

Charter Township of Canton



Request For Proposal

for

**HERITAGE PARK SOUTH PAVILIONS
CONSTRUCTION**

Contact: Jeanette Aiello

Phone: (734) 394-5479

E-mail: jeanette.aiello@cantonmi.gov

Date Issued: 1/4/2024

Due Date & Time: 3:00 p.m., Thursday, January 18, 2024

The deadline established for the receipt of your sealed bid is **1/18/2024** at 3:00 p.m. The bid is to be submitted to the Clerk's Office, 1150 S. Canton Center Road, Canton, Michigan 48188. Address the bid to:

Canton - Clerk's Office
HERITAGE PARK SOUTH PAVILIONS CONSTRUCTION
1/18/2024
1150 Canton Center S
Canton MI 48188

SECTION # 1 GENERAL REQUIREMENTS & INSTRUCTIONS

1. **SUBMISSION OF OFFERS:** All offers should be submitted in a sealed envelope or package. The invitation title, opening date and time, company name, address and telephone number shall be clearly displayed on the outside of the sealed envelope or package. The delivery of responses to the Clerk's Office prior to the specified date and time is solely and strictly the responsibility of the offeror. Any submittal received in the Clerk's Office after the specified date and time will not be considered. Responses shall be submitted on the forms provided by Canton. Additional information may be attached to the submittal. Facsimile submissions are NOT acceptable. No offer may be modified after acceptance. No offer may be withdrawn after opening for a period of sixty days unless otherwise specified. Bid must include all costs. **All offers must include the original and at least two (2) copies.**
2. **EXECUTION OF OFFER:** Offer shall contain a manual signature in the space(s) provided of a representative authorized to legally bind the offeror to the provisions therein.
3. **EXECUTION OF ACCEPTANCE:** Canton Township legally recognizes acceptance of formal offer when a written contract is signed by both parties. Offerer is not to assume that the Canton Board of Trustees resolution approving the bid or proposal is a binding contract.
4. **OPENING & RECORDING:** Opening shall be public in the Clerk's Office immediately following the advertised deadline date and time for receipt of submittals.
5. **INTEGRITY:** Canton Township does not discriminate on the basis of race, color, national origin, sex, religion, age or disability in employment or the provision of services.
6. **TABULATION:** Bid results will be posted on the MITN website at <https://www.bidnetdirect.com/mitn/solicitations/open-bids/page1>
7. **BOARD AWARDS:** As the best interest of Canton may require, Canton reserves the right to make award(s) by an individual item, group of items, all or none, or a combination thereof; on a geographical basis and/or on a countrywide basis with one or more supplier(s) or provider(s); to reject any and all offers or waive any irregularity or technicality in offers received. Offerors are cautioned to make no assumptions. Any or all awards made as a result of this invitation shall conform to applicable ordinances and policies of Canton Township. Bid awards will be posted on the Township's website at www.canton-mi.org.

8. **BRAND NAME OR EQUAL:** If items requested by this invitation have been identified in the specifications by a brand name “OR EQUAL” description, such identification is intended to be descriptive and not restrictive and is to indicate the quality and characteristics of products that will be acceptable. Offers proposing “equal” products will be considered for award if such products are clearly identified in the offer and are determined by Canton to meet fully the salient characteristic requirements listed in the specifications.
9. **PRICING:** Unless otherwise specified prices offered shall remain firm for a period of at least sixty (60) days; all pricing of goods shall include FOB Canton Township, all packing, handling, shipping charges and delivery to any point(s) within Canton to a secure area or inside delivery.
10. **PAYMENT TERMS:** Canton Township will remit full payment on all undisputed invoices within thirty (30) days from receipt by the appropriate person(s) of the invoice or receipt of all products or services ordered.
11. **INCURRED EXPENSE:** This invitation does not commit Canton to make an award nor shall Canton be responsible for any cost or expense which may be incurred by any respondent in preparing and submitting a reply, or any cost or expense incurred by any respondent prior to the execution of a purchase order or contract agreement.
12. **QUESTIONS/ ADDENDA:** Any questions concerning the conditions or specifications shall be directed to the designated contact person. Addenda items will be posted on the township website, on the Purchasing Division page under Requests for Bids, Proposals and Qualifications. It is the bidder’s responsibility to check and verify that addenda have been issued. Failure to acknowledge addenda may result in the offer not being considered.
13. **CLARIFICATION/CORRECTION OF ENTRY:** Canton reserves the right to allow for the clarification of questionable entries and the correction of OBVIOUS MISTAKES.
14. **INSURANCE:** The successful bidder is required to furnish evidence of the following insurance requirements in accordance with Canton’s Risk Management Policy O:02. Work may not commence until the Certificates of Insurance have been received. The coverage requirements are as follows:

Workers’ Compensation Insurance: The Contractor shall procure and maintain during the life of this contract, Workers’ Compensation Insurance, including Employers’ Liability Coverage, in accordance with all applicable statutes of the State of Michigan.

Commercial General Liability Insurance: The Contractor shall procure and maintain during the life of this contract, Commercial General Liability Insurance on an “Occurrence Basis” with limits of liability not less than \$ 1,000,000 per occurrence and aggregate combined single limit, Personal Injury, Bodily Injury, and Property Damage. Coverage shall include the following extensions:(A) Contractual Liability; (B) Products and Completed Operations; (C) Independent Contractors Coverage; (D) Broad Form General Liability Extensions or equivalent.

Motor Vehicle Liability: The Contractor, or its subcontractors, shall procure and maintain during the life of this contract Motor Vehicle Liability Insurance, including Michigan No-Fault Coverage, with limits of liability not less than \$ 1,000,000 per occurrence combined single limit, Bodily Injury, and Property Damage. Coverage shall include all owned vehicles, all non-owned vehicles, and all hired vehicles.

Additional Insured: Commercial General Liability Insurance as described above, shall include an endorsement stating that the following shall be ***Additional Insured:*** The Charter Township of Canton, all elected and appointed officials, all employees and volunteers, all boards, commissions, and/or authorities and board members, including employees and volunteers thereof.

Cancellation Notice: The Insurance coverage described above, shall include an endorsement stating the following: “It is understood and agreed that Thirty (30) days Advance Written Notice of Cancellation, Non-Renewal, Reduction, and/or Material Change shall be sent to: Jeanette Aiello, 1150 Canton Center S., Canton MI, 48188.

Indemnification: To the fullest extent permitted by law, the (name of contractor) agrees to defend, pay on behalf of, indemnify, and hold harmless the Charter Township of Canton, its elected and appointed officials, employees and volunteers, and others working on behalf of the Charter Township of Canton against any and all claims, demands, suits, or loss, including all costs connected therewith, and for any damages which may be asserted, claimed, or recovered against or from the Charter Township of by reason of personal injury, including bodily injury or death and/or property damage, including loss of use thereof, which arises out of or is in any way connected or associated with this agreement.

15. PUBLIC ACT 517 OF 2012: In accordance with Public Act 517 of the Public Acts of 2012, any Iran linked business is not eligible to submit a bid on a request for proposal with a public entity in Michigan. An “Iran linked business” includes the following:

- (1) A person engaging in investment activities in the energy sector of Iran, including a person that provides oil or liquefied natural gas tanker or products used to construct or maintain pipelines used to transport oil or liquefied gas for the energy section of Iran; and
- (2) A financial institution that extends credit to another person, if that person will use the credit to engage in investment activities in the energy sector of Iran.

For purposes of this prohibition, “person” includes an individual, corporation, company, limited liability company, business association, partnership, society, trust, or any other non-governmental entity, organization or group. It also includes a governmental entity or instrumentality of a governmental entity, or any successor, subunit, parent company or subsidiary of, or company under common ownership or control with and of the foregoing.

16. RESPONSIBLE CONTRACTING: Responses to this RFP will be evaluated using the point system shown in Section 2. All Contractors and subcontractors are encouraged to provide details of all the information requested in Section 2. If bidder does not submit all of the information requested, the bidder will not be precluded from the evaluation process, but scores will reflect the lack of information provided. Final Step of determination may result in an interview process, of all or subset of responsible bidders, that will be scored

independently from the above evaluation criteria. Interviews will be based on a set of predetermined questions, depending on the project scope.

SECTION # 2 – RESPONSIBLE CONTRACTING REQUESTED INFORMATION

The following describes the elements that should be included in each of the proposal sections and the weighted point system that will be used for evaluation of the proposals.

Bidders should organize Proposals into the following Sections:

- A. Price
- B. Qualifications, Experience and Accountability
- C. Workplace Safety
- D. Workforce Development
- E. Social Equity and Sustainability
- F. Work Plan

Bidders are strongly encouraged to provide details of all of the information requested below as well as all Sub-Contractors. Back-up documentation may be requested at the sole discretion of Canton Township to validate all of the responses provided herein by the proposers. False statements by proposers to any of the criteria provided herein will result in the proposal being considered non-responsive and will not be considered for award. If bidder does not submit all of the information requested, the bidder will not be precluded from the evaluation process, but scores will reflect the lack of information provided.

A. Price (35 points)

1. Submitted Proposals must break out labor costs from material and equipment costs.

B. Qualifications, Experience and Accountability (15 points)

1. Qualifications of management and supervisory personnel to be assigned by the bidder, including the qualifications of subcontractors.
2. References from individuals or entities the bidder has worked for within the last five (5) years of service including specific municipal projects, information regarding records of performance and job site cooperation.
3. Evidence of any quality assurance program used by the bidder and the results of any such program on the bidder's previous projects.
4. Assurance that all construction work for this project must proceed economically, efficiently, continuously and without interruption.

5. A list of previous projects completed within the past five (5) years of comparable size and complexity, including dates, clients, approximate dollar value, and size. Documentation from these previous projects including but not limited to all extra costs relating to the bidder's timeliness, performance, technique standards, trade standards, quality of work, extension requests, contractual fines and penalties imposed, liens filed, history of claims for extra work and any contract defaults with an explanation of the reason for the default and how the default was resolved.
6. Provide a copy of the company's most recent financial statements.

C. Workplace Safety (10 points)

1. The ratio of journeypersons to apprentices proposed to be used on the construction project job site, if apprentices are to be used on the project.
2. Documentation of an on-going Michigan OSHA approved safety training program for employees to be used on the proposed job site.
3. Evidence of the bidder's workers' compensation Experience Modification Rating (EMR). Preference will be given to contractors and subcontractors who exhibit an EMR of 1.0 or less based on a three-year average.
4. All craft labor that will be employed by the firm for the project has completed at least the OSHA 10-hour training course for safety established by the U.S. Department of Labor, Occupational Safety & Health Administration.
5. All craft labor that will be employed by the firm for the project has completed at least the OSHA 30-hour training course for safety established by the U.S. Department of Labor, Occupational Safety & Health Administration.
6. Documentation of master or journeyperson certification or status for masters and journeypersons to be used on the project, and the source of such certification or status.

D. Workforce Development (15 points)

1. Documentation as to pay rates of employees and whether the bidder provides health insurance, pension or other retirement benefits, or other benefits to its employees.
2. Documentation that the bidder participates in a Registered Apprenticeship program that is registered with the United States Department of Labor Office of Apprenticeship or by a state Apprenticeship Agency recognized by the Office of Apprenticeship.

E. Social Equity and Sustainability (10 points)

1. A statement from the bidder as to what percentage of its workforce can be drawn significantly from area residents because a goal of the Township is to utilize, in its construction activities, local residents as much as is economically feasible while retaining

the high quality of construction required for its construction activities, consistent with applicable law. The township will consider in evaluation which bids best serve its interest, the extents to which responsible and qualified bidders are able to achieve this goal.

2. Assurance that the bidder is an equal opportunity employer and does not discriminate on the basis of race, sex, pregnancy, age, religion, national origin, marital status, sexual orientation, gender identity or expression, height, weight or disability.

3. Evidence of Equal Employment Opportunity Programs, such as policies or specific programs, for minorities, women, veterans, returning citizens and small businesses.

4. Evidence that the bidder is a business operated in Canton Township.

5. If applicable, state certification evidence to support if the business is owned by at least 51% by women, minorities, veterans or people with disabilities.

F. Work Plan (15 points)

1. The proposed work plan to complete the project, including such information as the schedule, staging, materials and equipment to be used, methods and techniques for completing the work that will be employed, plans to maintain operations at Township facilities or access to city infrastructure during construction if desired by the Township, or other criteria as determined by the Township in the bid documents.

Selection Process:

Final step of determination may result in an interview process, of all or subset of responsible bidders, that will be scored independently from the above evaluation criteria. This provides the opportunity to explore significant variations of the proposals received. Interviews will be based on a set of predetermined questions, depending on the project scope.

TABLE OF CONTENTS

<u>Item</u>	<u>Page</u>
General Conditions	GC 1 – 13
TECHNICAL SPECIFICATIONS	
<u>Site</u>	
General Site Conditions	02050-1 – 02050-2
Removal Items	02100-1 – 02100-2
Earthwork and Grading	02200-1 – 02200-3
Concrete Work	02514-1 – 02514-6
Joint Filler and Sealant.....	02515-1 – 02515-2
Lawn Seeding	02910-1 – 02910-4
Site Electrical	
Electrical Basic Materials and Methods	16050 -1 – 16050-4
Conduit	16111 -1 – 16050 -8
Wire and Cable	16120 -1 – 16120 -3
Electrical Identification	16195 -1 – 16195 -3
Secondary Grounding	16450 -1 – 16450 -2
Lighting Fixtures	16510 -1 – 16510 -2
Pavilion	13 3423-1 – 13 3423-2
<u>Forms/Statements</u>	
Agreement Form	A 1 – 2
Proposal Form	P 1 – 6
<u>Appendices</u>	
Appendix A – Cedar Forest Products Preliminary Layout	

GENERAL CONDITIONS

GENERAL CONDITIONS

1.00 TERMS DEFINED:

Wherever in the bid or contract documents the term "LANDSCAPE ARCHITECT" appears, it shall refer to M. C. Smith Associates and Architectural Group, Inc., Landscape Architects and Architects, or his authorized representative. Wherever the term "OWNER" is used, it shall refer to Canton Township as "Party of the First Part" in the Proposal Agreement and Contract. The term "CONTRACTOR" shall refer to the "Party of the Second Part" in the Proposal Agreement and Contract.

2.00 BOND:

The Contractor shall, at the time of the execution and delivery of the contract and before the taking effect of the same in other respects, furnish and deliver to the Owner a written bond or indemnity to the amount of One Hundred Percent (100%) of the total base price of this contract which is herein stated, in form and substance and with surety thereon satisfactory and acceptable to the Owner, to insure the faithful performance of the Contractor of all the covenants and agreements on the part of the Contractor contained in this contract, or any part thereof, and for the period of extension that may be granted on the part of the Owner as well as for all changes, and modifications of the contract as herein provided, for the prompt payment of all laborers, tradesmen, mechanics, subcontractors for materials, supplies or provisions for carrying on such work, and all just dues and demands incurred in the performance of the work, and to indemnify and save harmless the Owner against any direct or indirect damages that may be suffered or claimed or from injuries to persons or property during the construction of said work until it is accepted, and against claims or royalties on patents and to indemnify and save the Owner harmless from all losses, costs and expenses which it may sustain by reason of any negligence of the Contractor.

3.00 CONTRACTOR'S UNDERSTANDING:

It is understood and agreed that the Contractor has, by careful examination satisfied himself as to the nature and location of the work, the conformation of the ground, the character, quality and quantity of the materials to be encountered, the character of the equipment and facilities needed preliminary to and during the prosecution of the work, the general and special conditions, and all other matters which can in any way affect the work under the contract. No verbal agreement or conversation with any officer, agent or employee of the Owner, either before or after the execution of this contract shall affect or modify any of the terms or obligations herein contained.

4.00 SUBSTITUTIONS:

Each bid or proposal shall be based upon the materials and equipment described in the bidding documents. Whenever a material, article or piece of equipment is identified on the Drawings or in these specifications by reference to manufacturers' or vendors' names, trade names, catalog numbers, or the like, it is so identified for the purpose of establishing a standard, and any material, article, or piece of equipment of other

manufacturers or vendors which will perform comprehensively the duties imposed by the general design will be considered equivalent provided the material, article, or piece of equipment so proposed is, in the opinion of the Landscape Architect, equivalent in substance, appearance and function.

No substitution will be considered unless written request has been submitted to the Landscape Architect for approval at least seven (7) days prior to the date of receipt of bids. Each such request shall include a complete description of the proposed substitute, the name of the material or equipment for which it is to be substituted, drawings, cuts, performance and test data and any other data or information necessary for a complete evaluation. A bidder requesting approval of a substitute shall also promptly submit additional data requested by the Landscape Architect. Only approvals embodied in a written Addendum shall be binding.

Substitutions submitted after bid date will be reviewed for compliance with Construction Documents for a Review Fee (to be charged to the Prime Contractor) as follows:

- A. A minimum review fee of \$250.00 for reviewing and processing non-specified items will be charged to Prime Contractor. Request must be submitted in writing to the Landscape Architect with fee attached.
- B. If review time exceeds \$250.00 minimum charge, the additional time will be billed at an hourly rate of \$100.00 per hour to be paid before Landscape Architect renders decision.

5.00 **APPROVED EQUAL:**

References to the term "equal" or "approved equal" shall mean that alternate or substitute items shall be equal to or greater in every respect than the item specified. All such substitutions shall be proposed to the Landscape Architect in writing prior to bidding. The Contractor shall receive written notice of approval prior to committing himself in any way to the item. The Contractor will be proceeding at his own risk in the absence of a written approval and shall be fully responsible for all removal, replacement and restoration necessary to conform to the Contract and shall incur all costs directly or indirectly related to such activities.

6.00 **PERMITS:**

The Contractor shall be responsible for the procurement of and payment for all permits, and licenses necessary for the complete prosecution of the work.

7.00 **PROTECTION:**

Whenever the local conditions, circumstances, laws or ordinances require, the Contractor shall furnish and maintain, at his own expense and cost, necessary passageways, barriers, lights and such facilities and means of protection as may be required to provide safe conditions at all times.

8.00 **RIGHTS OF VARIOUS INTERESTS:**

Whenever work being done by Owner'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 Landscape Architect to secure the completion of the various portions of the work in general harmony.

9.00 **CONSENT TO TRANSFER:**

The Contractor shall not let or transfer this contract or any part thereof (except for the delivery of material) without the written consent of the Landscape Architect. Such consent does not release or relieve the Contractor from any of his obligations and liabilities under this Contract.

10.00 **SUPERINTENDENCE:**

The Contractor shall constantly supervise all the work embraced in this contract in person or by a duly authorized manager acceptable to the Landscape Architect.

11.00 **TIMELY DEMAND FOR INSTRUCTIONS:**

The Contractor shall provide reasonable and necessary opportunities and facilities for review. He shall not proceed until he has made timely demand upon the Landscape Architect for, and received from him, such instructions as may be necessary as the work progresses. The work shall be done in strict conformity with such instruction. The Contractor shall furnish the Landscape Architect, from his force, sufficient and competent help for any field work in connection with the project which the Landscape Architect may require. The Contractor shall employ diligence and care in protecting all points and stakes approved by the Landscape Architect. The Contractor shall be responsible also for the failure to follow stakes given him by the Landscape Architect as well as failure to conform to other directions or instructions of the Landscape Architect, and shall rectify any work which does not conform to the Landscape Architect's directions, at his own expense.

12.00 **REPORT ERRORS AND DISCREPANCIES:**

If the Contractor, in the course of the work, finds any discrepancy between the plans and the physical conditions of the locality or any errors or omissions in plans or in the layout as given by said instructions, it shall be his duty to immediately inform the Landscape Architect, in writing, and the Landscape Architect shall promptly verify the same. Any work done after such discovery, until authorized, will be done at the Contractor's risk.

13.00 **COMPLIANCE:**

All construction shall conform to all aspects of the State of Michigan Building Code (MBC), Uniform Federal Accessibility Standards (UFAS), the ADA Accessibility Guidelines for Buildings and Facilities (ADAAG) and the Americans with Disabilities Act (ADA). All work by the Contractor for complete execution of this project shall meet or exceed laws, guidelines, and statutes in every situation. In the event the Contractor believes that any portion of the work is inconsistent with the MBC, UFAS, ADAAG, and ADA they must immediately inform the Landscape Architect.

14.00 **INSPECTIONS:**

All work and materials shall be open to the inspection, acceptance and rejection of the Landscape Architect or his duly authorized representative at all times. The Contractor shall give the Landscape Architect reasonable and necessary facilities for inspection, even to the extent of taking out portions of finished work, if the work is found satisfactory, the cost of taking out and replacement will be paid by the Owner.

15.00 **DEFECTIVE WORK OR MATERIALS:**

The inspection of the work shall not relieve the Contractor of any of his obligations to fulfill his contract as herein prescribed, and defective work shall be made good and unsuitable materials may be rejected, notwithstanding that such work and materials have been previously overlooked by the Owner and accepted or estimated for payment. If the work or any part thereof shall be found defective before the final acceptance of the work, the Contractor shall forthwith make good such defect, without compensation, in a manner satisfactory to the Landscape Architect as unsuitable or not in conformity with the specifications, the Contractor shall forthwith remove them from the site. If the Contractor shall fail to replace any defective work or materials after reasonable notice, the Landscape Architect may cause such defective work or materials to be replaced and the expense thereof shall be deducted from the amount to be paid the Contractor. It is further expressly agreed that the granting of any progress certificate, the signing of any periodic estimate, or the payment of any money hereunder shall not be considered an acceptance of all or part of the work and shall in no way lessen the liability of the Contractor to replace defective work, though the same may not have been detected prior to the time that such money was paid. All periodic estimates are to be made merely on approximate quantities and shall be subject to correction at the time or before final estimate or final payment is made. However, nothing in this Contract shall be construed to mean that the Owner or its Landscape Architect waives or forfeits any right it or he has or had to later complain about defective materials or workmanship.

16.00 **INDEMNITY:**

The Contractor shall defend, indemnify, protect and save harmless the Owner, its Landscape Architect and their officers and agents, from all suits or claims of every name or description brought against the Owner or its officers and/or agents for or on account of any loss, injuries or damages to persons or property received or sustained by any person or persons, or from the Contractor, his servants or agents in or on account of

work done under the contract or extensions of, or additions thereto, whether caused by negligence or in consequence of any negligence in guarding the same, or by or account of any improper materials used in its construction or by or on account of any accident or of any acts of omission of the Contractor, his servants or agents; and Contractor further agrees that so much of the money due to him under this agreement as shall be considered necessary by the Owner, may be retained until all such suits or claims for damages aforesaid have been settled, and evidence to that effect has been furnished to the satisfaction of the Owner. This covenant of indemnification shall include reasonable costs and attorney fees incurred in defense of such claim, action, or liability.

17.00 **NOT USED**

18.00 **RISK:**

The Contractor shall take all responsibility of the work and shall bear all losses resulting to him on account of the amount and character of the work, because the nature of the land in or upon which the work is done is different from what is assumed or expected or on account of the weather, floods, or other causes.

19.00 **ORDER AND DISCIPLINE:**

The Contractor shall at all times enforce strict discipline and good order among his employees, and any superintendent, foreman or other employee of the Contractor who shall appear to be incompetent, disorderly, or in any way disqualified or unfaithful to the work entrusted to him, or whom the Landscape Architect may consider prejudicial to the prosecution of the work, shall be discharged immediately upon the request of the Landscape Architect, and shall not again be employed on the work without the Landscape Architect's written consent.

20.00 **CLEANUP:**

The Contractor, on completion of the work, or significant parts thereof, shall put the site in a clean, orderly, usable manner free of construction debris, temporary structures, unnecessary materials or equipment, irregularities in ground grades or other project related conditions. The cost of such clean-up and removal shall be part of the Contract and shall in no way entitle the Contractor to additional fees or payments. Final or partial payments and execution of the Certificate of Substantial Completion will be withheld until such items are completed to the satisfaction of the Landscape Architect.

21.00 **AUTHORITY OF LANDSCAPE ARCHITECT:**

The Landscape Architect shall have the authority to reject or condemn all work or materials which does not conform to his contract; to direct application of forces to any portion of the work, which, in his judgement requires it; to order forces increased or diminished, and to decide questions which arise between the parties relative to the execution of the work. All questions or controversies which may arise between the Contractor and Owner under or in reference to this Contract shall be subject to the decision of the Landscape Architect, and his decision shall be final and conclusive upon

both parties, except in cases where time and/or financial considerations are involved; which, if no agreement in regard thereto is reached, shall be subject to arbitration.

22.00 **AUTHORITY OF OWNER:**

The Owner shall advise the Landscape Architect of changes in their financial capability, changes in their understanding of the intent of the plans, concerns for progress or quality of the work or of any other comment or concern related to the work in any way. The Owner shall not directly administer alterations to the work nor direct or supervise any employee or representative of the Contractor in any way at any time without the written consent of the Landscape Architect to both parties.

23.00 **UNCLASSIFIED WORK:**

In case any work shall be required to be furnished whether specified herein or indicated on the plans or not, or whether or not such work is typical work listed in the proposal which is in the opinion of the Landscape Architect, not susceptible of classification under the Schedule of Unit Prices, the Contractor shall and will, if ordered by the Owner, do and perform such work and furnish such materials as may be required. If possible, an agreement as to the cost and payment for said additional work will be reached and agreed upon by the Owner and Contractor. In the event of failure to reach such satisfactory agreement, the Contractor may be ordered by the Owner to proceed with such work and furnish such materials on a cost plus basis, on which basis the contractor shall receive the cost of any materials which he may be required to purchase plus ten percent (10%) and the cost of any labor which may be required to supply plus fifteen percent (15%). The ten percent (10%) and fifteen percent (15%) of such net cost are for profit, the use of the plant, tools, superintendence, overhead costs, and all other expenses incidental to the performance of such work and the furnishing of such materials, and the Contractor shall have no further claim in excess of the above; but this method of payment shall not apply to the performance of any work or the furnishing of any materials which, in part or in whole, is in the opinion of the Landscape Architect, susceptible of classification under such schedule which work or material shall be paid for in part or in whole as the case may be, at the Unit Price given in such schedule, except as herein otherwise expressly provided.

In case any work or material is required to be done or furnished under the provisions of this article for cost plus ten percent (10%) and fifteen percent (15%) as stipulated above, the Contractor shall at the end of each day, during the progress thereof, furnish to the Landscape Architect daily time slips showing the name and/or number of each workman employed thereon, the character of work his workmen are doing the wage paid or to be paid to therefore. If required, the Contractor shall produce any books, vouchers, records or memoranda showing the work and materials actually paid for the actual prices therefore. Such daily time slips and memoranda shall not, however, be binding upon the Owner and if any question or dispute shall arise as to the correct cost of such work or material, the determination of the Landscape Architect upon such question or dispute shall be final and conclusive.

24.00 **CHANGES:**

The Landscape Architect shall have the right to increase or diminish all or any contract amount or items without impairing the volume or scope of this contract so long as these alterations do not change the amount of the contract price more than 35%.

Decreases in the quantity of work by more than 35% does not constitute a claim for damage or for loss of profits on the work to be dispensed with. Such alterations shall not in any way release or impair the bond or the sureties nor will any payments be made for items of work not actually constructed, regardless of the quantities shown in the bid and contract documents.

25.00 **UNAVOIDABLE DELAYS - EXTENSION OF TIME:**

If the Contractor shall be delayed in the performance of the work from any natural or unavoidable cause or for which the Owner or his authorized representative is responsible, he shall, upon written application to the Landscape Architect at the time of such delay, be granted such extension of time as the Landscape Architect shall deem equitable and just.

26.00 **SUSPENSION OF WORK:**

Should the Landscape Architect deem it necessary to suspend operations on the work due to severity of the weather, he may notify the Contractor in writing to suspend operations on the entire project or any part thereof, and in the event of such right being exercised, the Landscape Architect shall grant to the Contractor an extension of the work. The Contractor shall on not less than ten (10) days notice, again resume the work if ordered to do so by the Landscape Architect. The Owner shall also reserve the right to suspend operations for any reason that it may deem necessary for a period not longer than ten (10) days, at any one time in which event the Contractor will be allowed an extension of time equivalent to the time that the work has been suspended. Should such a suspension be deemed necessary by the Owner, the Contractor shall have no claim for damage due to such suspension.

27.00 **EXPEDITING WORK:**

(A) **Correcting Imperfections:** If the Landscape Architect or the Owner shall at any time be of the opinion that the Contractor is neglecting to remedy any imperfections in the work, or is not progressing with the work as fast as necessary to insure its completion within the time and as required by the contract, or is otherwise violating any of the provisions of this contract, said Landscape Architect, on behalf of the Owner, shall have the power, and it shall be his duty to notify the Contractor to remedy such imperfections and/or proceed more rapidly with said work, or otherwise comply with the provisions of this contract.

(B) **Annulment:** In such case the Owner may give the Contractor ten (10) days written notice, and at the end of that time, if the Contractor continues to neglect the work, the Owner may provide labor and materials and deduct the cost from any money due the Contractor under this agreement and may terminate the employment of the Contractor

under this agreement and take possession of the premises and of all materials, tools, and appliances thereon, and employ such forces as may be necessary to finish the work. In such case the Contractor shall receive no further payment until the work shall be finished, when, if the unpaid balance that would be due under this Contract exceeds the cost to the Owner of finishing the work, such excess shall be paid to the Contractor; but if such cost exceeds such unpaid balance, the Contractor shall pay the difference to the Owner.

(C) Owner May Do Part Of Work: Upon failure of the Contractor to comply with any notice given in accordance with the provisions hereof, the Owner shall have the alternative right, instead of assuming charge of the entire work, to place additional forces, tools, equipment, and materials on parts of the work for the purpose of carrying on such parts of the work and the costs incurred by the Owner in carrying on such parts of the work shall be payable by the Contractor and such work shall be deemed to be carried on by the Owner on account of the Contractor, and the Contractor shall be allowed therefore, the contract price. The Owner may retain the amount of the cost of such work, with seven percent (7%) added for any such sum or sums due or to become due the Contractor under this agreement.

28.00

PAYMENT TO CONTRACTOR:

At the end of each thirty (30) days following the agreed upon starting date for the work under this agreement, the Contractor shall estimate the quantities of work completed and have the quantities invoiced verified by the Landscape Architect. The Landscape Architect will certify the amount due the Contractor within 5 working days after receipt. The Owner shall pay the Contractor up to ninety percent (90%) of the amount of the approved invoice within thirty (30) days after receipt.

All partial and final payment requests shall be submitted in duplicate on AIA Documents G 702 and G 703, Application and Certificate for Payment, and shall completely describe and account for all items in accordance with the provisions of the forms. No other forms of payment requests will be accepted.

Upon completion of the work and certification of acceptance by the Owner and its representatives, the ten percent (10%) retained during construction shall be paid to the Contractor. In the event a performance bond is not in force and effect, the retained ten percent (10%) shall be retained by the Owner for the one year guarantee period, after which and if all work is still in acceptable condition the Contractor shall be paid in full.

At the time of issuance of the Certificate of Completion, the Contractor shall be paid the full amount due him within forty-five (45) days. All prior estimates upon which partial payments have been made being merely estimates, shall be subject to adjustment in the final certification. Before final payment is made, the Contractor shall show to the Owner satisfactory evidence that all just liens, claims and demands of his employees or from parties from whom material used in the construction of the work may have been purchased or procured as duly satisfied, and that the material furnished and the work done are fully released from all such liens, claims and demands.

29.00 **ACCEPTANCE:**

The Landscape Architect shall inspect the work for acceptance within ten (10) days of receipt of written notice from the Contractor that he is ready for such inspection. The listing of items to be completed on a "Certificate of Substantial Completion" or "Punch List" does not constitute a final acceptance of the work and the Contractor shall not submit a final billing on that basis.

30.00 **NOT USED**

31.00 **TIME AND RESPONSIBILITIES:**

The work under this agreement shall be inspected by the firm of M. C. Smith Associates and Architectural Group, Inc., Landscape Architects and Architects, 529 Greenwood Avenue S.E., East Grand Rapids, Michigan 49506, herein called the Landscape Architects. The Contractor shall be responsible to said firm as agents of the Owner, as well as the Owner for proper execution of said agreement. The Contractor shall notify the Landscape Architect, in writing, of concerns about their ability to conform to work progress schedules outlined at the pre-construction of any other work related items in ample time to avoid unnecessary delays or alterations to the Contract.

32.00 **DAMAGES FOR NONCOMPLETION:**

The Owner shall withhold the aforestated amount of not less than \$500.00 Dollars per day for each day of suitable working weather, except for Sundays and legal holidays, that the Contractor exceeded the specified date for completion of the work as compensation for liquidated damages and additional costs suffered by the Owner due to the Contractors failure to complete the work as specified.

In the event the Landscape Architect is required to provide construction administration for inspection services after the contract completion date, the cost of this work shall be paid by the Owner. The cost of these services shall be \$100.00 per hour, including: all travel time; all on-site time; and all office administration time. The Landscape Architect shall be paid for travel expense to and from the site at \$.50 per mile. The cost of these services shall be deducted from the contract retainage and paid by the Owner to the Landscape Architect. A Change Order will be issues to reflect these costs.

33.00 **GUARANTEE:**

The Contractor shall guarantee all materials, equipment, and workmanship against defects for a period of one (1) year from the date of final acceptance. Any failure of materials during this period shall be removed and completely replaced and guaranteed for one year at no additional cost to the Owner.

34.00 MAINTENANCE:

The Contractor shall provide maintenance, as specified, on all landscape materials during and after construction through the one (1) year guarantee period, which begins on the date of certification of final acceptance or as herein specified.

35.00 CONTRACTORS IDENTIFICATION SIGN:

The Contractor shall furnish and install a contractors identification sign which lists all construction contractors and design and engineering firms by name and type of work. Sign layout shall be approved by the Landscape Architect prior to painting. Location on the site shall be as directed by the Landscape Architect. The Contractor shall furnish this sign as part of the contract with no additional cost to the project.

36.00 SHOP DRAWINGS:

The Contractor shall submit a electronic copy of all shop drawings for any manufactured or fabricated item of work for review and approval prior to commencement of that work. Subcontractor shop drawings shall be submitted through the prime Contractor and shall be checked and approved by the Contractor prior to submission to the Landscape Architect.

Shop drawings shall clearly and accurately illustrate every aspect of the item of work and include dimensions, types of materials, fasteners, finishes, space requirements, performance and quality ratings and approvals and all other relevant information.

Shop drawings shall be required for all work items that are not totally described in the plans and specifications or for items that require unusual or specialized fabrication, whether or not it is so stated.

Submit shop drawings with a duplicate transmittal indicating the date of submission, project title, contractor identification, number and title of each item submitted, deviations from contract and statement of action required. Approved shop drawings shall be signed by the Contractor and the Landscape Architect. The Landscape Architect will distribute the reviewed shop drawings via e-mail in a timely manner.

37.00 PRODUCT DATA AND SAMPLES:

Product data and samples shall be submitted for all items specified or requiring further clarification, for purposes of modifying or substituting a specified material or to determine acceptability of a given product. Submissions should include the name of the source, specific product characteristics and capabilities, product cost and all other relevant information in sufficient size and description to make a realistic evaluation of the material.

38.00 MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS:

All product materials, equipment and site furnishings of any kind shall be installed as

specified and recommended by the manufacturer. The Contractor shall obtain from each manufacturer their comprehensive specifications and recommendations for utilization of their product. All assembly, installation and utilization shall be in conformance with the manufacturer's specifications and recommendations. In the event that any portion of these specifications and related plans and details vary from the manufacturer's specifications and recommendations, it shall be the Contractors' responsibility to immediately notify the Landscape Architect prior to any construction for clarification and directions on product utilization and installation.

39.00 **RECORD DOCUMENTS: (AS-BUILTS)**

Record documents are defined to include those documents or copies relating directly to performance of the work, which Contractor is required to prepare or maintain for Owner's records, recording work as actually performed. In particular, record copies show changes in work in relation to work in which shown or specified by original contract documents; and show additional information of value of Owner's records, which was not indicated in original contract documents. Record copies include marked-up product data submittals, record samples, field reports for variable miscellaneous record information on work which is otherwise recorded only schematically or not at all.

a. At the time of substantial completion, submit record drawings to Architect for Owner's records. Organize into sets, bind and label sets for Owner's continued use.

40.00 **OPERATING AND MAINTENANCE DATA: (MANUALS)**

"Operating and Maintenance Manuals" are to be prepared for the Owner and the Owner's personnel. These manuals contain information necessary for the safe and efficient operation and maintenance of equipment and operating systems, and information relative to the inspection, care and maintenance or repair of products and finishes.

Each manual shall include the following:

- General system or equipment description.
- Copies of applicable shop drawings and product data.
- System equipment identification, including name of manufacturer, model number and serial number of each component.
- Operating instructions.
- Emergency instructions.
- Wiring diagrams.
- Inspection and test procedures.
- Maintenance instructions and procedures.
- Precautions against improper use and maintenance.
- Copies of Warranties.
- Repair instructions including spare parts listing.
- Names and addresses of sources of required maintenance materials and related services.

41.00 **CONTRACTOR COORDINATION:**

The Contractor shall make every effort to coordinate every aspect of his work with that of other contractors on the site to assure an efficiently managed and proper installation. Special attention shall be given to the coordination of utility service installation and related construction.

TECHNICAL SPECIFICATIONS

GENERAL SITE CONDITIONS - SECTION 02050

PART I - GENERAL

1.01 Maintenance of Survey Information

The Contractor shall be responsible for maintaining all layout information, elevations, benchmarks, and general site information provided or approved by the Owner and/or Landscape Architect. Survey or layout information lost or displaced or in any way disturbed through neglect or any construction activity by the Contractor or any of his employees or representatives shall be restored by the Contractor at his expense.

1.02 Layout and Staking

The General Contractor shall be responsible for layout staking, grade staking and for getting approvals for all work for himself and/or his sub-contractor. The Contractor shall employ a Registered Land Surveyor who shall establish and maintain all lines and levels required for laying out and constructing the work. The Contractor agrees to assume all responsibility due to inaccuracy of any work of said Surveyor, and including incorrect benchmarks, their loss or disturbance.

The Contractor shall provide on-site assistance for any work specified to be laid out by the Landscape Architect. The Contractor shall also be responsible for any additional staking required for field adjustments by the Landscape Architect.

1.03 Soil Testing

The General Contractor shall be responsible for all soil testing throughout the course of the project on a daily basis or as required. Testing shall be done to ensure the stability of all graded areas and proposed items of work. All testing shall be conducted by a professional soil testing specialist. Results of all testing shall be delivered to the Landscape Architect weekly, upon completion.

1.04 Sub-Contractor Layout Verification

Each sub-contractor shall verify layout stakes, grades and other information as it pertains to his particular work and report any errors or inconsistencies to the Landscape Architect before commencing work. Starting the work shall imply his acceptance and willingness to correct any errors at his expense.

1.05 Protection of Existing Features

The Contractor shall save and protect, to the highest degree possible, all areas and features of the site that are not identified as construction items. Unnecessary disturbances or damage shall be considered the responsibility of the Contractor for complete restoration at no additional expense to the Owner.

1.06 **Water, Power, and Sanitary Sewer**

The Contractor shall provide all water, electrical, mechanical and toilet services and facilities as may be required to properly execute the Contract and provide proper maintenance throughout the guarantee period.

1.07 **Miss Dig**

The Contractor shall be responsible for notification to MISS DIG, one number utility alert (1-800-482-7171), for location of public utility service lines where digging or deep excavation operations could disturb or sever such lines. The Contractor shall pay for all repairs, restoration and damages resulting from failure to properly fulfill such notification and location requirements.

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

GENERAL SITE CONDITIONS - SECTION 02050

PART I - GENERAL

1.01 Maintenance of Survey Information

The Contractor shall be responsible for maintaining all layout information, elevations, benchmarks, and general site information provided or approved by the Owner and/or Landscape Architect. Survey or layout information lost or displaced or in any way disturbed through neglect or any construction activity by the Contractor or any of his employees or representatives shall be restored by the Contractor at his expense.

1.02 Layout and Staking

The General Contractor shall be responsible for layout staking, grade staking and for getting approvals for all work for himself and/or his sub-contractor. The Contractor shall employ a Registered Land Surveyor who shall establish and maintain all lines and levels required for laying out and constructing the work. The Contractor agrees to assume all responsibility due to inaccuracy of any work of said Surveyor, and including incorrect benchmarks, their loss or disturbance.

The Contractor shall provide on-site assistance for any work specified to be laid out by the Landscape Architect. The Contractor shall also be responsible for any additional staking required for field adjustments by the Landscape Architect.

1.03 Soil Testing

The General Contractor shall be responsible for all soil testing throughout the course of the project on a daily basis or as required. Testing shall be done to ensure the stability of all graded areas and proposed items of work. All testing shall be conducted by a professional soil testing specialist. Results of all testing shall be delivered to the Landscape Architect weekly, upon completion.

1.04 Sub-Contractor Layout Verification

Each sub-contractor shall verify layout stakes, grades and other information as it pertains to his particular work and report any errors or inconsistencies to the Landscape Architect before commencing work. Starting the work shall imply his acceptance and willingness to correct any errors at his expense.

1.05 Protection of Existing Features

The Contractor shall save and protect, to the highest degree possible, all areas and features of the site that are not identified as construction items. Unnecessary disturbances or damage shall be considered the responsibility of the Contractor for complete restoration at no additional expense to the Owner.

1.06 **Water, Power, and Sanitary Sewer**

The Contractor shall provide all water, electrical, mechanical and toilet services and facilities as may be required to properly execute the Contract and provide proper maintenance throughout the guarantee period.

1.07 **Miss Dig**

The Contractor shall be responsible for notification to MISS DIG, one number utility alert (1-800-482-7171), for location of public utility service lines where digging or deep excavation operations could disturb or sever such lines. The Contractor shall pay for all repairs, restoration and damages resulting from failure to properly fulfill such notification and location requirements.

TECHNICAL SPECIFICATIONS

REMOVAL ITEMS - SECTION 02100

PART I - GENERAL

1.01 Description

This work shall consist of the complete removal of all items called for in the plans and specifications or as otherwise implied in a safe and orderly manner creating as little disturbance as possible.

All areas indicated for construction of any kind shall be cleared of any debris, undergrowth, weeds, stumps, roots, and marked trees which might interfere with the progress of that work. Unmarked trees or any plant materials indicated to be saved by the Landscape Architect shall be given special protection as specified.

PART II - PRODUCTS (Not Applicable)

PART III - EXECUTION

3.01 Protection of Items to Remain

Extreme care shall be utilized when removing any item adjacent to structures, utilities, paving, vegetation or any item not indicated for removal or relocation. These items shall be properly protected as required to keep them from damage or other disturbance of any kind during the course of the work.

Care should be taken to work from open areas when working around plants that are to be saved to avoid unnecessary soil compaction and other damages that might occur. Only hand methods shall be utilized for removal of roots and debris under the drip line of trees that are to remain.

3.02 Plant Damage Compensation

Damage inflicted to any trees or plant materials by the Contractor shall be compensated for at a rate established by the American Society of Consulting Arborists, Inc.

3.03 Removal Responsibility

All debris, trees, stumps, or soil to be cleared and removed from the project area shall be disposed of off the site at an approved disposal area at the arrangement and expense of the Contractor. No materials will be stockpiled on site for future disposal nor will any excavation areas be left in unsafe or unsightly conditions at days end. The Contractor will be responsible for all transportation and disposal fees associated with this work. Burning of cleared, grubbed, or construction waste materials is not permitted on the Owner's property.

3.04 Utility Shut-Off

The Contractor shall ascertain the location of all existing utilities and accept total responsibility for shut-off and avoidance of all such utilities during construction. All utilities to be disconnected, plugged, and capped, or otherwise taken out of service shall be the responsibility of the Contractor and shall be properly executed with skilled tradesmen in accordance with the standards and practices of the trade.

TECHNICAL SPECIFICATIONS

EARTHWORK AND GRADING – SECTION 02200

PART 1 - GENERAL

1.01 Description

The work consists of all work as called for by the plans and/or proposal form and may include: rough and finish grading to approved grade stakes; excavation of organic or unstable soils; excavation, stockpiling and redistribution of topsoil; placement of sand base for construction items not covered by sub-contractors; placing and grading supplemental topsoil; and all other grading and excavation operations, unless otherwise called for in the plans and specifications, all in conformance to Act 347, Soil Erosion and Sedimentation Control, as locally administered and enforced.

PART II - PRODUCTS

2.01 Fill Materials

Fill and backfill materials shall be MDOT Class II or approved clean, porous granular materials free of clay, rock or gravel larger than 2" in any dimension, debris, waste, frozen materials, vegetation or other deleterious matter.

2.02 Subbase Materials

Subbase materials shall be the specified properly graded mixture of natural or crushed gravel, crushed stone, crushed slag or natural processed sand that will readily compact to the required density and remain in that state under normal conditions.

2.03 Topsoil

Topsoil shall be the surface layer of soil with no admixture of refuse or any material toxic to plant growth. It shall be reasonably free from subsoil and stumps, roots, brush, stones (1 inch or more in any dimension), clay lumps or similar objects. Existing vegetation including brush and noxious weeds shall be removed from the soil surface and disposed of prior to stripping of the topsoil. Ordinary sod can be thoroughly broken up and intermixed with the soil during handling operations. Topsoil shall be classifiable as a loam, silt loam, silty clay loam, or clay loam, as determined from the Bureau of Plant Industrial, Soils and Agricultural Engineering, USDA triangular soil texture chart. The topsoil, unless otherwise specified or approved, shall have a ph range of approximately 5.5 to 7.5, when tested in accordance with the methods of testing of the Association of Official Agricultural Chemists in effect on the date of invitation of bids. The organic content shall not be less than 3% nor more than 20% as determined by the wet-combustion method (chromic acid reduction) test.

2.04 **Screened Imported Topsoil**

Prior to obtaining additional material to be used for imported topsoil, the Landscape Architect shall be notified of the source of topsoil to be furnished by the Contractor. The topsoil shall be inspected to determine if the selected soil meets the requirements of well drained soil specified and to determine the depth to which stripping will be permitted. At this time, the Contractor shall be required to take representative soil samples from several locations within the area under consideration to the proposed stripping depths for testing purposes as specified above and shall have them professionally tested by a laboratory approved by the Landscape Architect prior to approval of the soil. Topsoil must be screened to remove all debris.

2.05 **Chips and Fines**

Chips and Fines mixture shall be compacted to 95% or as to meet ADA guidelines for accessibility. The material shall be 100% crushed limestone material, commonly known as limestone screening, shall be free of all dirt, clay and foreign material. Limestone aggregate shall meet the following gradation requirements:

Sieve Size	Total % Passing
3/8"	100%
no. 4	65-85%
no. 8	40-65%
no. 16	30-40%
no. 30	25-30%
no. 50	20-25%
no. 100	15-20%
no. 200	10-20%

The name and location as well as sieve analysis shall be provided as a submittal as well as a five (5) gallon sample of material shall be approved by the Landscape Architect prior to construction.

Limestone shall be delivered to the site in a thoroughly blended condition and shall be handled in such a manner that will minimize segregation and avoid mixing of underlying aggregate with the limestone.

PART III - EXECUTION

3.01 **Stripping Topsoil**

Topsoil in areas that are to be graded shall be stripped to the depth designated and stockpiled in an area approved by the Landscape Architect outside of the construction work areas. Stockpiles shall be graded and shaped to ensure proper drainage and minimize wind erosion.

3.02 Removal of Unsatisfactory Materials

All organic, unstable or otherwise unsatisfactory soils shall be excavated to stable soil and replaced with an approved sand or gravel compacted as specified.

3.03 Excavation for Structures

Grading for structures shall be to the tolerances specified and shall extend sufficient distances from footings and foundations to permit placing and removal of formwork, installation of services, other construction operations and inspection.

3.04 Placing Fill

During grading and filling operations, all fill shall be placed in ten inch (10"), or less, layers and compacted by operating heavy track or rubber tired equipment over it.

3.05 Compaction of Soil

Soil compaction for all graded or fill materials shall be at least 95% ASTM D 1557 or Proctor Density and shall be achieved under optimum moisture conditions unless otherwise specified.

3.06 Grade Tolerance

All earthwork grading shall be within one inch (1" or 0.083') of the elevations called for on the plans. All pavement and surface grading; and curb and gutter elevations shall be within one quarter inch (1/8" or 0.0104') of the elevations called for in the plans. All grading shall drain uniformly to designated low points and all changes in elevation and transition areas shall be with gentle, rounded gradients.

No horizontal walk grades will exceed 5% (1 in 20) with the exception of curb ramps which may be up to 8.33% (1 in 12) for a distance of not over 6 feet. No walk cross slopes shall exceed 2% (1 in 50). No barrier free parking spaces and/or loading aprons shall exceed 2% (1 in 50) in any direction.

The Landscape Architect may check finished grades with a smart level to ensure compliance with the plans, Americans with Disabilities Act (ADA) and the requirements stated above. All paving not meeting these requirements shall be removed and replaced by the Contractor at no cost to the Owner.

3.07 Maintenance of Graded Areas

Recently completed sub and finished grade work areas shall be protected from erosion, traffic and accumulation of debris. The Contractor shall scarify, regrade and otherwise restore settled, eroded, and/or rutted areas to the specified grades and approval of the Landscape Architect.

TECHNICAL SPECIFICATIONS CONCRETE WORK - SECTION 02514

PART I - GENERAL

1.01 Description

This work shall consist of all labor, equipment, and materials necessary for complete installation of site concrete work as called for in the plans and details.

1.02 Testing

Standard 6-inch cylinders for compression tests of the concrete shall be prepared from each pour. Concrete for test specimens and assistance for making them on the project will be furnished by the Contractor. The furnishing of molds, the actual making of the test cylinders and all testing will be performed by the Contractor.

The sample shall be tested in accordance with the specification of the American Society for Testing Materials, Serial Designation C-31 or the current Michigan Department of Transportation Specifications. If the average results from test specimens cured at an average temperature of 70° F are below the 28 day required compressive strength it will be sufficient reason for rejecting for further use the materials entering into the concrete.

PART II - PRODUCTS

2.01 Concrete

Concrete shall be Type A, air-entrained concrete with a slump of not less than 3 inches nor more than 4 inches unless otherwise specified.

Portland Cement shall conform to the requirements of the current ASTM Specifications for Air-Entraining Portland Cement.

Fine Aggregate shall conform to the requirements for "Natural Sand, 2NS" of the current Standard Specifications of the Michigan Department of Transportation.

Course Aggregate shall conform to the requirements for Course Aggregate, 6 A (limestone) of the current Standard Specifications of the Michigan Department of Transportation.

Course aggregate for exposed aggregate and sandblasted concrete to be natural, dense graded ½ inch round stone with a maximum of five percent (5%) fines with the stone. Only washed and graded stone will be accepted. Crushed stone will not be accepted. Aggregate with soft, porous, calicious or other low-quality stone will be rejected. Color of aggregate to be natural stone with a predominance of bluff or brown stone.

At location on Project selected by Landscape Architect, place and finish 2 each, 3'x3'. Demonstrate methods of obtaining consistent visual appearance, including materials, workmanship, and curing method to be used throughout Project. Retain samples of cements, sands and aggregates used in mock-up for comparison with materials used in remaining Work.

Textural indicators shall be as per plans and detail. Provide full size sample for approval of Landscape Architect.

Water for mixing and curing the concrete shall be from Municipal Potable Water Supply, unless otherwise specified.

2.02 Reinforcing

Steel Reinforcement Materials shall conform to the requirements of current Standard Specifications of the Michigan Department of Transportation.

2.03 Additives

Curing of the concrete shall be performed by one of the appropriate methods as specified for "Concrete Curing Agents" in the current Standard Specifications of the Michigan Department of Transportation. Only clear curing agents or other methods that will not affect the natural colorations of the concrete will be permitted. Care shall be taken to avoid using agents or methods that affect the future use of specified sealants.

Calcium chloride shall not be used in any concrete without written approval from the Landscape Architect.

Ready mix concrete shall conform to the requirements of ASTM C 94. Batch plants must meet the requirements of ACI 304. Hand mixing will not be permitted except in emergencies or for very small quantities.

Air entraining admixtures shall conform to ASTM C 260 and shall be constituted so that the total air content is not less than 5% nor more than 8%.

2.04 Synthetic Fiber Reinforcing

Synthetic fiber reinforcing shall be 100% virgin homo polymer polypropylene fibrillated fibers as manufactured by the Fibermesh Company, 125 Meridan, Dearborn, Michigan, (313) 278-7205, by Forta Corporation, 100 Forta Drive, Grove City, Pennsylvania 16127 (1-800-245-0306), or approved equal.

Synthetic fibers shall be incorporated into all concrete whether indicated on the drawings or not. The incorporation of said fibers shall be documented on the delivery ticket from the ready mix producer.

Fibers shall be added to the concrete in strict accordance with manufacturer's printed instructions. Synthetic fibers shall be 3/4" in length and shall be added at a rate of 1-1/2 lbs./cubic yard of concrete.

PART III - EXECUTION

3.01 Concrete Mixing

The proportioning of aggregates and cement shall be weight in accordance with the current Michigan Department of Transportation "Mortar Voids" theory with the quantities of each shown on the delivery tickets for each batch.

Concrete shall be mixed only as required for immediate use and any which has developed initial set shall not be used. Concrete which has partially hardened, shall not be retempered or remixed. The use of a fractional sack of cement will not be permitted unless the fractional part is measured by weight. The mixer shall be cleaned thoroughly each time when out of operation for more than 30 minutes.

Concrete mixes will be measured as described in the current "Method of Slump Test for Consistency of Portland Cement Concrete" of the ASTM Designation C-143. The concrete shall at all times be of such consistency and workability, that it can be puddled readily into corners and angles of the forms and around joints, dowels, tie bars and reinforcement without excessive spading, segregation or undue accumulation of water or laitance on the surface.

The mixing of concrete in truck mixers enroute from the batching plant to the site of the work will be permitted only for mixers equipped with an approved revolution counter which will either record the number of revolutions of the mixer drum at mixing speeds and the number of revolutions at agitating speeds, for each batch, or will record the revolutions of the mixer drum only

when the mixer is operating at mixing speeds. Truck mixers not so equipped shall mix the concrete at the batching plant site. The mixing shall be done on a reasonable level area, sloping not more than 2 percent in any direction.

The concrete shall be discharged within a period of one hour after the introduction of the mixing water with the dry materials or within a period of 1-1½ hours after the cement has been placed in contact with the aggregates, and it shall be within the specified limits for consistency and air content and it shall not be segregated.

3.02 **Forming**

Concrete which is improperly formed, is out of alignment or level or displays surface defects shall be removed and replaced by the Contractor at no additional cost to the Owner unless patching or other corrective measures are approved. Approved permission to patch or otherwise correct such defects does not waive the Owners Agent's right to require complete removal of the defective work if the corrective measures do not adequately restore the quality and appearance of the concrete.

Forms shall be metal or wood, straight and free from distortion, and of sufficient strength to resist springing during the process of depositing and finishing the concrete. Wood forms or flexible steel forms shall be used on circular curb or special sections and shall be defined as any curved section of curb or wall constructed on a radius of 150 feet or less. They shall be of an approved section with a flat surface on top. The forms shall be of the full depth of the structure and shall be well built, substantial and unyielding. They shall be securely staked, braced, and tied to the required line and grade and sufficiently tight to prevent leakage of mortar. The inside surface of the forms shall be oiled with a light, clear paraffin-base oil which will not discolor or otherwise injuriously affect the concrete as on the walls to be treated with Thoroseal or equal.

Placing concrete shall not be permitted until the subgrade and forms have been approved by the Landscape Architect. The subgrade shall be wetted and the concrete deposited to the proper depth. The concrete shall be spaded sufficiently to eliminate all voids and tamped to bring the mortar to the surface, after which it shall be floated smooth and even by means of a wooden float.

3.03 **Reinforcement**

All steel reinforcement shall be accurately placed in the position shown on the approved plans and firmly held during the placing of concrete. When placed

in the work, it shall be free from dirt, rust, mill scale, paint, oil or other foreign material. Bars shall be placed with a variation in spacing between adjacent bars of not more than one-sixth of the spacing shown on the plans, and the clear distance from the near surface of the concrete to the reinforcement shall not vary from the distance shown on the plans by more than one-fourth the plan distance. Bars shall be tied at all intersections except where the spacing is less than one foot in each direction in which case alternative intersections shall be tied. Supports for reinforcement which are to remain in the work shall be either precast concrete blocks of approved shape and dimensions, or approved preformed steel bar-chairs.

Bars shall not be spliced except as provided on the plans or as authorized by the Landscape Architect.

3.04 **Finishing**

Edges on all concrete shall be rounded to a radius of 1/4 inch with an approved finishing tool unless otherwise specified. All joints shall be rounded with an approved double edging tool having a radius of 1/4 inch on each side and the surface shall then be brushed lightly to produce a slightly roughened surface and remove the finishing tool marks except where otherwise specified.

All Portland Cement Concrete shall be finished with a light broom finish in the direction indicated on the plans, unless otherwise specified.

Exposing Aggregate: Begin exposing aggregate when paving will bear weight of cement mason on knee boards without indentation. Brush with bristle broom and fine water spray to remove excess mortar until exposure of aggregate is uniform and at proper depth as approved by the Landscape Architect.

3.05 **Protection**

Protection of Concrete shall be performed in the following manner:

Sealant for curing shall be applied immediately in accordance with manufacturer's recommendations. (See part 3.05a)

Protection Against Rain - The Contractor shall take such precautions as are necessary to protect the concrete from damage.

Hot Weather Limitations - Casting of concrete during hot weather shall be limited by the temperature of the concrete at the time of placing. Concrete shall not be cast when the temperature of the concrete is above 90° F. Care

shall be taken to properly wet and protect all concrete placed in direct sun or in hot weather.

Cold Weather Limitations - No concrete shall be placed unless the temperature of the air in the shade and away from artificial heat is at least 25° F. and rising unless specifically approved.

Protection from Cold Weather - The Contractor shall be responsible for the concrete placed during cold weather and any concrete injured by frost action shall be removed and replaced at his expense.

3.05a **Sealant**

Sealant for curing shall be Kure-N-Seal 25 LV by Sonneborn. Sealant shall be applied at a coverage rate of 250 square feet per gallon. For application, proper surface preparation and drying time, consult the coatings manufacturer for more instructions. Sealant must comply with ASTM C 1315-96 Type I, Class A. Kure-N-Seal 25 LV by Sonneborn is available from S. A. Morman & Co. ph. 1.800.968.8012.

Sealant for curing of exposed aggregate and sandblasted concrete shall be Kure-N-Seal 30 by Sonneborn. Sealant shall be applied at a coverage rate of 250 square feet per gallon. For application, proper surface preparation and drying time, consult the coatings manufacturer for more instructions. Sealant must comply with ASTM C1315-96, Type 1, Classs A. Kure-N-Seal 30 by Sonneborn is available from S. A. Morman & Co. ph. 1.800.968.8012.

For subsequent coating applications, use Sonosil Curing aid, hardening and dustproofing compound for concrete. For application, proper surface preparation and drying time, consult the coatings manufacturer for more instructions. Sonosil by Sonneborn is available from S. A. Morman & Co. ph. 1.800.968.8012.

3.06 **Curing**

Forms shall be left in place for a period of not less than 12 hours. Immediately after they have been removed, all porous or honeycomb areas thus uncovered shall be filled smooth with mortar consisting of one part cement and two parts fine aggregate. Also, the ends of all expansion joints shall be cut open to the full width of the expansion joint material.

The main supporting forms, including all shoring and bracing shall remain in place for a period of not less than seven (7) days, and for such longer period as the Landscape Architect may direct.

3.07 **Expansion Joints**

Contractor to indicate the layout of the proposed expansion joints required in all concrete areas if not shown on construction documents.

Expansion joints at to be placed at a minimum of 30' intervals to correct elevation and profile.

Contractor to align curb, gutter; and sidewalk expansion joints.

Place joints between paving components and building or other appurtenances.

Location of expansion joints is subject to approval of the Landscape Architect.

TECHNICAL SPECIFICATIONS

JOINT FILLER AND SEALANT - SECTION 02515

PART I - GENERAL

1.01 Description

This work shall consist of the complete installation of specified expansion joint filler and joint sealant as called for in the plans and details.

1.02 Submittals

Sealant manufacturer's instructions, including limitations for application and priming. Indicate on the brochure or by transmittal which primers will be used or submit printed statement from sealant manufacturer that no primers are required for maximum adhesion.

Sealant manufacturer's standard color range for color selection. Color will be selected by the Landscape Architect.

PART II - PRODUCTS

2.01 Expansion joint material shall be pre-molded, non-staining and compatible with sealant and primer, and of a resilient nature such as closed cell resilient foam or sponge rubber. Sonoflex - F closed cell foam as manufactured by Sonneborn Building Products and available from Ersco Corporation, 2643 - 28th Street, Wyoming, Michigan, A/C 616-531-7050, or approved equal by Landscape Architect shall be used. Materials impregnated with oil, bitumen, or similar materials shall not be used. Provide back-up materials only as recommended by sealant manufacturer in writing. Joint material shall be 33% to 50% larger than joint width.

2.02 Expansion joint cap shall be white cap or snap-cap premolded P.V.C. expansion joint cap.

2.03 Joint sealant shall be MasterSeal SL 1 self-leveling polyurethane sealant as manufactured by BASF Construction Chemicals.

PART III - EXECUTION

3.01 Joint Preparation

All joint surfaces shall be dry and thoroughly clean. Remove all loose particles, dirt, paint, foreign matter, or curing compound by means not injurious to the material to be sealed and that will not change the appearance of the exposed surfaces adjacent to the

sealant joint.

3.02 **Sealant Application**

All joints shall be neatly finished to assure proper filling of voids, elimination of air pockets and maximum contact at joint interfaces.

After surfaces of joints are cleaned, joint interfaces shall be primed and then joint sealant installed over expansion joint material. Sealant shall be brought close to the surface without overflowing and form a slightly concave joint seal.

Where required because of excessive slope, a non-sag variety of the same joint sealant shall be installed with a caulking gun and the joints tooled. Where required to avoid smearing exposed surfaces of a joint, use masking tape and remove after installation.

No sealant shall be applied to a joint at temperatures other than those per manufacturer's recommendations.

Wherever possible, sealant application shall be scheduled for seasonal periods (medium temperature) when joints are at their normal size.

Sealant SHALL NOT be applied over incompatible materials, oil base or asphaltic products, any migratory saturant or any other materials or sealant in which the bonding properties and adverse effects resulting from the combination are not known.

Modification of a sealant by the addition of liquids or powders to alter its flow properties SHALL NOT be permitted.

A sealant SHALL NOT be used if the date of manufacture indicates that the sealant is more than 12 months old. Where a lesser period is recommended by the manufacturer, the lesser period shall govern.

3.03 **Quality**

Any sealed joint not completely filled or properly finished shall be reopened and replaced as directed and sealed as specified. No rough or unsightly work shall be accepted as determined by Landscape Architect.

TECHNICAL SPECIFICATIONS

LAWN SEEDING - SECTION 02910

PART I - GENERAL

1.01 Description

This work consists of the complete construction of all lawn areas as indicated on the plans or disturbed during construction, including the finish grading, tilling and cleaning the seed bed; seeding; fertilizing; mulching; weed control; specified watering; and maintaining the seeded areas through the required mowings.

PART II - PRODUCTS

2.01 Grass seed shall be applied at the rate of six pounds (6#) per thousand square feet in the following mixture.

<u>SEED</u>	<u>PERCENT/ WEIGHT</u>	<u>MINIMUM PERCENT GERMINATION</u>
Merit Kentucky Bluegrass	10%	85%
Monopoly Kentucky Bluegrass	10%	85%
Touchdown Kentucky Bluegrass	10%	85%
Manhattan II Perennial Ryegrass	25%	85%
Fiesta II Perennial Ryegrass	25%	85%
Pennlawn Creeping Red Fescue	<u>20%</u>	85%
	100%	

2.02 Mulch for hydro-mulching shall be commercially available wood cellulose fiber or wood pulp for use in spray applicators and shall be applied at a rate of 1,250 pounds per acre. All seed areas must be completely and uniformly covered.

2.03 Tackifier for mulch shall be GeoPro Matrix as available from Price & Company, Inc., telephone 1-800-248-8230.

2.04 Straw/Coconut fiber combination blanket shall be by North American Green, number SC150BN, as available from Price & Company, Inc., telephone 1-800-248-8230.

PART III - EXECUTION

3.01 Seeding Operations

The Contractor shall till; fine grade; remove all sticks, stones, debris, clay lumps, sod clods and other undesirable materials in the top four (4") inches of soil and have the Landscape Architect approve the seed bed before seeding.

After the seedbed has been prepared and approved by the Landscape Architect, the Contractor shall sow the specified seed mixture with a Brillion, or equal, mechanical seeder.

The Contractor shall incorporate an equal ratio, complete fertilizer such as 10-10-10 or 12-12-12 in the top two inches (2") of soil or in the hydro-slurry mix at a rate of four hundred pounds per acre (400#/acre).

After the seed is installed the entire seedbed area shall be hydro-mulched as specified. All seed areas must be completely and uniformly covered. Light and uneven areas will not be accepted. Care should be taken to prevent overspray of mulch on curbs, walks, pavement, etc. All overspray must be cleaned off.

For slopes of 5 on 1 (20%) or greater, the contractor shall incorporate GeoPro Matrix in combination with hydroseeding at a rate of 2000 lbs per acre. GeoPro Matrix is available through Price & Company, Inc., telephone 1-800-248-8230.

For slopes of 4 on 1 (25%) or greater and all drainage swales, the contractor shall cover the entire area with the straw/coconut combination blanket in accordance with the manufacturer's recommendations.

3.02 Season of Seeding

The normal seasonal dates for seeding shall be August 20 through October 10 and April 15 to May 25. The Landscape Architect may approve seeding of irrigated areas outside of these dates. The Landscape Architect must approve seeding at other times of the year. Seeding shall not be done when the ground is excessively wet, frozen or otherwise intillable.

3.03 Repairs

The Contractor shall be responsible for the repair of any damage to existing lawns, which may result from his work and such repairs shall be made swiftly in a thorough and workmanlike manner, with minimum inconvenience to the Owner and users of the site. Repairs shall be made to the satisfaction of the Landscape Architect.

Where lawn areas have been disturbed or damaged, the damaged lawn areas, ruts and depressions shall be cultivated, filled with topsoil, settled to proper grades and seeded to the satisfaction of the Landscape Architect.

3.04 **Maintenance**

This work consists of all labor, equipment, materials and means necessary to completely nurture, cultivate, sustain, care for or otherwise maintain all seeded lawn areas including additional fertilization and weed control as required to achieve as thick, healthy weed free turf.

All seeded lawn areas shall be maintained by the Contractor for a period of sixty (60) days following germination and for at least three (3) complete mowings.

A. Lawn Mowing

The first mowing shall occur when the grass is approximately 3½ inches in height. Mowings shall occur when the grass is within ¼ inch of 3 inches in height. Cut grass 2 inches to 2½ inches high. Not more than 1/3 of the height of the grass shall be removed in any single cutting.

All mowing shall be done with clean, freshly sharpened and properly adjusted rotary or reel type mowing equipment of reputable make and design. Mowing is not permitted when the grass blades are wet. Clippings shall be left if the grass is cut within the specified heights. Cuttings of more than 1/3 of the height shall have all clippings removed. Mowing direction should be varied with each mowing to change the patterns of wear and cut. All edge areas shall be cleanly trimmed to the same height as the rest of the lawn area.

All walks, ground cover beds, parking areas, drives and related areas shall be free of clippings or related mowing and maintenance waste before mowing is considered complete and before the Contractor leaves the job site.

B. Lawn Watering

Watering shall occur on a regular basis throughout the maintenance period and shall be adjusted to include natural rainfall if ½ inch or more falls in a two consecutive day period.

All lawn areas shall receive at least 1½ inches of water per week in porous soils and 1 inch of water in clay soils. One inch (1") of water is approximately 640 gallons of water per 1,000 square feet of lawn. Water shall be applied in not more than two equal applications per week in any given area to ensure complete and thorough wetting of the soil and root systems. Frequent, light waterings shall not be permitted.

If an irrigation system is available, the contractor shall be responsible for its complete operation during the maintenance period.

Care shall be taken to water all areas equally by adjusting rates of application

required for different soils and exposure conditions.

Every effort shall be made to water from early morning to approximately one (1) hour before mid-day. Watering during the mid-day period or during very high winds shall not be permitted without expressed approval by the Owner.

The Contractor shall furnish and/or arrange for with the Owner, all equipment and materials necessary to properly conduct all watering operations in a timely, efficient and orderly manner.

The Owner shall make available all equipment, facilities, access and water necessary for the Contractor to connect to, control, locate or otherwise utilize to achieve the specified rates and schedules for lawn watering.

The Contractor shall utilize all existing water services and irrigation systems; in the manner they were intended, to uniformly and thoroughly water all lawn areas. Spray from watering devices shall not be directed across walks, drives or parking areas or against buildings, except by expressed approval from the Owner.

Rotation of watering areas shall be in an organized, orderly manner with every effort made to completely water physically contiguous areas.

All watering shall be by spray application at rates that permit continuous absorption without puddling or flowing off-site or into other areas. Flood watering will not be permitted.

ELECTRICAL SPECIFICATIONS

SECTION 16 0100 – BUILDING ELECTRICAL WORK

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. These specifications set forth conditions, and include the work to be performed, and equipment to be installed, to implement a complete operable electrical installation.

1.2 SUBMITTAL:

- A. Submit schematics and connection diagrams for all electrical equipment. A manufacturer's standard connection diagram or schematic showing more than one scheme of connection will not be accepted unless it is clearly marked to show the intended connections.
- B. Equipment and materials descriptive literature not readily cross-referenced with the drawings or specifications shall be identified by a suitable notation.
- C. Lamp fixture descriptive sheets shall show the fixture schedule letter, number, or symbol for which the sheet applies.
- D. Sheets or drawings showing more than the particular item under consideration shall have crossed out all but the pertinent description paragraph for which the equipment applies.

1.3 CODES AND STANDARDS:

- A. These specifications are minimum requirements and shall govern except where made more stringent by other sections of this specification or local, state or federal laws or regulations. In the event of conflict between these specifications and applicable codes and regulations, the codes and regulations shall govern.

1.4 PERMITS AND INSPECTIONS:

- A. The CONTRACTOR shall obtain all necessary permits and shall pay all fees in connection with all permits, inspections and approval by the proper authorities in local jurisdiction of such work. Final inspection by the ARCHITECT will not occur until necessary certificates of satisfactory inspection are received.

1.5 DRAWINGS:

- A. Drawings and specifications are provided for assistance of the CONTRACTOR and are diagrammatic only to indicate the general arrangement and location of circuits, outlets, etc. Exact locations will be governed by the building and site where dimensioned. Deviations from the arrangement indicated to meet structural conditions shall be made with no expense to the OWNER. Throughout the progress of construction, the CONTRACTOR shall keep a set of detailed field record drawings. This requirement does not authorize any deviations from the Contract Drawings without prior approval from the ARCHITECT. The field record information shall be marked in a legible manner on prints of drawings. At the completion of work, the field record information shall be delivered by the CONTRACTOR to the ARCHITECT.

1.6 CLEARANCES:

- A. Maintain working clearances around electrical equipment as required for proper maintenance and operation, as required by current N.E.C.

PART 2 - PRODUCTS

2.1 CONDUITS:

- A. Provide rigid galvanized steel conduit, threaded, hot dipped galvanized inside and out conforming to U.L. Standard 6 and ANSI C80.1-1966 (R1971).
- B. Provide flexible interlocking steel conduits, spiral strip with oil-proof and waterproof flexible PVC jacket, used as noted on drawing.
- C. Provide rigid threaded coupling and connectors compatible with galvanized steel conduit.
- D. Flexible conduit connectors to be compression gland, liquid tight type with grounding devices.
- E. For metallic conduit, fittings shall be U.L. listed, gasketed, liquid tight, cast aluminum alloy with covers and brass or stainless steel screws. Clamps shall be hot dipped galvanized malleable iron straps with back spacers.

2.2 WIRES AND CABLES:

- A. Conductors provided on 120/208 and 480 volt power and lighting systems to be stranded per ASTM B-8 soft drawn copper for wires sizes 8 AWG through 14 AWG and stranded soft drawn copper per ASTM B-8 and IPCEAS 61-402 for 6 AWG wire sizes and larger.
- B. Insulation system shall be type (THW) rated 600V as defined and listed in Article 310 of N.E.C.
- C. Minimum size conductor utilized shall be #12 AWG for lighting and power circuits.
- D. Each power cable color coded by manufacturer.

2.3 OUTLET BOXES:

- A. Outlet boxes to be hot dipped galvanized steel, with screw-on aluminum covers. Boxes shall be liquid tight.

2.4 WIRING DEVICES:

- A. Wall Switches: 120 Volt Switches to be Specification grade, toggle handle, with totally enclosed case, rated 20 ampere, Tungsten, 60 Hertz. Switches to be Hubbell or GE. Provide flush mounted outlet boxes for switches.
- B. Receptacles: Standard Duplex Receptacle shall be full gang size, polarized, duplex, parallel blade, round-grounding slot, rated at 20 amperes, 120 volts, conform to NEMA WD-1. Ground fault receptacle shall be UL listed Class A with 5 milli-ampere sensitivity 15 ampere 120 VAC rating grounded, NEMA 5-15R. Provide flush mounted outlet box.
- C. Cover plates for standard switches and receptacles shall be **stainless steel**.

2.5 ELECTRICAL HAND DRYER:

- A. NO EXCEPTIONS: by Excell - XLERATOR, Model XL-W ; surface mounted, no-touch control; white cover.
- B. Electrical Characteristics: 115V AC, 20 amp, 2300 watts, 60 Hz.

PART 3 - EXECUTION

3.1 GENERAL:

- A. The CONTRACTOR shall provide and install all equipment as specified, required or implied in this specification. This requirement shall include all labor, materials, and incidentals in a manner consistent with good practice necessary to a complete operable installation. The systems and equipment to be provided and installed by the CONTRACTOR include:
 - 1. Complete lighting and power systems.
 - 2. Lighting fixtures and mounts.
 - 3. Connection to heating and ventilating equipment.
 - 4. Devices, fixtures, materials, panels, as specified, and all other incidentals to provide a complete electrical job.
- B. Cooperation with other trades shall be implemented by the CONTRACTOR by his reference to the Architectural and Mechanical Drawings and other sections of the specifications for work by other trades and to be carried on simultaneously or sequentially with the electrical work. This requirement is to facilitate construction to proceed with no harm to the OWNER due to the absence of cooperation. All other drawings and sections of the specifications shall become part of the electrical specifications as they relate to electrical work.
- C. The CONTRACTOR shall verify equipment dimensions to insure dimensional compatibility.
- D. The CONTRACTOR is responsible for connecting wiring and circuitry to all equipment furnished by others and/or the CONTRACTOR which requires electrical power or control.
- E. The CONTRACTOR shall demonstrate to the satisfaction of the ARCHITECT or his representative at final inspection, the wiring is complete and free from open circuits and short circuits between circuits or ground. The entire electrical installation shall be demonstrated to operate in accordance with the specifications.

3.2 CONDUIT INSTALLATION:

- A. Install the conduit in accordance with the manufacturer's recommendations. Minimum conduit size shall be 1/2 inch. In no event shall the conduit size be less than required by National Electric Code for the wire size and number indicated. No wire junction shall be allowed except at outlets. All taps and splices shall be made in outlet boxes. Size conduit per THW insulation fill to allow for additional future wires.
- B. Run conduit parallel to or at right angles to building lines. Support conduit at a maximum of 8 feet on center.
- C. Bends shall be standard ells with a maximum equivalent of four quarter bends in any run between pulling joints.
- D. Paint the ends of the conduit jointing couplings or threaded fittings with zinc rich coating of at least 90% purity zinc.
- E. Fasten by lock nut and bushing in the inside and locknut in the outside of all conduit entering boxes.
- F. Provide flexible conduit connections to all motors, and vibrating equipment. Flexible conduit shall be a minimum 18 inches in length and shall be sufficiently long to enable motor to be moved and to allow the disconnecting of the motor coupling without disconnecting the motor and shall be equipped with approved type grounding devices to ensure continuity between the conduit and the connection.

- G. Clean all conduit thoroughly inside and outside after installation and just before pulling cables.
- H. For exposed runs, attach surface mounted conduit with clamps and use only approved conduit type of fittings or outlet boxes.
- I. Install only undamaged conduit. Plug ends to prevent entry of dirt and moisture.
- J. Layout conduit routing to avoid structural obstructions and minimizing crossovers.
- K. Conduit shall be securely attached to the building structure by means of concrete inserts or expansion anchors. Unless otherwise indicated all electrical equipment shall be spaced at least 1/4 inch from the wall with hanger clamps to Unistrut, Super Strut, or equal.
- L. Anchor Methods:
 - 1. Concrete or CMU Surfaces: Self-drilling anchors or power-driven studs.
- M. Conduit shall be as shown on plans and/or as required for the installation of outlets and devices shown on drawings. Proper location of conduits shall be the responsibility of the Electrical Contractor who shall avoid interference with other trades.

3.3 WIRE & CABLE INSTALLATION:

- A. Install only after completion of work which might cause damage to wires or conduit.
- B. Clean out or replace conduit in which dirt, water, concrete, or other foreign matter has been allowed to accumulate, before installing wiring.
- C. Identification of insulated conductors: Mark on outer cover giving voltage, type and size. In addition, identify each end of each conductor by wire marking tape or sleeve.
- D. Splices:
 - 1. No wire splices allowed in entire length of conduit or raceway.
 - 2. Make splices in electrical enclosures.
- E. Termination of Conductors:
 - 1. Insulated type compression lugs.
 - 2. At distribution equipment containing aluminum bus bars; use aluminum copper lugs rated and approved for the application.

3.4 WIRING DEVICE INSTALLATION:

- A. Mount switches 42 inches above finished floor, unless otherwise noted.
- B. Coordinate switch-mounting location with architectural detail.
- C. Mount receptacles 12 inches above finished floor.
- D. Install coverplates on all wiring devices.
- E. Installation in accordance with drawings, submittals and manufacturers recommendations.

3.5 **GROUNDING INSTALLATION:**

- A. Bond the non-current carrying parts of all electrical equipment installed under this contract including metallic raceways, raceway supports, motor, equipment enclosures by means of bar copper cable to the existing lighting panel ground bus located in electrical room.
- B. All power and receptacle circuit conduits shall include a copper ground conductor sized per the N.E.C. Attach grounding conductors to equipment by means of approved copper alloy solderless grounding lugs or clamps which shall be secured to the equipment and the grounding point by means of hexhead cap screws or machine bolts after the contact surfaces have been cleaned to bright metal.
- C. Ground conductors run in conduit with circuit conductors are to be securely connected inside the junction boxes or enclosures. Ground conductors terminating at the panelboards to be terminated at the ground bus. Splices in ground conductors shall be made by the "Cadweld" process by Erico Products, Inc., Continental Industries "Thermoweld", or equal.

END OF SECTION 16 0100

TECHNICAL SPECIFICATIONS
ELECTRICAL BASIC MATERIALS AND METHODS - SECTION 16050

PART I - GENERAL

1.01 WORK INCLUDED:

- A. Electrical basic requirements.
- B. Existing work.
- C. Connection of utilization equipment.
- D. Supports.

1.02 RELATED REQUIREMENTS:

- A. General Conditions.

1.03 REGULATORY REQUIREMENTS:

- A. Conform to Michigan State Electrical Code, State Electrical Administrative Board and State Fire Marshall requirements.
- B. Conform to National Electrical Code, NFPA 70, where not in conflict with State requirements.
- C. Obtain permits, and certified inspection and approval from State Electrical Administrative Board and local authority having jurisdiction.

1.04 PROJECT CONDITIONS:

- A. Verify field measurements and circuiting arrangements are as shown on drawings.
- B. Report discrepancies to Architect/Engineer before disturbing existing installation.

1.05 QUALITY ASSURANCE:

- A. Perform work to requirements of NECA Standard of Installation.
- B. Use personnel with appropriate experience and wearing required protection to perform work on energized equipment and circuits.
- C. Review submittals for equipment furnished under other Sections, prior to

installation and electrical rough-in. Verify location, size and type of connections. Coordinate details of equipment connections with supplier and installer.

- D. All Materials: Obtain approval from Architect/Engineer in writing, before order for material is placed, and conform with the standards of the Underwriters Laboratories, Inc. in every case where such a standard has been established for the type of material in question.
- E. Provide three copies of affidavits acceptable to the State Fire Marshall which provide proof from a nationally recognized testing laboratory that each fixture used on the project meets the requirements of the letter issued by the Fire Safety Board titled "Tentative Guidelines for Use of Formed Plastic Materials".
- F. At completion of the work, furnish to the Architect/Engineer, for Owner, three bound operating instructions, wiring diagrams, project record drawings, and certificates of inspection.
- G. Guarantee/Warranty:
 - 1. Guarantee products one (1) year minimum free from mechanical defects in manufacture.
 - 2. Warranty workmanship one (1) year free from defects.

1.06 SUBSTITUTIONS:

- A. No substitutions of equipment will be permitted where specific trade names or manufacturers are referenced, unless written approval is given by Architect/Engineer, such requests for approval will indicate difference in price, if any.

PART II - PRODUCTS

2.01 BASIC MATERIALS:

- A. Steel Channel: Galvanized or painted steel.
- B. Miscellaneous Hardware: Treat for corrosion resistance.
- C. Nameplates: Engraved three-layer laminated plastic, black letters on white background.
- D. Wire and Cable Markers: Cloth markers, split sleeve or tubing type.
- E. Expansion Shields: Tapered nut type with lead alloy expansive retainer sleeve.

PART III - EXECUTION

3.01 INSTALLATION:

- A. Make electrical connections to utilization equipment in accordance with equipment manufacturer's instructions.
 - 1. Verify that wiring and outlet rough-in work is complete and that utilization equipment is ready for electrical connection, wiring and energization.
 - 2. Make wiring connections in control panel or in wiring compartment of pre-wired equipment. Provide interconnecting wiring where indicated.
 - 3. Install and connect disconnect switches, controllers, control stations, and control devices as indicated.
 - 4. Make conduit connections to equipment using flexible conduit. Use liquid tight flexible conduit.
 - 5. Use wire and cable with insulation suitable for temperatures encountered in heat-producing equipment.
 - 6. Install pre-fabricated cord set where connection with attachment plug is indicated or specified, or use attachment plug with suitable strain relief clamps.
 - 7. Provide suitable strain-relief clamps for cord connections to outlet boxes and equipment connection boxes.
- B. Install support systems sized and fastened to accommodate weight of equipment and conduit, including wiring, which they carry.
 - 1. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using expansion anchors, or other fastener approved for application.
 - 2. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheet metal screws in wood construction.
 - 3. Do not fasten supporters to piping, ceiling support wires, ductwork, mechanical equipment, or conduit.
 - 4. Do not use powder-actuated anchors.

5. Do not drill structural steel members.
 6. Fabricate supports from structural steel or steel channel, rigidly welded or bolted.
 7. Install surface-mounted cabinets and panelboards with minimum of four anchors.
 8. Provide steel channel supports to stand cabinets 1" off wall.
 9. Bridge studs top and bottom with channels to support flush-mounted cabinets and panelboards in stud walls.
- C. Identify electrical distribution and control equipment, and loads served, to meet regulatory requirements and as indicated.
1. Degrease and clean surfaces to receive nameplates and tape labels.
 2. Secure nameplates to equipment lines. Secure nameplate to inside face of recessed panelboard doors in finished locations.
 3. Use nameplates with 1/8" lettering to identify individual switches and circuit breakers, wall switches, receptacle circuits and loads served.
 4. Use nameplates with 1/4" letters to identify distribution and control equipment.
 5. Install wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connections.
 6. Use branch circuit or feeder number to identify power and lighting circuits.
 7. Use control wire number as indicated on equipment manufacturer's shop drawings to identify control wiring.

3.02 **ADJUSTING AND CLEANING:**

- A. Touch up electrical equipment finishes at completion of work.
- B. Clean lighting fixture lenses and reflecting surfaces at completion of work.
- C. Leave work in clean condition, as approved by Owner.

END OF SECTION

TECHNICAL SPECIFICATIONS CONDUIT - SECTION 16111

PART I - GENERAL

1.01 WORK INCLUDED:

- A. Rigid Metal Conduit and Fittings (RGS).
- B. Electrical Metallic Conduit and Fittings (EMT).
- C. Liquid-tight Flexible Metal Conduit and Fittings.
- D. Non-metallic Conduit and Fittings.

1.02 RELATED SECTIONS:

- A. Section 01045 - Cutting and Patching.

1.03 REGULATORY REQUIREMENTS:

- A. Comply with UL Listing and labeling for grounding on all components.

1.04 PERFORMANCE REQUIREMENTS:

- A. Test and complete electrical continuity to ground from all boxes, fittings and cabinets.

PART II - PRODUCTS

2.01 MATERIALS:

- A. Rigid Metallic Conduit (RMC):
 - 1. Steel only (aluminum not acceptable)
 - 2. Hot-dipped galvanized.
 - 3. Acceptable Manufacturers:
 - a. Youngstown Sheet and Tube
 - b. Triangle Industries

- c. Republic Steel
 - d. Steelduct
 - e. Pittsburgh Standard
- 4. Fittings and Conduit Bodies:
 - a. Threaded Type
 - b. Materials to match conduit
- 3. Manufacturers:
 - a. Crouse Hinds Form 7
 - b. Appleton FM7
- B. Electrical Metallic Tubing (EMT):
 - 1. Steel only (others not acceptable).
 - 2. Hot-dipped galvanized.
 - 3. Acceptable Manufacturers:
 - a. Youngstown Sheet and Tube
 - b. Triangle Industries
 - c. Republic Steel
 - d. Steelduct
 - e. Pittsburgh Standard
 - f. GE White
 - 4. Fittings and Conduit Bodies:
 - a. Compression type only (set screw type not acceptable).
 - b. Material to match conduit.

C. Liquid-tight Flexible Metal Conduit:

1. Flexible metal conduit with PVC jacket.
2. Acceptable Manufacturers:
 - a. Anaconda Type UA.
 - b. Appleton Liquidtite.
3. Fittings and Conduit Bodies:
 - a. Material to match conduit.
 - b. Connectors:
 1. Straight connectors only.
 2. Standard and Class 1, Division 2 areas.
 3. Appleton Series ST.
 4. 40Z Gedney Groundtite.
4. Equipment Bonding Jumper (Refer to Section 16120 - Wire & Cable).

D. Rigid Non-metallic Conduit:

1. PVC.
2. Schedule 40 and 80.
 - a. Provide schedule 80 where branch circuit is greater than 30 amps.
3. Fittings and Conduit Bodies:
 - a. Materials to match conduit
 - b. Elbows for $>3/4$ " shall be PVC coated RGS.
4. Acceptable Manufacturers:
 - a. Carlon
 - b. Robroy
 - c. Pyle-National Division

E. Fittings:

1. Match conduit system type used.
2. Factory elbows:
 - a. Standard 1 ¼" - 2 ½" sizes.
 - b. Long Radius: 3" and larger sizes.
3. Couplings: Erickson type.
4. Gaskets: Solid type for sizes 1 ½" and smaller
5. Unions: Crouse Hinds type UNY.
6. Corrosion Resistant Sealant: Dow Corning Sealant #3145 RTV.
7. Bushings: Insulating type.
8. Clamps:
 - a. Galvanized malleable iron type.
 - b. R.C. (right angle).
 - c. E.C. (edge).
 - d. P.C. (parallel).
 - e. Cable Tray: Crouse Hinds LCC series.
9. Pipe Straps:
 - a. Galvanized malleable iron type.
 - b. One hole style for conduit sizes 1 ½" and smaller.
 - c. Two hole style for conduit sizes 2" and larger.
10. Cable and tubing fittings: Crouse Hinds type CGB with Neoprene bushings.
11. Drains and Breathers: Crouse Hinds ECD for Class 1, Division 2 areas.

12. Masonry wall anchors: Lead machine bolt type.

PART III - EXECUTION

3.01 PREPARATION:

- A. Plan precise routing; drawings show conceptualized routing only.
- B. Install floor sleeves and slots.
 1. Steel pipe sleeves two sizes larger than conduit.
 2. Slots with 4" continuous toe plates.
 3. Allow space for 50% future use.

3.02 INSTALLATION:

- A. Sizing:
 1. Size conduit for conductor type installed (or for type THW conductors, whichever is larger); 3/4" minimum, except for device fixture leads at 1/2" minimum.
- B. Routing:
 1. Run concealed in restroom and exterior public spaces and exposed in storage areas, except as specifically directed.
 2. Parallel and perpendicular to building lines.
 3. Provide space for 50% future conduit.
 4. Group conduit in parallel runs where practical and use conduit rack constructed of steel channel with conduit straps or clamps.
- C. Clearances:
 1. Hot Pipes and Surfaces: 6" minimum.
 2. Aisleways and Passageways: 8' minimum vertically above floor.

3. Covers on Fittings and Pull Boxes: Orient for ease of accessibility and maintenance.
- D. Ground at terminations.
- E. Use liquid-tight flexible metallic conduit:
1. At motor connections
 2. At equipment subject to vibration
 3. Where flexibility is required.
 4. Minimum length: 18"
 5. Maximum length: 6'
- F. Provide expansion fittings where crossing expansion joints in building construction.
- G. Provide structural support to ensure rigidity.
1. Arrange conduit supports to prevent distortion of alignment by wire pulling operations.
 2. Fasten conduit using:
 - a. Pipe straps against flat surface with 1/4" back strap.
 - b. Clamps.
 - c. Lay-in adjustable hangers.
 - d. Clevis hangers.
 - e. Bolted split stamped galvanized hangers.
 - f. Do not fasten conduit with wire or perforated pipe straps. Remove all wire used for temporary conduit support during construction before conductors are pulled.
 3. Provide support within 1' of conduit fittings control stations.
 4. Do not support from piping or insulated equipment.

5. Fabrication of supports:
 - a. From steel bar, angle, or channel.
 - b. Uni-Strut type materials may be used in indoor, non-corrosive areas.
 - c. Do not form pockets which can hold liquids.
6. Do not cut or drill structural steel.
 - a. Exception by prior Owner approval only.

H. Fabrication:

1. Field bends:
 - a. Prevent injuries to conduit.
 - b. Prevent effective reduction in internal diameter.
 - c. Make field bends uniform throughout system.
 - d. 90° maximum.
 - e. Verify minimum cable bending radius acceptable.
2. Cut conduit ends square and deburr.
3. Threading:
 - a. Use minimum number of threads required.
 - b. Running threads are not acceptable.
 - c. Remove all cutting oil prior to installation.
 - d. Coat exposed threads with acid resistant cold galvanizing treatment to prevent corrosion.
4. Conduit joints: Draw up tight to shoulder to assure solid connection.
5. Offset bends: Two maximum between pull boxes.
6. Conduit drains: Provide wherever water is likely to collect.

7. Unions:
 - a. Locate between conduit seals and electrical devices requiring seals.
 - b. Locate at motor or equipment end of flex conduit so motor may be removed without removing bonding jumper.
8. Screw threads on fittings and boxes:
 - a. Coat for corrosion prevention with one of the following:
 1. Molykote
 2. Graphite Grease
 3. Never Seize
9. Install two locknuts and a bushing on conduits which terminate in cabinets or pressed steel boxes.
10. Install bushings and CGB type cable fittings at conduit ends where wiring or pneumatic tubing only extends to electrical device.
11. PVC Conduit:
 - a. Wipe plastic clean and dry before joining.
 - b. Apply full even coat of cement to entire area of joint.
 - c. Let joint cure 20 minutes minimum after joining.
- J. Provide suitable conduit caps to protect installed conduit against entrance of dirt and moisture at end of each work period.
- K. Provide suitable pull string in empty conduits.

END OF SECTION

TECHNICAL SPECIFICATIONS WIRE AND CABLE – SECTION 16120

PART I - GENERAL

1.01 WORK INCLUDED:

- A. Building Wire.
- B. Wiring Connections and Terminations.

1.02 REFERENCES:

- A. NEMA WC 3 - Rubber-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.
- B. NEMA WC 5 - Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

1.03 SUBMITTALS:

- A. Submit shop drawings and product data under the provisions of General Conditions.
- B. Submit manufacturer's instructions.

PART II - PRODUCTS

2.01 MATERIALS:

- A. Building Wire:
 - 1. All wire shall be single conductor, multi-strand, copper, rated for 600 volts, with NEC insulation type as specified below:

<u>Wire Size</u>	<u>NEC Type Rating</u>	<u>Temperature Criteria</u>	<u>Selection</u>
#14-#8	AWG THWN or THHN THW or XHHW	75° C 75° C	Preferred 2 nd
For run over 200'	XHHW	75° C	Preferred
#6 - 500 MCM	XHHW	75° C	Preferred

THW	75° C	2 nd
THWN or THHN	75° C	3 rd

2. Wire shall be color-coded as follows:

a. 208Y/120 Volt, 3 phase, 4 wire, grounded wye

1. Neutral conductor: WHITE
2. Phase x conductor: BLACK
3. Phase y conductor: RED
4. Phase z conductor: BLUE

b. In addition, wires shall have numbers tape affixed to each conductor with lighting circuit or wire number in accordance with the drawings. The numbers shall appear at each electrical device, on the back of the associated coverplate.

B. Wire Connectors:

1. T & B Sta-kon
2. Burndy HY tape

C. Insulators for 600 volt or less:

1. Splicing
2. Terminating
3. 3M Scotch 33 Plus
4. T & B PT-66M

D. Wire Pulling Lubricant: UL Approved Required.

E. Cable Ties:

1. Indoors: Sunlight resistant Plastic T & B Ty-raps
2. Outdoors: Sunlight resistant Plastic T & B Ty-raps

F. Connectors:

1. Crimp type connectors
2. Wire nuts:
 - a. Used only in lighting fixtures
- G. Equipment Bonding Jumpers:
 1. Size per NEC-250
 2. Copper
 3. THWN type, green insulation
 4. Minimum size #12 AWG.

PART III - EXECUTION

3.01 INSTALLATION:

- A. Install wire in a single continuous length from termination to termination.
- B. Use no splices:
 1. Exception: 120 VAC and other wiring where approved.
- C. Terminations: Install maximum 3 wires per terminal.
- D. Use minimum wire sizes:
 1. Receptacles and lighting circuits: No. 12 AWG
 2. Motor and control wiring: No. 14 AWG.

END OF SECTION

BOXES - SECTION 16138

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall and ceiling outlet boxes.
- B. Pull and junction boxes.

1.02 RELATED SECTIONS

- A. Section 16050 – Basic Electrical Requirements - Firestopping.
- B. Section 16139 (26 2716) - Cabinets and Enclosures.

1.03 REFERENCES

- A. Install per NECA (National Electrical Contractors Association)
- B. Meet NEMA (National Electrical Manufacturers Association) standard requirements
- C. Install per NFPA 70 (National Electrical Code; National Fire Protection Association)

1.04 SUBMITTALS

- A. See Section 16050 - Basic Electrical Requirements - Submittal procedures.
- B. Project Record Documents: Record actual locations and mounting heights of outlet, pull, and junction boxes on project record documents.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Provide products listed and classified by Underwriters Laboratories, Inc., as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Appleton Electric
- B. Arc-Co./Division of Arcade Technology
- C. Unity Manufacturing
- D. Raco.
- E. Thomas & Betts (Steel City)
- F. Hubbell
- G. Quazite

H. Wiremold

I. Substitutions: See Section 16050 – Basic Electrical Requirements: Product Substitutions.

2.02 OUTLET BOXES

- A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
 - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.
 - 2. Concrete Ceiling Boxes: Concrete type.
- B. Nonmetallic Outlet Boxes: NEMA OS 2.
- C. Cast Boxes: NEMA FB 1, Type FD, aluminum. Provide gasketed cover by box manufacturer. Provide threaded hubs.
- D. Wall Plates for Finished Areas: As specified in Section 16140 (26 2726).

2.03 PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- B. Hinged Enclosures: As specified in Section 16139 (26 2716).
- C. Surface Mounted Cast Metal Box: NEMA 250, Type 4; flat-flanged, surface mounted junction box:
 - 1. Material: Galvanized cast iron.
 - 2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.
- D. In-Ground Fiberglass Handholes: Die molded fiberglass
 - 1. Cable Entrance: Pre-cut 4x4 inch cable entrance at center bottom of each side.
 - 2. Cover: weatherproof fiberglass, nonskid finish
 - 3. Cover Legend: Refer to plans and details.
 - 4. Hardware: Stainless steel inserts and bolts

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify locations of floor boxes and outlets in offices and work areas prior to rough-in.

3.02 INSTALLATION

- A. Install boxes securely, in a neat and workmanlike manner, as specified in NECA 1.
- B. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and as required by NFPA 70.
- C. Coordinate installation of outlet boxes for equipment connected under Section 16155.
- D. Set wall mounted boxes at elevations to accommodate mounting heights indicated.
- E. Electrical boxes are shown on Drawings in approximate locations unless dimensioned.
 - 1. Adjust box locations up to 10 feet if required to accommodate intended purpose, obtain approval from Architect prior to installation.

- F. Orient boxes to accommodate wiring devices oriented as specified in Section 16140.
- G. Maintain headroom and present neat mechanical appearance.
- H. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- I. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.
- J. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 16010 – Fire Stopping.
- K. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.
- L. Locate outlet boxes to allow luminaires positioned as shown on reflected ceiling plan and elevations.
- M. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.
- N. Use flush mounting outlet box in finished areas.
- O. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- P. Do not install flush mounting box back-to-back in walls; provide minimum 6 inches separation. Provide minimum 24 inches separation in acoustic rated walls.
- Q. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- R. Use stamped steel bridges to fasten flush mounting outlet box between studs.
- S. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- T. Use adjustable steel channel fasteners for hung ceiling outlet box.
- U. Do not fasten boxes to ceiling support wires.
- V. Support boxes independently of conduit.
- W. Use gang box where more than one device is mounted together. Do not use sectional box.
- X. Use gang box with plaster ring for single device outlets.
- Y. Use cast outlet box in exterior locations exposed to the weather and wet locations.
- Z. Large Pull Boxes: Use hinged enclosure in interior dry locations, surface-mounted cast metal box in other locations.
- AA. Handholes:
 - 1. Do all excavation. Bottom of excavation shall be undisturbed earth. If earth is disturbed, backfill with sand and compact.
 - 2. Set per manufacturers recommendations.
 - 3. Backfill shall be compacted to 95% Procter density. Remove all excess material from site.
 - 4. Restore all disturbed surfaces to their original condition.

3.03 ADJUSTING

- A. Install knockout closures in unused box openings.
- B. Adjust handholes such that cover is 1/4" above grade.

END OF SECTION 16138

TECHNICAL SPECIFICATIONS

ELECTRICAL IDENTIFICATION – SECTION 16195

PART I - GENERAL

1.01 SUMMARY:

- A. Tagging Requirements:
 - 1. Temporary
 - 2. Permanent
 - a. Electrical Circuits
 - b. Instrument Circuits
 - c. Wire Identification
 - d. Electrical Equipment

1.02 DEFINITIONS:

- A. Temporary Tagging: Used during construction.
- B. Permanent Tagging: Used after construction.

PART II - PRODUCTS

2.01 MATERIALS:

- A. Temporary Tagging:
 - 1. Cardboard tags with string ties:
 - a. Hand-written notes.
 - b. Permanent ink.
 - 2. Dymo Tape Markers:
 - a. Self-adhesive tape.
 - b. 1/8" high letters

- c. Blue or red tape
 - d. May be used for permanent marking where approved by Owner.
3. Permanent Tagging:
- a. Instrument Wire Markers
 - 1. Raychem marker sleeves.
 - A. Typed characters
 - B. or approved
 - B. Electrical Wire Markers:
 - 1. Brady self-adhesive markers:
 - A. Pre-printed
 - B. Typed characters
 - C. or approved
 - 2. Ziptape Rite and Wrap Markers
 - C. Electrical Equipment Markers:
 - 1. Low pressure laminated plastic engraved nameplates.
 - 2. Dymo Tape Markers where specifically approved by Owner.
 - 3. Self-adhesive paper discs:
 - A. Red Color
 - B. ½" diameter

PART III - EXECUTION

3.01 PREPARATION:

- A. Permanent tags:
 - 1. Verify inscriptions with Owner prior to manufacture.
 - 2. Where inscriptions are not shown on drawings:
 - a. Inscribe with tag name/number of equipment.
 - b. Inscribe with individual wire designation.
- B. Surface Preparation:
 - 1. Clean surface of equipment prior to installation.

3.02 INSTALLATION:

- A. Temporary Tags:
 - 1. Tie onto wires immediately after installation.
 - 2. Eliminate if permanent tags are available.
- B. Permanent Identification:
 - 1. Wire Tagging:
 - a. Install immediately before termination.
 - b. Install at each end of wire.
 - 2. Warning Signs: Install as directed in field.
 - 3. Night Lights:
 - a. Apply paper disc to fixture exterior.
 - b. Apply disc where visible from normal walk area.

END OF SECTION

TECHNICAL SPECIFICATIONS
SECONDARY GROUNDING - SECTION 16450

PART I - GENERAL

1.01 WORK INCLUDED:

- A. Power system grounding.
- B. Electrical equipment and raceway grounding and bonding.

1.02 SYSTEM DESCRIPTION:

- A. Bond together system neutrals, service equipment enclosures, exposed non-current carrying metal parts of electrical equipment, metal raceway system, grounding conductor in raceways and cables, receptacles ground connectors, and plumbing systems.

1.03 SUBMITTALS:

- A. Submit shop drawings under provisions of Section 01001.
- B. Indicate location of system grounding electrode connections, and routing of grounding electrode conductor.

PART II - PRODUCTS

2.01 MATERIALS:

- A. Materials:
 - 1. Ground Rods: Copper-encased steel, $\frac{3}{4}$ " diameter, minimum length 10 feet.

PART III - EXECUTION

3.01 INSTALLATION:

- A. Provide a separate, insulated equipment grounding conductor in feeder and branch circuits. Terminate each end on a grounding lug, bus, or bushing.

3.02 FIELD QUALITY CONTROL:

- A. Inspect installed grounding and bonding system conductors and connections for tightness and proper installation.
- B. Measure ground resistance from system neutral connection at service entrance to convenient ground reference point using suitable ground testing equipment. Notify architect and owner if resistance is greater than 10 ohms.

END OF SECTION

**TECHNICAL SPECIFICATIONS
LIGHTING FIXTURES - SECTION 16510**

PART I - GENERAL

1.01 WORK INCLUDED:

- A. Exterior luminaires and accessories.
- C. Lamps.
- D. Ballasts.

1.02 REFERENCES:

- A. ANSI C82.1 - Specification for fluorescent Lamp Ballasts.
- B. FS W-F-414 - Fixture, lighting (fluorescent, alternating-current, pendant mounting).

1.03 SUBMITTALS:

- A. Submit product data under provisions of General Conditions.
- B. Include outline drawings, lamp and ballast data, support points, weights, and accessory information for each luminaire type.
- C. Submit manufacturer's installation instructions under provisions of General Conditions.

1.04 DELIVERY, STORAGE AND HANDLING:

- A. Deliver products to site under provisions of Section 02760.
- B. Store and protect products under provision of Section 02760.

PART II - PRODUCTS

2.01 EXTERIOR LUMINAIRES AND ACCESSORIES:

- A. Enclosures: Complete with gaskets to form weatherproof assembly.
- B. Provide low temperature drivers, with reliable starting to -20 degrees F.

2.02 ACCEPTABLE MANUFACTURERS – LAMPS:

- A. As shown on plans.
- B. Substitutions: under provisions of Section 01001.

2.03 LAMPS:

- A. LED lamps: Provide as part of light fixture assembly.

PART III - EXECUTION

3.01 INSTALLATION:

- A. Install lamps in luminaires and lampholders.
- B. Install recessed luminaires to permit removal from below. Install grid clips.

END OF SECTION

EXTERIOR LUMINAIRES - SECTION 16520 (26 5600)

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Exterior luminaires and accessories.

1.02 RELATED SECTIONS

- A. Section 03300 (03 3053) – Miscellaneous Cast-in-Place Concrete.

1.03 REFERENCES

- A. Meet ANSI (American National Standard) standard requirements
- B. Install per NECA (National Electrical Contractors Association)
- C. Meet NEMA (National Electrical Manufacturers Association) standard requirements
- D. Install per NFPA 70 (National Electrical Code; National Fire Protection Association)

1.04 SUBMITTALS

- A. See Section 16010 (26 0500) - Basic Electrical Requirements - Submittal procedures.
- B. Shop Drawings: Indicate dimensions and components for each luminaire which is not a standard product of the manufacturer.
- C. Product Data: Provide dimensions, ratings, and performance data.
- D. Test Reports: Indicate measured illumination levels.
- E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.
- F. Operation and Maintenance Data: Instructions for each product.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.
- C. Products: Listed and classified by Underwriters Laboratories, Inc. as suitable for the purpose specified and indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle poles per manufacturer's recommendations.

PART 2 PRODUCTS

2.01 LUMINAIRES

- A. Furnish products as indicated in Schedule included on the Drawings.
- B. Substitutions: See Section 16010 – Basic Electrical Requirements - Substitutions.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install fixtures securely, in a neat and workmanlike manner, as specified in NECA 501.
- B. Provide concrete bases for lighting poles at locations indicated, in accordance with Section 03300 (03 3000).
- C. Install poles plumb.
 - 1. Provide double nuts to adjust plumb.
 - 2. Grout around each base.
- D. Install lamps in each luminaire.
- E. Bond luminaires, metal accessories, and metal poles to branch circuit equipment grounding conductor. Provide supplementary grounding electrode at each pole.
- F. Provide fusing in base of pole.
- G. Do not install poles without fixtures without written approval from manufacturer

3.02 FIELD QUALITY CONTROL

- A. Perform field inspection to verify all fixtures are operational.
- B. Operate each luminaire after installation and connection. Inspect for improper connections and operation.

3.03 CLEANING

- A. Clean electrical parts to remove conductive and deleterious materials.
- B. Remove dirt and debris from enclosure.
- C. Clean photometric control surfaces as recommended by manufacturer.
- D. Clean finishes and touch up damage.

3.06 SCHEDULE – Refer to Drawings for pole, light fixture, and base requirements.

END OF SECTION 16520

TECHNICAL SPECIFICATIONS

PAVILION - SECTION 13 3423

BUILDING STRUCTURE(S) SHALL BE GOTHIC ARCH PAVILION, AS FURNISHED BY CEDAR FOREST PRODUCTS COMPANY, PO BOX 145, WEST OLIVE, MI 49460, USA, 800-552-9495.

SPECIFICATIONS

Building material package shall be as designed and supplied by Cedar Forest Products and specified herein. Any changes or departures from design shall be explained and documented by complete engineered drawings by a registered structural engineer at least seven days prior to bid date.

MATERIAL AND QUALITY ASSURANCE

Structural glue laminated timber shall be in conformance with ANSI/AITC Standard A.190.1-(latest edition). Species: Laminating lumber shall be kiln-dried, architectural grade, sealed and wrapped. The roof system for wood structures and buildings are designed to withstand 30 PSF live load and 20 PSF wind load. Please check local codes. For heavier load requirements, please consult with Cedar Forest Products Company. The roof slope shall be 3/12.

ROOF SYSTEM - LAMINATED ARCHES

Laminated timber shall conform to the American Institute of Timber Construction Standards, American Wood Systems and APA. Quality control provided in accordance with the American National Standards Institute ANSI/AITC-A 190.1-(latest edition), kiln-dried Southern Yellow Pine, glue laminated, sealed and wrapped. Laminated columns shall be sized to suit loading requirements. The roof system is designed to withstand 30 PSF live load and 20 PSF wind load.

CONNECTOR PLATES

Plates shall be fabricated from structural steel ASTM-A-36 (5" x 12" x 1/4") steel plates. Surface preparation in accordance with SSPC-SP10. Shall be primed painted with an alkyd corrosive resistant primer. Finish coat: Premium rust control latex inhibitive enamel as manufactured by PPG, or equal. Hardware: A-325 zinc plated machine bolts and nuts.

ROOF DECKING

Nominal 2" X 6" single tongue and groove with V-joint on bottom face kiln-dried #1 and better appearance grade, inland red cedar. Selected for decking. Decking shall be field cut, specified lengths with all joints over supports. Western Wood Products association grading (latest edition).

STEEL PANEL ROOF SYSTEM

29 gauge galvalume Maxrib Ultra roof with Kynar 500 coating. All panels to be precut to length. Roof panels to be 36" wide with 1 -3/16" tall ribs spaces 12" oc. Trim to be 24 ga. Galvalume with Kynar 500 coating.

FASCIA

(Nominal) 2" x 8" Western Red Cedar, "D"/ Better Grade, kiln-dried, Surfaced on Four Sides, Western Wood Products Association Grading Rules-(latest edition).

STRUCTURE ERECTION

The fabricator shall furnish complete shop drawings showing necessary details. Installation of the structure shall be done with a competent supervisor in the construction trades according to Cedar Forest Products installation instructions providing proficient construction practices and procedures. The general contractor is responsible for the security of materials after its arrival at the destination. The contractor will be required to shim, cut, and make adjustments for proper building erection. Cedar Forest Products has a policy of continuous improvement and reserves the right to discontinue or change specifications without notice.

ENGINEERING

Building material packages that are designed and supplied by Cedar Forest Products are reviewed by a registered structural engineer. Stamped structural drawings by a registered engineer licensed in the state of the project are available upon request. Structural calculations are available for an additional fee. Not included in our package is the site specific design of the foundation. No foundation stamped engineer drawings or calculations are provided by Cedar Forest Products. The purchaser must consult with a local registered structural engineer if the soil bearing conditions are different than those indicated in our drawings. The design, excavation, and construction of the structure(s) foundation must be verified by a local registered structural engineer.

FORMS AND STATEMENTS

AGREEMENT FORM

THIS AGREEMENT made this _____ day of September in the year 2024, by and between Canton Township whose address is 1150 S Canton Road, Canton, Michigan 48188, hereinafter called the Owner, and _____, whose address is _____, hereinafter called the Contractor.

WITNESSETH that in consideration of the covenants of agreements hereinafter mentioned, to be performed by the parties hereunto and of the payments herein agreed to be made, it is mutually agreed as follows: The Contractor shall furnish all the materials, superintendence, labor, equipment, and transportation, and shall execute, construct, and finish, in an expeditious, substantial, and workmanlike manner to the satisfaction and acceptance of MCSA Group, Inc., hereinafter called the Landscape Architect, the Heritage Park South Pavilion on which Contractor has proposed a price. The above referred to work shall be executed from materials furnished in accordance with the accompanying plans, which it is agreed are with the Information for Bidders, Proposal, General Conditions, and Technical Specifications attached and made a part of this Agreement as if fully set forth herein.

The work covered by this Agreement shall be commenced no later than five (5) days from the date this Agreement is signed by the Owner. All work must be completed in accordance with the General Requirements & Instructions. If all work is not completed by July 19, 2024, the Contractor will be responsible for all Damages for Non-Completion, as per section 32 of the General Conditions.

And in consideration of the conclusion of the work herein and the fulfillment of all stipulations of this Agreement to the satisfaction and acceptance of the Landscape Architect, said Owner shall pay or cause to be paid to said Contractor, the amounts due the Contractor, based on the prices submitted by the Contractor in its proposal in the complete amount of \$_____ for those proposal items as accepted by the Owner and listed on Page A - 2 of this Agreement Form.

IN WITNESS WHEREOF, the parties to this Agreement have hereunto set their hands and seals;
dated the day and year first written.

OWNER - Canton Township

By -----

Its: _____

CONTRACTOR -

By _____

Its: _____

Bid Proposal Items accepted by the Owner:

Item No

**PROPOSAL FORM
HERITAGE PARK SOUTH PAVILIONS**

TO: Michael A. Siergrist, Township Clerk
Canton Township
1150 S. Canton Center Road
Canton, MI 48188

The undersigned bidder has carefully examined the plans and specifications for the construction of the Heritage Park South Pavilions in Canton, Michigan, as prepared by MCSA Group, Inc. and, having carefully examined the site and completely familiarized himself with local conditions affecting the cost of the work; hereby states that he will provide all necessary labor, equipment, tools, machinery, apparatus and all other means of construction, do all the work and furnish all materials called for by said plans and specifications in the manner prescribed by in accordance with the requirements of the contract, specifications and drawings; and will accept as full and complete payment therefore the Lump Sum Bid Amount Which Is The Summation Of The Cost Of The Items Of Work And Must Be Equal To The Summation Of The Extension Of The Unit Prices in the amount of :

_____ Dollars
and _____ Cents (\$ _____)

This is not a unit price contract. The following unit prices will be utilized to assess bids, revise contract amounts, and develop change orders. Bidders must provide unit prices for every bid item at the time the bid is submitted. The Base Bid amount must be equal to the summation of the extension of all unit prices; Items 1 through 10. Bids which are incomplete or inaccurate will be subject to disqualification.

All items labeled (incidental) on plans are considered incidental to construction of whole contract. The contractor must carefully read the plans and specifications to determine incidentals and must take them into consideration in his bid.

Contractor is responsible for barricading areas that have been excavated or disturbed from construction and can be considered a possible hazard, incidental to this contract.

Bidders shall immediately notify the Landscape Architect of any perceived errors, omissions, or discrepancy in the bid item quantities so they and other bidders can be advised of an acceptable bid procedure. This is a Lump Sum Bid. The base bid as submitted is for complete construction as shown by the plans, details, and specifications.

The bidder agrees to reduce or add to the amount of the Base Bid under this proposal for any items deleted or added in accordance with the following unit prices. These unit prices shall include overhead and profit for each associated work item.

HERITAGE PARK SOUTH PAVILIONS**GENERAL CONDITIONS**

Item No.	Description	Qty.	Unit *	Installed Unit Price	Unit Total
1.	Allowance for Construction Contingencies.	1	LS	\$45,000.00	\$45,000.00
2.	Mobilization, related bonds and insurance, and layout and staking.	1	LS	\$	\$
3.	General conditions: management, overhead and profit. Unit price shall be equal to 10% of the total base bid.	1	LS	\$	\$

SITE PREPARATION AND REMOVALS

Item No.	Description	Qty.	Unit *	Installed Unit Price	Unit Total
4.	Site preparation and grading including all removal items, soil erosion and sedimentation control and all other work shown on the plans but not otherwise listed below.	1	LS	\$	\$
5.	Sawcut and remove concrete and bituminous paving per plans and specifications.	4,602	SF	\$	\$

GENERAL SITE IMPROVEMENTS

Item No.	Description	Qty.	Unit *	Installed Unit Price	Unit Total
6.	Furnish and install 4" Concrete Paving per detail no. 1 and 2 on sheet 7 and per plans and specifications.	4,350	SF	\$	\$
7.	Furnish and install pavilion (24 x 28 gothic Arch by Cedar Forest Products) per detail no. 3 and 4 on sheet 7 and per plans and specifications.	3	EA	\$	\$
8.	Furnish and install pavilion lights and outlets as per sheet 6 and per plans and specifications.	1	LS	\$	\$
9.	Furnish and install electrical distribution including all connections and conduit as per sheet 6 per plans and specifications.	1	LS	\$	\$

Bidder Company Name _____

LANDSCAPE IMPROVEMENTS

Item No.	Description	Qty.	Unit *	Installed Unit Price	Unit Total
10.	Furnish and install Restoration Seeding as per plans and specifications.	1	LS	\$	\$

TOTAL FOR HERITAGE PARK SOUTH PAVILION **\$** _____

Unit Descriptions

LS = Lump Sum

LF = Lineal Feet

SF = Square Feet

SY = Square Yard

EA = Each

Bidder Company Name _____

LIST OF SUBCONTRACTORS

LIST ALL SUBCONTRACTORS: To be completed as part of Bid Proposal.

[illegible]

SPECIFICATIONS:

LAMINATED ARCHED BEAMS

MATERIAL AND QUALITY ASSURANCE. Structural glue laminated timber shall be in conformance with AITC Standard (latest edition). Species: Laminating lumber shall be kiln-dried, architectural grade, sealed and wrapped. The roof system for wood structures and buildings are designed to withstand 30 PSF live load and 90 MPH wind load. Please check local codes. For heavier load requirements, please consult with Cedar Forest Products Company. The roof slope shall be 4/12.

LAMINATED STUB COLUMNS AND STUB RAFTERS

MATERIAL AND QUALITY ASSURANCE. Structural glue laminated timber shall be in conformance with AITC (latest edition). Species: Laminating lumber shall be kiln-dried Southern Yellow Pine, architectural appearance grade. Laminated columns/rafters shall be sized to suit loading requirements. Manufacturers shall furnish connection steel and hardware for joining structural glue laminated timber members to their supports, exclusive of anchorage and embedment in masonry or concrete (anchor bolts are not furnished).

CONNECTOR PLATES

Plates shall be fabricated from structural steel ASTM-A-36. Plates to be Powder Coated Black. Hardware: A-325 zinc plated machine bolts and nuts.

ROOF DECKING

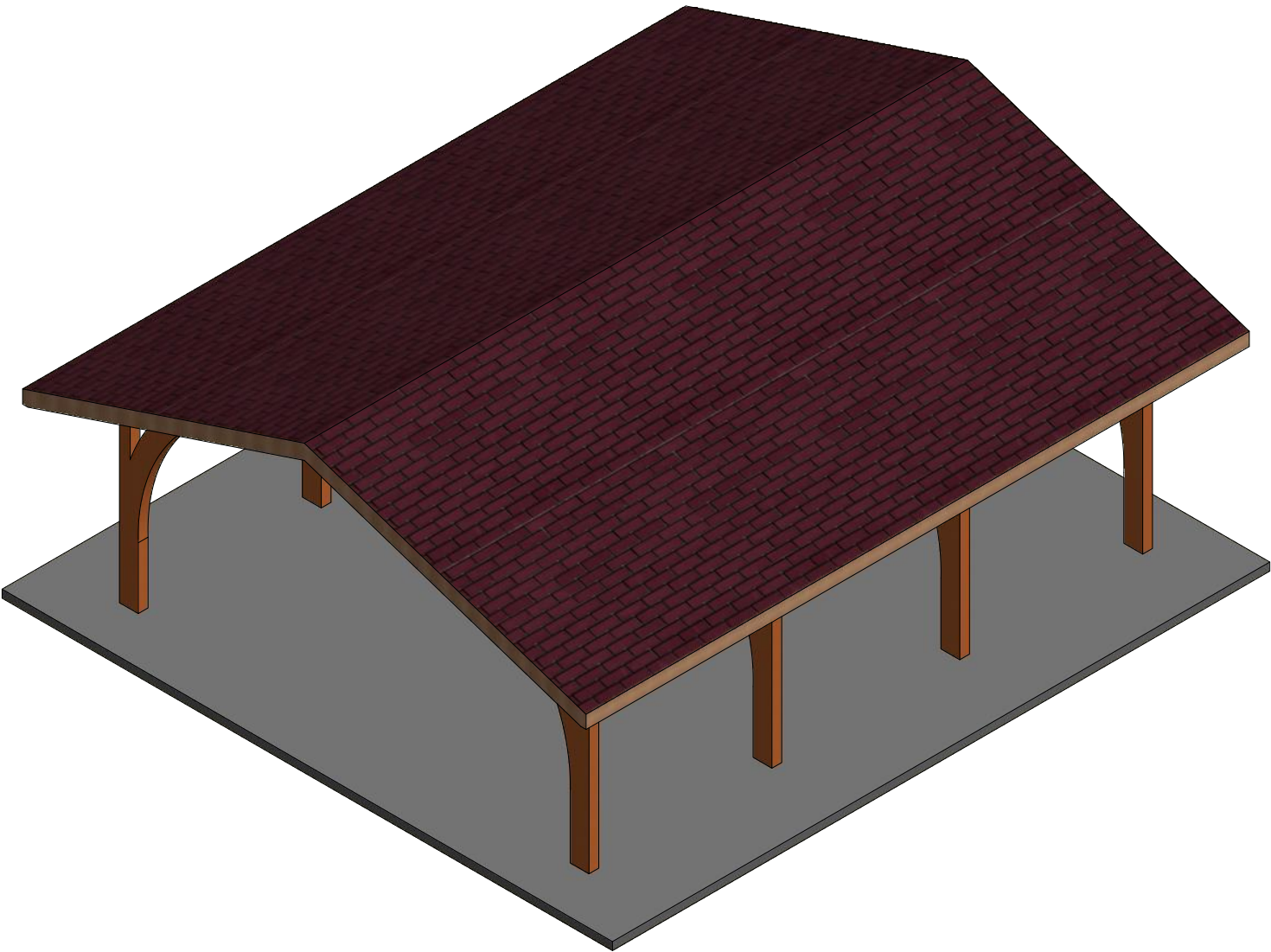
2" x 6" (nominal), #1 grade, single tongue and groove with V-joint on bottom face, kiln dried southern yellow pine, maximum moisture content shall be 19% or less selected for decking. Specified lengths, with all joints over supports.

SHINGLES

Class "A" fire rated, architectural grade, laminated fiberglass shingle with a 30 year limited warranty. To be installed, over 30 lb. felt. Roof application as per manufacturer's specifications. Color to be approved by owner/design professional.

FASCIA

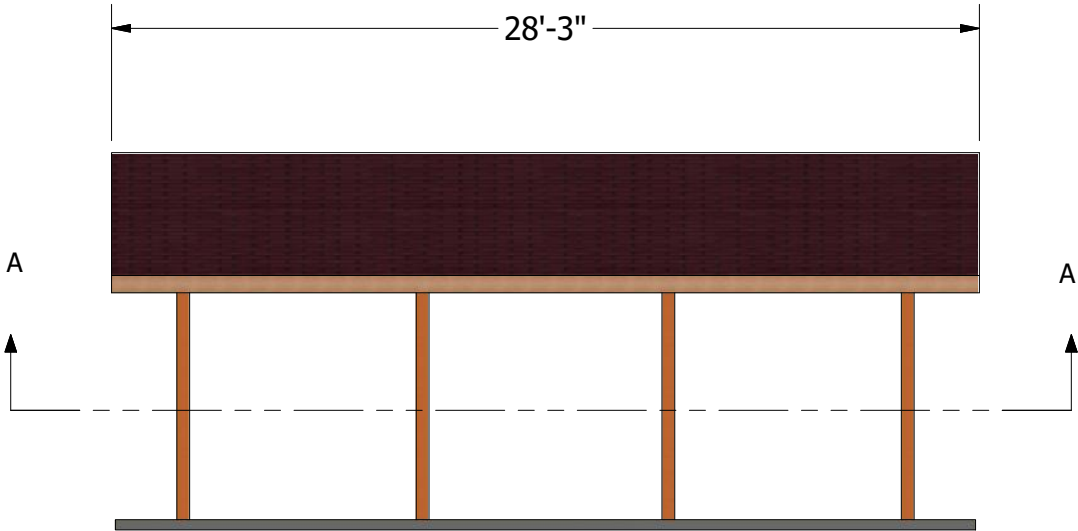
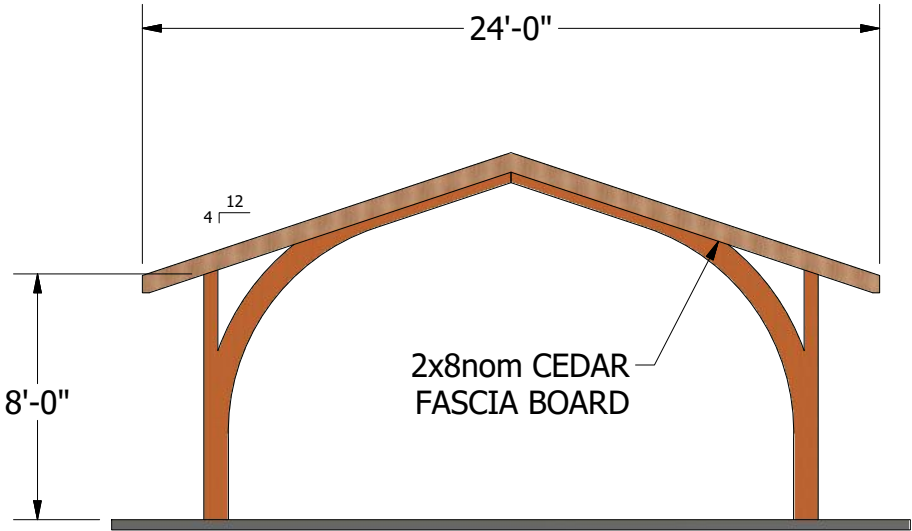
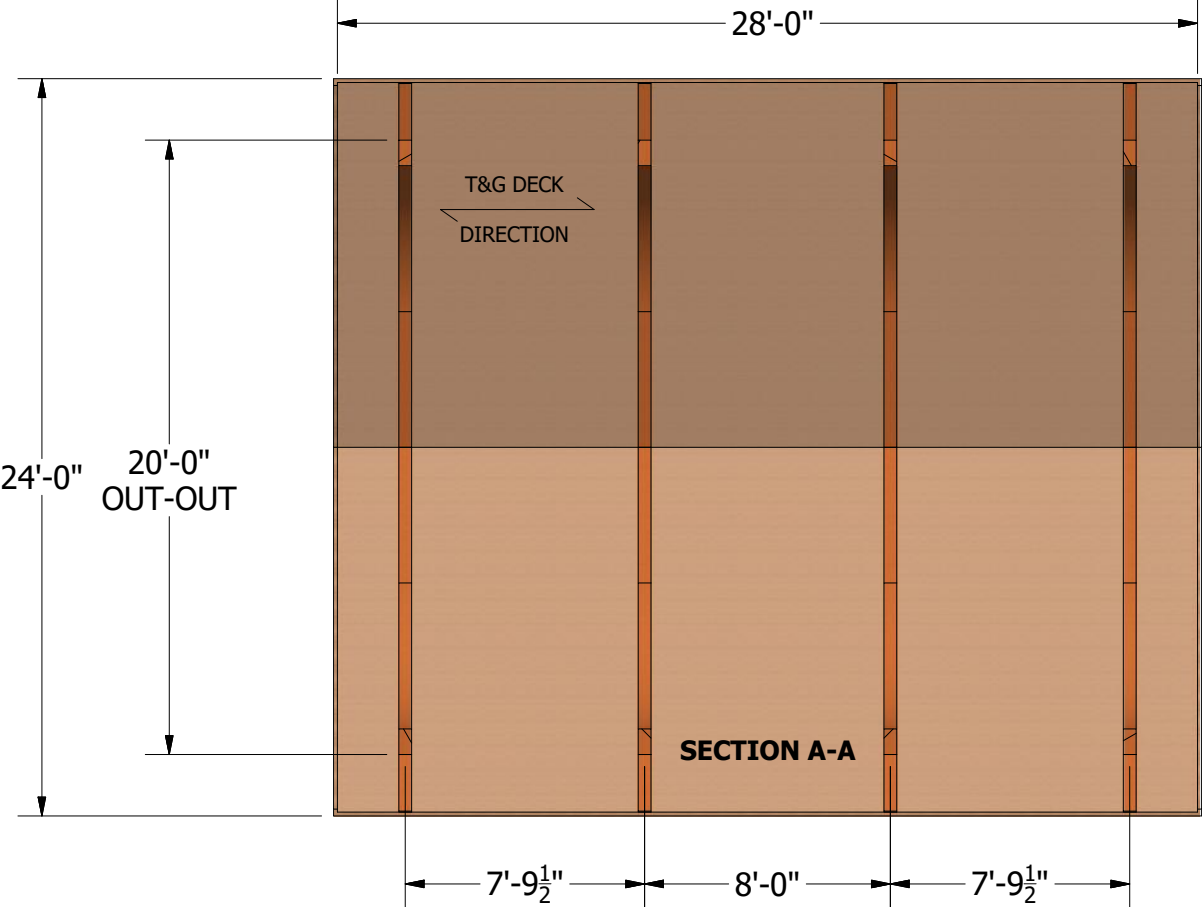
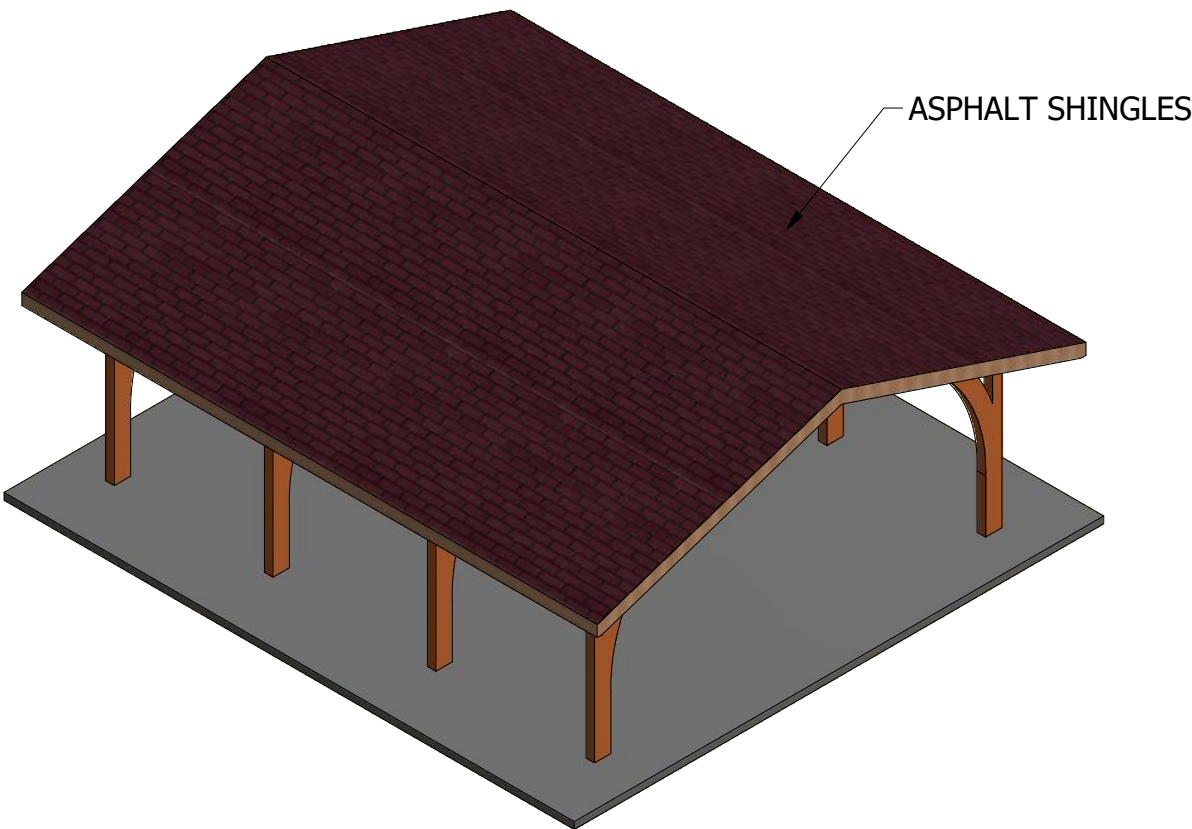
2x8nom Cedar, "D"/ Better Grade, kiln-dried, Surfaced on Four Sides.



P.O. BOX 145
WEST OLIVE, MI 49460
800-552-9495
WWW.CEDARFORESTPRODUCTS.COM

PRELIMINARY LAYOUT
NOT FOR CONSTRUCTION

DESCRIPTION:	MODEL #:	DATE:	JES DESIGN #:	REV:
24x28 Gothic Arch Pavilion	GAP2428	4/12/2019	GAP-STNRD	0

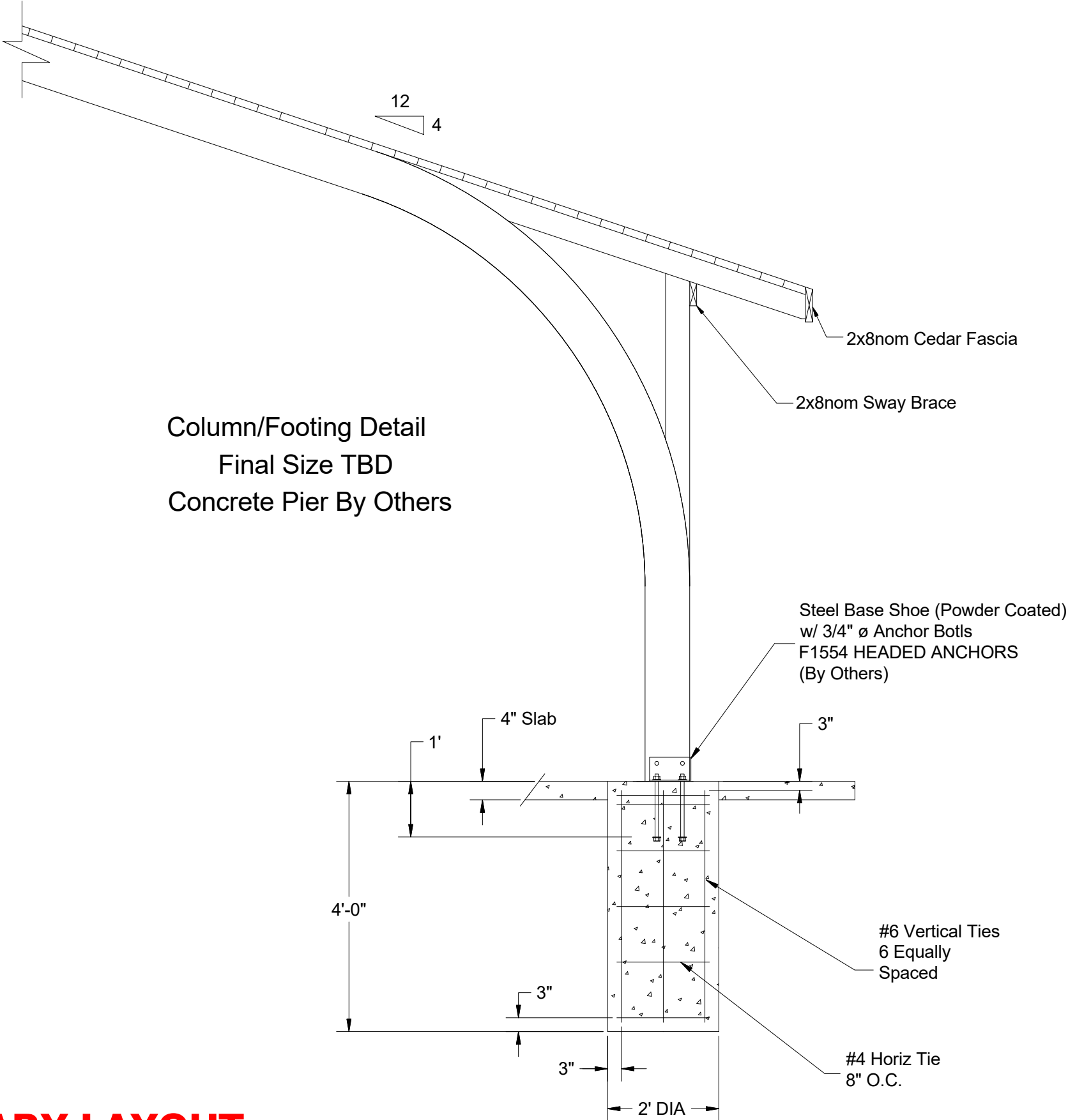


PRELIMINARY LAYOUT
NOT FOR CONSTRUCTION



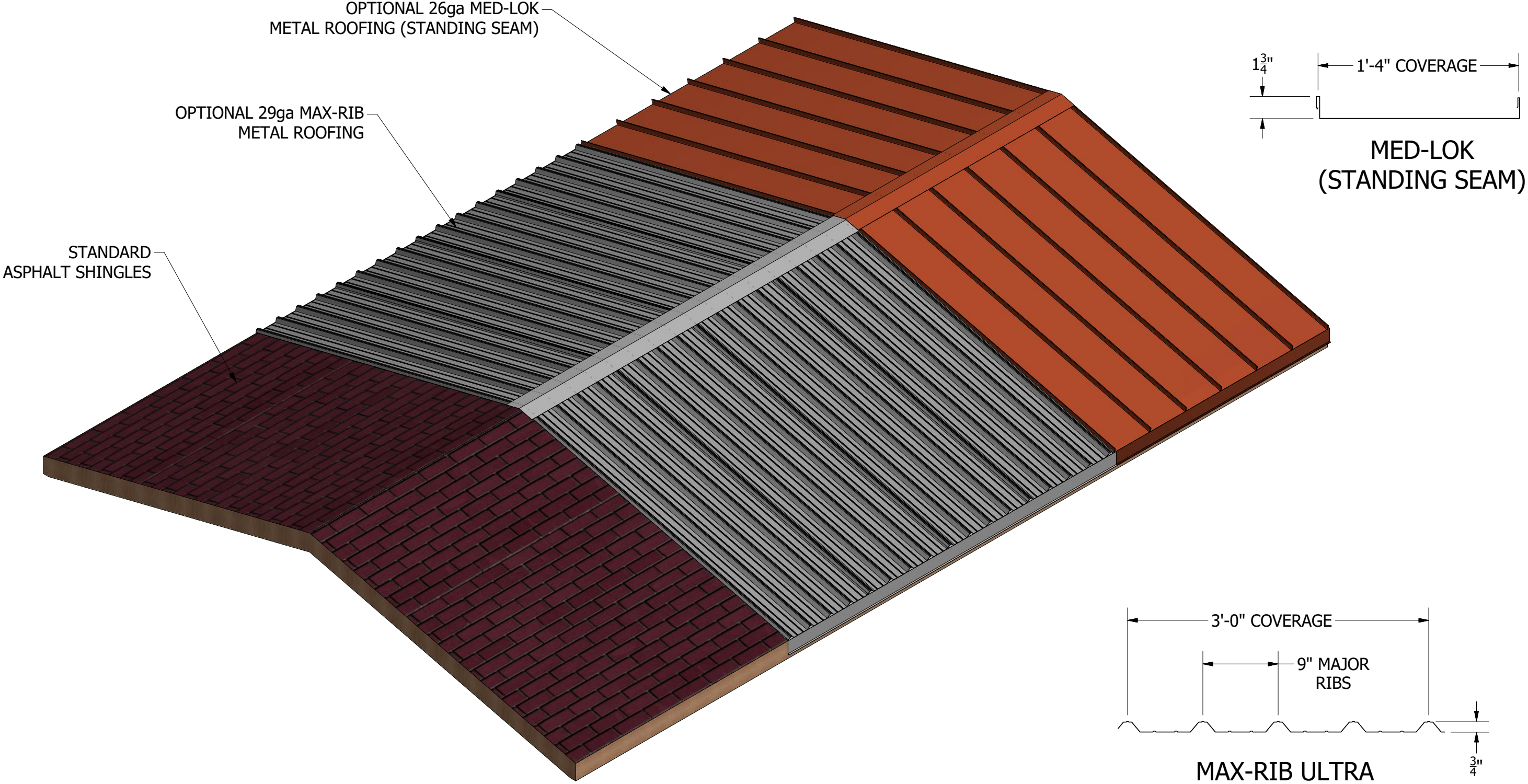
P.O. BOX 145
WEST OLIVE, MI 49460
800-552-9495
WWW.CEDARFORESTPRODUCTS.COM

DESCRIPTION: 24x28 Gothic Arch Pavilion	MODEL #: GAP2428	DATE: 4/12/2019	JES DESIGN #: GAP-STNRD	REV: 0
--	---------------------	--------------------	----------------------------	-----------



PRELIMINARY LAYOUT
NOT FOR CONSTRUCTION

DESCRIPTION:	MODEL #:	DATE:	JES DESIGN #:	REV:
24x28 Gothic Arch Pavilion	GAP2428	4/12/2019	GAP-STNRD	0



PRELIMINARY LAYOUT
NOT FOR CONSTRUCTION

MODEL #: OPTIONS
GAP(SIZE) = With Standard Asphalt Shingles
GAP(SIZE)-MR = With Max-Rib Metal Roof
GAP(SIZE)-SS = With Med-Lok Standing Seam Metal Roof

DESCRIPTION:	MODEL #:	DATE:	JES DESIGN #:	REV:
24x28 Gothic Arch Pavilion	GAP2428	4/12/2019	GAP-STNRD	0

CONTRACTOR INFORMATION SHEETS
(These sheets must be completed and included with proposal)

COMPANY NAME: _____

ADDRESS: _____

ESTABLISHED: _____
(Month) (Year)

TYPE OF ORGANIZATION: (Circle One)

- A) Individual
B) Partnership
C) Corporation
D) Joint Venture
E) Other _____
(Specify)

(If Applicable)

FORMER FIRM NAMES(S)

YEARS IN BUSINESS

YEARS OF WORK IN A RELATED FIELD:

(Described Any Related Work)

USE OF SUBCONTRACTORS:

To provide all services listed in the specifications, would any services be handled by subcontractors? Yes/No If "Yes", please explain:

Subcontractor Name(s):

PROJECT MANAGER:

Would your company be able to provide a single project manager for this work? ____
Yes/No

Name: _____ Credentials: (Please List)

Title: _____

REFERENCES: List (3) clients who have had work meeting (or similar to) the Specifications:

	<u>COMPANY</u>	<u>ADDRESS</u>	<u>CONTACT</u>	<u>PHONE</u>
1)	_____	_____	_____	_____
2)	_____	_____	_____	_____
3)	_____	_____	_____	_____

EQUIPMENT: List equipment, owned by the company to be used while completing the job:

THE FOREGOING IS A TRUE STATEMENT OF FACTS:

I/we hereby certify under penalty of law that we are not an Iran linked business as defined in PA 517 of 2012.

Signature of Authorized Company Representative: _____

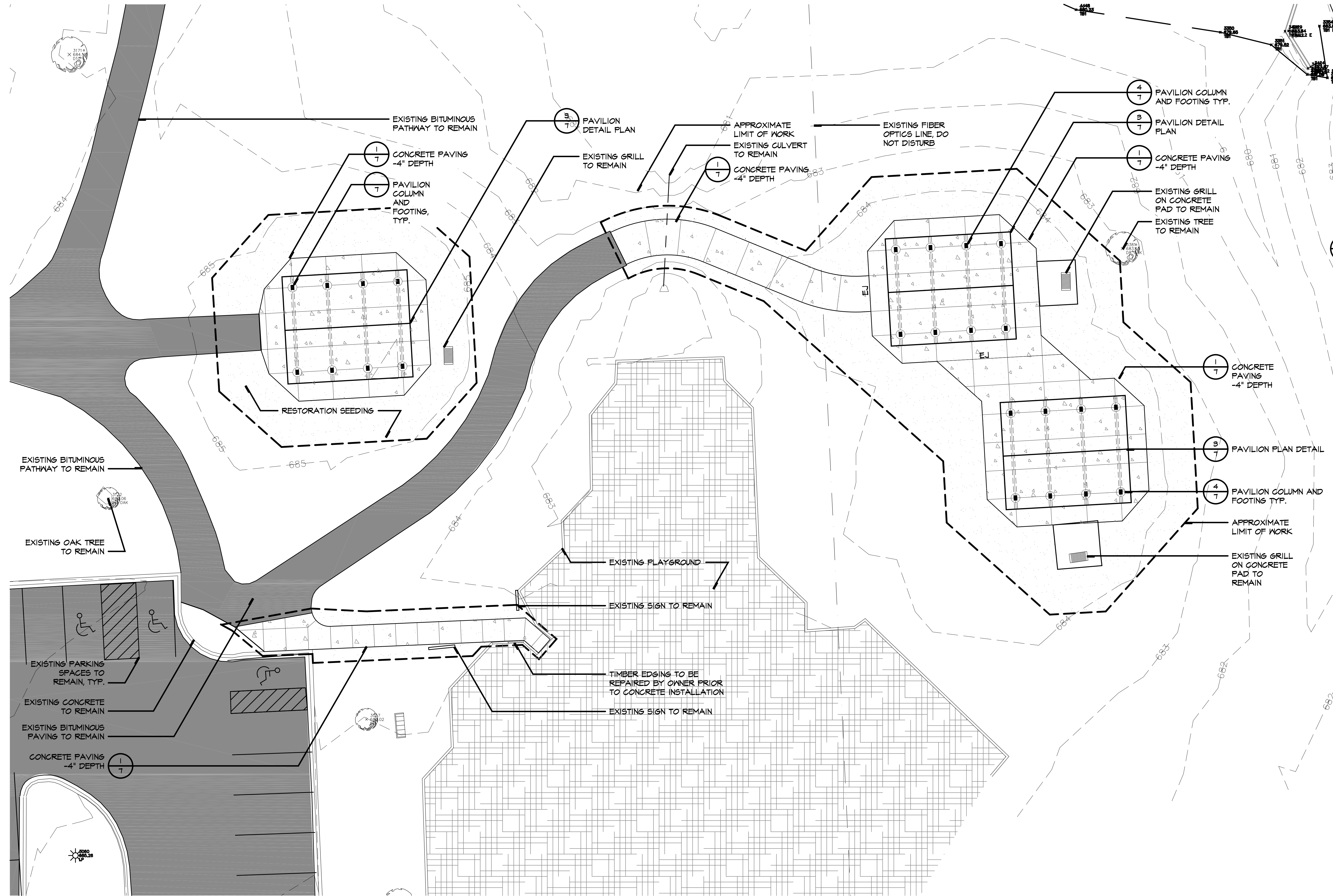
Company _____

Address _____

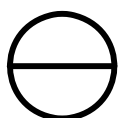

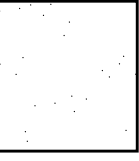

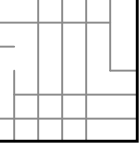
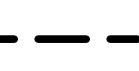

Date _____

Representative's Name _____

(Please Print)



LEGEND

-  DETAIL NUMBER SHEET NUMBER
-  CONCRETE PAVING-4" DEPTH
-  RESTORATION SEEDING
-  EXISTING BITUMINOUS PAVING
-  EXISTING PLAYGROUND
-  APPROXIMATE LIMIT OF WORK
-  EXPANSION JOINT

SITE GENERAL NOTES

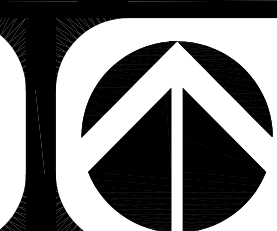
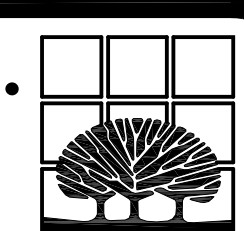
1. SITE PLAN SHOWN FOR GENERAL INFORMATION AND DETAIL REFERENCE ONLY. SEE FOLLOWING PLAN SHEETS FOR SITE LAYOUT, GRADING AND LANDSCAPE INFORMATION.
2. TOWNSHIP WILL WAIVE PERMIT FEES. HOWEVER CONTRACTOR MUST PAY REGISTRATION FEE IF NOT CURRENTLY REGISTERED WITH THE TOWNSHIP.

COMPLIANCE:

- ALL CONSTRUCTION SHALL CONFORM TO ALL ASPECTS OF THE STATE OF MICHIGAN BUILDING CODE (MBC), THE ADA ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES (ADAAG) AND THE AMERICANS WITH DISABILITIES ACT(ADA). ALL WORK BY THE CONTRACTOR FOR COMPLETE EXECUTION OF THIS PROJECT SHALL MEET OR EXCEED LAWS, GUIDELINES, AND STATUTES IN EVERY SITUATION. IN THE EVENT THE CONTRACTOR BELIEVES THAT ANY PORTION OF THE WORK IS INCONSISTENT WITH THE MBC, ADAAG, AND ADA THEY MUST IMMEDIATELY INFORM THE LANDSCAPE ARCHITECT.

HERITAGE PARK SOUTH PAVILIONS
CANTON TOWNSHIP, MI

MCSA GROUP, INC.
Landscape Architecture • Park & Recreation Planning • Architecture
Downtown Planning • Interior Design • Sports Facility Planning
529 Greenwood Avenue S.E. • East Grand Rapids, MI 49506
616-451-3346 • FAX: 616-451-1935 • EMAIL: tas@mcsgroup.com



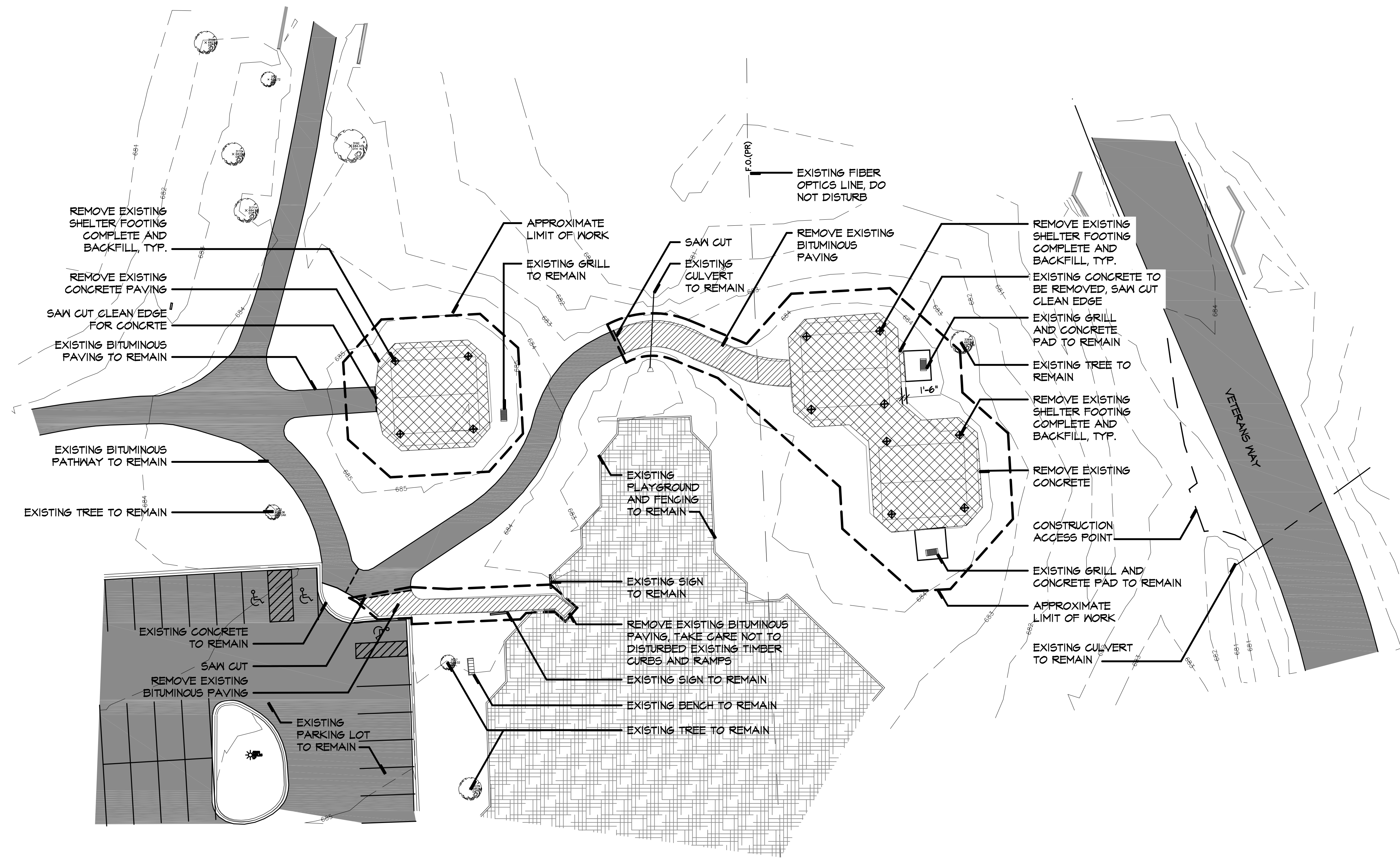
SCALE:
1" = 10'

Site Plan

DATE	REVISIONS
01.04.2024	

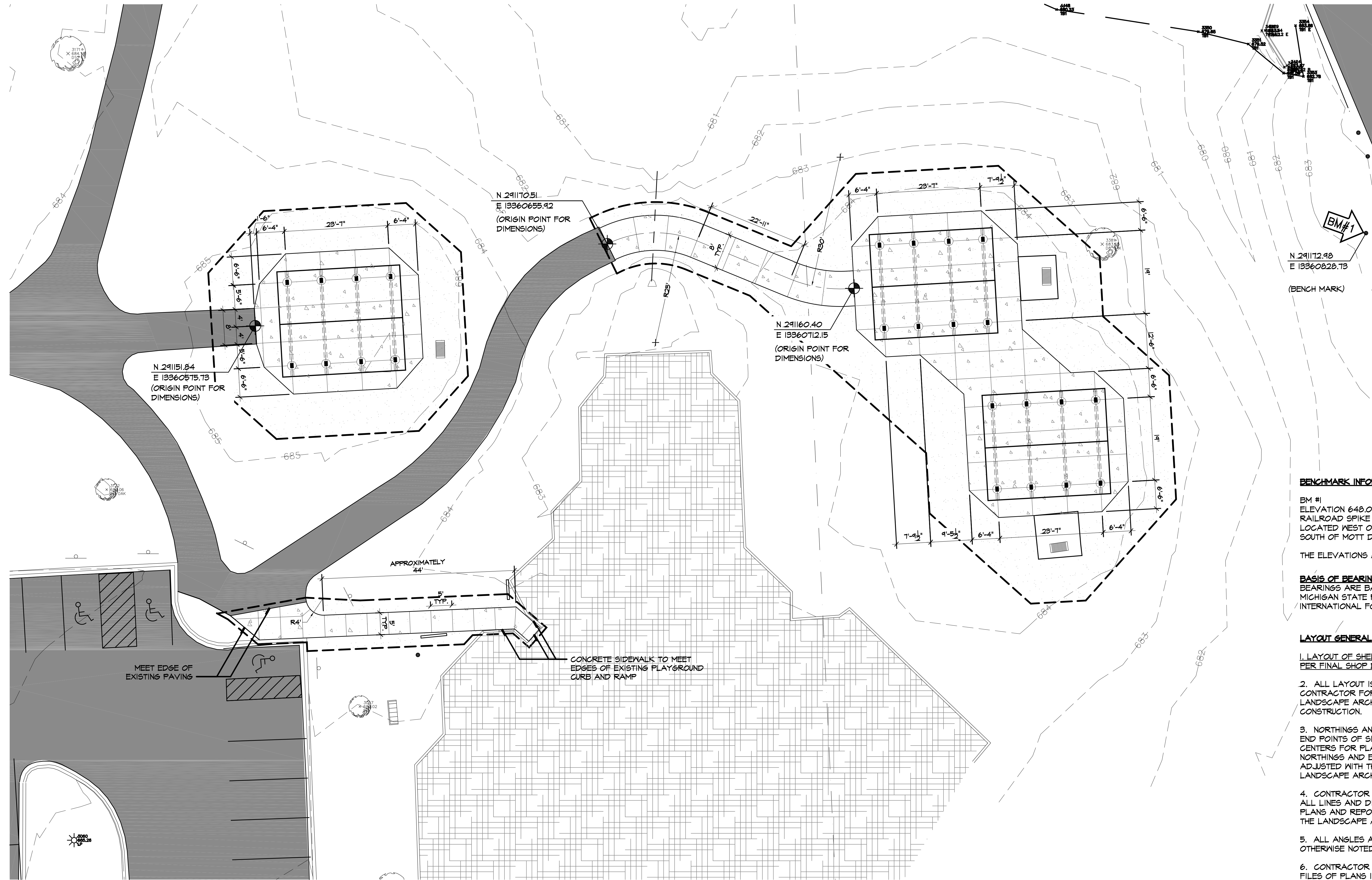
PROJECT NO.	SHEET NO.
2207	1

THIS DOCUMENT AND CONTENT ARE THE EXCLUSIVE PROPERTY OF MCSA GROUP, INC. COPYRIGHT (C) 2019



- EXISTING CONDITIONS AND REMOVALS LEGEND**
- REMOVE EXISTING CONCRETE PAVING
 - REMOVE EXISTING BITUMINOUS PAVING
 - EXISTING BITUMINOUS PAVING TO REMAIN
 - EXISTING PLAYGROUND TO REMAIN
 - APPROXIMATE LIMIT OF WORK
 - PROPOSED WORK SHOWN FOR COORDINATION
 - ITEMS TO BE REMOVED, COMPLETE

- EXISTING CONDITIONS AND REMOVALS GENERAL NOTES:**
1. TOPOGRAPHIC SURVEY PERFORMED BY LRE.
 2. THE CONTRACTOR IS TO LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION OPERATIONS. CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGES TO UTILITIES CAUSED BY THEIR WORK. CONTACT MISS DIG FOR CONFIRMATION OF UTILITY LOCATIONS (1-800-482-7171).
 3. PROTECT ALL TREES. DO NOT OPERATE EQUIPMENT, STORE, STOCKPILE, OR PARK WITHIN DRIPLINE OF TREES. HOLD NECESSARY DISTURBANCE TO A MINIMUM.
 4. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR DAMAGE TO ITEMS NOT SCHEDULED FOR REMOVAL.
 5. REMOVAL ITEMS SHOWN ARE BASED ON BEST AVAILABLE INFORMATION AND ARE SHOWN SCHEMATICALLY. THE CONTRACTOR SHALL WALK THE SITE PRIOR TO BID TO BE FULLY FAMILIAR WITH THE EXTENT OF REMOVAL ITEMS. THE CONTRACTOR IS RESPONSIBLE FOR ALL REMOVALS NECESSARY TO COMPLETE CONSTRUCTION. QUESTIONS REGARDING ITEMS TO BE REMOVED SHALL BE DIRECTED TO THE LANDSCAPE ARCHITECT.
 6. CONTRACTOR SHALL STRIP AND STOCKPILE TOPSOIL AND DISTRIBUTE A MINIMUM OF 4" OF TOPSOIL, UNLESS OTHERWISE NOTED, ON ALL DISTURBED AREAS AT COMPLETION OF SITE GRADING. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED PER PLANTING PLANS AND SPECIFICATIONS.
 7. WHEN TREE ROOTS ARE ENCOUNTERED THEY SHALL BE CUT CLEANLY NOT RIPPED OR TORN.



BENCHMARK INFORMATION

BM #1
ELEVATION 648.00
RAILROAD SPIKE IN NEW, SIDE OF WOOD POST
LOCATED WEST OF VETERAN'S WAY ROAD &
SOUTH OF MOTT DRAIN

THE ELEVATIONS ARE BASED ON NAVD 88

BASIS OF BEARINGS

BEARINGS ARE BASED ON NAD83
MICHIGAN STATE PLANES, SOUTH ZONE,
INTERNATIONAL FOOT

LAYOUT GENERAL NOTES

1. LAYOUT OF SHELTER POSTS/FOOTINGS TO BE
PER FINAL SHOP DRAWINGS.

2. ALL LAYOUT IS TO BE STAKED BY THE
CONTRACTOR FOR APPROVAL BY THE
LANDSCAPE ARCHITECT PRIOR TO
CONSTRUCTION.

3. NORTHINGS AND EASTINGS REFLECT MAJOR
END POINTS OF SITE ELEMENTS AND POST
CENTERS FOR PLAY EQUIPMENT. THESE
NORTHINGS AND EASTINGS MAY ONLY BE
ADJUSTED WITH THE APPROVAL OF THE
LANDSCAPE ARCHITECT.

4. CONTRACTOR SHALL VERIFY IN THE FIELD
ALL LINES AND DIMENSIONS INDICATED IN THE
PLANS AND REPORT ANY INCONSISTENCIES TO
THE LANDSCAPE ARCHITECT FOR RESOLUTION.

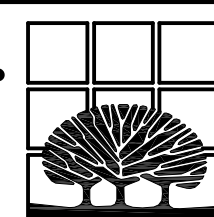
5. ALL ANGLES ARE PERPENDICULAR UNLESS
OTHERWISE NOTED.

6. CONTRACTOR TO RECEIVE ELECTRONIC
FILES OF PLANS IN AUTOCAD 2015 PRIOR TO
CONSTRUCTION.

HERITAGE PARK SOUTH PAVILIONS CANTON TOWNSHIP, MI

MCSA GROUP, INC.

Landscape Architecture • Park & Recreation Planning • Architecture
Downtown Planning • Interior Design • Sports Facility Planning
529 Greenwood Avenue S.E. • East Grand Rapids, MI 49506
616-451-3346 • FAX: 616-451-1935 • EMAIL: tas@mcsagroup.com

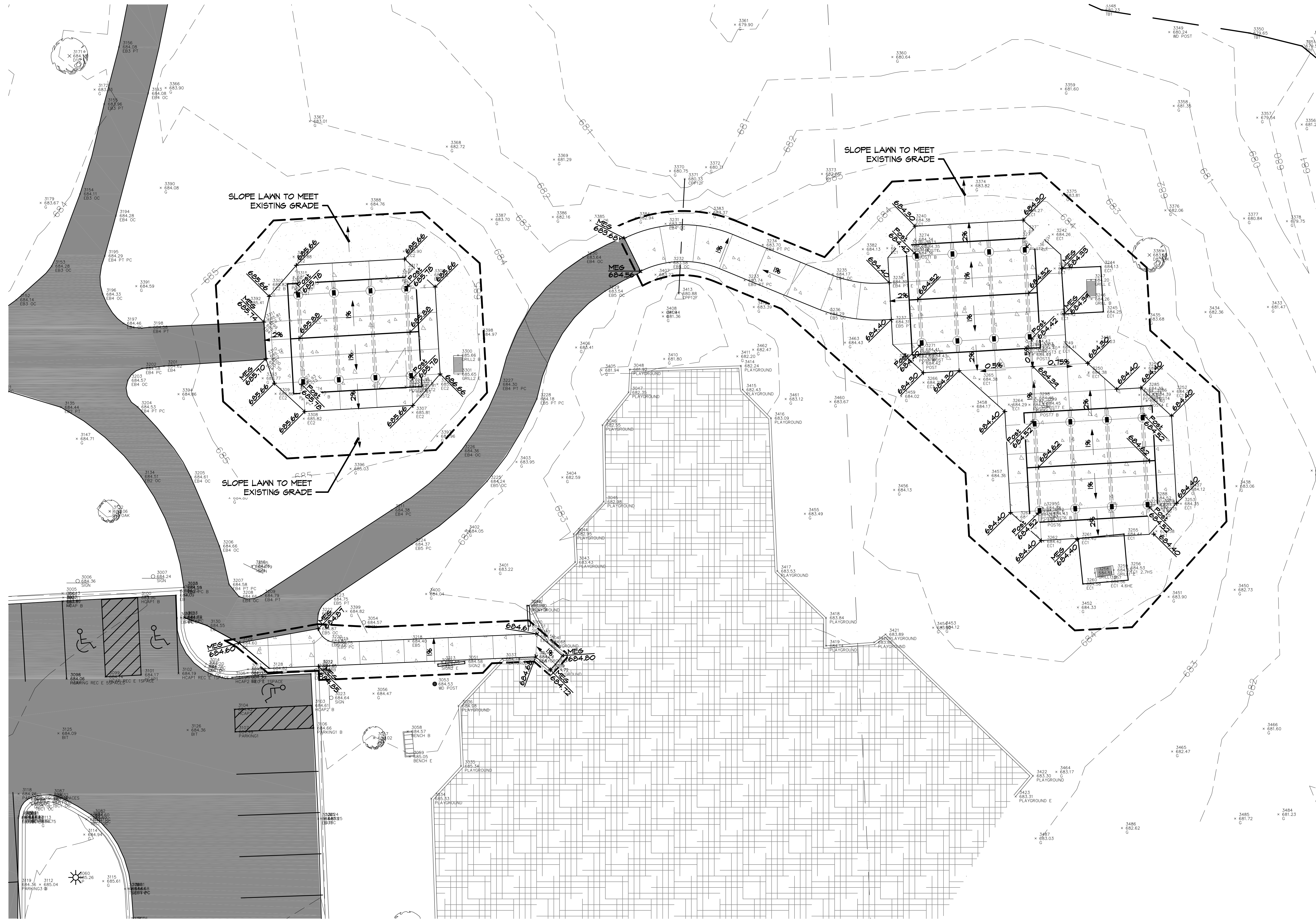


SCALE:
1" = 10'

Layout Plan

DATE	01.04.2024
REVISIONS	

PROJECT NO.	2207
SHEET NO.	3



- GRADING LEGEND:**
- POST GRADE AT BASE OF POST
- MEG MEET EXISTING GRADE
- LIMIT OF WORK LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- SPOT GRADE 00.00
- DIRECTION OF SLOPE 2%

- GRADING GENERAL NOTES:**
1. FINISHED SURFACES TO BE SMOOTH AND EVEN WITH NO ABRUPT OR ANKWARD CHANGES IN GRADE. ADJUSTMENTS TO BE APPROVED BY LANDSCAPE ARCHITECT.
2. GRADE ALL SURFACES AS NOTED ON PLANS, MAXIMUM TRAVERSE SLOPE, OR RUNNING SLOPE SHALL NOT EXCEED 5% (1' IN 20') UNLESS OTHERWISE NOTED. PROPOSED CROSS SLOPES SHALL NOT EXCEED 2% (1' IN 50') UNLESS OTHERWISE NOTED.
3. ANY PAVING IN EXCESS OF THESE SLOPES AND NOT MEETING ADA REQUIREMENTS SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR AT THEIR OWN COST.
6. CONTRACTOR TO PROVIDE ANY NECESSARY FILL MATERIAL.
7. ANY EXCESS FILL SHALL BE HAULED OFF FROM SITE BY CONTRACTOR.
8. CONTRACTOR SHALL STRIP AND STOCKPILE TOPSOIL AND DISTRIBUTE A MINIMUM OF 4", UNLESS OTHERWISE NOTED. OF TOPSOIL ON ALL DISTURBED AREAS AT THE COMPLETION OF SITE GRADING. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED PER PLANTING PLANS AND SPECIFICATIONS.

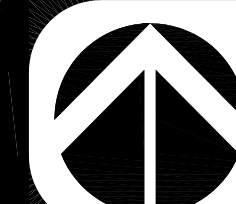
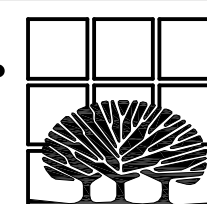
COMPLIANCE:

- ALL CONSTRUCTION SHALL CONFORM TO ALL ASPECTS OF THE STATE OF MICHIGAN BUILDING CODE (MBC), THE ADA ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES (ADAAG) AND THE AMERICANS WITH DISABILITIES ACT (ADA). ALL WORK BY THE CONTRACTOR FOR COMPLETE EXECUTION OF THIS PROJECT SHALL MEET OR EXCEED LAWS, GUIDELINES, AND STATUTES IN EVERY SITUATION. IN THE EVENT THE CONTRACTOR BELIEVES THAT ANY PORTION OF THE WORK IS INCONSISTENT WITH THE MBC, ADAAG, AND ADA THEY MUST IMMEDIATELY INFORM THE LANDSCAPE ARCHITECT.

HERITAGE PARK SOUTH PAVILIONS

CANTON TOWNSHIP, MI

MCSA GROUP, INC.
Landscape Architecture • Park & Recreation Planning • Architecture
Downtown Planning • Interior Design • Sports Facility Planning
529 Greenwood Avenue S.E. • East Grand Rapids, MI 49506
616-451-3346 • FAX: 616-451-1935 • EMAIL: tas@mcsgroup.com

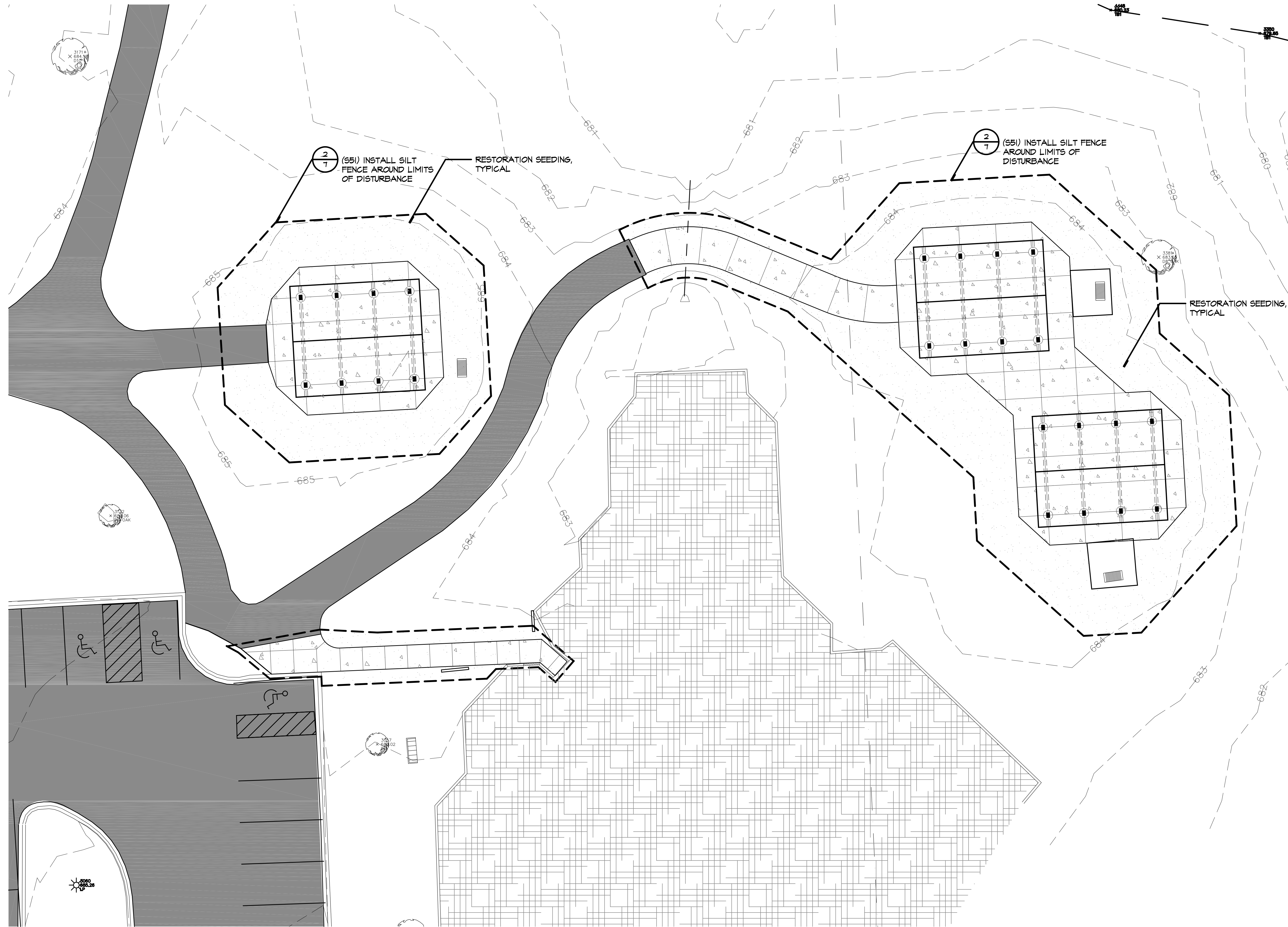


SCALE:
1" = 10'

Grading and Drainage Plan

DATE	01.04.2024
REVISIONS	

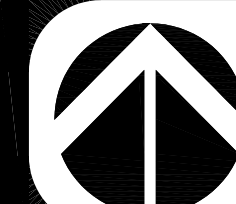
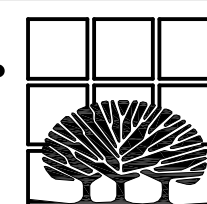
PROJECT NO.	2207
SHEET NO.	4

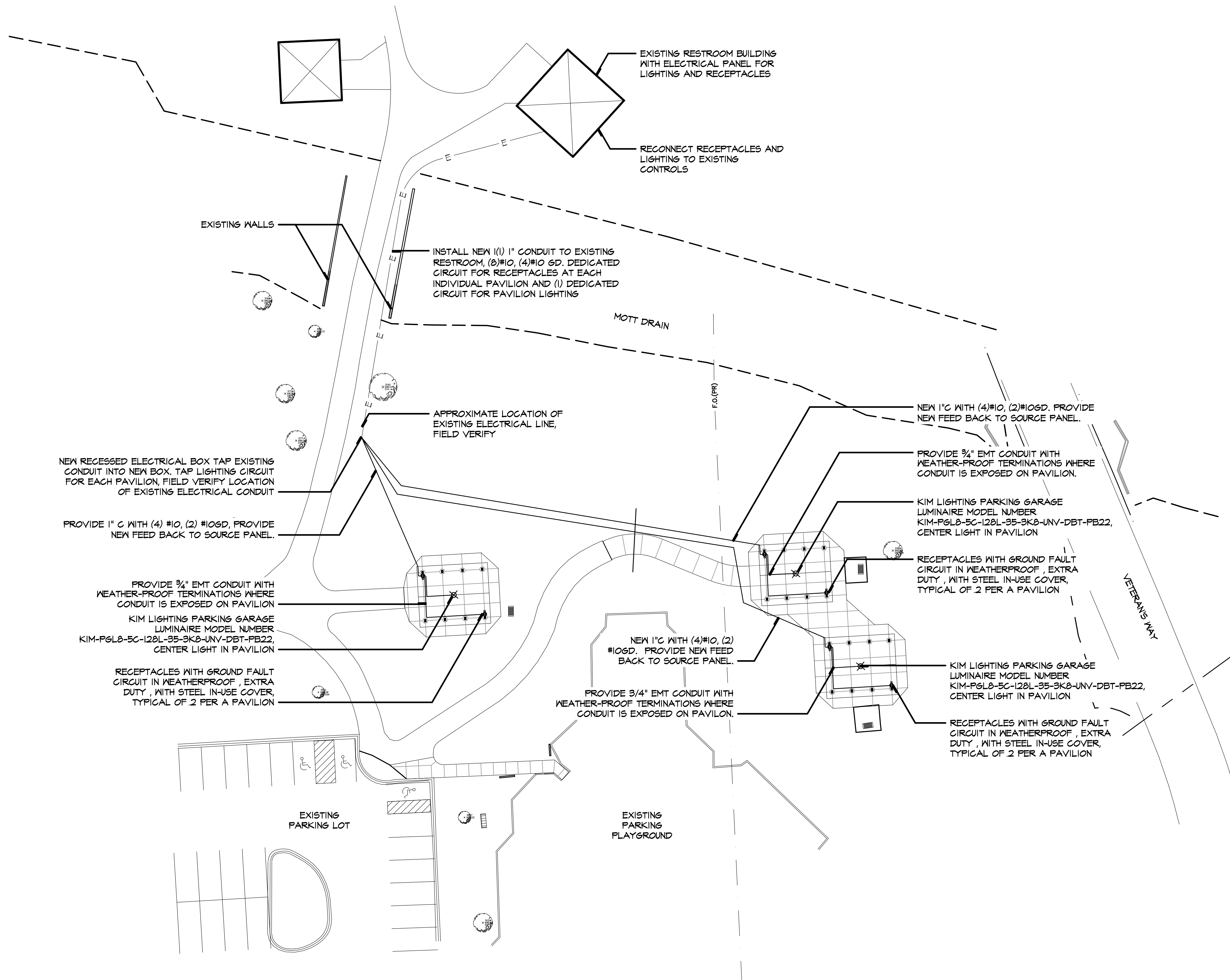


- SOIL EROSION AND SEDIMENTATION CONTROL GENERAL NOTES**
- ALL WORK SHALL COMPLY WITH THE APPLICABLE SOIL EROSION AND SEDIMENTATION CONTROL (SESC) RULES AND REGULATION (SOIL EROSION AND SEDIMENTATION CONTROL - 1994 PA 451, PART 91, AS AMENDED, MCL 324.9101 ET SEQ.).
 - PLACE EROSION CONTROL MEASURES AS SHOWN TO ESTABLISH VEGETATION AND ELIMINATE SEDIMENTATION INTO NON-CONSTRUCTION AREAS. CONTRACTOR SHALL OBTAIN REQUIRED EROSION AND SEDIMENTATION CONTROL PERMIT AND MUST POST THE PERMIT ON SITE THROUGHOUT THE DURATION OF THE PROJECT.
 - ALL TEMPORARY SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT.
 - ANY MUD OR DEBRIS TRACKED ONTO EXISTING ROADWAYS, PARKING AREAS, AND SIDEWALKS MUST BE REMOVED DAILY.
 - PROPOSED AND EXISTING DRAIN STRUCTURES (AS NOTED) TO RECEIVE INLET PROTECTION FABRIC DROP AND FENCE.
 - **S51 S58**
 - ANY MATERIAL STOCKPILED ON-SITE MUST BE PROTECTED WITH TARP AND OR SILT FENCE.

S-E-S-C KEYING SYSTEM			
KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
EROSION CONTROLS			
E5	DUST CONTROL		For use on construction sites, unpaved roads, etc. to reduce dust and sedimentation from wind and construction activities.
E8	PERMANENT SEEDING		Stabilization method utilized on sites where earth change has been completed (final grading attained).
E9	MULCH BLANKETS		On exposed slopes, newly seeded areas, new ditch bottoms, or areas subject to erosion.
E11	VEGETATED CHANNELS		For use in created stormwater channels. Vegetation is used to slow water velocity and reduce erosion within the channel.
E12	RIPRAP		Use along shorelines, waterways, or where concentrated flows occur. Slows velocity, reduces sediment loss, and reduces erosion.
EROSION / SEDIMENT CONTROLS			
ES31	CHECK DAM		Used to reduce surface flow velocities within constructed and existing flow corridors.
SEDIMENT CONTROLS			
S51	SILT FENCE		Use adjacent to critical areas, to prevent sediment laden sheet flow from entering these areas.
S53	STABILIZED CONSTRUCTION ACCESS		Used at every point where construction traffic enters or leaves a construction site.
S58	INLET PROTECTION FABRIC DROP		Use at stormwater inlets, especially at construction sites.
S59	INLET PROTECTION FABRIC FENCE		Use at stormwater inlets, especially at construction sites.

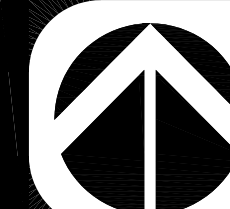
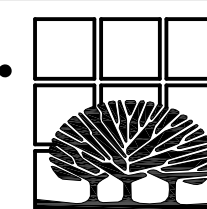
- LANDSCAPE NOTES:**
1. PLANTING SOIL AND MULCH FOR ALL TREES, SHRUBS, AND PERENNIALS SHALL BE AS PER APPROPRIATE DETAIL.
 2. SEED ALL DISTURBED AREAS. SEED LIMIT LINE (LIMITS OF DISTURBANCE) IS APPROXIMATE, ALL DISTURBED AREAS SHALL BE SEEDED AND RESTORED, UNLESS OTHERWISE NOTED.
 3. SEE SPECIFICATION FOR SEED MIX.
 4. EXISTING ON SITE TOPSOIL MAY BE USED. IT MUST BE SCREENED, TESTED AND AMENDED PER SPECIFICATIONS. IF THERE IS NOT ENOUGH TOPSOIL TO ACHIEVE A MINIMUM OF 4" DEPTH, THEN TOPSOIL SHALL BE IMPORTED.

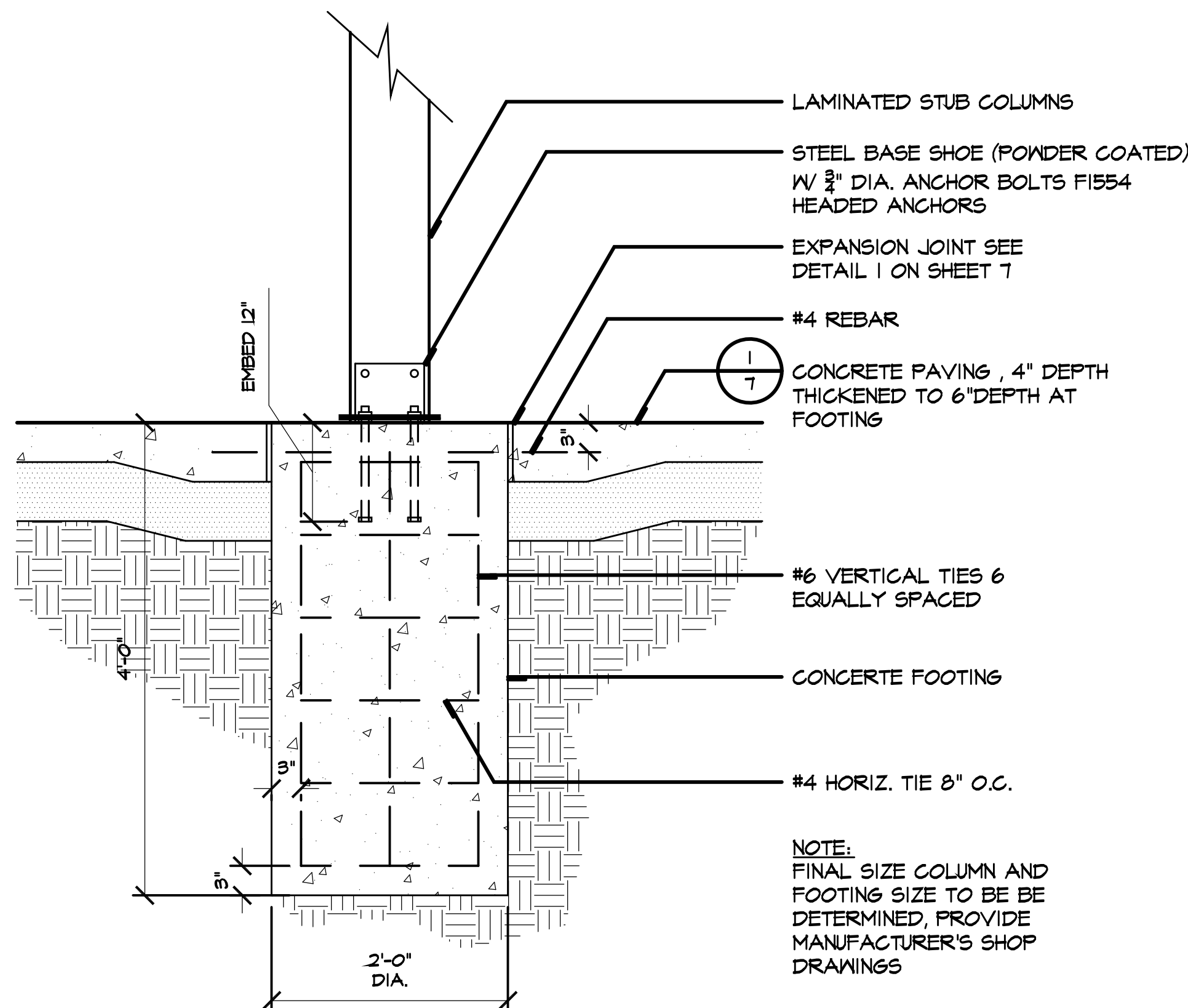




SITE ELECTRICAL NOTES

1. PROVIDE SHOP DRAWINGS FOR LIGHT FIXTURES.





4
7 Pavilion Column and Footing

Scale: 1"=1'-0"

PAVILION NOTES:

PAVILION TO BE 24 X 28 GOTHIC ARCH BY CEDAR FOREST PRODUCTS OR APPROVED EQUAL. MODEL NUMBER GAP2428.

SEE SPECIFICATIONS FOR PRELIMINARY LAYOUT.

PAVILION TO FACTORY FINISHED STAIN SYSTEM. COLOR TO BE DETERMINED BY LANDSCAPE ARCHITECT.

ROOF TO BE 4:12 ROOF PITCH, 26 GA MED-LOK METAL ROOFING (STANDING SEAM) ROOF COLOR TO BE DETERMINED BY LANDSCAPE ARCHITECT

TONGUE AND GROOVE DECKING TO BE PRE-STAINED IN COLOR PER LANDSCAPE ARCHITECT.

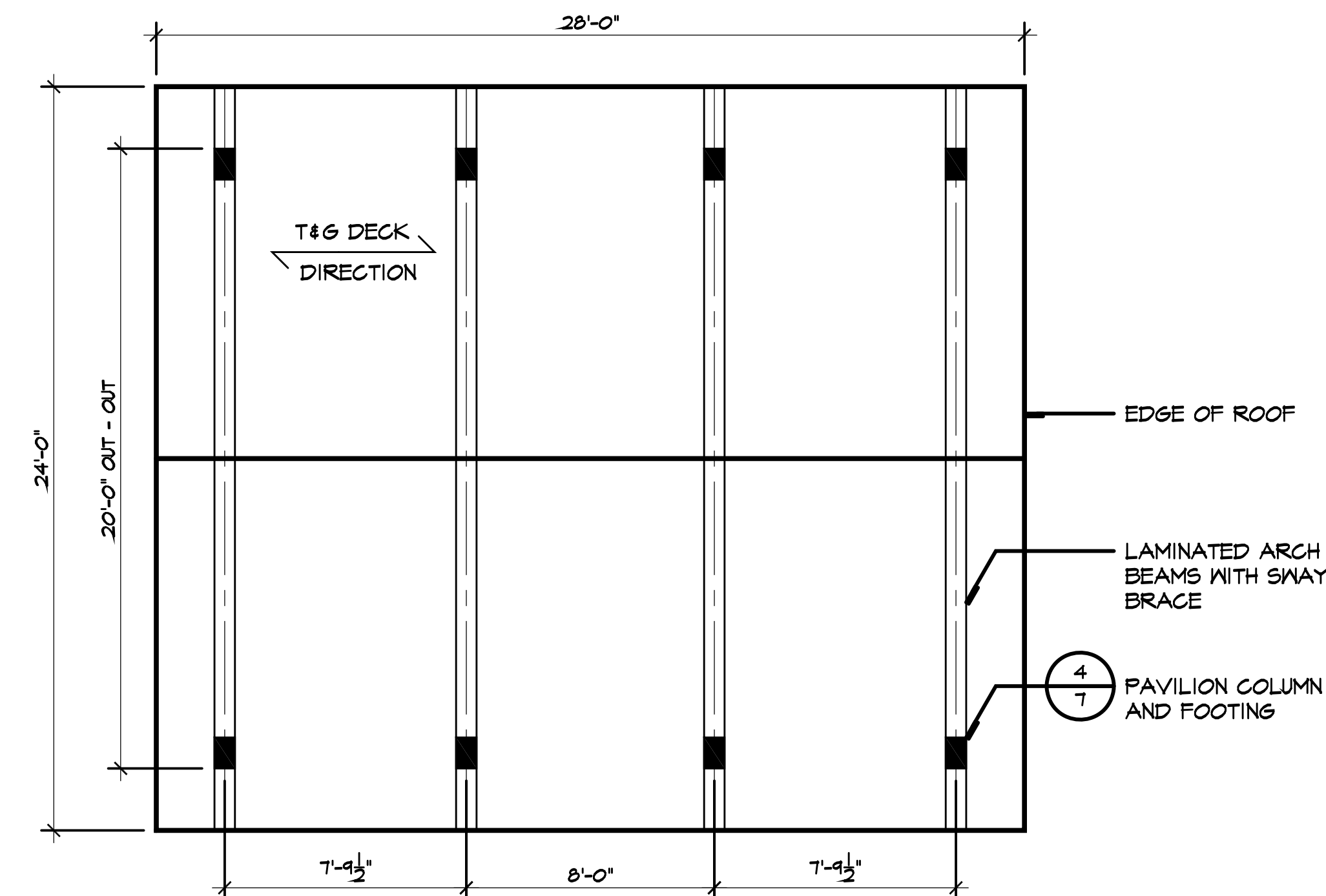
REFER TO MANUFACTURER'S SPECIFICATIONS FOR INSTALLATION.

CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION.

COORDINATE LAYOUT WITH FINAL PAVILION SHOP DRAWINGS.

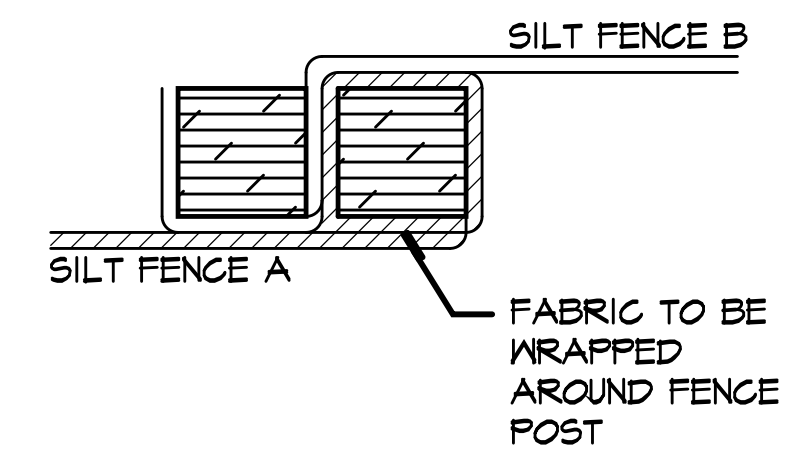
PAVILION TO HAVE ONE (1) LIGHTS AND TWO (2) GFI OUTLET SEE ELECTRICAL PLANS. CONTRACTOR SHALL PROVIDE NECESSARY CONDUIT ON EXTERIOR OF POST.

CONTRACTOR TO PROVIDE ALL NECESSARY SEALED ENGINEERING DRAWINGS FROM MANUFACTURER TO ACQUIRE BUILDING OCCUPANCY PERMIT FROM CANTON TOWNSHIP.



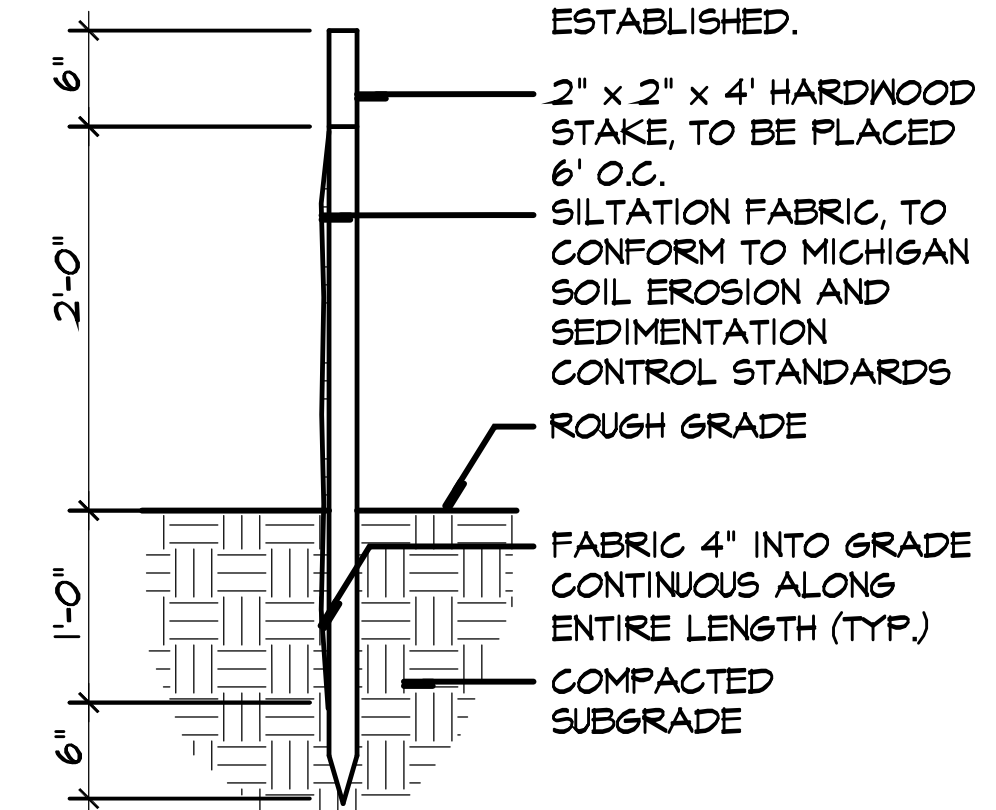
3
7 Pavilion Detail Plan

Scale: 1/4"=1'-0"



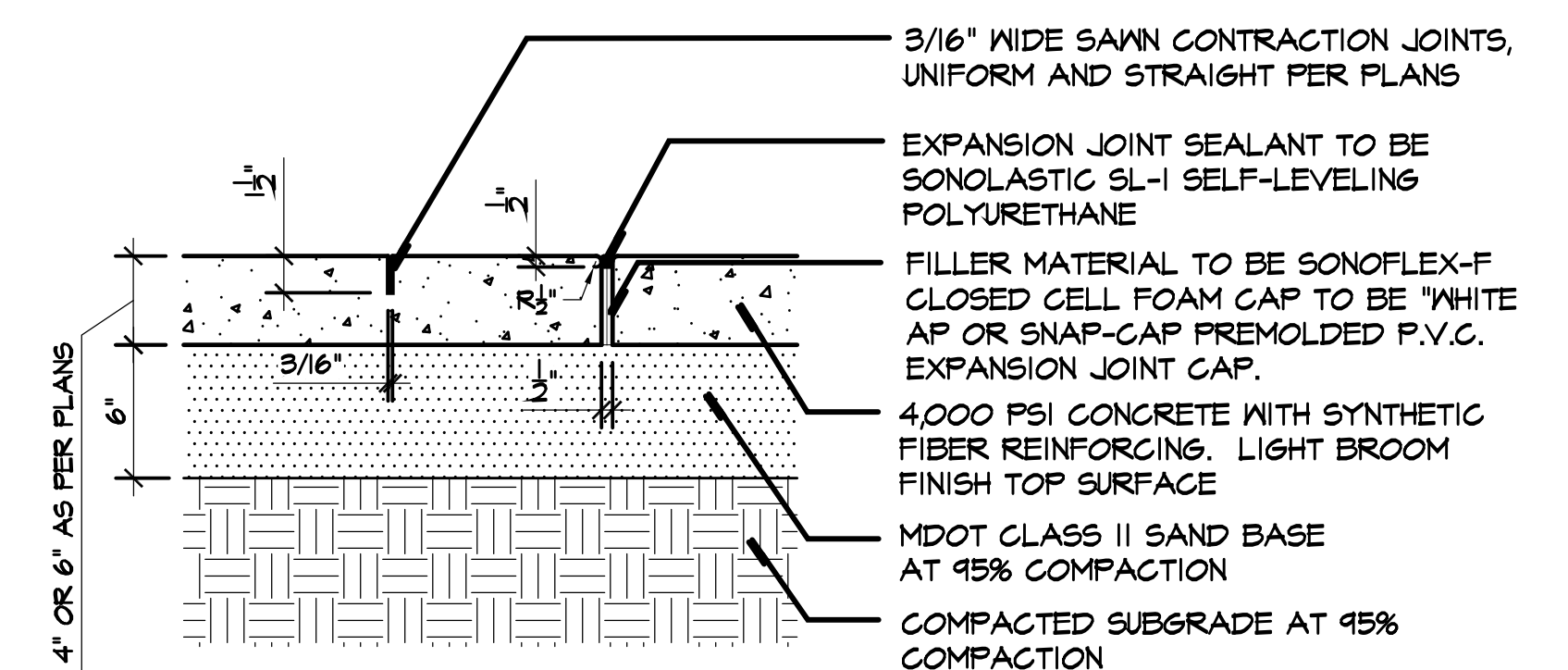
SILT FENCE JOINT
N.T.S.

NOTE-CONTRACTOR TO
MONITOR SILT FENCE
FOR DURATION OF
PROJECT AND REMOVE
ONCE VEGETATION IS
ESTABLISHED.



2
7 Silt Fence

Scale: 1"=1'-0"



NOTES:

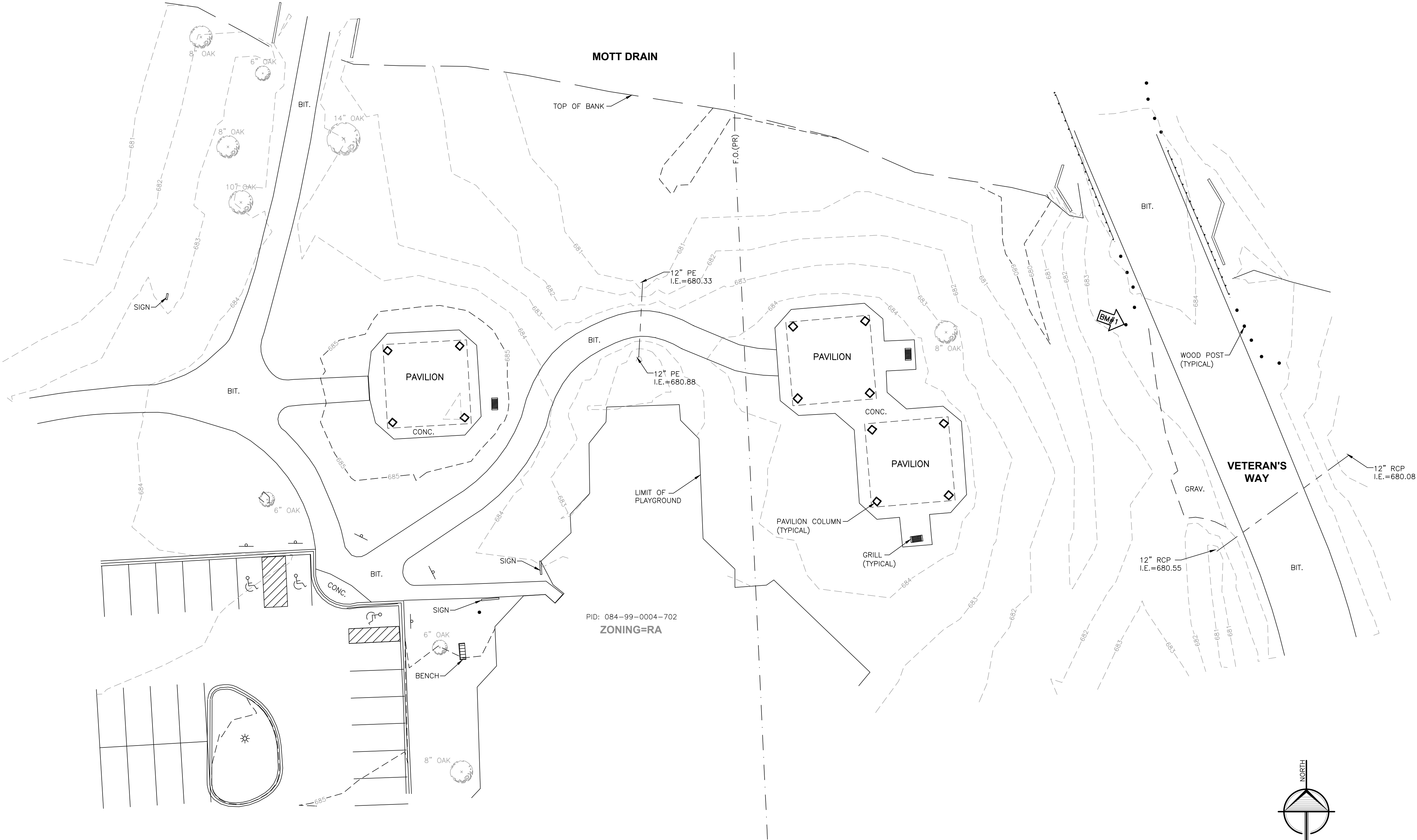
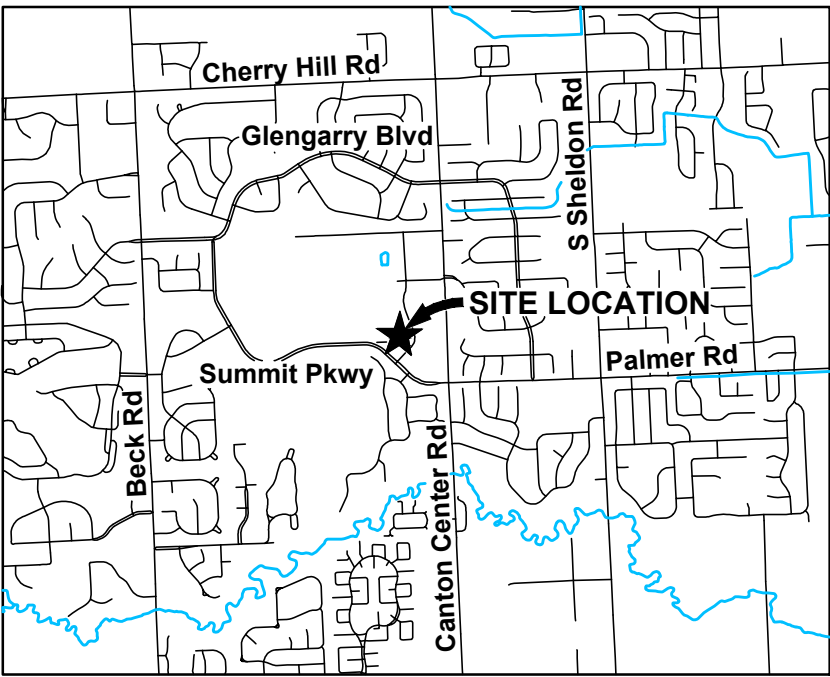
1. EXPANSION JOINTS TO BE PLACED AS PER LAYOUT PLAN OR 30' O.C. MAXIMUM.
2. SEE LAYOUT PLANS FOR SCORING PATTERNS, SPECIALTY FINISHES AND COLORS
3. USE 6" THICKNESS AT DRIVEWAYS AND WHERE SHOWN ON PLANS
4. *PLACE 6X6 MI.4XMI.4 WELDED WIRE MESH CENTERED IN 6" CONCRETE
5. MAY UTILIZE EXISTING SUBBASE IF IT MEETS COMPACTION.

1
7 Concrete Paving & Joints

Scale: 1-1/2"=1'-0"

HERITAGE PARK SOUTH PAVILION

CANTON TOWNSHIP, WAYNE COUNTY, MICHIGAN



LEGEND

- | | | | |
|-----|--------------------------|-----|--------------------------|
| △ | TRAVERSE POINT | ⊕ | FIRE HYDRANT |
| ▲ | WELL | ◇ | WATER VALVE |
| ⬢ | HIGHWAY | ⊞ | ELECTRIC TRANSFORMER |
| ● | MONUMENT | ⊞ | GAS METER |
| ○ | FOUND IRON STAKE | ⊞ | WATER METER |
| ● | SET IRON STAKE | ⊞ | TELEPHONE RISER |
| + | SIGN | ⊞ | ELECTRIC METER |
| RR | RR SIGN | ⊞ | CATCH BASIN |
| ⊞ | GUY POLE | ⊞ | ROUND CATCH BASIN |
| ⊞ | GUY ANCHOR | ⊞ | UTILITY MANHOLE |
| ⊞ | UTILITY POLE | ⊞ | STM MANHOLE |
| ⊞ | LIGHT POLE | ⊞ | SANITARY MANHOLE |
| ⊞ | POST | ⊞ | ELECTRIC MANHOLE |
| ⊞ | SOIL BORING | ⊞ | TELEPHONE MANHOLE |
| ⊞ | U.G. UTILITY MARKER | ⊞ | SHRUB |
| ⊞ | MAILBOX | ⊞ | DECIDUOUS TREE |
| ⊞ | AC UNIT | ⊞ | CONIFEROUS TREE |
| --- | WATER UTILITY LINE | --- | WATER UTILITY LINE |
| --- | TELEPHONE UTILITY LINE | --- | TELEPHONE UTILITY LINE |
| --- | ELECTRIC UTILITY LINE | --- | ELECTRIC UTILITY LINE |
| --- | GAS UTILITY LINE | --- | GAS UTILITY LINE |
| --- | STEAM UTILITY LINE | --- | STEAM UTILITY LINE |
| --- | STM UTILITY LINE | --- | STM UTILITY LINE |
| --- | SANITARY UTILITY LINE | --- | SANITARY UTILITY LINE |
| --- | FIBER OPTIC UTILITY LINE | --- | FIBER OPTIC UTILITY LINE |
| --- | OVERHEAD UTILITY LINE | --- | OVERHEAD UTILITY LINE |
| --- | LAKE LINE | --- | LAKE LINE |
| --- | EXISTING CONTOUR | --- | EXISTING CONTOUR |
| --- | DECK | --- | DECK |
| --- | CONCRETE | --- | CONCRETE |
| --- | GRAVEL | --- | GRAVEL |
| --- | BITUMINOUS | --- | BITUMINOUS |

BENCHMARK INFORMATION

BM#1) ELEVATION: 684.00
RAILROAD SPIKE IN NW. SIDE OF WOOD POST LOCATED
WEST OF VETERAN'S WAY ROAD & SOUTH OF MOTT
DRAIN

THE ELEVATIONS ARE BASED ON NAVD 88

BASIS OF BEARINGS

BEARINGS ARE BASED ON NAD83 MICHIGAN STATE PLANES,
SOUTH ZONE, INTERNATIONAL FOOT

NOTES

- CONTRACTOR TO FIELD VERIFY HORIZONTAL &
VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR
TO CONSTRUCTION AND MUST NOTIFY ENGINEER
IMMEDIATELY OF ANY DISCREPANCIES.

2121 3 Mile Rd. NW
Walker, MI 49544
Ph: 616-301-7888
www.LREMI.com



REVISIONS:	NO.	ISSUED FOR	DATE

CLIENT:	MCSA GROUP, INC.
PROJECT:	529 GREENWOOD AVENUE S.E. EAST GRAND RAPIDS, MICHIGAN 49506
	HERITAGE PARK SOUTH PAVILION
	CANTON, MI

PROJECT NUMBER: 23-26	DATE:	10/2023
SURVEYED BY: RLB	DESIGNED BY:	10/2023
DRAFTED BY: KLB	QA/QC: RLB	10/2023

SHEET NAME:	TOPOGRAPHIC SURVEY
SHEET NUMBER:	C1



ALL UTILITIES AS SHOWN ARE APPROXIMATE LOCATIONS DERIVED FROM
ACTUAL MEASUREMENTS AND AVAILABLE RECORDS. THEY SHOULD NOT BE
INTERPRETED TO BE EXACT LOCATION NOR SHOULD IT BE ASSUMED THAT
THEY ARE THE ONLY UTILITIES IN THE AREA.