1.1 [ME7][3]	Insulation exposed to weather protected from damage. Insulation outside of the conditioned space and associated with cooling systems is vapor retardant.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** No external insulation
6.4.4.1.2 [ME8][2]	HVAC ducts and plenums insulated.	R-____	R-____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** No ductwork on project
6.4.4.1.3 [ME9][2]	HVAC piping insulation thickness.	____ in.	____ in.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** No piping on project
6.4.4.2.1 [ME10][2]	Ducts and plenums sealed based on static pressure and location.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** No ductwork on project
6.4.4.2.2 [ME11][3]	Ductwork operating >3 in. water column requires air leakage testing.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. **Location on plans/spec:** No ductwork
6.4.4.2.2 [ME11][3]	Ductwork operating >3 in. water column requires air leakage testing.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. **Location on plans/spec:** No ductwork

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.5.2.3 [ME19][3]	Dehumidification controls provided to prevent reheating, recooling, mixing of hot and cold airstreams or concurrent heating and cooling of the same airstream.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** None of these systems on project
6.5.4.1 [ME25][3]	HVAC pumping systems >10 hp designed for variable fluid flow.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** None of these systems on project
6.5.6.1 [ME30][1]	Exhaust air energy recovery on systems >=5,000 cfm and 70% of design supply air.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. **Location on plans/spec:** None of these systems on project
6.5.7.1 [ME32][2]	Kitchen hoods >5,000 cfm have make up air >=50% of exhaust air volume.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. **Location on plans/spec:** None of these systems on project
6.5.7.2 [ME33][1]	Fume hoods exhaust systems >=15,000 cfm have VAV hood exhaust and supply systems, direct make-up air or heat recovery.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. **Location on plans/spec:** None of these systems on project
6.5.8.1 [ME34][3]	Unenclosed spaces that are heated use only radiant heat.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. **Location on plans/spec:** None of these systems on project

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
10.4.1 [EL9]²	Electric motors meet requirements where applicable.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** Will comply

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
6.4.3.1.1 [FI2][2]	Heating and cooling to each zone is controlled by a thermostat control.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** No cooling. Refer to plans for thermostat
6.4.3.1.2, 6.4.3.2, 6.4.3.3, 6.4.3.3.1, 6.4.3.3.2 [FI3][2]	Thermostatic controls have a 5 °F deadband.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** Heat only
6.4.3.7 [FI6][3]	When humidification and dehumidification are provided to a zone, simultaneous operation is prohibited.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** equipment not on page
6.7.2.1 [FI7][3]	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.7.2.2 [FI8][3]	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.7.2.3 [FI9][1]	An air and/or hydronic system balancing report is provided for HVAC systems serving zones >5,000 ft2 of conditioned area.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. **Location on plans/spec:** No equipment to be balanced, less than 5,000 sq ft
6.7.2.4 [FI10][1]	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** Building less than 50,000 sq ft
6.4.3.2 [FI20][1]	Temperature controls have setpoint overlap restrictions.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** Heat only
6.4.3.3.1 [FI21][1]	HVAC systems equipped with at least one automatic shutdown control.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** thermostat has complete scheduleling controls
6.4.3.3.2 [FI22][1]	Setback controls allow automatic restart and temporary operation as required for maintenance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** thermostat has complete scheduleling controls

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)