

May, 27, 2025

**Request for Bids
Lansing School District
Purchasing Department
519 West Kalamazoo
Lansing, MI 48933**

This is not an order

Sealed proposals for the furnishing of items and services listed on the sheets attached to the bid proposal documents that are available on our web-site will be received in the Lansing School District Purchasing Office, 519 W. Kalamazoo St., Lansing, Michigan 48933 until

June 18, 2025, 2:00 PM local time.

At this time and place bids will be opened publicly and read aloud.

One (1) original and Two (2) copies of the bid are to be submitted on the forms furnished by the Lansing School District in a sealed envelope and clearly marked:

Bid SB-0063 Lewton Elementary Demolition and Abatement

BID DOCUMENTS WILL BE POSTED BY June 2, 2025

To obtain a copy of this request for bid please visit our web site at:

www.lansingschools.net

(Click on Quicklinks at the top and click on Vendors (Bid Info), scroll down to Current Requests for Bids or Proposals) or the bid documents are also posted on the State of Michigan's procurement system SIGMA. If you need assistance, please contact the Lansing School District Purchasing Department at 517-755-3030.

No faxed, telephone or e-mailed bids will be accepted. Late submittals will not be considered.

All questions must be in writing and should be directed to Jon Laing, Chief Financial Officer at: projects@lanisngschools.net, no later than 3:30 PM on Monday, June 9, 2023. Addendums will be posted on the Lansing School District's web-site and SIGMA as they are issued.

All bids/proposals must be accompanied by a 5% bid bond and a sworn and notarized statement disclosing any familial relationship with the Board of Education and selected staff. Bids must include the completed statement to be accepted or considered.

All bids shall be submitted in accordance with the attached instructions and shall remain firm for a period of ninety (90) days after the opening of bids.

A bid bond is required with this bid in the amount of 5% of the total bid amount. Certified payrolls are required with each invoice or pay application. A performance, labor and materials bond will be required to cover 100% of the project.

The Lansing School District reserves the right to reject any or all bids in whole or in part and to accept the proposal or portion of the proposal that, in their opinion, best serves the interests of the Lansing School District.

Lansing School District

Jon Laing
Chief Financial Officer

PRE-BID INFORMATION

There will be a Pre-Bid Meeting held Monday June 6, 2025 at 2:00 PM at Lewton Elementary, 2000 Lewton Place, Lansing, MI 48911. Attendance is HIGHLY RECOMMENDED.

PROJECT MANUAL

LEWTON ELEMENTARY
Lansing, Michigan

VOLUME 2

Bid Package I

Friday, May 23, 2025

Building & Site Demolition

CONSTRUCTION MANAGER

The Christman Company
208 N. Capitol Avenue
Lansing, MI 48933-1357
517-482-1488

Architect

Kingscott Associates, Inc
950 Trade Centre Way #130
Portage, Michigan 49002

Civil Engineer

Spalding DeDecker
905 South Boulevard East
Rochester Hills, MI 48307

Hazardous Material

BDN Industrial Hygiene Consultants
8105 Valleywood Lane
Portage, Michigan 49024

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Trade Contract Proposal Pre-Submission Checklist
Trade Contract Proposal Form
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Contract Forms

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Performance Bond (Authored by Construction Manager)
Labor and Material Payment Bond (Authored by Construction Manager)
Guarantee (Authored by Construction Manager) requirements from contract and then include appropriately; Standard is one year

AIA Documents are not included in this specification, but are part of the contract documents, copies may be obtained from the Construction Manager

Contractor's Qualification Statement (AIA Document A305)
Application and Certificate for Payment and Continuation Sheet (AIA Documents G702 and 703) Submitted and utilized electronically via Trade Contractor Portal
Certificate of Substantial Completion (AIA Document G704)
Certificate of Insurance (AIA Documents G705)
Contractor's Affidavit of Payment of Debts and Claims (AIA G706)
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0750	General Conditions of the Contract for Construction (AIA Document A201-2007 Edition)
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DIVISION 1 .. GENERAL REQUIREMENTS

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SECTION 00025

Project: **LEWTON ELEMENTARY**
Abatement and demolish existing elementary building and site clearing for future build.

Owner: **Lansing School District**
519 West Kalamazoo Street
Lansing, MI, 48933

Architect/Engineer: **Kingscott Associates, Inc**
950 TRADE CENTRE WAY #130
PORTAGE, MICHIGAN 49002

Construction Manager: The Christman Company
208 N. Capitol Avenue
Lansing, MI 48933-1357
517-482-1488

Sealed proposals for all work categories as described in the Project Manual for the above project will be received no later than **Wednesday, June 18th, 2025 at 2:00 PM.** Proposals must be received at the Lansing School District Purchasing Office, ATTN: Jon Laing, 519 W. Kalamazoo St., Room 208, Lansing, MI. The Lansing School District will not consider any late, faxed or electronic mail bids. Bids will be opened publicly and read aloud. All bids must be presented on the forms provided in the contract documents

Proposals shall be submitted to the Lansing School District at the above address on the proposal form provided, in a sealed envelope clearly marked **WORK CATEGORY NO. _____**, and shall be identified with the project name and the bidder's name and address.

Proposals shall be submitted in triplicate for record keeping by owner, construction manager, and architect.

All contractors bidding on work must be bondable and must include in their bid the cost for furnishing a Co-Obligee Labor and Material Payment Bond and a Co-Obligee Performance Bond. On the proposal form, the bidder shall identify the cost to furnish a payment and performance bond which is not included in their base bid.

There will be a pre-bid meeting in person, on site Friday June 6th at 2:00-3:30PM where bidders may tour the project at 2000 Lewton Pl, Lansing, MI 48911 conducted by the Construction Manager. It is strongly recommended that contractors attend this pre-bid conference.

Contract documents may be obtained by visiting Lansing School District's Purchasing website (www.lansingschools.net), the State of Michigan's SIGMA Vendor Self Service website (<https://sigma.michigan.gov>) or the Builder's Exchange website (www.bxlansing.com).

All questions are to be directed to the Construction Manager. No direct contact with the Owner or Architect is requested.

Each Proposal shall be accompanied by a certified check, cashiers' check, money order, or bid bond made payable to The Christman Company in an amount not less than five percent (5%) of the base bid as a bid security. The Bid Security of Bidders under consideration will be returned immediately after award of contracts by the Construction Manager. The amount of the guarantee shall be forfeited to the Owner if the successful Bidder fails to enter into a contract and furnish required bonds and insurance within 30 days after award of contracts.

All proposals submitted shall remain valid for a period of sixty (60) days after the bid date. The Owner, Architect and Construction Manager reserve the right to waive any irregularities, reject any or all proposals, or accept any proposal, which, in their opinion, will serve their best interest.

Pre-bid conference will be held at 2000 Lewton Place Lansing, MI 48915 at 2:00-3:30 on Friday June 6, 2025.

RFI's shall be submitted in writing via email to projects@lansingschools.net by Monday June 9th, 2025 at 3:30PM.

END OF SECTION 00025

ARTICLE 1, SCOPE OF PROPOSALS

- 1.1 This is a "Construction Manager Project" for which The Christman Company is the "Construction Manager" For this portion of this project the successful bidders will become "Trade Contractors" and will enter into "Trade Contracts" with the Construction Manager. The Construction Manager will administer separate Trade Contracts for all Work Categories involved in the project. The project will be controlled, coordinated, and scheduled by the Construction Manager on behalf of the Owner.
- 1.2 Provisions shall be such that the Trade Contractor will assume the Construction Manager's obligations to the Owner for the portion of the work performed by each Trade Contractor.
- 1.3 Proposals: Separate proposals for the Work Categories included in this phase of the construction will be received by the Construction Manager. The time and place where proposals shall be received and a listing of the Work Categories included in this phase of the work are included in the Advertisement for Bids.

ARTICLE 2, BIDDER'S REPRESENTATION

- 2.1 Each Bidder by making his bid, represents that he has read and understands the bidding documents, and that they visited the site and familiarized himself with the local conditions under which the work is to be performed. No plea of ignorance of conditions that exist, or of any other relevant matter concerning the work to be performed in the execution of the work will be accepted as justification for failure to fulfill every detail of all the requirements of the Contract Documents. The Bidder, if awarded the Contract, shall not be allowed any extra compensation by reason of any matter or thing concerning which such Bidder did not fully inform himself prior to the bidding.

ARTICLE 3, BIDDING PROCEDURES

- 3.1 Proposals shall be submitted in duplicate, only on the forms provided by the Construction Manager, all blank spaces shall be fully filled in, including Addenda, Alternates, Price Breakouts, Unit Prices and Bidder's Certificate where applicable. All designations and prices shall be fully and clearly set forth with the amount of the bid stated in words and repeated in numerical figures. In cases of variations, the worded amount shall prevail. Erasures or other changes in the bid shall bear the signature of the Bidder. Insert N/A in those blanks on the Proposal Form that are not applicable. Separate Proposal Forms shall be prepared for each Work Category.
- 3.2 The bids shall be on the basis of a Lump Sum. Proposals shall not contain any added recapitulation of the work to be done as otherwise the proposal may be declared irregular. Oral, telegraphic or telephonic modifications of the work and/or the bid amounts shall not be considered.
- 3.3 The Architect or Construction Manager will make clarifications and corrections by the issuance of an addendum to all Bidders recorded in the Construction Manager's office as having in their possession a set of bidding documents. Addenda shall also be issued to all plan rooms in which bidding documents are on file.

- 3.4 It shall be the responsibility of the Bidders on record to provide all of their prospective sub-bidders with the information contained in any addenda.
- 3.5 Duplicate proposals shall be submitted in an opaque envelope, clearly marked "PROPOSAL FOR WORK CATEGORY NO. _____", and shall be identified with the Project Name and the Bidder's name and address.
- 3.6 Proposals for this phase of the work will be received at the time and place indicated in the "Advertisement for Bids".
- 3.7 An award of Contracts: Each Work Category or combination of Work Categories will be awarded based on the dollar value of the proposal, qualifications of the Contractor, his ability to perform the work, and in the best interest of the Owner.

ARTICLE 4, EXAMINATION OF THE SITE

- 4.1 Each Bidder shall carefully examine the site of the project and surrounding territory; the means of approach to the site, and the structure of the ground, and make all necessary investigations required to inform himself thoroughly and fully as to facilities for delivering, storing, placing and handling of materials and equipment, and to inform himself fully as to all difficulties that may be encountered in the complete execution of all work in accordance with the Contract Documents.
- 4.2 Should a bidder find apparent discrepancies in, or omission from the Contract Documents, or should he be in doubt as to their true meaning, or should he have any questions regarding any work or material intended, then such Bidder, either Trade Contractor or Trade Subcontractor, shall submit to the Architect, through the Construction Manager, a written request for an interpretation thereof. The person submitting the request shall be responsible for its prompt delivery and such request must be delivered to the Architect by the Construction Manager at least five days before the opening of proposals.
- 4.3 Any verbal information obtained from, or statements made by a representative of the Owner, Architect, or the Construction Manager at the time of examination of the Contract Documents or Site shall not be construed as in any way amending the Contract Documents. Only such corrections or addenda as are issued in writing to all Bidders shall become a part of the Contract. Neither the Owner, the Architect, nor the Construction Manager shall be responsible for verbal instructions.

ARTICLE 5, MODIFICATION OR WITHDRAWAL OF BID

- 5.1 Bids submitted prior to the time and date designated for receipt of Bids may be modified or withdrawn only by notice to the party receiving Bids. Such notice shall be in writing over the signature of the Bidder, and must be received prior to date and time set for receipt of Bids. Any modification shall be so worded as not to reveal the amount of the original Bid.

ARTICLE 6, REJECTION OF BIDS

- 6.1 The Bidder acknowledges the right of the Construction Manager, Architect, and Owner to reject any or all bids, and to waive any informality or irregularity in any bid received, or to accept any bid which in the opinion of the Construction Manager, Architect, and Owner shall serve their best interests. In addition, the Bidder recognizes the right of the Construction Manager, Architect, and Owner to reject a bid if the Bidder failed to submit on the date and time required by the bidding documents, or if the bid is in any way incomplete or irregular, including a bid security, if required, is not received with the bid proposal.

ARTICLE 7, PERFORMANCE CO-OBLIGEE BOND AND LABOR & MATERIAL PAYMENT CO-OBLIGEE BOND OWNER AND CONSTRUCTION MANAGER

- 7.1 The Construction Manager may, prior to the execution of the Contract, require the successful Bidders to furnish Co-obligee bonds, written in favor of the Owner and the Construction Manager, covering the faithful performance of the Contract and the payment of all obligations arising thereunder in an acceptable form to the Owner and the Construction Manager, and with such sureties secured through the Bidder's usual sources as long as the surety is licensed to do business in the State of Michigan and holds a minimum "A.M. Best" rating of A. Bonds shall be in the amount of 100% of the Contract sum. The premium for such bonds shall be paid by the Bidder. A space has been provided on the Proposal Form for the Bidders to indicate the amount that shall be deducted from their proposals if Bonds are not required. Should they be required, the Bidder shall deliver the bonds to the Construction Manager not later than the date of execution of the Contract.
- 7.2 The Bidder shall require the attorney-in-fact who executes the bonds on behalf of the surety, to affix thereto a certified and current copy of his power of attorney indicating the monetary limit of such power.

ARTICLE 8, VARIATIONS FROM MATERIALS SPECIFIED

- 8.1 Wherever materials are specified using names of specific manufacturers, the purpose is to establish a standard of quality and design, and not to limit competition. Contractors desiring to use materials of manufacturers other than those specified, shall indicate such material, manufacturer, and change of price, if any, in the space provided under the heading "Variations from Materials Specified" on the Proposal Forms. BASE BID PROPOSALS SHALL INCLUDE ONLY MATERIALS SPECIFIED. Variations, if accepted, shall be incorporated in the Contract, and the Contract Price adjusted accordingly, and no other materials shall be allowed accept upon written authorization of the Architect, Construction Manager, and Owner.

ARTICLE 9, THE CONTRACT FORM

- 9.1 Unless otherwise provided in the Bidding Documents, the Agreement for the Work shall be between the Trade Contractor and the Construction Manager on the contract form referenced in the Standard form section of the Project Manual (The Christman Company subcontract agreement). By submitting your bid the Trade Contractor fully agrees to accept **ALL** terms

and conditions of The Christman Company Subcontractor Agreement without modification.

ARTICLE 10. TIME OF COMPLETION

- 10.1 Each Bidder, as evidenced by submitting a proposal, shall agree to abide by the construction schedule dates as indicated in the Contract Documents, as developed during the post bid interview, scheduling meetings, and as required by Construction Manager. **The completion schedule for this project shall be met without exceptions.**

ARTICLE 11. QUALIFICATION OF BIDDER

- 11.1 The Owner, Architect, and Construction Manager may make such investigations as they deem necessary to determine the ability of the Bidder to perform the work, and the Bidder shall furnish all such information and data for this purpose as the Construction Manager may request within 24 hours, including a list of projects completed, a financial statement, organization of the firm, etc. The Owner reserves the right, based on the advice of the Construction Manager and Architect, to reject any bid if the evidence submitted by, or investigation of such Bidder fails to prove that such Bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein.

ARTICLE 12. TAXES AND CONTRIBUTIONS

- 12.1 It is understood that the bid prices stated shall include all applicable Federal, State or other Governmental Division taxes and assessments. Also, all contributions for unemployment compensation, health and welfare, old age benefits or other purposes now or hereafter effective during the term of the contract, and the Owner and Construction Manager shall not be liable for any additional charges therefore.

ARTICLE 13. WARRANTY

- 13.1 All work shall be guaranteed for a period of at least one (1) year and/or as more specifically stated in the contract documents after final payment but not earlier than substantial completion as determined by the Architect, and all service within that period shall be rendered without charge to the Owner.

END OF SECTION

00201 - The Construction Manager will be located at 208 N. Capitol Avenue, Lansing, MI 48933-1357 for questions regarding this Bid Package. Any questions regarding information contained in this Project Manual will be answered following a written request to the Architect through the Construction Manager, and clarified in an addendum. **Under no circumstances should any prospective bidder call the Owner or Architect for clarification of the Bidding Documents.**

00202 - AIA CONTRACT FORMS

Sample AIA Documents are available for review and reference in the Construction Manager's Main Office.

00203 - AIA STANDARD FORM FOR GENERAL CONDITIONS

AIA Document A201\2007, "General Conditions of the Contract for Construction as modified for this project," is available for review at the Construction Managers Main Office.

00204 - GEOTECHNICAL INVESTIGATION

1. A geotechnical investigation report has been prepared for the site by a geotechnical consultant.
2. Copies of the geotechnical investigation report are available for review at the offices of the Construction Manager.
3. The Contractor is cautioned that the geotechnical investigation report was prepared during early preliminary design stages, and as such, references to elevations, dimensions, loadings, quantities and the like, may not coincide with the building as designed. The Contractor shall coordinate between the geotechnical investigation report and the contract documents.
4. Site Information: Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that the Owner and Architect will not be responsible for interpretations or conclusions drawn therefrom by the Contractor. Data are made available for convenience of the contractor.
5. Additional test borings and other exploratory operations may be made by Contractor at no cost to the Owner.

00205 - PRELIMINARY CONSTRUCTION SCHEDULE NARRATIVE

1. Time is of the essence on this project. The Project sequencing will be scheduled by the Construction Manager and must be adhered to by all Trade Contractors. Time, labor, material, equipment and possible cost implication of this sequencing and others not fully conceived or described prior to the time of bidding, shall be included in base bid.

A preliminary schedule is included for reference only. It is emphasized that start

dates for work may shift. The bidder shall familiarize himself with expected maximum durations and shall include in his proposal sufficient manpower to meet these requirements. All milestone dates are approximate and are to be used as guidelines for the Trade Contractor's basis for bid.

2. The project will start 8/18/2025 and adhere to the following milestones.

Activity Description	Start Date	Completion Date
Temporary Fencing	08/18/2025	08/29/2025
Asbestos Abatement	09/01/2025	10/10/2025
Installation of SESC Measures	10/05/2025	10/10/2025
Mass Demolition	10/13/2025	11/14/2025
Backfill foundations & strip site	11/17/2025	12/05/2025

3. It is the Trade Contractor's responsibility to establish which items of work within the scope of his work category will be affected by the Owner's or other Trade Contractors operations and coordinate and schedule completion of his work accordingly at no cost to the Owner.

END OF SECTION 00200

The Work Category (W.C.) Description is included as a guide for Prospective Bidders to summarize the scope of work involved with the work category. The description included is **not** a final summary of the scope of work and should not be construed as such. **All** Contract Documents should be used, as a reference in preparing the Bid Proposal and any omissions in the proposal does not relieve the successful bidder of the responsibility to perform this work.

W.C. Category
No. Description

Specification
Reference

01	Demolition & Abatement	Division 00, Division 01, Division 02, Division 31, BDN Specification & Manual, SME Inspection Report
07	Temporary Fencing	Division 00, Division 01

Work Category No. 00 – General Requirements for All Subcontractors

Work Included:

1. All permits, fees, inspections and approvals required by governing jurisdictions are included within base bid. Coordinate well in advance (at least 24 hours), required inspections and testing with the Construction Manager. This will include liaison between state and local agencies to ensure code compliance and for securing approval for the facility.
2. Excessive noise and vibration creating equipment shall be prohibited within close proximity of existing Structures/Buildings or occupied spaces. All proposed equipment scheduled for project shall be reviewed with the Construction Manager prior to delivery onsite.
3. Cleanup is required on a daily basis, and/or as directed by the Construction Manager. Cleanup dunnage, shipping materials and associated materials/debris generated from installation and dispose of properly. At no time will shipping containers, crates, materials, piles of debris, tarps, boxes, etc. be left on site, unattended and unsecured, subject to unsafe conditions (i.e. access, fire and slip hazards and wind blown debris).
4. At least two (2) weeks prior to starting on-site, meet with the Construction Manager, Architect and Engineer to discuss and resolve any issues relating to status of material procurements, site conditions, access, staging/storage requirements, safety, testing, sequencing and scheduling of work.
5. Any work that could interfere with existing owners operation, i.e. use of certain roads, parking lots, access to buildings, shall require pre-task planning with the Construction Manager and shut-down notification requests shall be prepared (72) hrs in advance of any work being scheduled. Pre-task planning shall review and discuss scheduling, coordination with Owner operations, working durations, safe practices and procedures.
6. Protect existing structures, equipment, and finishes, including new work in place, from damage during the performance of this work category. Any protection removed to facilitate other work shall be reinstalled / replaced by the trade needing access.
7. Include all layout and engineering for each work category. Unless otherwise indicated in Section 00210, two control lines and one bench mark will be provided by the Construction Manager for Trade Contractor use.
8. Prior to commencing with installation, verify all field conditions and measurements and report any discrepancies to the Construction Manager.
9. Whenever possible all embeds to be furnished to other trades shall be fabricated / modified by the providing contractor with holes / tabs, etc to allow easy for installation by the installing contractor.
10. Provide full-time on-site supervision during the performance of your work. Supervision will be responsible for coordination, scheduling, safety, manpower, and other activities necessary to achieve safety, quality and scheduling requirements set forth under this work category. Supervision shall not be removed from this project without prior written consent and approval of the Construction Manager.
11. Full compliance with all site specific rules and regulations, including (but not limited to) OSHA, State Authorities, Local Authorities, and the Construction Manager. This subcontractor shall submit, prior to performing any work on-site, a copy of their site specific safety program/manual.

12. Should Subcontractor require on-site trailer or storage units, Subcontractor shall obtain approval from the Construction Manager on size, count and where to locate, prior to delivery on-site. Subcontractor to arrange and pay for service to trailers, including (but not limited to) electrical, phone, etc.
13. For material deliveries, if traffic control is required, Subcontractor to arrange manpower accordingly and provide signage, barricading, flagman etc., necessary for the safe performance of own work and protection of the public. Staging, storage on-site, and all deliveries required to support this installation must be reviewed and approved in advance by the Construction Manager.
14. Furnish and receive all required materials and deliver FOB jobsite. All deliveries shall be closely coordinated with the Construction Manager and 72 hour advance notice shall be given prior to delivery. Unless noted otherwise, deliveries must be coordinated to be complete with unloading during normal working hours.
15. This subcontractor will receive and handle all respective material and properly store/protect before, during and after installations. Excessive and out-of-sequence deliveries will be prohibited and subject to re-handling and removal offsite as directed by the Construction Manager.
16. Unless noted otherwise in Section 00210, furnish all hoisting, lifting, scaffolding, and handling to complete your own work.
17. Hoisting of materials and equipment over occupied areas will not be permitted, unless areas below are vacated or occupancy access is controlled during lifting. Each subcontractor will be required to notify Construction Manager seven (7) days in advance of required hoisting over occupied areas. Pre-Task planning and shut-down notifications will be required to assure minimum interruptions to Owner operations. In general, any hoisting equipment required to be used on-site must be reviewed in advance with Construction Manager for coordination of site logistics, safety procedures (including FAA approvals if required), access, lift swing areas, duration and overall activities relating to this hoisting equipment.
18. Approved O&M manuals are required at least 2 weeks prior to equipment start-up, start of warranty, and Owner training, but no later than thirty (30) days prior to substantial completion.
19. In the event of any jurisdictional or labor issues, the subcontractor assigned the work shall arrange to complete all work as required to avoid any interruptions/continuity of work on this project at no additional cost. All labor requirements pertaining to the project will be met.
20. Cooperate fully with representatives from Architect, Engineer, Owner, Construction Manager and independent testing agency, and allow for in progress inspections, including providing access to areas of work, when required.
21. This project may require multiple phases, which will require re-mobilization. All costs for multiple phasing shall be included.
22. Each Trade Contractor shall assume full responsibility for all pre-ordered products after their arrival at this designated location. This includes transportation, storage, start-up, warranty services, and installation in accordance with the General Conditions unless otherwise specified.

23. Critical Scheduling and Sequencing of Work:

The Construction Manager shall provide overall scheduling and coordination for the entire project. All Trade Contractors shall acknowledge the Construction Manager's right to establish and set up, or subsequently modify the sequencing and scheduling of all work on this project for the earliest completion and/or benefit to the Owner. More restrictive sequencing to coordinate the Owner's on-going operations and/or for the coordination of the various trades shall be spelled out by the Work Category descriptions or as otherwise directed by the Construction Manager. All Trade Contractors agree to cooperate and alter their operations to maintain these more specified restrictions and sequences of the work.

- A. Subcontractor agrees to work concurrently with other subcontractors and the Construction Manager, according to the Master Project Schedule.
- B. Subcontractor shall confirm fabrication lead times, installation durations and sequencing for their Work in writing within two weeks of award, and report any discrepancies to Construction Manager.
- C. Scheduling updates and proper coordination and communication with other trades shall be accomplished as follows:
 - Weekly sub-progress meetings
 - Safety meetings, BIM meetings, scheduling meetings, pre-installation meetings, etc.

24. Construction Waste Management And Disposal – Review Spec Section 017419 Construction Waste Management And Disposal

25. General Commissioning Requirements – Review Spec Section 019113 General Commissioning Requirements.

26. Indoor Air Quality Management Plan – During Construction. Comply with site specific IAQ Management Plan for this project.

End of Work Category No. 00

Work Category No. 01 – Demolition & Abatement**Work Included:**

The subcontractor shall timely perform all Demolition work, as detailed below, in accordance with the contract documents (including Bidding Requirements, Proposal Section, Contract Forms, General Conditions, Supplemental Conditions, General Requirements, Addenda, etc.), including, but not limited to, the following Specification Sections and Work Scope Items. Unless otherwise noted, this contractor is responsible for all items specified in the following specifications sections:

See Work Category Index and Cross Reference

Work Category Notes:

- I. Complete demolition and off-site disposal of all items of work as shown and/or specified except as noted below. Includes all architectural, structural, mechanical, and electrical demolition. Removals to include, but not limited to, concrete walls, saw-cutting of concrete and masonry walls/foundations, steel framing, existing equipment, cabinets, ceilings, flooring, piping, conduit, etc. Includes all labor, material, accessories, and equipment to complete this work.
 - A. This work category is responsible for their own dumpsters and disposal.
 - B. Provide waste shipment records to BDN, the Construction Manager, and Owner when received by waste facility for all asbestos containing materials.
2. Install all backfill to existing grade as required, including where footings and structures were removed to full depth (as verified by CM prior to backfilling) with required fill per drawings and specifications.

Perform all selective removal for structures and items to be turned over to ownership including play structures, mailboxes, and signage. Contractor to selectively remove all items to be turned over to ownership, including footings intact, without damage.
3. Once removal is complete (including footings) of play structures at various locations, complete removal of play surface to virgin material required. Backfill in accordance with specifications and drawings with appropriate fill to grade as required.
4. Provide all dust control measures as required for demolition activities. If fire sprinklers are to be used, this WC to coordinate with local municipality for all permitting, backflow preventers, and temporary water needs. This shall include all temporary measures required to satisfy local municipality and permitting required.
5. Complete demolition and removal of all footings & foundation structures.
6. Complete demolition and removal of all storm & sanitary structures out to property boundary for capping & marking for future use/removal by others. This WC to coordinate with local municipalities for all permitting, inspections, etc., as required as it relates to utility demolition.
7. Coordinate scheduling and sequencing of this work with other contractors for power and utility shutdowns, capping, and continuation of utility services as required. Coordinate scheduling and sequencing of work with other trades. Contractor shall acknowledge and adhere to the construction schedule and sequencing.
8. Furnish and install all hoisting, scaffolding, temporary platforms, chutes, etc., as required for the performance of this work.
9. Remove and relocate all items designated to be returned to owner to a location on site as determined by

the owner and/or general contractor.

10. Provide, maintain and remove barricades, signage, and other safety precautions that may be required where removal of equipment and/or structure leaves unsafe conditions. Site fencing to be by others. This WC responsible for all temporary safety structures/guards as required by MIOSHA/Christman Safety standards.
11. Provide, maintain, and remove temporary partitions, dust control, and negative exhaust for work. Take precautions and provide measures to protect the public and fellow workers during the performance of this work. Protect existing structures, utilities / drains, equipment, flooring, and other finishes from damage during the performance of this contract.

Specific Notes and Details:

The following details and notes are included in this Work Category; this list is to clarify the specific items noted below and does not exclude other details or otherwise limit the scope of work for this Work Category.

1. This WC responsible for all tree removal, including stumps and roots. As tree demolition may occur outside project site fence, this WC is responsible to coordinate with temporary fencing contractor to perform all work necessary prior to installation of temporary fencing, or ensure tree removal will not require additional fencing relocation during removal. This WC shall maintain all SESC measures for tree/root demolition including but not limited to re-seeding and straw upon completion of tree removal
2. This WC is responsible for all SESC measures (installation and maintenance, as required by weather events and local municipality requirements) until Bid Package 2 construction begins in March 2026. Include logs by a CSWO, maintenance of roads and street sweeping as required by the Construction Manager/local municipality, installation and maintenance of 50' construction access at all site entrances as shown on the SESC plan, silt sack bags in all catch basins at surrounding streets (Mt. Hope Ave., Lewton Place, and corner of Belaire Dr.) and internal to the project until demolition of structures is complete.

NOTE: Construction Manager will file for and hold the permit for all SESC activities as required by local municipality. All inspections performed (weekly at a minimum, and after every rain event) shall be submitted to the construction manager for onsite records. All corrections, violations, etc., as required by local municipality shall be corrected and maintained by this WC until March 2026.

3. Locate, coordinate, and demolish all underground utilities as required (fiber internet, gas service, water, sanitary, etc.), cut and cap at ROW and remove within property boundaries. Coordination, permitting and all other required information with local municipalities for this work is required.
4. Ensure all work is done in accordance with local requirements for dust control and noise ordinance.
5. This Work Category is responsible for all costs associated with acquiring and providing all demolition permitting requirements, right of way permits, sidewalk closures, lane closures, etc., as required to complete a full demolition of the building and site furnishings. Reference drawing C2.1 – Demolition Plan at the bottom of this WC for highlighted notes by Construction Manager in BLUE to be by future earthwork contractor.
6. This Work Category responsible for all temporary water requirements, including provision of temporary bulk water permitting through the City of Lansing, backflow preventor, and all temporary water use costs.
7. Perform all hazardous material abatement (asbestos, lead, PCBs, and all others) as defined in BDN's report. This is to include all selective demolition required to uncover, expose, and abate until complete. Upon completion, verification of full abatement by ownership's third party testing agency shall be scheduled for final verification prior to demolition of structures. Include all materials, tools, equipment, etc. necessary to perform a full and complete abatement of asbestos containing materials (ACM) and presumed asbestos containing materials (PACM) as outlined in the BDN report.

Related Work by Others:

- I. Site fencing to be by WC 07, and installed in coordination with demolition activities.

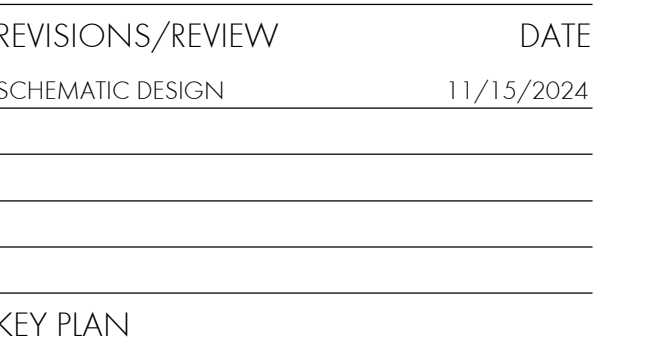
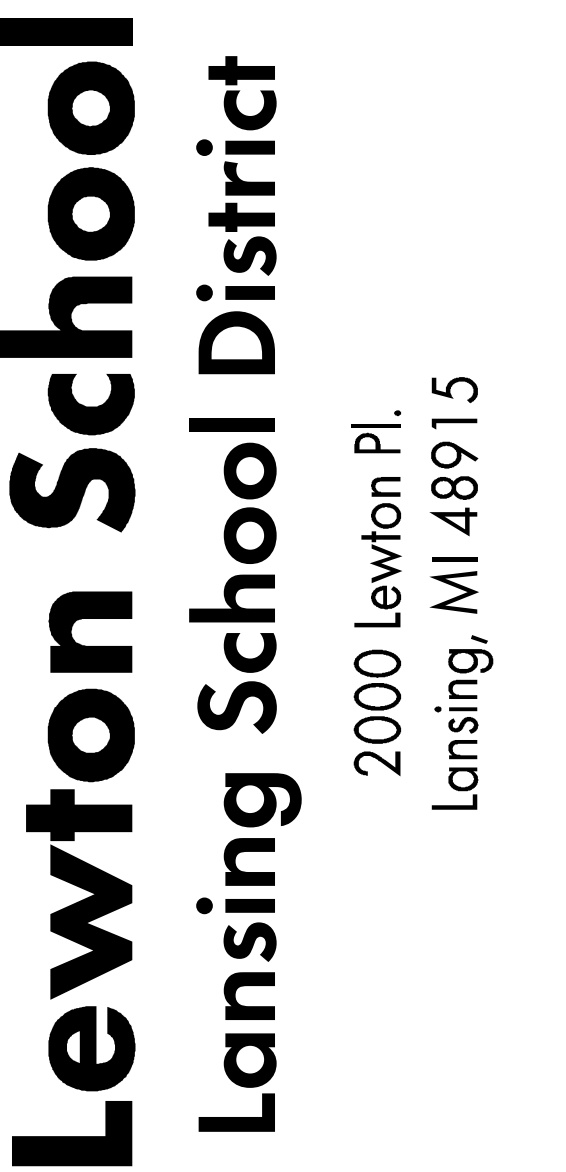
Allowances:

This Contractor shall include in their Base Bid a Construction Manager's allowance of \$50,000. Reference Section 01020 for specific instructions on allowances.

Unit Prices:

Unit Prices are to be complete furnished in-place operations, and include all costs, incidental materials and work, insurance, fringes, bonds, engineering, overhead and profit. Reference the Trade Contract Proposal form for unit pricing required.

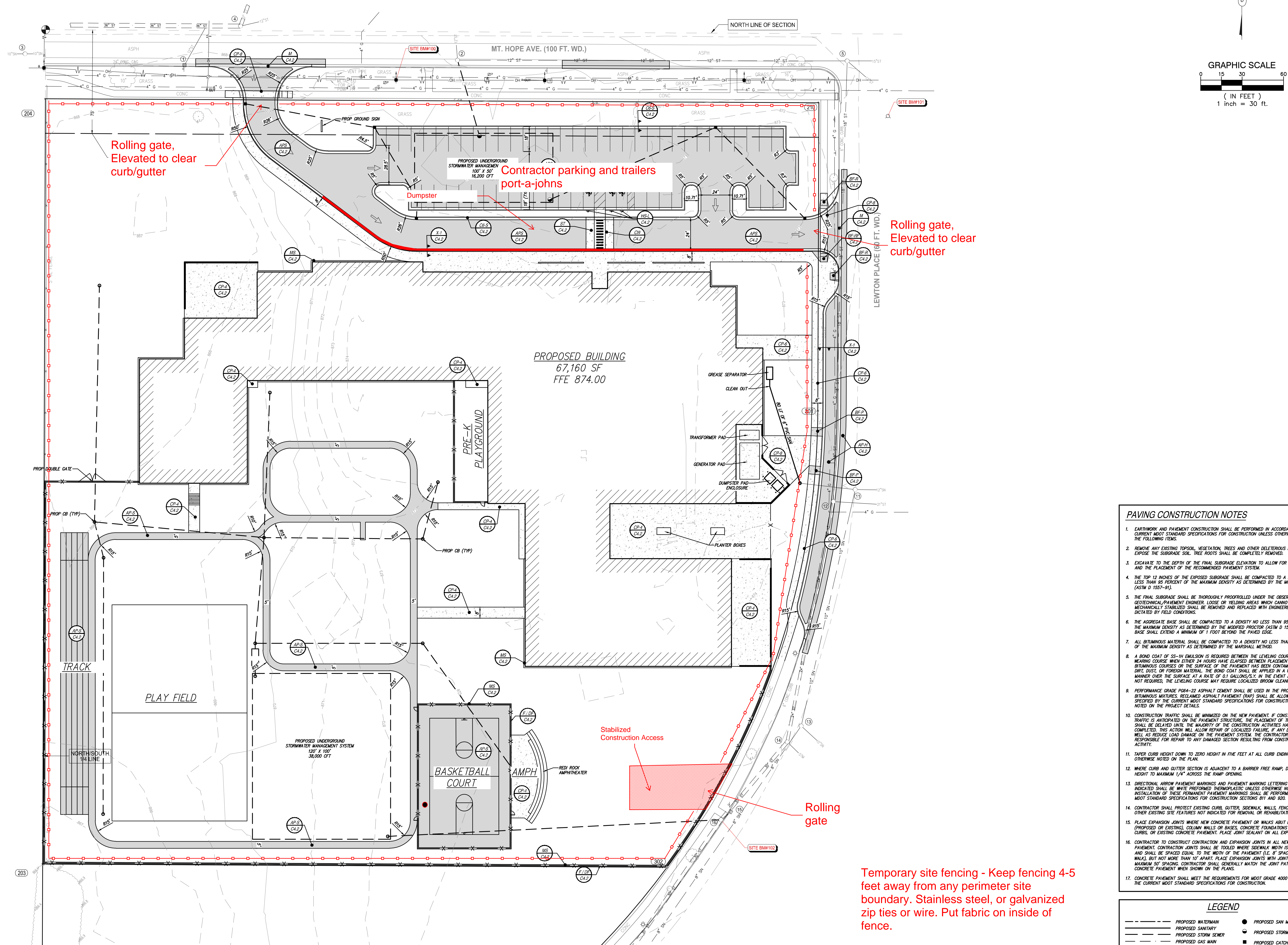
End of Work Category No. 01



SHEET NO.

C4.1

KINGSCOTT ASSOCIATES INC. KALAMAZOO, MICHIGAN



1. **EARTHWORK AND PAVEMENT CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT MOORE STANDARD SPECIFICATIONS FOR CONSTRUCTION UNLESS OTHERWISE NOTED IN THE PROJECT MANUAL.**
2. **REMOVE ANY EXISTING TOPSOIL, VEGETATION, TREES AND OTHER DELETERIOUS MATERIALS TO EXPOSE THE SUBGRADE SOIL. TREE ROOTS SHALL BE COMPLETELY REMOVED.**
3. **EXCAVATE TO THE DEPTH OF THE FINAL SUBGRADE ELEVATION TO ALLOW FOR GRADE CHANGES TO BE MADE. THE DEPTH OF THE EXCAVATION SHALL BE SUFFICIENT TO ACCOMMODATE THE**
4. **THE TOP 12 INCHES OF THE EXPOSED SUBGRADE SHALL BE COMPACTED TO A DENSITY NO LESS THAN 85 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR METHOD (ASTM D 1557-99).**
5. **THE FINAL SUBGRADE SHALL BE THOROUGHLY PROTECTED UNDER THE OBSERVATION OF A GEOLOGICAL/PAVEMENT ENGINEER, LOSS OF YIELDING AREAS WHICH CANNOT BE MECHANICALLY STABILIZED SHALL BE REMOVED AND REPLACED WITH ENGINEERED FILL OR AS SPECIFIED BY THE DESIGNER.**
6. **THE AGGREGATE BASE SHALL BE COMPACTED TO A DENSITY NO LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR (ASTM D 1557-99). THE DENSITY OF THE MINIMUM DENSITY SHALL BE 90 PERCENT.**
7. **ALL BITUMINOUS MATERIAL SHALL BE COMPACTED TO A DENSITY NO LESS THAN 97 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MARSHALL METHOD.**
8. **A BOND COAT OF SS-1 HEMISPHERE IS REQUIRED BETWEEN THE LEVINGE COURSE AND THE READING COURSE. WHEN OTHER TYPES OF BOND COAT ARE USED, THE SIGNATURE OF THE BITUMINOUS COURSE ON THE SURFACE OF THE PAVEMENT HAS BEEN CONTAMINATED WITH OIL. IN THIS CASE, THE PAVEMENT CONTRACTOR SHALL BE RESPONSIBLE FOR THE CORRECT MANNER OF HOW THE SURFACE AT A RATE OF 0.1 GALLONS/SY. IN THE EVENT A BOND COAT IS NOT USED, THE LEVINGE COURSE SHALL BE PROTECTED BY ANOTHER MEANS.**
9. **PERFORMANCE GRADE 1064-21 ASPHALT CEMENT SHALL BE USED IN THE PRODUCTION OF ALL BITUMINOUS MIXTURES. RECLAIMED ASPHALT PAVEMENT (RAP) SHALL BE ALLOWED ONLY AS SPECIFIED BY THE CURRENT MOORE STANDARD SPECIFICATIONS FOR CONSTRUCTION, UNLESS NOTED IN THE PROJECT MANUAL.**
10. **CONSTRUCTION TRAFFIC SHALL BE MINIMIZED ON THE NEW PAVEMENT. IF CONSTRUCTION TRAFFIC IS ANTICIPATED ON THE PAVEMENT STRUCTURE, THE PLACEMENT OF THE FINAL LIFT SHALL BE COMPLETED PRIOR TO THE TRAFFIC BEING ALLOWED ON THE PAVEMENT. WHEN COMPLETED, THIS ACTION WILL ALLOW REPAIR OF LOCALIZED DAMAGE, IF ANY DOES OCCUR, AS WELL AS LOAD DRAINAGE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM CONSTRUCTION**

PROPOSED WATERWAY	● PROPOSED SAN MANHOLE (SAN)
PROPOSED SANITARY	■ PROPOSED STORM MANHOLE (SM)
PROPOSED STORM SEWER	■ PROPOSED CATCH BASIN (CB)
PROPOSED GAS MAIN	⌋ PROPOSED INLET (NL)
PROPOSED ELECTRIC	PROPOSED END SECTION (ES)
PROPOSED HYDRANT	PROPOSED FIELD CATCH BASIN (FSB) W/REVERSE COVER OR STORMPIPE (SP) W/ RAIN GATE COVER
PROPOSED DATE VALVE & WELL (DWW)	② — UTILITY CROSSING (SEE DATA TABLE)
PROPOSED TAPPING SLEEVE, VALVE & WELL (TSW)	CB — STRUCT. NO.
STANDARD BITUMINOUS PAVEMENT	STORM SEWER STRUCTURE
HEAVY-DUTY BITUMINOUS PAVEMENT	SANITARY SEWER STRUCTURE
DEEP-STRENGTH BITUMINOUS PAVEMENT	20
CONCRETE PAVEMENT	WATERMAIN STRUCTURE
CONCRETE SIDEWALK	△ XXX — STRUCT. TYPE
MILL PAVEMENT	

Work Category No. 07 – Temporary Fencing

Work Included:

The subcontractor shall timely perform all Fencing work, as detailed below, in accordance with the contract documents (including Bidding Requirements, Proposal Section, Contract Forms, General Conditions, Supplemental Conditions, General Requirements, Addenda, etc.), including, but not limited to, the following Specification Sections and Work Scope Items. Unless otherwise noted, this contractor is responsible for all items specified in the following specifications sections:

See Work Category Index and Cross Reference

Work Category Notes:

1. Furnish and install fencing shown and/or specified including but not limited to sliding gates, chain link fencing and privacy fabric. Includes all material, labor, accessories, and equipment for a complete installation.
2. Protection and cleaning of walkways, parking lots, drives, etc. during and at the completion of this work. Includes removal of spoils.
3. Field verification of underground piping, electrical conduit, site utilities, etc., prior to digging, trenching, plowing or spading operations.
4. Include all layout, staking, and auger work.
5. Fencing shall not use existing buildings or other existing structures as support. Fencing must be an independent entity.

Specific Notes and Details:

The following details and notes are included in this Work Category; this list is to clarify the specific items noted below and does not exclude other details or otherwise limit the scope of work for this Work Category.

1. Provide, install, maintain, and remove three (3) sliding gates. The sliding gates to be minimum 30' in width, and span the full site entrances/exits. Locations are shown on the logistics plan. Remove any concrete footings/foundations installed as part of the gate posts installation. Ensure rolling gate posts are installed with appropriate footings to ensure they do not fall out of adjustment during use. Include all service and adjustment required for duration of demolition and new construction.
2. Provide, install, maintain, and remove new rolled chain link fence around the perimeter of the site as shown on the logistics plan. Fencing to be 6' chain link fence with driven posts. Rolled chain link fence shall be free of damage when installed, and show no prior use. Site posts shall be installed at a distance determined by the installing contractor to ensure shade cloth and wind do not impede the integrity of the fence when shade cloth is fully adhered as described below.
3. Provide, install, and maintain windscreen on the fencing. Windscreen to be black in color, 90% privacy, and entire height of the fence. Grommets to be fully adhered to the site fence, with no grommets skipped for a full and complete installation. Shade cloth to be installed on the interior site side of the fence. Installing contractor shall use metal ties in lieu of plastic zip ties.
4. All temporary fencing and gates to be in place for the duration of the abatement/demo project as well as the new school build that has an estimated completion in Spring 2028.
5. Provide removal of, and reinstallation of gates when site paving occurs in coordination with curb removal, and reinstallation upon curb concrete curing.
6. Coordination with Demolition contractor is required for temporary fencing installation, including tree

removal requirements to ensure demolition contractor shall be able to perform all work necessary without impacting the site fencing.

7. This WC shall provide twenty (20) 10' long temporary panels in addition to all site fencing installed for future use by Construction Manager for utility tie in by future Earthwork contractor, and adjustments in the site fence as required. This shall include twenty two (22) fence panel bases, and forty (40) sandbags.

Related Work by Others:

- I. Refer to Sections 00210 and 01019 for testing requirements and responsibilities.

Allowances:

This Contractor shall include in their Base Bid a Construction Manager's allowance of \$10,000. Reference Section 01020 for specific instructions on allowances.

Unit Prices:

Unit Prices are to be complete furnished in-place operations, and include all costs, incidental materials and work, insurance, fringes, bonds, engineering, overhead and profit. Reference the Trade Contract Proposal form for unit pricing required.

End of Work Category No. 07

Trade Contract Proposal Pre-Submission Checklist

Trade Contract Proposal Form completely filled out?

Form signed by authorized officer of firm?

Costs for Performance and Labor & Material Bond excluded in base bid proposal sum but amount included in break out?

All taxes included in base proposal sum?

Bid security (bond or certified check or money order) of at least 5% of base proposal sum included?

Requested alternates & unit prices quoted?

Sworn & Notarized Familial Affidavit for Lansing School District included with your proposal?

Sworn & Notarized Familial Affidavit for Kingscott and Christman included with your proposal?

Non-Discrimination Certification included in your proposal?

Affidavit of Bidder – Non-Collusion included with your proposal?

Iran Sanctions Certificate and Act Certificate included in your proposal?

Legal Status of Bidder Certificate included in your proposal?

All information (proposal, bond, etc.) Submitted in triplicate?

Proposal submitted in sealed envelope per specifications?

TRADE CONTRACT PROPOSAL FORM

WORK CATEGORY NO. 00 and _____

Date: _____

TO: The Christman Company
208 N. Capitol Avenue
Lansing, MI 48933-1357

Re: LEWTON ELEMENTARY
2000 Lewton Pl, Lansing, MI 48911

Ladies and gentlemen:

Having carefully examined General Conditions, Supplementary Conditions, General Requirements, Advertisement for Bids, Instructions to Bidders, Proposal Section, Specifications, Drawings, all Addenda issued, Work Category Descriptions, and understanding the scope of work involved in this Work Category (ies) and those that interface with it (them), the undersigned does hereby propose to furnish all labor, materials, insurances, taxes, tools, equipment and services to complete all work required for the Work Category(ies) indicated in accordance with the Work Category Description and the Contract Documents prepared by _____.

BASE PROPOSAL SUM:

(\$ _____)

PERFORMANCE & PAYMENT BOND: The Trade Contractor may be required to furnish a Co-Obligee Labor & Material Payment & Performance Bonds for the full contract amount.

The name of the Bonding Company is: _____.

The sum of (\$ _____) to cover cost of furnishing these bonds **not included in** the base bid.

EXPERIENCE MODIFICATION RATING (EMR):

List the EMR for your firm as determined by your insurance carrier for the past three (3) years.

2022 _____ 2023 _____ 2024 _____

ADDENDA: The following Addenda have been received, are hereby acknowledged, and their execution is included in Bid Sums listed herein.

No _____ Dated _____ No _____ Dated _____ No. _____ Dated _____

TIME AND MATERIAL RATES:

Labor rates listed below include the following:

Cost of labor including Michigan Single Business Tax, Social Security and Medicare, Federal and State Unemployment Tax, and Fringe Benefits Under Collective Bargaining Agreements, and Worker's Compensation Insurance. The rates listed below do not include overhead and/or profit. These rates are only for additions and/or deletions to the contract that could not have been anticipated at the time of the bid.

TRADE CONTRACT PROPOSAL FORM

WORK CATEGORY NO. 00 and _____

Date: _____

	TRADE	STRAIGHT TIME	SHIFT TIME	1 1/2 TIME	DOUBLE TIME
1					
2					
3					
4					
5					
6					

OVERHEAD AND PROFIT (FOR FUTURE CHANGES): Overhead and Profit shall include the following: Supervision, Superintendents, Commercial General Liability and Umbrella Insurances, Wage of Time Keepers, Watchmen and Clerks, Small tools with material value of less than \$1,500.00. Incidentals, General Office Expense, and all other expenses not included in Labor Rates as listed above. The percentage fee for Overhead and Profit on the Contractor's own work shall be 15% of net cost. The percentage fee for Overhead and Profit on Subcontractor's work shall be 5% (see log).

MANDATORY ALTERNATES:

Reference Specification Section 01100 for alternate descriptions.

Alternate #1 Full Demolition of Playground Equipment (ILO selective demo) Add/Deduct \$ _____

Alternate #2 Added costs for Private Utility Location on property Add/Deduct \$ _____

UNIT PRICES:

Unit rates filled out as listed below;

#	Description of Material	Amount	Units
1.	Straight pipe insulation (one glove bag)	\$	ln. ft.
2.	Straight pipe insulation (Per 100 feet)	\$	100 ln. ft.
3.	Pipe joint / fitting insulation (one glove bag)	\$	glove bag
4.	Pipe joint / fitting insulation (Per 100 feet)	\$	100 ln. ft.
5.	Asbestos-containing debris clean-up and disposal	\$	sq. ft.
6.	Fire doors (tagged or untagged)	\$	Each door
7.	Door system removal w/ frame	\$	each
8.	Floor tile removal without mastic	\$	sq. ft.
9.	Exterior building caulk	\$	sq. ft.
10.	Interior building caulk	\$	sq. ft.
11.	Window glazing	\$	sq. ft.
12.	Gaskets and/or Valves	\$	Each
13.	Mobilization charges once Contractor off site	\$	per call out

TRADE CONTRACT PROPOSAL FORM

WORK CATEGORY NO. 00 and _____

Date: _____

VOLUNTARY ALTERNATIVES (Variations From Materials Specified):

Undersigned proposes the following voluntary alternates for materials and/or equipment specified, it being understood that, should any voluntary alternate(s) be accepted by the Owner, applicable amount(s) hereinafter listed will be added to or deducted from the Base Bid. (No voluntary alternates are required)

- | | |
|----------|-----------------------|
| 1. _____ | \$ _____ (Add/Deduct) |
| 2. _____ | \$ _____ (Add/Deduct) |
| 3. _____ | \$ _____ (Add/Deduct) |

SCHEDULE:

The undersigned if awarded a Contract, agrees to work concurrently with the work of other Trade Contractors and the Construction Manager, according to the "Approved Construction Schedule."

SUBCONTRACTOR PAYMENT BOND

BOND NUMBER: _____

SUBCONTRACTOR:

Address: _____

SURETY: (or Sureties)

Address: _____

Phone Number: _____

Email: _____

CONTRACTOR:

Address: _____

THE CHRISTMAN COMPANY

208 N. Capitol Avenue, Lansing, MI 48933

PROJECT:

SUBCONTRACT DATE:

CONTRACT AMOUNT:

\$ _____

BOND AMOUNT:

(\$ _____)

Dollars

Contractor has entered into a Subcontract or Purchase Order (Agreement) with Subcontractor in the amount stated above (Contract Amount) for the Project for the performance of work, including warranty obligations (Work), as detailed in the Agreement. That Agreement is incorporated by reference in its entirety into this Bond.

By virtue of this Bond, Subcontractor and Surety are held and firmly bound to Contractor to pay for labor, materials, and equipment (collectively, "Improvements") furnished for use in performing the Work and agree to bind themselves and their respective heirs, administrators, executors, successors and permitted assigns, jointly and severally, firmly as follows:

1. **Payment Made** If Subcontractor promptly pays all sums due Claimants and defends, indemnifies and holds harmless Contractor from claims, demands, liens or suits by any person or entity seeking payment for Improvements furnished for use in performing the Work, then Subcontractor and Surety shall have no obligation under the Bond.

2. **Surety Obligation to Contractor** Surety's obligations to Contractor shall arise after Contractor notifies Surety and Subcontractor in writing of claims, demands, liens or suits against Contractor or the real property upon which the Project is located, by any person or entity seeking payment for Improvements. Upon such notice, Surety shall promptly, and at Surety's expense, defend, indemnify and hold Contractor harmless from such claim, demand, lien or suit.

3. **Surety Obligation to Claimant** Every Claimant who has not been paid in full before the expiration of ninety (90) days after Claimant provided or performed the last of the Work, or furnished the last of the Improvements for which the claim is made, may have a right of action on this Bond. The Surety's obligation shall not exceed the Bond Sum, as modified.

4. **Limitation of Action** Claimant shall not commence any suit or action on this Bond:

- a. Unless Claimant, except a Claimant having a direct contract with Subcontractor, shall have given written notice of non-payment to Subcontractor, Contractor and Surety within ninety (90) days after Claimant last performed or furnished the Improvements for which the claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom Claimant provided the Improvements. Claimant shall serve such notice to the addresses set forth in this Bond. And, after the expiration of one (1) year from the date when Claimant last performed or provided Improvements to the Project. If this provision is prohibited by law, the minimum period of limitation available to surety in the jurisdiction shall apply; and,
- b. Other than in any court of competent jurisdiction in the location where the Project is located.

5. **Contractor Notice** Contractor's written notice to Subcontractor and Surety of Claimant's claim, served by Contractor to the addresses set forth in this Bond, shall be sufficient to satisfy Claimant's obligation in paragraph 4(a) to furnish notice. Contractor's notice in the form of email with delivery or read-receipt verification shall be sufficient written notice. Notwithstanding the foregoing, Contractor shall have no affirmative obligation to Claimant, Subcontractor or Surety to provide notice on behalf of Claimant.

SUBCONTRACTOR PAYMENT BOND

BOND NUMBER: _____

6. **Surety Response** When the conditions of paragraph 4(a) are satisfied, Surety shall promptly, and at Surety's expense, take the following actions:
 - a. Provide a written response to Claimant, with a copy to Subcontractor, within forty-five (45) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and,
 - b. Pay any undisputed amounts.
7. **Claimant** Claimant means an individual or entity having a direct contract with Subcontractor, or with a subcontractor or vendor of the Subcontractor, to provide Improvements. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located.
8. **Improvements** The intent of this Bond shall be to include, without limitation, in the terms "Improvements" and "labor, materials, or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in performing the Work, architectural, engineering, and consulting services required for the work of the Subcontractor and the Subcontractor's subcontractors, and all other items for which a mechanic's lien may be asserted.
9. **Principal Surety** Surety is the principal surety and its obligations under this Bond shall be deemed primary to any bond procured by Contractor, with Contractor's surety being deemed a sub-surety.
10. **Changes** Surety agrees that no change, extension of time, alteration, addition, deletion, amendment, or other modification of the Agreement or the Prime Contract between Contractor and the Project owner, or both, or in the Work, specifications, drawings, whether material or otherwise, or in the manner, time or amount of payment as provided therein, and whether or not made in the manner as provided therein, shall in any way affect Surety's obligations on this Bond, except that the Bond Sum shall increase directly with any additive amendments to the Agreement. Surety hereby waives notice of any changes, extensions of time, alterations, additions, deletions, amendments, and other modifications to the Agreement.

Subcontractor and Surety cause this Bond to be duly executed and acknowledged as set forth below, on this day of _____.

SUBCONTRACTOR

Company:

SURETY

Company:

By:
Its:

By:
Its: Attorney in Fact

(Impress Corporate Seal)

SUBCONTRACTOR PERFORMANCE BOND

BOND NUMBER: _____

SUBCONTRACTOR:

Address: _____
As Principal (the Principal), and _____

SURETY: (or Sureties)

Address: _____
Phone Number: _____
Email: _____
As Surety or Co-Sureties (collectively, Surety), and _____

CONTRACTOR:

Address: _____
As Obligor (Obligor)

THE CHRISTMAN COMPANY

208 N. Capitol Avenue, Lansing, MI 48933

PROJECT:

SUBCONTRACT DATE:

CONTRACT AMOUNT:

\$ _____

BOND AMOUNT (Penal
Sum):

Dollars _____
(\$ _____)

WHEREAS, Principal has by written agreement entered into a Subcontract Agreement or Purchase Order (Agreement) with Obligor in the amount stated above (Contract Amount) for the performance of work, including warranty obligations (Work), as detailed in the Agreement, which Agreement in its entirety is by reference expressly incorporated into this Bond.

WHEREAS, the amount of this Bond (Penal Sum) is in the amount stated above.

NOW THEREFORE, Principal and Surety are held and firmly bound to Obligor for the payment of the Penal Sum and agree to bind themselves and their respective heirs, administrators, executors, successors and permitted assigns, jointly and severally, firmly as follows:

1. If Principal shall promptly and faithfully perform the Agreement within the time provided therein, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

2. Surety agrees that no change, extension of time, alteration, addition, deletion, amendment, or other modification of the Agreement or the Prime Contract between Obligor and the Project owner, or both, or in the Work, specifications, drawings, whether material or otherwise, or in the manner, time or amount of payment as provided therein, and whether or not made in the manner as provided therein, shall in any way affect Surety's obligations on this Bond, except that the Penal Sum of this Bond shall increase directly with any additive amendments to the Agreement provided the additive change(s) do not, either singly or in the aggregate, exceed 20% of the original Contract Amount. If any change singly or in the aggregate exceeds 20% of the original Contract Amount, Obligor shall obtain Surety's written consent to increase the Penal Sum. Surety hereby waives notice of any changes, extensions of time, alterations, additions, deletions, amendments, and other modifications to the Agreement.

3. Whenever Obligor has declared Principal to be in default of the Agreement, Surety shall, within twenty (20) calendar days of receipt of Obligor's declaration of default (Investigation Period), respond as follows, failure of

SUBCONTRACTOR PERFORMANCE BOND

BOND NUMBER: _____

which shall be a material breach of this Bond:

- a. Determine the amount for which Surety may be liable and tender the amount to Obligor; or,
- b. Notify Obligor that Surety has elected to complete the Work itself or through its agents or contractors in accordance with the terms and conditions of the Agreement, in a manner acceptable to Obligor, and thereafter promptly begin the Work; or,
- c. Obtain bids or offers from replacement subcontractors (Completing Subcontractor), reasonably acceptable to Obligor, to complete the Agreement in accordance with its terms and conditions, and upon determination by Surety and Obligor jointly of the lowest responsible bidder or offeror, arrange for new performance and payment bonds from the Completing Subcontractor in a form and from a surety as required by the Agreement, all of which must be completed before expiration of the Investigation Period. Upon execution of the agreement between Completing Contractor and Obligor, Surety shall pay to Obligor, within five (5) days of execution, the difference between the cost to complete the Work and the Contract Balance; or,
- d. Arrange to provide financial and/or other assistance to the Principal (Financing) to assist the Principal with timely completion of the Agreement. This option is subject to Obligor's concurrence, which concurrence may be withheld in Obligor's sole discretion.
- e. Having made an independent assessment of the facts and circumstances of Obligor's declaration of default, deny Surety's liability in whole or in part and provide a detailed explanation of the reasons for its denial, specifying amounts that are disputed and undisputed. Surety shall tender payment of any undisputed amount.

4. Surety may request an extension of up to twenty (20) calendar days (Extension Period) to respond as required by the Bond. Surety shall finance performance of the Work during the Extension Period on a schedule and in a manner acceptable to Obligor. Upon expiration of the Extension Period, Surety shall respond as outlined in paragraph 3.

5. Upon declaration that Principal is in default, Obligor shall have the right, but not the obligation, to immediately proceed to perform or correct the Work and take such other action pursuant to its rights under the Agreement to mitigate the damages caused by Principal's default (Mitigation Work). Obligor's overhead (both field and home office) and profit shall be included in the cost of the Mitigation Work at a markup of 20% to the actual labor, material, equipment, and subcontractor costs Obligor incurs. Obligor shall keep Surety reasonably informed of costs incurred for the Mitigation Work. Obligor shall be entitled to deduct the cost of the Mitigation Work from the Contract Balance. To the extent Obligor's cost of the Mitigation Work exceeds the Contract Balance, Surety shall, as the Work progresses, promptly and without deduction, reimburse Obligor for such shortage. Reimbursement by Surety shall reduce the Penal Sum by the amount of Surety's reimbursement to Obligor.

6. The term Contract Balance means the Contract Amount, as adjusted by any amendments to the Agreement issued before declaration of default, less the amount paid by Obligor to Principal or others in accordance with the Agreement, less amounts to which Obligor is entitled to a setoff under the Agreement, and less any other amounts for which the Principal or Surety is liable under the Bond or Agreement.

7. Surety shall be liable for:

- a. Principal's responsibilities for correcting defective work, warranty work, latent defects, indemnity, and completion of the Work.
- b. Legal, design professional and delay costs resulting or arising from Principal's default, or resulting or arising from the actions or failure to act of the Surety under paragraph 3 herein,

SUBCONTRACTOR PERFORMANCE BOND

BOND NUMBER: _____

and liquidated damages, or if no liquidated damages are specified in the Agreement, and actual damages caused by delayed performance or non-performance of the Principal.

c. Principal's responsibilities for damages and set-offs in accordance with the Agreement.

8. If Surety elects to act under paragraph 3, Surety's liability is limited to Penal Sum, as adjusted pursuant to paragraph 2 above. Notwithstanding the foregoing, Surety shall reimburse Obligor for Obligor's reasonable attorney fees and costs, which shall not be credited against the Penal Sum, from disputes arising from this Bond.

9. Neither Surety's payments for Work performed before Obligor's declaration of default, nor Surety's payments to Claimants as defined in any payment bond issued by Surety as a companion payment bond to this Bond, shall be credited against the Penal Sum of this Bond.

10. All Information Obligor provides to Surety, whether before or after Surety issues the Bond, is provided by Obligor voluntarily as a matter of courtesy and is merely an expression of opinion. Furnishing such information is not a guaranty or warranty of the accuracy or correctness and no responsibility or liability is assumed by Obligor as a result of providing such information to Surety. Surety shall not rely on such information in any manner and waives and releases Obligor and Obligor's surety from any such claims.

11. Surety shall not be liable to Obligor for obligations of the Principal that are unrelated to the Agreement.

12. If this Bond has been furnished to comply with a statutory requirement in the location of the Project, any provision in this Bond conflicting with the statutory requirement shall be deemed deleted and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

13. No right or action shall accrue on this Bond to or for the use of any person or corporation other than Obligor or its heirs, executors, administrators, assigns or successors.

Principal and Surety cause this Bond to be duly executed and acknowledged as set forth below, on this day of _____.

SUBCONTRACTOR AS PRINCIPAL

Company:

By:
Its:

SURETY

Company:

By:
Its: Attorney in Fact

(Impress Corporate Seal)

DATE: Friday, May 23, 2025

PROJECT: LEWTON ELEMENTARY

OWNER: Lansing School District

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

The American Institute of Architect (AIA) "General Conditions of the Contract for Construction" - AIA Document A201/2007 is a part of this contract, and is incorporated herein by reference as fully as if here set forth for bidding purposes and will be set forth at length in the contract. The General Conditions are modified by the Supplementary General Conditions as specified herein.

All references to the "Standard form of General Conditions" are hereinafter used in these specifications shall refer to the above documents.

END OF SECTION

Job No.

Work Category:

**** SUBCONTRACT ****

This Subcontract (Agreement) is dated , between , , with its principal place of business at 208 N. Capitol Avenue, Lansing, MI 48933-1357 (Christman), and , with its principal place of business at , (Subcontractor). Christman and Subcontractor are collectively called the Parties. The Parties agree:

ARTICLE 1 - PROJECT

Subcontractor shall perform and pay for all of the Work, for the Contract Sum on the following Project known as , located at , , , for (Owner) in accordance with the documents prepared by (Architect/Engineer).

ARTICLE 2 - CONTRACT SUM

2.1 Contract Sum Subcontractor shall perform the Work for the Contract Sum, subject to adjustment only with Christman's prior written approval for changes in the Work. For the complete, timely, and satisfactory performance of the Work, Christman will pay Subcontractor the Contract Sum, subject to additions or deletions by Change Order, and subject to the terms of the Contract Documents. The Contract Sum shall not be adjusted unless Subcontractor shall have strictly complied with Articles 13 (Changes). Notwithstanding the foregoing, Christman may adjust the Contract Sum by Change Order, without Subcontractor's consent, for backcharges, set offs, or all costs associated with Subcontractor's Default. Subcontractor shall pay for all costs to perform its obligations, even if those costs exceed the Contract Sum.

Contract Sum: *** DOLLARS***

. Work Category

Total for Subcontract:

2.2 Resource Planning The Contract Sum shall include any material or labor escalation, incidental costs required for the Project, any additional crews, overtime, shift time, and any other resource necessary to meet the Project Schedule, including any revisions or amendments to the Schedule.

2.3 Employer Contributions & Taxes The Contract Sum shall include: (a) all wages, prevailing wages (if required), premiums, payroll taxes, pension, fringe, welfare, vacation, annuity, travel pay, and union or benefit contributions, apprenticeship or industry advancement funds payable in connection with the Work if applicable or as required by Applicable Laws (collectively, Employer Contributions); and (b) all taxes arising out of Subcontractor's furnishing or installing any labor, material and equipment including but not limited to sales, use, personal property, and excise taxes (collectively, Taxes). Before receiving final payment, Subcontractor shall certify that it has paid all Employer Contributions and Taxes.

2.4 Patents & Copyrights The Contract Sum shall include all license fees and royalties for all items, materials, methods, or systems for the Work provided by subcontractor.

2.5 Lump Sum This is a lump sum contract. Subcontractor represents and warrants that it has independently investigated and ascertained the quantity and cost of the Work. The Contract Sum shall not be adjusted for increases in the quantity or cost of labor or materials. Subcontractor assumes exclusive liability for all matters required to be included in the Contract Sum.

ARTICLE 3 - WORK

3.1 The Work Subcontractor shall provide and install all labor, materials, tools, equipment, hoisting, scaffolding, insurance, Taxes, supervision, services, design, and all other items, in the quantities necessary to properly, efficiently and timely prosecute and

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complete the Work identified in the Contract Documents and Supplements, except to the extent specifically indicated in the Contract Documents to be the responsibility of another trade (the Work). The Drawings and Specifications describe the general scope of the Project, and as such, they do not necessarily describe all work required for the full performance of the Work. The Parties execute this Agreement on the basis of such documents with the understanding that Subcontractor shall furnish and install all items reasonably implied or inferable by Christman or the Owner from the Contract Documents as required for the proper completion of the Work without adjustment to the Contract Sum. Subcontractor shall perform the Work in strict accordance with the Contract Documents. All workmanship shall be of the highest grade. All materials and equipment shall be new except as provided in the Contract Documents.

ARTICLE 4 - CONTRACT DOCUMENTS

4.1 Contract Documents Subcontractor, and its subcontractors, consultants, laborers and suppliers (collectively, Lower Tiers), shall be bound by the Contract Documents which consist of this Agreement, Exhibits to this Agreement, the agreement between Christman and Owner/Customer (Prime Contract) except as otherwise provided in this Agreement, all documents incorporated in the Prime Contract, the Drawings, Specifications, Addenda, Conditions, and any documents set forth in Supplements, all of which are incorporated herein and made a part of this Agreement, except payment terms of the Prime Contract and except dispute resolution terms of the Prime Contract as they relate to the specific method of final dispute resolution after claim submission, in which case Article 16 (Dispute Resolution) controls. Subcontractor shall perform all Work subject to all terms and conditions, express or implied, in the Contract Documents relating to its Work, it being the intention that Subcontractor will fully, properly and faithfully discharge the obligations of Christman insofar as the Subcontractor's Work.

4.2 Flow Down Subcontractor assumes toward Christman all of the obligations and responsibilities that Christman, by the Contract Documents, assumes toward Owner insofar as the Subcontractor's Work, regardless of whether Owner enforces these obligations against Christman. Subcontractor shall not have any right or remedy against Christman which Christman does not have to or against the Owner under the Contract Documents. Subcontractor shall incorporate the Contract Documents by reference into any agreements with Lower Tiers. By written contract, Subcontractor shall require its Lower Tiers to assume towards Subcontractor and Christman all of the obligations including but not limited to, insurance, indemnity, and defense that Subcontractor, by the Contract Documents, assumes toward Christman insofar as the Subcontractor's Work. If requested by Subcontractor, Christman shall supply Subcontractor with a copy of the Prime Contract with confidential information redacted.

4.3 Conflicts & Interpretation The Contract Documents are intended to complement each other and shall be so interpreted where possible. If, however, any provision of this Agreement irreconcilably conflicts with another provision of the Contract Documents, the provision imposing the greater duty, greater quality, or more stringent requirement on Subcontractor shall govern. Further, to the extent the Contract Documents give the Architect/Engineer or Owner the right to determine quantities, quality, and other factors relating to the Work, such determinations shall be binding on Subcontractor to the same extent they are binding on Christman.

4.4 Acceptance Subcontractor's signature on this Agreement or the start of any Work shall constitute Subcontractor's acceptance of this Agreement. However, this Agreement is expressly contingent upon Owner approving Subcontractor. Upon Christman's notice to Subcontractor that Owner rejects Subcontractor, Subcontractor shall have 5 days after notice to overcome its disqualification to the satisfaction of Owner, otherwise this Agreement shall be deemed null and void.

ARTICLE 5 - BONDS

5.1 Surety Qualification If Performance and/or Payment bonds are required, Subcontractor shall pay for and deliver such bonds, within 10 days of Christman's request using the form specified by Christman and attached to this Agreement, each in the full amount of this Agreement, issued by a United States (U.S.) Treasury listed surety with an AM Best rating of A or better, approved and licensed to do business in the state where the Project is located (Controlling State), duly executed by agents with complete Power of Attorney to the full limits therein. Christman shall have the right, in its discretion, to reject Subcontractor's bonds and surety and to require replacement of the bonds and/or surety, at Subcontractor's cost, if the surety proposed by Subcontractor does not meet any requirements of this Agreement upon submission. Subcontractor is not permitted any mark up on bond costs and shall present an invoice from its surety to establish the actual cost of any bonds. Subcontractor shall refund to Christman any rebate or refund in bond premiums resulting from adjustment in bonds.

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5.2 Changes & Terms Christman shall have the right, without notice to Subcontractor's surety, to order changes in the performance or time of performance of the Work and to modify this Agreement. No extension of time, change, addition, or omission of terms in this Agreement or the Prime Contract shall affect the surety's obligation on the bonds. Subcontractor and its surety waive notice to the surety of any such extension of time, change, addition, or omission. Subcontractor and surety agree without the necessity for any further authorization, to increase the bonds' penal sums if or when additive changes to the Contract Sum are executed. Christman's response to any surety inquiry as to Subcontractor's performance shall not estop or impair Christman's rights under this Agreement or any bond, and surety shall be required to conduct its own independent investigation of Subcontractor's performance.

5.3 Duration Any Performance Bond shall guaranty Subcontractor's performance through the end of any warranty period and any statute of limitation as to surety's obligations under the Performance Bond shall not begin to accrue until the warranty period ends, subject to the requirements of the Prime Contract and as allowable by Applicable Law.

ARTICLE 6 - INSURANCE

6.1 General Obligation Before starting any Work and as a condition precedent to payment, Subcontractor shall maintain insurance in the types, coverages, and for the limits as set forth below, in the Prime Contract, or in Subcontractor's actual policies of insurance, *whichever is greater or requires more*, and shall furnish Certificates of Insurance (COI) evidencing such insurance.

- | | | | |
|--|-----------------------------|--|-----------------------------------|
| a. Worker's Compensation | Statutory Limit | | \$1,000,000 Employer's Liability |
| b. Commercial General Liability (CGL)* | | | |
| 1) Bodily Injury | \$2,000,000 Each Occurrence | | \$2,000,000 Per Project Aggregate |
| 2) Property Damage | \$2,000,000 Each Occurrence | | \$2,000,000 Per Project Aggregate |
| Subcontracts greater than \$3,000,000 | | | |
| 1) Bodily Injury | \$5,000,000 Each Occurrence | | \$5,000,000 Per Project Aggregate |
| 2) Property Damage | \$5,000,000 Each Occurrence | | \$5,000,000 Per Project Aggregate |
| *Coverage shall be occurrence based and shall include products and completed operations, contractual and independent contractors, and where applicable, underground hazard and/or explosion and collapse | | | |
| c. Comprehensive Automobile Liability | | | |
| 1) Bodily Injury | \$2,000,000 Each Occurrence | | \$2,000,000 Per Project Aggregate |
| 2) Property Damage | \$2,000,000 Each Occurrence | | |
| d. Professional Liability - when the Work includes any design, engineering, or professional services with a deductible and/or self-insured retention, including those relating to defense costs, not in excess of \$25,000 | | | |
| | \$2,000,000 Each Occurrence | | \$2,000,000 Per Project Aggregate |

Insurance policy limits shall be in the amounts specified above, as required by the Prime Contract, or as specified in Subcontractor's policies, *whichever is greater*. Policy limits may be achieved through a combination of underlying and excess (umbrella) coverage. Unless the Prime Contract provides for insurance by and at the expense of Owner to protect Subcontractor against loss, Subcontractor shall provide for all of its own insurance of every kind.

6.2 Additional Insured Subcontractor shall name the Owner, Architect/Engineer, Christman, and their directors, officers and agents, and any other persons or entities listed in the Prime Contract and Supplements, as additional insureds (AI) on every policy of insurance, except Workers Compensation, including under the completed operations coverage, using AI ISO form Endorsements CG 20 10 07 04 and CG 20 37 07 04, and with respect to the Architect/Engineer, CG 20 32 07 04. All COIs shall include evidence of these endorsements. Insurance covering the AI parties shall be primary and all other insurance carried by any additional insured shall be excess.

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6.3 Qualifications Subcontractor shall provide insurance from insurers with policy holder ratings not lower than "A" and financial ratings not lower than "XI" in the Best's Insurance Guide, latest edition in effect as of the date of the Agreement.

6.4 Duration Subcontractor warrants and represents that for the duration of its Work, and for such longer periods required herein, Subcontractor has and shall maintain the required insurance coverage. Subcontractor shall maintain Products and Completed Operations insurance for a minimum period of the longer of the following: (a) six years after the Project Substantial Completion Date; or (b) the period of the statute of limitation or the statute of repose of the Controlling State; or (c) the duration set forth in the Prime Contract.

6.5 Cancellation Subcontractor shall provide written notice to Christman of the cancellation or expiration of any required insurance within 3 days of the date of the cancellation or expiration or within 3 days Subcontractor is first aware of any notice of cancellation or expiration, whichever comes first. If Subcontractor becomes uninsured, such event shall be deemed a material breach of contract and an immediate Subcontractor Default without notice.

6.6 Subcontractor Property If any loss or damage to Subcontractor's own property occurs, Subcontractor shall look solely to its own insurance for recovery regardless of whether a Builder's Risk policy is in place on the project, and is solely responsible for its deductibles. Subcontractor shall hold harmless and defend Christman and Owner from such loss or damage.

6.7 Deductibles Subcontractor shall be solely and exclusively responsible for any insurance deductibles to the extent arising out of or relating in any way to its Work, including but not limited to claims which could be covered by Builder's Risk insurance.

6.8 Waiver of Subrogation Subcontractor unconditionally waives all of its rights and shall require its insurers and Lower Tiers to unconditionally waive all rights of subrogation against the Owner, Architect/Engineer, Christman, and their parent companies, affiliates, subsidiaries, partners, officers, directors, employees, and agents, and similarly waives all rights of subrogation against all other subcontractors, vendors and suppliers.

6.9 Vertical Exhaustion Subcontractor's underlying and excess coverage shall be primary and noncontributory to any policy of insurance maintained by any other entity and shall be vertically exhausted first in the order of coverage before any other policy of insurance. Subcontractor's excess policy shall be tied only to Subcontractor's underlying policy and shall not require the exhaustion of limits of policies of any insurance maintained by any other entity before attaching. Further, Subcontractor's excess policy shall not require the exhaustion of underlying limits only through the actual payment by the underlying insurer.

6.10 Lower Tiers Subcontractor shall require, and Subcontractor represents that its Lower Tiers will maintain, the insurance coverages specified in this Article including naming Owner, Architect/Engineer, and Christman, as additional insureds.

ARTICLE 7 - INDEMNITY

7.1 TO THE MAXIMUM EXTENT PERMITTED BY LAW, SUBCONTRACTOR SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS OWNER, ARCHITECT/ENGINEER, CHRISTMAN, AND THEIR OFFICERS, DIRECTORS, EMPLOYEES, AGENTS AND ASSIGNS, AND OTHER ENTITIES IF ANY, THAT CHRISTMAN IS OBLIGATED TO INDEMNIFY BY THE PRIME CONTRACT, (COLLECTIVELY, INDEMNITEES) FROM AND AGAINST ANY AND ALL CLAIMS, ALLEGATIONS, DEMANDS, DAMAGES, COSTS, EXPENSES, PENALTIES, WORK STOPPAGE, ATTORNEY FEES, AND/OR LIABILITIES OF ANY TYPE OR KIND, REGARDLESS OF THE LEGAL THEORY, ARISING OUT OF OR RELATED TO THE WORK (COLLECTIVELY, CLAIMS) INCLUDING BUT NOT LIMITED TO ANY AND ALL CLAIMS: (a) personal injury or property damage or property impairment; (b) defects or omissions in Subcontractor's workmanship or materials provided; (c) Subcontractor's violation of any Applicable Law, regulatory violations, citations or penalties; (d) Subcontractor's breach or failure to perform this Agreement; (e) Subcontractor's use of Christman's equipment or equipment operator and Christman's use of Subcontractor's equipment in accordance with section 10.4; (f) Subcontractor's infringement of any patent, trademark or other proprietary right; (g) claims and/or liens per Article 12; (h) Subcontractor's breach of any representation or warranty; (i) damage to Subcontractor's own equipment and property; (j) Subcontractor's violation of any applicable confidentiality or nondisclosure agreement; (k) Subcontractor's failure to comply with all matters required to be included in the Contract Sum; (l) Subcontractor

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substitutions, regardless of whether Christman or Owner consented to the substitution; and, (m) any claim as described in the Prime Contract. **THIS INDEMNITY OBLIGATION COVERS ALL CLAIMS CAUSED BY OR CONTRIBUTED TO, IN WHOLE OR IN PART, ANY ACTIVITY OR INACTIVITY OF SUBCONTRACTOR, ITS LOWER TIERS, AND THEIR OFFICERS, DIRECTORS, EMPLOYEES, OR AGENTS. THIS INDEMNITY APPLIES REGARDLESS OF ANY ACTIVE AND/OR PASSIVE NEGLIGENT ACT OR OMISSION OF INDEMNITEES. SUBCONTRACTOR, HOWEVER, SHALL NOT BE OBLIGATED TO INDEMNIFY AN INDEMNITEE FOR CLAIMS ARISING FROM THE SOLE NEGLIGENCE OF THAT SPECIFIC INDEMNITEE. THE INDEMNITY OBLIGATIONS SHALL NOT BE LIMITED IN ANY WAY BY ANY LIMITATION ON THE AMOUNT OR TYPE OF DAMAGES, COMPENSATION OR BENEFITS PAYABLE BY OR FOR SUBCONTRACTOR UNDER WORKER'S COMPENSATION ACTS, DISABILITY BENEFIT ACTS OR OTHER EMPLOYEE BENEFIT ACTS..**

7.2 Duty to Defend At its cost and with legal counsel reasonably acceptable to Christman, Subcontractor shall defend Indemnitees from any Claims, including those raised in an administrative hearing, arbitration or similar proceeding. The obligation to defend accrues immediately upon receipt of a notice of Claim. If Subcontractor fails to provide timely, competent defense, Christman shall be entitled to reasonable costs associated with assuming such defense, including but not limited to attorney fees and costs incurred to enforce this indemnity and defense provision.

7.3 Notice to Insurer/Surety Subcontractor shall advise its insurers and sureties of these indemnity, defense, and hold harmless and insurance obligations and shall obtain a contractual coverage endorsement to discharge its obligations as set forth herein.

7.4 Consideration The Parties agree that \$1,000 of the Contract Sum is part of the consideration for this indemnity obligation. Only in those states where there must be a contractual limit on indemnity obligations, the contractual limit shall be three times the aggregate value of CGL insurance limits required by this Agreement.

7.5 Survival Subcontractor's indemnity and defense obligations shall survive the termination or expiration of this Agreement and the completion of the Work.

ARTICLE 8 - SAFETY

8.1 Responsibility Subcontractor represents that it has expertise in the particular means and methods required to safely execute the Work and that it maintains a consistently high level of safety and health compliance. At its expense, Subcontractor shall furnish its workers a place of employment free from recognized hazards that cause or are likely to cause serious physical harm. Subcontractor shall protect from injury, its employees engaged in the Work, employees of other trade contractors working adjacent to Subcontractors Work and all property and persons which may be affected by its operations. The prevention of accidents to workers engaged in the Work and others affected by the Work is the responsibility of Subcontractor. Subcontractor shall strictly comply with the Safety Program of Christman and the Owner, and all Applicable Laws. The Subcontractor shall submit to Christman, a current Safety Program and Experience Modification Rates for Subcontractor and Lower Tiers. Subcontractor shall employ all engineering controls, administrative actions, and personal protective equipment to eliminate, and where elimination is not possible, control and reduce worker exposure to hazardous conditions, including but not limited to respirable crystalline silica and asbestos containing material. Subcontractor shall periodically monitor and evaluate its engineering and work practice controls to ensure they are effective and to discover, prevent and detect hazardous conditions. Subcontractor shall furnish Christman copies of Safety Data Sheets for all materials to be used in executing the Work. Subcontractor's foreman/superintendent (Foreman), at a minimum shall have satisfactorily completed OSHA 10-Hour training. The Foreman shall be assigned for the duration of the Project so as to maintain continuity. The Foreman shall speak English and be able to translate into English for non-English speaking workers to facilitate communications and ensure mutual understanding. Subcontractor shall ensure that all non-English speaking workers fully understand the site safety requirements and their duties for safety, health, and welfare. Subcontractor shall immediately correct any unsafe or hazardous condition related to its Work. If Subcontractor fails to immediately correct an unsafe condition, Christman may have the unsafe condition corrected by others at Subcontractor's expense or direct that the Work be stopped in the area of the unsafe condition.

8.2 Hazardous Materials Christman makes no representation or warranty as to conditions described in any hazardous materials

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survey. If Subcontractor encounters any hazardous conditions or materials, Subcontractor shall immediately stop Work in the affected area and notify Christman in writing. Subcontractor acknowledges that it is fully apprised of all Applicable Law regarding hazardous conditions or material and that it will be fully responsible for disturbing any hazardous material, including for any and all fines, penalties, or damages assessed against Subcontractor or Christman. If Subcontractor uses hazardous materials on site of any type for which an employer is required by Applicable Laws to notify its employees of such use Subcontractor shall, before using the materials on site, give timely written notice of the materials to Christman. Subcontractor shall immediately correct any unsafe or hazardous condition related to its Work. If Subcontractor fails to immediately correct an unsafe condition, Christman may have the unsafe condition corrected by others at Subcontractor's expense or direct that the Work be stopped in the area of the unsafe condition.

8.3 Notice Subcontractor shall immediately notify Christman and provide Christman with copies of all OSHA citations and accident reports.

8.4 Responsibility Per Article 7, Subcontractor shall bear sole responsibility for any Claims arising out of any breach of, in whole or in part, or failure to comply with this Article, by the Subcontractor or its Lower Tiers, their invitees, or vendors, including any claims arising from regulatory violations, citations or penalties.

ARTICLE 9 - DESIGN SERVICES (If Applicable)

9.1 Design Services If the Work includes any design, engineering or professional services, Subcontractor accepts the design standards, criteria and performance specifications in the Contract Documents and agrees that such data is sufficient for Subcontractor's proper design and functioning of the Work. Christman does not warrant the accuracy or completeness of information in the Contract Documents, however, Subcontractor may rely on these items to the same extent Christman is entitled to rely upon such items in the Prime Contract. Subcontractor agrees that its design services relate to a part of the overall design of the Project and that its design must integrate into the Project's overall design concept expressed, inferred or reasonably implied by the Contract Documents. Subcontractor shall coordinate its Work with the services performed by others. Subcontractor shall submit to Christman detailed drawings and specifications (Work Product) describing the requirements for the Work and showing the relationship of the Work to the overall Project. Subcontractor shall provide Work Product in the form and quantity required by the Contract Documents. Christman shall be entitled to rely upon the adequacy, accuracy and completeness of the services and certifications or approvals performed by Subcontractor and its Lower Tiers. Subcontractor shall perform agreed upon revisions and submit revised Work Product for Christman's review. Subcontractor shall provide written notice to Christman and other affected trades of all design development changes in sufficient time to preclude additional costs and conflicts with the work of others.

9.2 Design Consultant Subcontractor's engagement of any design consultant shall be subject to Christman's written approval. The consultant's seal shall appear on all drawings, calculations, specifications, certifications, shop drawings and other Work Product prepared by the consultant. All consultants shall be licensed in accordance with Applicable Laws and fully bound to Christman in the same manner as Subcontractor is bound to Christman for all Contract Document requirements applicable to the Work, including all insurance requirements, including professional liability insurance. Subcontractor shall be responsible for the services performed by its consultants.

9.3 Standard of Care Subcontractor's standard of care for all design services shall be the highest care and skill used by members of the design profession practicing under similar conditions at the same time and locality of the Project, or as stated in the Prime Contract, whichever imposes the higher standard of care.

ARTICLE 10 - EXECUTION OF THE WORK

10.1 Project Investigation Subcontractor assumes responsibility for all Project investigation as related to its Work. Subcontractor represents that it has carefully inspected the Project site. Subcontractor represents that it is familiar with, has satisfied itself as to, and assumes all risk of: (a) the nature, location, and amount of the Work; (b) site conditions and access; (c) ability to perform the Work in accordance with the Project Schedule and Contract Documents; (d) any Applicable Laws and inspection requirements; (e) all safety and barricade requirements; (f) the terms and conditions of applicable collective bargaining agreements, to the extent applicable; (g) the quality, quantity, and availability of labor, materials, equipment, and utilities; and, (h) the limiting physical, climatic, and other conditions. Subcontractor is not relying on any opinion or representation of Christman as to Project conditions.

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Subcontractor shall be solely responsible for all cost, expense and damage that may result from Subcontractor's failure to perform or properly perform such investigations including its failure to properly notify Christman and obtain written approval before proceeding with related Work.

10.2 Document Investigation Subcontractor warrants that it has thoroughly reviewed and fully acquainted itself with the Contract Documents and that the Contract Documents are suitable and sufficient for their intended purposes, without any express or implied representation or warranty having been made as to their accuracy, consistency, adequacy, completeness or constructability. Subcontractor shall give written notice to Christman of any error, inconsistency, ambiguity or omission in the Contract Documents within the earlier of 3 days after Subcontractor first becomes aware of the error, or 3 days before the time Christman is required to make such claims to the Owner under the Prime Contract. Subcontractor shall not be excused from any provision of the Contract Documents due to a lack of knowledge or understanding of their content. Christman disclaims any and all warranties, express or implied, as to the accuracy or adequacy of the plans, specifications, design, or other Contract Documents. Subcontractor shall make no claim based upon such disclaimed warranties.

10.3 Qualifications Subcontractor represents and warrants at all times it shall obtain and maintain all necessary credentials, certifications, licenses and other qualifications to do business and safely perform the Work. Subcontractor's obligation to perform the Work is non-delegable and nontransferable. Subcontractor shall be solely responsible for determining, supervising and implementing the means, methods, techniques, sequences, procedures and inspections of its Work. Christman shall not be responsible for the direction, supervision, inspection, quantity or quality of Subcontractor's Work.

10.4 Progress & Cooperation Subcontractor shall furnish sufficient equipment, tools and materials and a sufficient number of properly skilled workers to carry on the Work and conduct its activities in a manner and at a rate of performance in all respects satisfactory to Christman and the Owner and in a manner that will not interfere with, disrupt or delay the activities of Christman, the Owner, or others involved in the Project. Subcontractor shall erect, maintain, inspect and operate all of its equipment including but not limited to scaffolding, hoists, and material handling equipment in accordance with Applicable Laws. Subcontractor shall not unreasonably refuse Christman's use of Subcontractor equipment. If Christman utilizes Subcontractor's equipment, Christman shall not be liable to Subcontractor for the erection, maintenance or inspection of any such equipment, except to the extent Christman has assumed such obligations under written agreement with Subcontractor, and any such use by Christman shall be done in strict accordance with equipment manufacturer's instructions. Any Christman employee engaged in such use has all the necessary and requisite training to operate such equipment. Subcontractor shall cooperate with Christman and others involved in the Project, including those that Subcontractor's schedule may affect, to avoid any conflict and to ensure a first class workmanlike job in every respect. Subcontractor shall maintain good order among its employees and others and not permit upon the Project any disorderly, intemperate, or unfit person or anyone unskilled in performing the Work. At all times Subcontractor shall have a competent person with authority available to act on its behalf. Subcontractor shall provide all technical personnel required to startup, test, commission, and operate any equipment, and to test and use any material, supplies, or other items provided by Subcontractor in connection with the Work and to instruct Christman and Owner's personnel in the operation and maintenance of any equipment, materials, supplies, or other items. Subcontractor shall not perform any work directly for Owner or any Owner tenant or deal directly with the Owner's representatives in connection with the Project.

10.5 Shop Inspection The Owner, Architect/Engineer, Christman, and their representatives, shall have full access at reasonable hours to Subcontractor's Work and its Lower Tier's shops, factories, or other places of business to inspect the general condition and progress of the Work.

10.6 Submittals Within the time directed by Christman and without delay, Subcontractor shall furnish all mock ups, submittals, shop drawings, product data, specifications, samples, interim design submissions if applicable, electronic data or similar items (Work Product). By submitting such Work Product, Subcontractor represents that it has verified materials, field measurements, and field construction criteria related thereto, or will do so, and has checked and coordinated the information in its Work Product with the requirements of the Contract Documents. If Subcontractor's Work Product is rejected after a reasonable number of reviews, Christman may backcharge Subcontractor for the actual costs to continue review and process the rejected Work Product. Subcontractor waives any claim arising out of Subcontractor's failure to comply with this requirement. Christman's review of Work Product shall be limited to conformance with general design and general detailing and Christman need not verify dimensions or field

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conditions. Subcontractor shall not make any substitutions in the Work, unless it first requests in writing permission for a substitution by expressly identifying the item or method substituted, as a "Substitution" and then only upon receipt of Christman's written consent to such substitution. Christman or Owner's review or consent of any Work or Work Product, shall not relieve Subcontractor from its responsibility for any deficiency that may exist or from its obligation to perform the Work in strict accordance with the Contract Documents.

10.7 Layout Subcontractor shall be solely responsible for the layout, accuracy, and workmanship of its Work. Before starting its Work, Subcontractor shall examine the work of others affecting its Work and verify all dimensions set forth in the Contract Documents as they pertain to or may affect Subcontractor's Work. If any defect, conflict, or inconsistency exists, Subcontractor shall immediately notify Christman in writing. Subcontractor shall not proceed until the defect is corrected or Christman provides written authorization to proceed. If Subcontractor fails to inspect or give written notice, Subcontractor shall be deemed to have accepted the work of others as fit and proper to receive Subcontractor's Work and waives any claim as to the defects. Subcontractor is responsible for all corrective work.

10.8 Compliance Subcontractor shall obtain and pay for all necessary permits, licenses, assessments and inspections, and comply with all statutes, ordinances, rules, regulations and orders of any governmental or quasi-governmental authority applicable to the Work (Applicable Laws) including: any LEED building, sustainable construction means, methods or requirements, or energy performance requirements, including those in the Contract Documents; local, state or federal safety and health laws and regulations, including those related to hazardous materials, such as crystalline silica; local, state or federal fair employment practices laws, affirmative action programs, minority contracting programs, business ethics and compliance; rules and regulations of any Contract Compliance Division of the state and federal Civil Rights Commission or any similar commission having jurisdiction; all immigration laws, rules and regulations, including I-9 verification and E-verify; Buy American provisions; and, Davis Bacon and/or state prevailing wage requirements. At Christman's request, Subcontractor shall certify to Christman's satisfaction that its employees have presented the correct documents to legally work in the U.S. Subcontractor shall immediately correct any violations of Applicable Laws.

10.9 Protecting the Work Subcontractor shall protect all Work, tools, material and equipment against any loss, damage or theft (Loss). At its sole risk, Subcontractor shall bear any Loss to its Work arising from any cause until Substantial Completion as defined in the Prime Contract, or such duration required by the Prime Contract, whichever is greater. Subcontractor is responsible for any Loss to existing property, structures, materials or equipment, the Work, the work of others, and property of Owner and adjacent land owners, utilities, roads, bridges, and waterways, arising out of Subcontractor's operations. Subcontractor shall repair or replace such items to the satisfaction of and at no cost to Christman. If Subcontractor refuses or fails to repair, replace, or correct the Loss, at Christman's sole election, Subcontractor shall accept a deduction in Contract Sum to the extent of the cost incurred by Christman or demanded by Owner. If a dispute arises between Subcontractor and another trade as to which is responsible for any Loss, Christman may determine the responsibility for such Loss and its determination shall be final and binding upon Subcontractor. Christman may backcharge Subcontractor the reasonable actual costs to investigate and respond to such claims.

10.10 Christman Tools & Equipment Subcontractor is responsible for all unloading, moving, lifting, protection, securing, and handling of its materials and equipment at the job site. In consideration of Christman's permission to use any tools or equipment of any nature whatsoever, including but not limited to elevators, hoists, derricks, cranes, side tracks, and yards, Subcontractor contractually assumes complete risk, responsibility, and liability for the use or operation of such equipment, and for any Claim arising in any manner because of Subcontractor's use or operation of tools and equipment or use of same for Subcontractor's benefit, irrespective of who actually operated the tools and equipment.

10.11 Clean Up Subcontractor shall at all times keep the Project and Owner's premises, adjoining premises, and streets clear of rubbish, debris, overspray and similar items resulting from its Work and shall remove all such rubbish at its own expense, as directed by Christman. Subcontractor shall maintain broom clean conditions at the end of each day. Christman shall designate the location of all dumpsters. Subcontractor shall not dispose of any hazardous waste or waste requiring special manifests in these dumpsters. If Subcontractor fails to clean the site to the satisfaction of Christman and/or the Owner upon 24 hours' notice (except where such condition creates a safety concern, and in that case, without notice) then Christman may do so and backcharge Subcontractor the actual cost of cleanup.

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10.12 Labor Relations Subcontractor shall only use labor which will not cause disharmony or labor disputes in the performance at the Project. Subcontractor shall implement policies and practices to avoid work stoppages, slowdowns, disputes, and strikes. Subcontractor shall notify Christman promptly of any actual or potential dispute that may affect the Work. Subcontractor guarantees that there shall be no strike, lock-out or other work slowdown affecting its Work or the work of others. Subcontractor represents that it has the legally binding agreement of all bargaining representatives of any part of its workforce (or before beginning Work will obtain such agreement), that the represented workers will not strike, picket, engage in any slow-down or other concerted activity where Work is performed, and will cross and work behind any picket line at the job site, regardless of by whom. If Subcontractor's workers are involved in a dispute with other trades on the Project, or any union, or such workers refuse work due to any labor disputes, Subcontractor shall immediately resolve the disputes. Failure to do so shall be a material breach of this Agreement. If a labor condition threatens the timely completion of any portion of the Work, Christman may, at its option, terminate Subcontractor's right to proceed with Work for Default or employ others to perform the affected Work and backcharge Subcontractor the cost thereof. Notwithstanding the foregoing, Subcontractor shall not be liable for strikes, work stoppages, jurisdictional disputes, lockouts, union and non-union disputes and other similar claims or conflicts ("Labor Issues") except to the extent such Labor Issues are caused, in whole or in part, by the actions or inactions of Subcontractor or anyone else for whom Subcontractor is responsible.

10.13 Meetings Subcontractor shall attend any project meetings as directed by Christman. Subcontractor shall be represented by its Project Manager or Senior Representative responsible for the Project and its Site Supervision. Subcontractor shall attend an on-site pre-installation meeting before beginning any Work. Christman will maintain and distribute to attendees minutes of the meetings for review. Subcontractor shall review the minutes and provide written notice of any objections within 3 days after issuance of the minutes; failure to do so shall be deemed Subcontractor's acceptance without reservation of the content of the minutes.

10.14 Material Delivery & Installation Space for storage on the Project site may be limited. Subcontractor shall schedule material deliveries accounting for the limited storage or lay down area and to coincide with construction phasing. Subcontractor shall coordinate its access, deliveries, staging, trailers, storage areas and parking in advance, and as approved by Christman's superintendent before Subcontractor's mobilization on site. If Subcontractor's Work includes installation of materials or equipment furnished by others, Subcontractor shall examine the items with due care and install the items with such skill and care as to ensure a satisfactory and proper installation and to preserve all warranties. All material and equipment delivered to the job site or off site and in the process of fabrication shall become the property of the Owner and shall not be removed from the site or damaged in any way.

10.15 Cutting & Patching Unless otherwise directed in writing by Christman, Subcontractor shall do all cutting, fitting, and patching of its Work that may be required to make its several parts come together properly and to fit it to receive or be received by work of others.

10.16 Employment Practices Subcontractor shall not discriminate against any person with respect to his/her hire, tenure, terms, conditions or privileges of employment because of race, color, age, sex, religion, sexual orientation, the presence of a physical, sensory or mental disability, or national origin. Subcontractor shall comply with any and all Applicable Laws as to fair employment practices and other employment programs required by the Contract Documents.

10.17 Conduct Subcontractor and its Lower Tiers shall not engage in any harassment or offensive behavior. Christman strictly prohibits any request to engage in illegal or unethical conduct and negative comments or actions based on race, color, age, sex, religion, sexual orientation, physical, sensory or mental disability, or national origin. Subcontractor shall immediately address any claim of harassment or offensive behavior involving it or its Lower Tiers, properly discipline any person who engaged in such conduct, including removal from the Project where appropriate, and use its best efforts to ensure that such conduct does not reoccur. In its sole judgment, Christman shall have the right to cause removal from the Project any worker who engages in unsafe work practices or violates this Article.

10.18 Recordkeeping Subcontractor shall keep full and detailed accounts and exercise such controls as may be necessary for proper financial management, using accounting and control systems in accordance with generally accepted accounting principles.

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During the Work and for a period of 3 years after final payment, Christman and/or Owner and their accountants shall be afforded access to and the right to periodically audit, upon reasonable notice, Subcontractor's records, books, receipts, subcontracts, purchase orders, man hours and equipment hours, and other data relating to the Work, all of which Subcontractor shall preserve for 3 years, or such longer period as specified in the Prime Contract.

10.19 Operation Manuals Upon approval of shop drawings and Submittals, Subcontractor shall provide an electronic copy (unless some other form is specified in the Prime Contract) of Operation and Maintenance Manuals for each item approved, as applicable.

ARTICLE 11 - WARRANTY

11.1 Warranty Subcontractor warrants that the Work shall strictly conform to the requirements of the Contract Documents and shall be free from defects in design, workmanship, and materials. Subcontractor shall promptly correct any defective or nonconforming Work, by (at Christman's exclusive option) adjustment, repair, or replacement to the satisfaction of Christman and Owner. Subcontractor shall pay all costs associated with accessing the Work to make warranty repairs and returning the Work and all affected surrounding work to the condition required by the Contract Documents. If Christman determines that Subcontractor is not timely completing its warranty obligation, Christman may replace or repair, at its sole election, and backcharge Subcontractor all associated costs. If no sums remain due Subcontractor, Subcontractor shall pay Christman all those costs immediately upon demand.

11.2 Duration The Subcontractor shall provide a one (1) year warranty from the actual Project "Substantial Completion Date" on all material, equipment and workmanship, or the warranty duration specified in the Contract Documents, whichever is longer. For any portion of the Work repaired or replaced, Subcontractor shall provide an additional one (1) year, or longer if the Contract Documents require, warranty on the Work after the date of repair or replacement.

11.3 Statutory Warranty Nothing in this Article shall limit the rights afforded to Christman and Owner under Applicable Law as to Subcontractor's warranty against defects in design, workmanship and materials or defective or non-conforming Work, nor shall this Article limit any statutory period of liability for warranty, design, and latent defects.

ARTICLE 12 - PAYMENT

12.1 Schedule of Values Subcontractor shall submit all payment, insurance and other compliance documents through Christman's Trade Contractor Portal. Within the time required by Christman, Subcontractor shall submit for review, through the Trade Contractor Portal, a detailed schedule of values (SOV) on AIA Form G703 or equivalent. The SOV shall be itemized into discrete items and areas of Work and include labor and material breakdowns for each work item, general conditions, mobilization, demobilization, punch list, and administrative close out, with no less than 5% designated for close out. For any allocation for mobilization, there must be an equal allocation for demobilization. To the extent practicable and subject to Christman's approval, the SOV shall not contain a single line item greater than 5% of the Contract Sum. Christman shall have the right to require modification at any time of the SOV to align with proper allocation of scopes of work and distribution of resources. Christman will not process a payment application until Subcontractor revises or corrects the SOV to account for imbalance, errors or irregularities.

12.2 Conditions To the extent permitted by Applicable Laws, for Subcontractor's complete, timely, and satisfactory performance of the Work, Christman will pay Subcontractor out of such equivalent payment Christman receives from Owner for Subcontractor's Work. Christman will pay Subcontractor within 7 days after Christman receives Owner's payment, less retainage held by Owner or Christman. To the extent permitted by Applicable Laws, Christman's receipt of Owner's payment is an absolute condition precedent to Christman's obligation to pay Subcontractor. If Christman has furnished a payment or performance bond, the obligations of Christman and its surety to make progress payments or final payment is subject to the absolute condition precedent of Owner prior payment. Christman's surety is a third party beneficiary of this condition precedent. Christman's payment to Subcontractor shall not be construed as an admission by Christman of the classification, quantity, quality, or sufficiency of Work done, or as an acceptance or release of Subcontractor's responsibility under this Agreement. Also to the extent permitted by Applicable Law, as an absolute condition precedent to Christman's obligation to pay Subcontractor and using Christman's Trade Contractor Portal, Subcontractor shall timely furnish with each payment request: (a) a satisfactory sworn statement sworn by an officer of Subcontractor; (b) conditional waivers of lien from Subcontractor and its Lower Tiers for the current payment application; (c)

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unconditional waivers of lien or bond claims by Subcontractor and its Lower Tiers reflecting Christman's previous payments; (d) payrolls and, if required by the Prime Contract, weekly certified payrolls in compliance with Applicable Laws; and (e) any other information or documents reasonably requested by Christman. The form and content of all submissions shall be satisfactory to Christman. Sworn statements must include a complete and accurate list of all Lower Tiers including equipment lessors and any entity entitled to assert a lien or bond claim.

12.3 Process On the date of the month specified by Christman, Subcontractor shall submit a payment application in the form and manner specified by Christman, detailing costs accrued and percent of Work complete, through the time period of the month specified by Christman. Subcontractor's determination of percentage of work complete is subject to the approval of Christman, Owner, and/or Architect. Any application not timely submitted may not be included in Christman's payment application to Owner. Subcontractor shall not request payment for any Work for which it does not intend to promptly pay its Lower Tiers. Payment for all materials stored offsite is solely at Christman's discretion.

12.4 Cost Reimbursable Items If Subcontractor is entitled to reimbursement of any costs incurred for the Work (Reimbursable Costs), such as approved Change Order work, payment of Reimbursable Costs shall be made in accordance with cost reimbursement terms of the Prime Contract, or in the absence of such terms, in accordance with this Agreement. Subcontractor shall maintain, in a manner and quality satisfactory to Christman, accounting records for Reimbursable Costs, including, without limitation, Lower Tier invoices, material receiving reports, segregated cost data, payrolls, labor hours, equipment hours, and other documentation necessary to fully substantiate each Reimbursable Cost. These records shall be subject to audit by Christman, the Owner or their designated representatives.

12.5 Joint Payment Subcontractor authorizes Christman to communicate with Subcontractor's Lower Tiers on payment issues and to make payment via joint check to any Lower Tier if, in Christman's sole discretion, Christman determines that joint checks are necessary or appropriate. Subcontractor gives this authorization without the need for any further joint-check arrangement. Christman's payment by joint check shall be deemed to be made directly to Subcontractor. Christman may issue a joint check for the amount shown on Subcontractor's Sworn Statement as due to Lower Tiers, less any setoffs, backcharges, warranty work, or other deductions to which Christman may be entitled. Subcontractor waives any claim against Christman for any errors that may arise out of a joint check payment and accepts responsibility for the validity any endorsements of any joint check. Christman's right to pay by joint check does not create any obligation to do so, and no joint check payee or third party shall have third party beneficiary or other rights to demand joint payment.

12.6 Removal of Claims Provided Christman has paid Subcontractor in accordance with this Agreement, within 3 days of Christman's written request, Subcontractor shall cause to be discharged any Lower Tier lien or bond claim related to the Work. If Subcontractor fails to do so, Christman, at its sole discretion, may use whatever means necessary to remove such suit, claim or lien and backcharge Subcontractor the cost of so doing. Subcontractor shall be responsible for any costs, including attorney fees, litigation costs, and consultant fees that Christman incurs in removing or attempting to remove such suit, claim or lien, plus a markup of 20% for administrative and overhead expenses (Contractor Markup). If Owner or Christman receive any lien, bond claim or notice of intent to file, Christman may withhold the full amount of such claim, plus Contractor Markup pending adjustment. If Subcontractor defaults in payment of its debts on the Project, Christman shall have the right to pay such debts and charge them to Subcontractor. If Christman determines, in its sole discretion, that the balance of the Contract Sum then remaining unpaid will not be sufficient to complete the Work in accordance with the Contract Documents, no additional payments will be due Subcontractor unless Subcontractor, at no cost to Christman, performs, and pays in full for, a sufficient portion of the Work such that the balance of the Contract Sum then remaining, as determined by Christman, is sufficient to complete the Work.

12.7 Trust Fund Subcontractor shall hold each payment from Christman in trust to satisfy all indebtedness to Lower Tiers first, before paying any other indebtedness of the Subcontractor.

12.8 Withholding Christman may withhold payment to Subcontractor or set off any payment for any of the following reasons: (a) failure to remedy defective Work or perform clean-up; (b) off-site fabrication not meeting production quotas or quality standards; (c) Subcontractor has damaged any portion of its Work or the work of others; (d) claims, levies, liens, attachments, stop notices or court orders or reasonable evidence indicating probable filing of such claims, including unpaid insurance claims arising out of the

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Work; (e) allegations that Subcontractor has not timely paid employees or Lower Tiers or Subcontractor fails to produce proof requested by Christman of such payments; (f) there exists reasonable doubt in Christman's sole discretion that the Work can be completed for the unpaid balance of the Contract Sum or within the Project Schedule; (g) unsatisfactory prosecution of the Work; (h) failure to deliver current insurance certificates, bonds, submittals, shop drawings, SOVs, "as built" drawings, written guarantees or warranties, or the approvals required of the Work by any authority having jurisdiction; (i) Christman is exposed to an Owner claim for liquidated damages arising in whole or in part from the Work; (j) a petition for bankruptcy or reorganization is filed by or against Subcontractor or Subcontractor has made an assignment without Christman's prior written consent; (k) Subcontractor is unlicensed or its license is invalid or lapsed; (l) any violation of Applicable Laws; (m) Subcontractor expresses an intent to repudiate the Agreement or reduce its work force, equipment, or materials; and (n) any circumstance that would constitute a Subcontractor Default, even if Christman has not declared a Subcontractor Default.

12.9 Contract Balance Subject to the absolute conditions precedent in this Article and Applicable Laws, the balance of the Contract Sum (Contract Balance) is defined as that amount payable to Subcontractor after Christman exercises any right to withhold or offset the Contract Sum. The Contract Balance does not include pending or disputed change order work. No Subcontractor surety bond shall alter this definition or prevent Christman's exercise of the right to withhold or setoff before making any Contract Balance available to surety under any bond.

12.10 Final Payment As an absolute condition precedent to Christman's obligation to make final payment of the Contract Balance to Subcontractor, Subcontractor shall submit to Christman: (a) an affidavit to Christman's satisfaction that Subcontractor has paid all indebtedness connected with the Work; (b) consent of surety, if required by Christman; (c) satisfaction of required closeout procedures and documentation; (d) receipts, releases, and waivers of lien and/or bonds in the form designated by Christman or Owner and other satisfactory evidence that there are no liens, bond claims, or other indebtedness related to the Work; and (e) Subcontractor's written Warranty. Upon Subcontractor's satisfaction of this condition precedent, after Subcontractor's application for final payment, and after Owner's acceptance of and payment for all Work, Christman shall pay the Contract Balance to Subcontractor. If Owner asserts a claim for, or assesses and retains against Christman any liquidated damages, Christman's payments to Subcontractor shall be reduced to the extent such assessment is attributable to Subcontractor. Subcontractor shall not assert a claim for retention until Owner's assessment of liquidated damages is finally resolved. Subcontractor's acceptance of final payment shall be deemed a final waiver of all claims of any nature against the Owner and Christman, but shall not relieve Subcontractor of liability for indemnity and warranty obligations, or for faulty or defective work appearing before or after final payment. To the extent permissible by Applicable Laws, all payments, including final payment, shall be out of such equivalent payments Christman receives from the Owner. Christman's receipt of such payments is an absolute condition precedent to payment to Subcontractor.

ARTICLE 13 - CHANGES AND EXTRA WORK

13.1 Changes Without invalidating this Agreement, Christman may make any changes by altering, adding to, or reducing the extent and/or scope of the Work, including the deletion of any major items of work to be completed. Except as provided below, no change in the extent or scope of such Work shall be made except by a Change Order signed by Christman. The charge or credit for any such changes shall be determined, at Christman's option, by any of the following methods: (a) agreed upon lump sum price; (b) unit prices named in this Agreement or subsequently agreed upon in writing; or (c) time and material. Subcontractor shall submit for approval a quotation covering any change in the Work which affects the Contract Sum. The quotation shall contain a detailed itemization of costs and shall identify any impact on the Project Schedule, Subcontractor's progress of the Work, milestone dates, and/or the Substantial Completion date. Subcontractor shall submit its quotation within 7 days' of receipt of notification of the change, or such shorter time as Christman directs. If the Parties cannot agree about whether there exists a change in the Work or cannot agree on the amount of the addition or deletion, to maintain the Project Schedule, pending final resolution of the Change Order, Subcontractor shall nonetheless timely perform the Work as changed by Christman's written direction and proceed in accordance with Article 13.4.

13.2 Written Authorization Subcontractor shall not perform any changes or additional work except upon Christman's prior written direction. If Subcontractor proceeds without such written authority, Subcontractor expressly waives any and all claims for additional payment. No oral or other claimed waiver of the requirement of prior written authority shall be binding. An increase in the Contract Sum by virtue of such change shall not occur until a Change Order has been issued and signed by Christman and

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Subcontractor, and, for Owner or Architect initiated changes, Owner has signed a Change Order. Any adjustment in the Contract Sum, Project Schedule or other provisions as set forth in each Change Order shall operate as an Accord and Satisfaction and shall constitute the full, final and complete compensation to Subcontractor for the entire cost and schedule effect related to the stated changes and the cumulative impact and effect resulting from the stated changes on all prior Work and prior changes in the Work. Subcontractor waives any claims for any other additional compensation, damages or time extensions in connection with the stated changes. The Contract Sum may be equitably adjusted by Christman by written Change Order or directive issued by Christman, with or without Subcontractor's consent, for reasonable backcharges and adjustments to the Contract Sum permitted under this Agreement.

13.3 Signature With the exception of backcharges, all Change Orders must be approved and signed either by Christman's representative who executed this Agreement or another representative on the same or higher level of authority. No changes to the Agreement may be made or agreed to by any field personnel. Email, texts, or other electronic means of communications shall not be sufficient to establish a Change Order. Field representatives may not authorize or sign for changes in the Work or additional work and do not have any authority to agree to or approve changes. Superintendents may sign time tickets for the sole purpose of documenting time on the Project; under no circumstances shall such signature be deemed to accept or authorize additional work or otherwise obligate Christman to pay for such work, notwithstanding any language on Subcontractor's time ticket or other documentation to the contrary.

13.4 Claims If Subcontractor intends to assert any claim for additional compensation or schedule extension, as an absolute condition precedent to such claim, Subcontractor's notice and claim shall strictly conform to Articles 14 and 15.

ARTICLE 14 - TIME

14.1 Schedule Time is of the essence. Within the time specified by Christman, Subcontractor shall provide Christman with scheduling information and a proposed schedule for performing the Work which shall include a projection of labor hours and crew sizes, all in forms acceptable to Christman. Subcontractor's proposed schedule shall conform to the Project Schedule and all revisions or changes made to the Project Schedule from time-to-time. Subcontractor shall maintain the specified rate of progress for its Work and shall complete the Work on or before the dates set by Christman for Subcontractor's Work. Subcontractor shall perform the Work in a prompt and diligent manner without delaying or hindering the work of others. The Project Schedule is not a representation by Christman that Subcontractor will be able to perform its activities on certain dates. Subcontractor acknowledges that as construction progresses it may be necessary for Christman to change the sequential order and duration of activities to account for unanticipated delays, occurrences, and other factors that alter Christman's schedule. Christman may require Subcontractor, at no additional cost to Christman, to prosecute the Work in such sequence as the progress of other trades and the Project Schedule reasonably dictate. Scheduling may require temporary omission of the Work at locations determined by Christman. All patches, fill-in and "come back" work for the proper completion of the Work shall be included in the Contract Sum. Subcontractor expressly agrees that the reasonable scheduling and sequencing of the Work is Christman's exclusive right and that Christman reserves the right to reasonably reschedule and re-sequence the Work from time to time as the demands of the Project require without additional cost or expense to be paid to Subcontractor. Christman's exercise of any rights or remedies under this Agreement, including ordering changes in the Work, directing suspension, rescheduling or correction of the Work, regardless of the extent or frequency of Christman's exercise of such rights or remedies shall not be construed as active or unreasonable interference with Subcontractor's performance of the Work.

14.2 Failure to Progress If Subcontractor delays or disrupts the progress of any work, Subcontractor shall, at its own cost and expense, take such action as Christman deems necessary or appropriate to improve Subcontractor's rate of progress, including, but not limited to, increasing the number of superintendents, foremen, skilled and unskilled labor, increasing the number of crews and or shifts, employing more or better equipment, working overtime, expediting delivery of materials, changing sequence of performance, prosecuting parts of the Work in preference to other parts, and any other increase or acceleration effort to avoid or mitigate delays. Subcontractor shall be subject to liquidated or other damages on the basis stated in the Prime Contract if Subcontractor causes or contributes, in whole or in part, to any delay, even if concurrent, which would allow the Owner to assess liquidated or other damages against Christman. Regardless of whether liquidated damages are specified, Subcontractor shall be liable to Christman for any loss, damage or liability of Christman, caused in whole or in part by delays, disruptions or other reasons attributable to Subcontractor.

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14.3 Cure If Subcontractor fails to correct, replace and/or re-execute faulty or defective Work or materials, fails to maintain the progress of its Work in a timely and proper manner and with such effort, speed and diligence to maintain the Project Schedule, current revisions of milestone dates, interim completion dates, activity durations, or otherwise fails to facilitate the orderly progress of the Project, or is unable to proceed with the Work because of any labor dispute, then Christman, upon 48 hours' notice to Subcontractor, shall have the right to correct, replace and/or re-execute such faulty, defective, damaged or delayed work, or to supplement Subcontractor's crews, or to take over this Agreement with all materials of the Subcontractor on the site and complete the remaining Work, charging such cost to Subcontractor. Under such circumstances, Christman shall also have the right to withhold payments to Subcontractor until Subcontractor pays Christman in full for such costs.

14.4 Time Extension If, without fault or cause by Subcontractor, Subcontractor's performance is delayed, and provided that such delay is not concurrent with a delay caused by Subcontractor, Subcontractor may request an extension of time for performance, but shall not be entitled to any increase in the Contract Sum, any additional compensation, damages for schedule compression, acceleration, stacking, or loss of labor/equipment productivity, or consequential damages, as a result of such delays, such extension of time for performance being Subcontractor's sole and exclusive remedy for any schedule or delay related claim. Notwithstanding the foregoing, Christman will cooperate with Subcontractor in submitting to Owner any just claim arising from delay which is permitted by the Contract Documents and by applicable law.

14.5 Claims Any claim for a time extension shall strictly comply with the Claim provisions in Article 15.

ARTICLE 15 - CLAIMS

15.1 Owner Claims For any claim by Subcontractor seeking payment of money or a schedule extension because of any act, failure to act, default or interference by the Owner and/or the Architect, and/or their respective subcontractor or suppliers, the Subcontractor shall carefully observe all terms and conditions of the Prime Contract relating to claims and shall give Christman timely written notice of such claim in the form required by the Prime Contract. Subcontractor shall specifically label the notice a "Notice of Claim." Unless expressly prohibited by Applicable Laws, Subcontractor shall provide such notice, no later than 5 days before the time Christman is required to make such claim to the Owner under the Prime Contract, or within 5 days of the beginning of the event giving rise to the claim, whichever is earlier. Subcontractor shall not claim any time extension, cost reimbursement, compensation, or damages for any delay, disruption, or interference except to the extent that Christman is entitled to a corresponding time extension, cost reimbursement, compensation, or damages from Owner under the Contract Documents and Applicable Laws. Subcontractor shall be solely responsible for all attorneys' fees, costs, and expenses (Pursuit Costs) Christman incurs in submitting such claim and shall reimburse Christman on a monthly basis for Pursuit Costs. Subcontractor's recovery shall be limited to the amount, if any, that Christman actually receives from Owner for Subcontractor's claim. To the extent permitted by Applicable Laws, Owner's payment to Christman for such claim shall be an express condition precedent to Christman's duty of payment to Subcontractor.

15.2 Contractor Claims For any claim by Subcontractor against Christman seeking payment of money or a schedule extension or other relief with respect to the terms of this Agreement because of any claimed act, failure to act, default or interference by Christman or Christman's other subcontractors, Subcontractor shall give Christman written notice no later than 5 days from the beginning of the event giving rise to the claim. Such notice shall be specifically labeled a "Notice of Claim" and served in accordance with 15.5.

15.3 Claim Substantiation For all claims, within 14 days of providing a timely Notice of Claim, Subcontractor shall provide Christman with: (a) detailed actual cost records supporting the claim and identifying the actual discrete costs attributable to the claim; (b) an affidavit under oath by an officer of Subcontractor certifying and stating (a) the specific relief sought; if money is sought, the specific dollar amount sought; (b) that the actual discrete costs claimed are true and correct. The affidavit must contain or attach sufficient supporting documentation to reasonably allow its consideration, including without limitation, any documentation required by the Contract Documents.

15.4 Claim Calculation Subcontractor agrees that the total cost approach of calculating damages, or variations thereof (collectively, TCA) or any other method of calculating claims through estimating based upon the measured mile analysis (MMA),

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earned value analysis (EVA), or the use of industry standards, is inherently unreliable and uncertain. Therefore, Subcontractor waives any damages based on the TCA, MMA, or EVA, and/or any claim based on estimated costs or industry guidelines such as the Mechanical Contractors Association of America, the National Electrical Contractors Association, or any other organization. As an absolute condition precedent to any claim, claims must be based upon a discrete actual costs analysis supported by contemporaneously (daily) documented actual costs properly allocated to the claim. Subcontractor waives any claim not contemporaneously documented and properly allocated. If Christman receives Subcontractor daily time reports, such receipt shall be deemed solely for documentation purposes and not as an admission of quantity, validity or liability of a claim.

15.5 Delivery of Notice For all claims, Subcontractor shall provide written notice via certified or registered mail to the address on page 1 of this Agreement. **EMAIL OR FACSIMILE OF A NOTICE OF CLAIM IS PROHIBITED AND IS INSUFFICIENT TO ESTABLISH NOTICE.**

15.6 Strict Compliance Subcontractor's strict compliance with all claim requirements (timely notice, form, substantiation, calculation and delivery) is a strict and absolute condition precedent to any claim and the failure to adhere to any one of these requirements is an absolute defense to the claim. Subcontractor waives any claim that does not strictly comply with Article 15 and Christman shall not be liable to Subcontractor on any claim not timely or properly presented. Christman's actual or constructive notice of a claim shall not satisfy or excuse Subcontractor from strict compliance nor prevent Subcontractor's waiver of the claim. If Subcontractor does not strictly comply with this Article or if Christman cannot in good faith certify or submit Subcontractor's Owner Related Dispute to Owner, Christman is not obligated to do so.

ARTICLE 16 - DISPUTE RESOLUTION

16.1 Owner Related Disputes In case of any dispute between Christman and Subcontractor, which in Christman's sole opinion is in any way related to or arising from any act or omission of the Owner or Architect/Engineer, (Owner Related Dispute), Subcontractor shall be bound to Christman to the same extent that Christman is bound to Owner by the Contract Documents and by any and all preliminary and final decisions, determinations or agreements made by Christman and Owner or so authorized in the Contract Documents or by the court or arbitrator designated in the Contract Documents whether or not Subcontractor is a party to such agreement or proceeding. Subcontractor shall stay any and all legal actions against Christman or its surety until a final non-appealable decision has been obtained from or against the Owner as to the Owner Related Dispute. Christman and its surety shall not be liable to Subcontractor in excess of any sum actually received from Owner for Subcontractor's Owner Related Dispute. Unless expressly prohibited by Applicable Laws, Christman's receipt of payment from the Owner for Subcontractor's Owner Related Dispute is a strict condition precedent to Christman's and its surety's obligation to pay Subcontractor.

16.2 All Other Disputes All disputes arising out of or relating to this Agreement or any performance or payment bonds furnished by either party shall first be resolved in the following order: (1) by a meeting of the project management on site, within 7 days of the date a party requests such meeting; (2) if that fails, by a meeting of the principals in charge for each Party within 10 days following the project management site meeting; (3) if that fails, within 30 days after the principals in charge meeting, by mediation where the Parties select a mediator, the costs of which shall be shared equally. All disputes and claims that are not disposed of as provided herein shall be resolved by submission to the state or federal court whose district includes the county where the Project is located (Controlling Venue). The Controlling Venue is the exclusive venue for any claim and litigation may only be filed in that county. Subcontractor consents to personal jurisdiction in any court whose jurisdiction includes the Controlling County. **The Parties waive their right to a trial by jury and acknowledges that they have had the opportunity to seek the advice of legal counsel before waiving this right.**

16.3 No Stop Work Pending the resolution of any dispute, Subcontractor, without waiver of its other rights and remedies, shall not stop work or reduce its labor force, equipment, or progress, and shall diligently proceed with the Work.

ARTICLE 17 - DEFAULT AND TERMINATION

17.1 Adequate Assurance If at any time Christman deems in its sole discretion, that there are reasonable grounds of insecurity as to Subcontractor's ability to properly and timely perform, Christman may give Subcontractor written demand for adequate assurance of performance. Subcontractor shall provide such assurance, reasonably acceptable to Christman, within 10 days after Subcontractor's receipt of written demand.

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17.2 Subcontractor Default Any of the following shall be considered a Subcontractor Default: (a) default in the performance of any requirement of this Agreement or the Prime Contract insofar as the Work; (b) failure to provide a sufficient crew of skilled workers and proper quantity and quality of equipment and materials as and when required; (c) failure to maintain the progress of its Work in a timely and proper manner and with such effort, speed and diligence to maintain the Project Schedule, current revisions of milestone dates, interim completion dates, activity durations, or otherwise failing to facilitate the orderly progress of the Project as a whole; (d) reduction in work force, equipment or materials, or abandonment of portions of the Work; (e) interference with the performance of others on the Project; (f) failure to timely pay any Employer Contributions, labor employed by Subcontractor, or any Lower Tiers; (g) failure to pay or to maintain satisfactory credit relationships for the purchase of labor, supplies, materials, equipment, and services; (h) repudiation or anticipatory repudiation of all or part of the Agreement; (i) failure to provide adequate assurance of timely performance; (j) failure to timely remedy any defects in Work; or (k) failure to perform in strict accordance with Christman's safety requirements.

17.3 Notice to Cure / Remedies If Subcontractor commits a Default and fails to commence and continue satisfactory correction of the Default within 48 hours after receipt of a written Notice of Default, then Christman, at its option, and in its sole discretion, and without prejudice to any other right or remedy, shall have the immediate right to any or all of the following remedies: (a) supplement Subcontractor's Work; (b) enter on the site of the Work and take possession of, for the purpose of completing the Work, Subcontractor's material; (c) employ any other person or persons to finish the Work; (d) provide materials or equipment to complete the Work; (e) terminate Subcontractor and/or Subcontractor's right to proceed; or (f) take whatever other or additional steps Christman deems, in its sole discretion, are in the best interests of Christman or the Project. Notwithstanding the terms of any surety bond to the contrary, Christman shall have the absolute right to exercise any remedy at the cost of Subcontractor or its sureties and shall have the right to enforce any bond right if Subcontractor is declared in Default, during Subcontractor's attempted cure of Default, and/or during surety's investigation of Default. Christman's exercise of any remedy shall not be deemed to impair, prejudice, extinguish, or otherwise diminish any obligation of Subcontractor's surety, nor shall it impair, prejudice, extinguish or diminish the rights of Christman under any such bond.

17.4 Assignment If Christman elects in writing, in its sole discretion, and effective only upon Christman's termination of Subcontractor's right to proceed, Subcontractor shall assign to Christman any Lower Tier contract for the Work. Subcontractor shall include provisions in its Lower Tier contracts for such assignment without further consent of such Lower Tiers.

17.5 Set Off Christman shall be entitled to recover from Subcontractor and its sureties (as applicable), all expenses, damages, and liabilities Christman incurs as a result of a Default including the cost of labor and materials to complete the Work, acceleration costs incurred in performing the work or engaging others to perform the Work, costs paid to other subcontractors, additional supervision, consultant fees, attorney's fees, and liquidated damages, plus Contractor Markup (collectively, Default Damages). Christman shall have the immediate right to offset or deduct the Default Damages from any money due or to become due to Subcontractor and thereby reduce any unpaid balance of the Contract Sum, notwithstanding any term in a surety bond to the contrary. Subcontractor and its sureties shall remain liable to Christman for Default Damages as they continue to accrue, without waiver of or prejudice to any other right, remedy or claim Christman may have. If a Default occurs, Subcontractor shall not be entitled to any further payment until Owner finally accepts the Work, and until after Christman offsets or deducts Default Damages. If the Default Damages exceed the unpaid balance of the Contract Sum, then Subcontractor and/or its surety shall pay the difference to Christman. If it is determined, by litigation, arbitration or otherwise, that any remedy exercised by Christman, including a termination for Default, was unjustified, such remedy or termination shall be deemed for convenience and Subcontractor's remedies shall be limited to those provided for as a termination for convenience.

17.6 Termination for Convenience Christman may terminate this Agreement for convenience by written notice to Subcontractor for any reason provided in the Prime Contract or within Christman's sole discretion. If a Termination for Convenience occurs, Christman shall only be obligated to pay Subcontractor, as otherwise provided for and in accordance with the terms of this Agreement, and as Subcontractor's sole and exclusive remedy: (a) that portion of the cost of the Work allocable to the portion of the Project satisfactorily performed by Subcontractor before the effective date of termination, plus reasonable overhead and profit on such work; and (b) demobilization costs as properly substantiated by proof acceptable to Christman. Under no circumstances shall Subcontractor be entitled to recover for profit and overhead on work not performed before the notice of termination for

Job No.

Work Category:

convenience.

ARTICLE 18 - MISCELLANEOUS

18.1 Calendar Day All references in this Agreement to days shall mean calendar days.

18.2 Assignment Subcontractor shall not assign or subcontract this Agreement or any portion thereof, nor assign any payment, claims or rights under this Agreement to any third party without Christman's prior written consent. Consent will not be given to any proposed agreement that would relieve the Subcontractor or its surety of their responsibilities under this Agreement. Christman may assign this Agreement to its surety, joint venture partner, an affiliate, or other third party. Christman may also assign this Agreement to Owner, its designated assignee, or lender, in accordance with the terms of the Prime Contract or Owner's loan documents associated with the Project.

18.3 Ownership of Work Product Subcontractor grants to Christman and the Owner if required by the Prime Contract, all ownership and property interests in all Subcontractor Work Product. To the extent Subcontractor Work Product includes or otherwise utilizes trade secrets, copyrighted materials or other similarly protected intellectual property, Subcontractor grants to Christman a license for the use of such Work Product solely and exclusively for the Project.

18.4 Data Ownership & Confidentiality Engineering, architectural, or other information provided pursuant to this Agreement is the property of Christman (or the Owner if so provided in the Prime Contract) and is not to be reproduced or disclosed to others or used for other purposes without Christman's written permission. All information about the Project, Christman's systems, processes, procedures, and other operations, and the Owner's systems, processes, procedures, and business operations shall be kept strictly confidential by Subcontractor and its Lower Tiers unless otherwise prohibited by Applicable Laws or to the extent exceptions are permitted by written approval from Christman. If confidential information is disclosed by Subcontractor or its Lower Tiers, Subcontractor shall immediately notify Christman of the unauthorized disclosure and details pertaining to what was disclosed, to whom and when the disclosure occurred. Subcontractor shall be responsible to Christman and to the extent applicable in the Prime Contract, to the Owner for any unauthorized disclosure.

18.5 E-Data Except as to a Notice of Claim, the parties may exchange and execute records in electronic form. Christman disclaims any representation or warranty as to the functionality of the software or computer program associated with electronic transmission of records. Christman disclaims any warranty, express or implied, including the warranty of fitness for a particular purpose, as to the information transmitted in electronic form.

18.6 Integration This Agreement including incorporated documents is the entire agreement between the Parties, supersedes and cancels any prior written or verbal agreements, and constitutes the only agreement between the Parties for the Work and the Project. Except for Christman backcharges to Subcontractor, no terms of this Agreement or the nature and extent of the Work shall be waived, modified, reduced, or enlarged, except in writing signed by both Parties. No additional or contrary term in any Subcontractor document related to this Agreement is binding on Christman.

18.7 Controlling Law This Agreement is governed by the law of the Controlling State and to the extent applicable, all federal laws, rules and regulations. The term "State" includes all 50 states, the District of Columbia, Puerto Rico, and any other unincorporated territory of the U.S.

18.8 Independent Contractor Subcontractor shall be deemed to be an independent contractor fully responsible for the means, methods and safety measures and procedures utilized fulfilling the scope of services or terms of this Agreement. Under no circumstances shall the Subcontractor be deemed to be an employee or joint venturer with Christman.

18.9 Authority Subcontractor affirms that its signatory to this Agreement is an authorized agent of Subcontractor, with full authority to enter into this Agreement on behalf of Subcontractor. This Agreement may be executed electronically and a copy of a signed Agreement may be exchanged via email in which case signatures shall be deemed binding for all purposes and an original signature is not required.

Job No.

Work Category:

18.10 Severability If any portion of this Agreement is deemed invalid or unenforceable, such term may be severed from this Agreement and the remainder of the Agreement shall be valid and enforceable to the fullest extent permitted by law.

18.11 Work Before Signing Subcontractor's liabilities and obligations to Christman hereunder shall apply to all the Work, even Work that may have been performed before the date of this Agreement pursuant to prior negotiations, representations, agreements, understandings or otherwise. Notwithstanding a later signing of this Agreement by Christman or Subcontractor, this Agreement is deemed effective on the date Subcontractor first commences any Work.

18.12 Enforcement Christman's failure to insist in any one or more instances on Subcontractor's performance of any term or condition of this Agreement, or failure to exercise any of its rights, shall not constitute waiver or relinquishment of such term, condition, or right as to further performance or Christman's right to enforce any term or condition. Christman's waiver of any term, condition, or rights shall be made in writing and such written waiver shall not be deemed a waiver of any other term or condition.

ARTICLE 19 - EXHIBITS

The following Exhibits, whether attached hereto or not, are incorporated by reference.

Exhibit I	Supplement A
Exhibit II	Christman's Safety Program
Exhibit III	Payment & Performance Bonds
Exhibit IV	Supplement B, if applicable

[SIGNATURE PAGE TO FOLLOW]

Sample

Job No.

Work Category:

ACCEPTANCE

The said parties, for themselves, their heirs, successors, executors, and administrators and assignees, do hereby agree to the full performance and covenants contained herein.

By signing below these parties affirm that they are each authorized agents of their respective organizations, with full rights and privileges to enter into this Agreement on behalf of those respective organizations. This Agreement may be executed by facsimile signature, or a copy of a signed Agreement may be delivered via email by either party and such signature will be deemed binding for all purposes hereof without delivery of an original signature being thereafter required.

Signature

Signature

Print Name

Print Name

Title

Title

Date

Date

Sample

The Drawings which will be issued for the use of Bidders and upon which all Proposals and the Contracts will be based, consist of the following:

Drawing No.	Drawing Title
C0.0	COVER SHEET
C1.1	GENERAL PLAN
C2.1	DEMOLITION PLAN
C3.1	SESC PLAN
C3.2	SESC DETAILS
EX 1.0	1956 ORIGINAL FOUNDATION PLAN FOR REFERENCE
EX 1.1	1956 ORIGINAL ALT FOUNDATION PLAN FOR REFERENCE
EX 1.2	1956 ORIGINAL TUNNEL PLAN FOR REFERENCE
EX 1.3	1956 ORIGINAL UNDERGROUND AND TUNNEL PIPING PLAN
EX 1.4	1956 ORIGINAL TUNNEL HEATING PIPING PLAN
EX 1.5	1956 ORIGINAL REVISED TUNNEL PIPING PLAN
EX 1.6	1969 ADDITION SITE PLAN
EX 1.7	1969 ADDITION FLOOR PLAN PART A
EX 1.8	1969 ADDITION FLOOR PLAN PART B
EX 1.9	1969 ADDITION MECH PLANS PART A
EX 1.10	1969 ADDITION MECH PLANS PART B

FORM OF SWORN STATEMENT OF FAMILIAL RELATIONSHIP
As required by Section 1267 of the Revised School Code - MCL 380.1267

_____, being duly sworn, deposes and says:

That _____ (the "Bidder") has bid to be the (contractor) (subcontractor) for an improvement to the following described real property located in Ingham County, Michigan, which is owned by Lansing School District, and legally described as follows:

OWNER: LANSING SCHOOL DISTRICT

TAX PARCEL ID: 33-01-01-30-201-001

ADDRESS: 2000 LEWTON PLACE

OUTLET A EXC COM 554 FT S OF NW COR OUTLOT A, TH E PAR L TO N LINE OUTLOT A TO W'LY LINE LEWTON PLACE, SW'LY ON W'LY & N'LY LINE LEWTON PLACE TO SW COR OUTLOT A, N TO BEG; ETON DOWNS SUB

OWNER: CITY OF LANSING

TAX PARCEL ID: 33-01-01-30-201-011

ADDRESS: 2122 LEWTON PLACE

COM 554 FT S OF NW COR OUTLOT A, TH E PAR L TO N LINE OUTLOT A TO W'LY LINE LEWTON PLACE, SW'LY ON W'LY & N'LY LINE LEWTON PLACE TO SW COR OUTLOT A, N TO BEG; ETON DOW

That the following is a statement of disclosure of any familial relationship that exists between the owner or any employee of the Bidder and any member of the Forest Hills Public School District Board of Education or the Superintendent, as required pursuant to Section 1267 of the Revised School Code, as amended.

- ☐ That there are no such familial relationships existing at this time.
- ☐ That a familial relationship exists between _____, who is an (owner) (employee) of the Bidder and the _____ (nature of familial relationship - e.g., brother, sister, cousin, etc.) of _____, who is (a member of the Board) (the Superintendent).

Deponent

Subscribed and sworn to before me this _____ day of _____, 2025.

: _____

Section 00210 - Special Provisions

1. General - All Bidders are responsible to review all work categories descriptions, and report any conflicts or ambiguities which may affect the execution of their Work Categories. All Bidders are responsible to review all Bidding Documents and become familiar with them to coordinate their work accordingly. Work Category descriptions should in no way be construed as being all-inclusive. Should a conflict exist between the Work Category description and other Bidding Documents, the Work Category description shall prevail and take precedence. Bidders are required to bid the entire Work Category and may bid more than one Work Category.
2. Electronic Documentation – In an effort to promote sustainability, information shall be conveyed electronically to the greatest extent possible.
3. Pre-approved contractors – The invitation procedure requires that each primary bidder be pre-qualified by the Construction Manager. If you are unsure if you are pre-qualified please contact Austin Brown immediately at 517-482-1488. Subcontractors and vendors responding to the primary bidders do not need to be pre-qualified. To become pre-qualified, please visit the following link - <https://www.christmanco.com/subcontractors> and fill out the “Trade Contractor Information Request” form.
4. Labor Requirements – Prevailing Wage Rates do not apply to this project. Certified Payroll will not be required.
5. Sustainable Design Requirements do not apply to this project.
6. Construction Waste Management And Disposal – Review Spec Section 017419 Construction Waste Management And Disposal. Ensure prompt delivery of Waste records in association with abatement are promptly provided.
7. General Commissioning Requirements – Review Spec Section 019113 General Commissioning Requirements.
8. Indoor Air Quality Management Plan – During Construction. Comply with site specific IAQ Management Plan for this project.
9. Parking – Contractors to park on site.
10. Project Scheduling - A preliminary project schedule has been included within the Bidding Documents for your review and use. As input from the Trade Contractors is provided and as progress begins, this schedule will be periodically updated and re-issued. Each Trade Contractor is required to become familiar with the preliminary schedule and sequence their work accordingly. Activity durations shall be maintained regardless of actual start dates.
11. Post Bid interviews – We will be holding post bid interviews for the low qualified bidders immediately after bids are received. It is essential to the interview process that the primary and secondary Trade Contractors are included in the meeting, as well as the intended project foreman and project manager. The purpose of the interview will be to discuss the bids but will also focus on schedule, submittals, safety, site utilization and unique project requirements.
12. Shop Drawings & Submittals – The Trade Contractor shall review, approve in writing, and submit through the Construction Manager all submittals within two weeks after contract award at the latest, as to cause no delay in the work or in the work of any separate Trade Contractor. Shop drawings, product data and samples shall be properly identified as specified or as the Construction Manager may require. At the time

of submission, each Trade Contractor shall inform the Construction Manager in writing of any deviation in the shop drawings, product data or samples from the requirements of the Bidding Documents.

For Re-Submittals – Each Trade Contractor shall make any corrections required by the Construction Manager or Architect and shall resubmit the shop drawings, product data or new samples until approved. Each Trade Contractor shall direct specific attention, in writing or on resubmitted shop drawings, product data or samples, to revisions other than those requested by the Construction Manager or Architect on previous submittals. Refer to Section 01300 Submittals for definitions of Action Markings.)

FINAL UNRESTRICTED RELEASE: Marking: Reviewed

MAKE CORRECTIONS NOTED: Marking: Reviewed with Comments

REVISE AND RESUBMIT: Marking: Revise and Resubmit

REJECTED: Marking: Rejected

13. Building Information Modeling (BIM) – BIM will not be utilized for this portion of work.
14. Project Website - Procore - This project will utilize Procore for coordination and document management. This website will be used for (not limited to) the following:
 - a. Submittal upload and approvals
 - b. RFI upload and approvals
 - c. Updated drawings
 - d. Updated schedule
 - e. Meeting minutes
 - f. Project directory
 - g. Testing reports
 - h. Notice of commencement
 - i. MSDS
15. Submittal Uploads All submittals must be submitted to The Christman Company via the Project Website and must be the original PDF document. Hard copies or re-scanned documents will not be accepted. The only exception is actual samples (paint draw downs, masonry, etc.); however, all brochures and product data related to these samples must be submitted electronically.

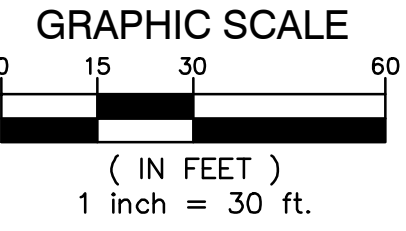
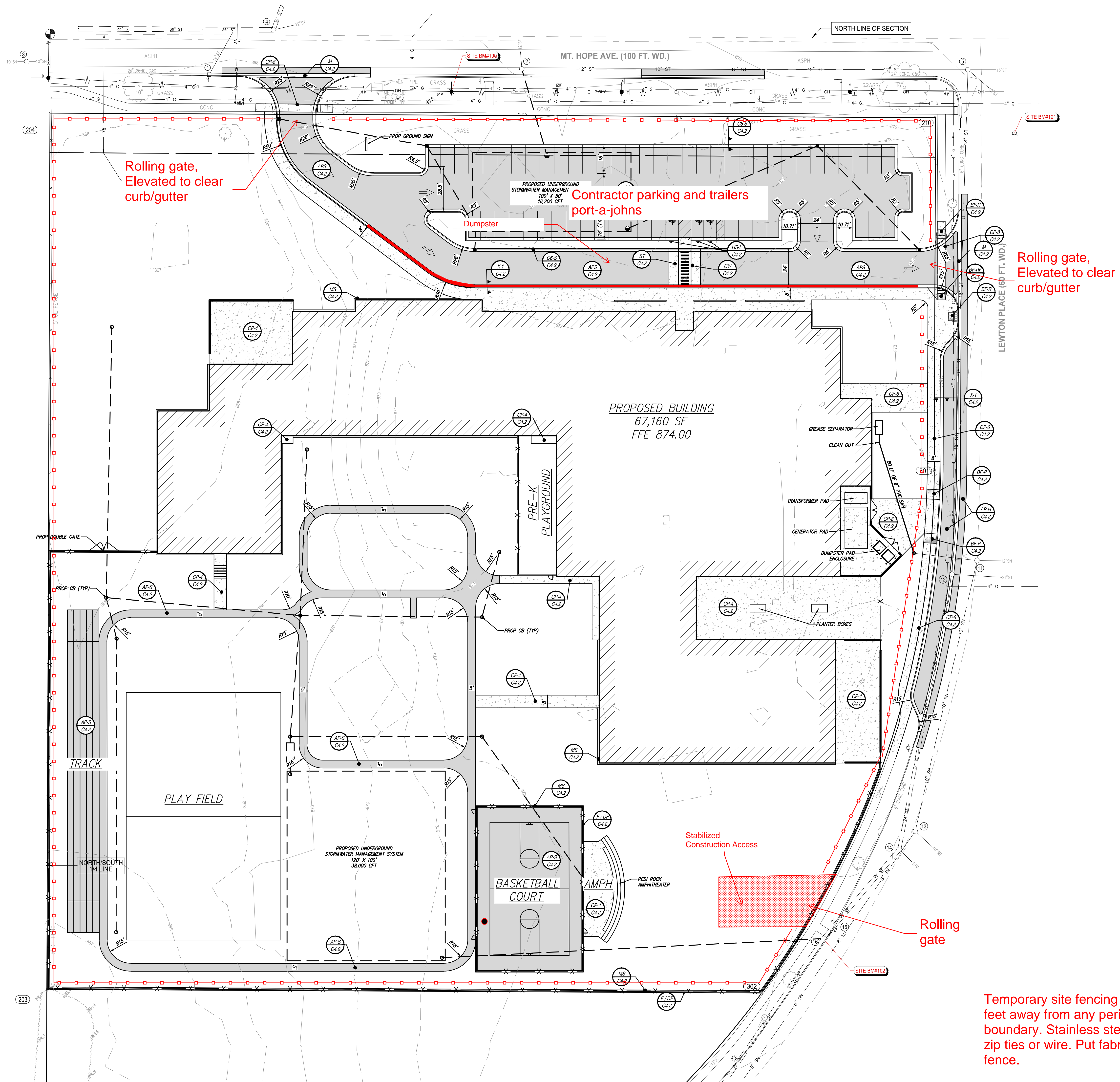
For any questions regarding this process, email Austin.brown@christmanco.com
16. Schedule of Values (SOV) – Per Section 01370 Schedule of Values, submit for approval through the Trade Contractor Portal. Once approved, adhere to the Application for Payment process. The SOV must be divided up with individual cost items not to exceed \$100,000.
17. Application for payment – Create and Submit the Pay Application through the Trade Contractor Portal. Payment period: Pencil copies are due the 20th of each month and revised signed payment applications are due the 25th of each month. Each request for payment shall be provided with a fully executed sworn statement along with its relative unconditional waivers. All subcontractors and suppliers are to be listed on the sworn statement.
18. Change Management – Refer to Sections 01150 and 01019 for definitions, but the following change management documents will be utilized on this project: Project Revisions, Field Orders, etc.

19. Existing Services – The existing utilities and fixtures (power, plumbing, fire alarm system and fire suppression) will remain in operation until removed by this scope of work. Care must be taken when working around the site and in the building. The Owner will pay for all power, water, and gas utilized from existing services for the specific purpose of demolition of this project. If temporary services in addition to existing services are required, the Trade Contractor shall provide power, water, and gas as necessary to complete this scope of work.
20. Hoisting – No hoisting equipment will be provided for this project.
21. Site Boundaries – Survey will be conducted prior to work taking place, all work is to fall within the project boundary. If work must take place outside the project boundary, ensure all permitting and right of way permitting is obtained prior to work taking place.
22. Existing Facilities – Existing toilet facilities may be utilized prior to terminating all services to the existing building. When existing services are terminated, the Construction Manager will provide temporary facilities for toilets as required.
23. Material Deliveries and Staging – All material deliveries must be coordinated with the Construction Manager a minimum of 24-hours in advance of said delivery. At no time, will delivery trucks be allowed to stage or park on existing roads. If deliveries require traffic control, the Trade Contractor is required to provide flagmen accordingly. All Trade Contractors are responsible for directing responsible trucks into project site, unloading of materials, handling, protection and storage of all received equipment. The Owner and Construction Manager will not accept deliveries.
24. Communication and Phones – All Trade Contractor field supervision shall have cellular phones available for communication with The Christman Company's field personnel. All project managers shall have email access for communications with The Christman Company's office personnel.
25. Independent Testing, Inspections and Commissioning – The Owner has arranged independent testing for certain portions of the project. All Trade Contractors are to cooperate and provide access and assistance for the independent testing and inspections to be performed. These services include asbestos air monitoring.
26. Layout – The Construction Manager will provide two perpendicular control lines established at the northwest corner of the building footprint, and one benchmark.
27. Noise, Odors & Vibration – Due to close proximity of adjacent existing facilities, vibration must be closely monitored as to not cause any damage to the existing building and facilities. Odor causing chemicals, adhesives, paints, cleaning supplies must have MSDS sheets submitted and approved by the Construction Manager prior to use. All equipment shall be self powered and all diesel powered equipment shall be operated with "Bio-diesel" fuels and/or emission "scrubbers" to reduce exhaust fumes.
28. Jobsite Safety Orientation – All Trade Contractors of any tier and visitors entering this jobsite will be required to check-in with the Construction Manager upon arrival at the project site. Check-in procedures will include the review and acknowledgement of the Construction Managers Project Specific Safety Orientation and Policies. All construction personnel will be required to wear The Christman Company issued safety sticker when working on or visiting this jobsite
 - a. Safety (see contract form section for project safety program) - It is a fundamental value of the Construction Manager that safety is always a primary consideration. There is no phase of the project that has greater importance than accident prevention and the preservation of human resources. The Construction Manager's safety program is stringent and rigorous. The following

32. Waste Management/Indoor Air Quality Plan – The Construction Manager’s Waste Management Plan and Indoor Air Quality plan will be strictly adhered to for this project. Please pay special attention to these specifications (01410 and 01524). The trade contractors are responsible to provide the necessary resources to follow these guidelines.
33. Phasing – Phase I of this project is the complete removal and demolition of existing site finishes, and a complete new build of a Pre-K – 8th grade school and facility.
34. RFI’s – Prebid RFI’s must be submitted to projects@lansingschools.net. The deadline for pre-bid RFI’s to be replied to is June 5th, 2025. Upon completion of bidding, all future RFI’s shall be initiated by the Trade Contractor through Procore for review by the Construction Manager/Architect.
35. Work Hours - Common jobsite working hours shall be 7:00 am to 3:30 pm, Monday through Friday. Any overtime requires advance approval by Construction Manager.
36. Hazardous Materials – Please refer to the report by BDN for Hazardous Material information.

End of Special Provisions Section 00210

LOGISTICS PLAN



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- ### PAVING CONSTRUCTION NOTES
1. EARTHWORK AND PAVEMENT CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT MOST STANDARD SPECIFICATIONS FOR CONSTRUCTION UNLESS OTHERWISE NOTED IN THE FOLLOWING ITEMS.
 2. REMOVE ANY EXISTING TOPSOIL, VEGETATION, TREES AND OTHER DELETERIOUS MATERIALS TO EXPOSE THE SUBGRADE SKL. TREE ROOTS SHALL BE COMPLETELY REMOVED.
 3. EXCAVATE TO THE DEPTH OF THE FINAL SUBGRADE ELEVATION TO ALLOW FOR GRADE CHANGES AND THE PLACEMENT OF THE RECOMMENDED PAVEMENT SYSTEM.
 4. THE TOP 12 INCHES OF THE EXPOSED SUBGRADE SHALL BE COMPACTED TO A DENSITY NO LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MOISTURE PROCTOR (ASTM D 1557-91).
 5. THE FINAL SUBGRADE SHALL BE THOROUGHLY PROOFTROLLED UNDER THE OBSERVATION OF A GEOTECHNICAL/PAVEMENT ENGINEER. LOOSE OR YIELDING AREAS WHICH CANNOT BE MECHANICALLY STABILIZED SHALL BE REMOVED AND REPLACED WITH ENGINEERED FILL OR AS DICTATED BY FIELD CONDITIONS.
 6. THE AGGREGATE BASE SHALL BE COMPACTED TO A DENSITY NO LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MOISTURE PROCTOR (ASTM D 1557-91). THE BASE SHALL EXTEND A MINIMUM OF 1 FOOT BEYOND THE PAVED EDGE.
 7. ALL BITUMINOUS MATERIAL SHALL BE COMPACTED TO A DENSITY NO LESS THAN 97 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MARSHALL METHOD.
 8. A BOND COAT OF 55-74 EMULSION IS REQUIRED BETWEEN THE LEVING COURSE AND THE WEARING COURSE WHEN EITHER 24 HOURS HAVE ELAPSED BETWEEN PLACEMENT OF THE BITUMINOUS COURSES OR THE SURFACE OF THE PAVEMENT HAS BEEN CONTAMINATED WITH DIRT, DUST, OR FOREIGN MATERIAL. THE BOND COAT SHALL BE APPLIED IN A UNIFORM MANNER OVER THE SURFACE AT A RATE OF 0.1 GALLONS/SQ.Y. IN THE EVENT A BOND COAT IS NOT REQUIRED, THE LEVING COURSE MAY REQUIRE LOCALIZED BROOM CLEANING.
 9. PERFORMANCE GRADE PG64-22 ASPHALT CEMENT SHALL BE USED IN THE PRODUCTION OF ALL BITUMINOUS MIXTURES. RECLAIMED ASPHALT PAVEMENT (RAP) SHALL BE ALLOWED ONLY AS SPECIFIED BY THE CURRENT MOST STANDARD SPECIFICATIONS FOR CONSTRUCTION, UNLESS NOTED ON THE PROJECT DETAILS.
 10. CONSTRUCTION TRAFFIC SHALL BE MINIMIZED ON THE NEW PAVEMENT. IF CONSTRUCTION TRAFFIC IS ANTICIPATED ON THE PAVEMENT STRUCTURE, THE PLACEMENT OF THE FINAL LIFT SHALL BE DELAYED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. THIS ACTION WILL ALLOW REPAIR OF LOCALIZED FAILURE, IF ANY DOES OCCUR, AS WELL AS REDUCE LOAD DAMAGE ON THE PAVEMENT SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR TO ANY DAMAGED SECTION RESULTING FROM CONSTRUCTION ACTIVITY.
 11. TAPER CURB HEIGHT DOWN TO ZERO HEIGHT IN FIVE FEET AT ALL CURB ENDINGS UNLESS OTHERWISE NOTED ON THE PLAN.
 12. WHERE CURB AND OUTER SECTION IS ADJACENT TO A BARRIER FREE RAMP, DROP CURB HEIGHT TO MAXIMUM 1/4" ACROSS THE RAMP OPENING.
 13. DIRECTIONAL ARROW PAVEMENT MARKINGS AND PAVEMENT MARKING LETTERING WHERE INDICATED SHALL BE WHITE PREPARED THERMOPLASTIC UNLESS OTHERWISE NOTED.
 14. CONTRACTOR SHALL PROTECT EXISTING CURBS, SIDEWALKS, WALLS, FENCES AND ALL OTHER EXISTING SITE FEATURES NOT INDICATED FOR REMOVAL OR REHABILITATION.
 15. PLACE EXPANSION JOINTS WHERE NEW CONCRETE PAVEMENT OR WALKS ABUT BUILDING WALLS (PROPOSED OR EXISTING), COLUMN WALLS OR BASES, CONCRETE FOUNDATIONS OR BASES, CURBS, OR EXISTING CONCRETE PAVEMENT. PLACE JOINT SEALANT ON ALL EXPANSION JOINTS.
 16. CONTRACTOR TO CONSTRUCT CONTRACTION AND EXPANSION JOINTS IN ALL NEW CONCRETE PAVEMENT. CONTRACTION JOINTS SHALL BE TOOK WHERE SIDEWALK WIDTH IS 8' OR LESS, AND SHALL BE SPACED EQUAL TO THE WIDTH OF THE PAVEMENT (E.G. 8' SIDEWALK FOR 8' WIDE WALK), BUT NOT MORE THAN 10' APART. PLACE EXPANSION JOINTS WITH JOINT SEALANT AT MAXIMUM 50' SPACING. CONTRACTOR SHALL GENERALLY MATCH THE JOINT PATTERNS FOR CONCRETE PAVEMENT WHEN SHOWN ON THE PLANS.
 17. CONCRETE PAVEMENT SHALL MEET THE REQUIREMENTS FOR MOIST GRADE 4000 CONCRETE PER THE CURRENT MOST STANDARD SPECIFICATIONS FOR CONSTRUCTION.

LEGEND

---	PROPOSED WATERMAIN	●	PROPOSED SAN MANHOLE (SAM)
---	PROPOSED SANITARY	●	PROPOSED STORM MANHOLE (SM)
---	PROPOSED STORM SEWER	●	PROPOSED CATCH BASIN (CB)
---	PROPOSED GAS MAIN	●	PROPOSED INLET (INL)
---	PROPOSED ELECTRIC	●	PROPOSED END SECTION (ES)
---	PROPOSED HYDRAUNT	●	PROPOSED FIELD CATCH BASIN (FSB) W/REINFORCED COVER OR STANDPIPE (SP) W/ BAY GRATE COVER
●	PROPOSED GATE VALVE & WELL (GVW)	②	UTILITY CROSSING (SEE DATA TABLE)
⊗	PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)	CB	STRUCT. TYPE
⊗	PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)	2	STRUCT. NO.
⊗	PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)	20	STRUCT. NO.
⊗	PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)	10	STRUCT. NO.
⊗	PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)	200	STRUCT. NO.

STANDARD BITUMINOUS PAVEMENT	HEAVY-DUTY BITUMINOUS PAVEMENT	DEEP-STRENGTH BITUMINOUS PAVEMENT	CONCRETE PAVEMENT	CONCRETE SIDEWALK	MILL PAVEMENT
STORM SEWER STRUCTURE	SANITARY SEWER STRUCTURE	WATERMAIN STRUCTURE			



REVISIONS/REVIEW DATE
SCHEMATIC DESIGN 11/15/2024

KEY PLAN

JOB NO. 2616.01G
SHEET TITLE
PAVING & LAYOUT PLAN

SHEET NO.
C4.1

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ID	WC	Task Name	Duration	Start	Finish						2026
						A		S	Q4	N	D
0		Lewton Demolition	84 d	8/18/2025	12/16/2025	Lewton Demolition					0%
1		Construction	84 d	8/18/2025	12/16/2025	Construction					0%
2		Preliminary Site Work	44 d	8/18/2025	10/17/2025	Preliminary Site Work					0%
3	01	Installation of Soil Erosion & Sediment Control Measures	5 d	10/13/2025	10/17/2025						10/17
4	07	Site Fence installation	10 d	8/18/2025	8/29/2025						8/29
5	01	Initial removal of trees outside site fence boundary	2 d	8/28/2025	8/29/2025						8/29
6		Demolition	74 d	9/2/2025	12/16/2025	Demolition					0%
7	01	Asbestos Abatement & Enclosure setup's	29 d	9/2/2025	10/10/2025						10/10
8	01	Structure Demolition, Haul Off & Backfilling	30 d	10/13/2025	11/21/2025						11/21
9	01	Selective Removal of Site Furnishings	10 d	11/24/2025	12/9/2025						12/9
10	01	Site clearing	5 d	12/10/2025	12/16/2025						12/16

01010 SUMMARY OF WORK

01011 RELATED DOCUMENTS

- I.1 Drawings and general provisions of the Contract including General and Supplementary Conditions and Division I Specification Sections, apply to work specified in this section.
- I.2 Information given in the Division I General Requirements shall supplement information given in the General and Supplementary Conditions. The most stringent provision in the General Conditions, General Requirements, Contract Drawings and Specifications shall govern the execution of any work or requirement.

01012 CONSTRUCTION MANAGER

- I.1 The Christman Company is the Construction Manager. Wherever the term General Contractor or Contractor (in the context of the General Contractor) is used, it shall be given the same meaning as Construction Manager.
- I.2 The Trade Contractor and his sub-Trade Contractors shall agree to and accept the same responsibility and follow the same terms of the Conditions of the Contract as the Construction Manager for the work for which he is under contract.

01013 PROJECT

- I.1 The Work as defined in the General Conditions and described in the Contract Document.

01014 RELATED WORK NOT-IN-CONTRACT (NIC)

- I.1 Reference Section 00210 for any work that will be performed by the Owner or accomplished under separate contract.

01015 REPLACEMENT MATERIAL (For Owner's future use)

- I.1 If any specific amounts are called for in the individual Sections, provide the specified amounts. If none are specified and a surplus is left, request instructions from the Construction Manager before discarding the surplus.

01016 LABOR, MATERIALS, TAXES & WORKMANSHIP

I. LABOR AND MATERIALS

- I.1 Unless otherwise specified in these Contract Documents, all materials and workmanship shall be new and of the best grade of their respective kind for the purpose.
- I.2 Unless otherwise specifically provided in the Contract Documents, the Trade Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, transportation, and other facilities and services necessary for the proper execution and completion of the Work.
- I.3 The Trade Contractor shall at all times enforce strict discipline and good order among his

employees and shall not employ on the Work any unfit person or anyone not skilled in the task assigned to him.

2. TAXES

- 2.1 Unless tax exempt status is specifically noted, it is understood that the bid prices stated shall include all applicable Federal, State or other Governmental division taxes and assessments. Also, all contributions for unemployment compensation, health and welfare, old age benefits or other purposes now or hereafter effective during the term of the contract, and the Owner and Construction Manager shall not be liable for any additional charges therefore.

01017 CRITICAL PHASING & STAGES OF CONSTRUCTION

I. INTRODUCTION

- I.1 Critical phasing and critical stages of construction have been established herein for the project. It is extremely important that the "Critical Phasing & Stages of Construction" requirements be understood and complied with.
- I.2 The Construction Manager shall coordinate detailed critical phasing and sequencing and scheduling with the Owner's representative.
- I.3 The Construction Manager shall provide overall scheduling and coordination for the entire project. All Trade Contractors shall acknowledge the Construction Manager's right to establish and set up, or subsequently modify, the sequencing and scheduling of all Work on this project for the earliest completion and/or benefit to the Owner.
- I.4 All Trade Contractors shall expedite the ordering and delivering of materials and equipment, etc. to meet these critical phasing and staging requirements and to make every effort possible to minimize disruption of normal building usage.

2. BID SCHEDULES

- 2.1 The preliminary construction schedule narrative included in the Contract Documents represents the general order and time frames for work to be followed by the Construction Manager in coordinating the project. Trade Contractors are to assume that their work will be coordinated in a manner consistent with industry practice, and the efficient coordination of all other trades. Trade Contractors recognize and accept their work may be sequenced and paced by other trades.
- 2.2 Please note that although the schedule defines the planned order of construction, Bidders should not assume that any assurance is given or implied as to the calendar dates associated with completion of the work of a particular contract.
- 2.3 All Trade Contractors and Trade Subcontractors recognize and shall accept modifications to the schedule which are reasonable, in the opinion of the Construction Manager, for the general interest of the project as a result of allowable time extensions (formally or informally approved) in any contract, and such modifications are inherent to the construction process and shall not qualify as a basis for extra compensation from the Construction Manager or Owner.
- 2.4 The Trade Contractor, in submitting a proposal for the work of a particular work category, agrees to commit the necessary resources to complete the work activities of that work category, within a time span not greater than the planned duration. Work included within a work category, but not specifically defined by a particular work activity, is to be accomplished in a reasonable manner in conjunction with other work of the work category, and in such a way as to avoid complication of or to delay the work of other Trade Contractors.

3. PROJECT SEQUENCING

3.1 GENERAL SEQUENCING

- 3.1.1 The overall project sequencing is indicated within the Preliminary Construction Schedule. Refer to Section 00200 and Section 01310.

3.2 RESTRICTIVE SEQUENCING & SCHEDULING

- 3.2.1 More restrictive sequencing to coordinate the Owner's on-going operations and/or for the coordination of the various trades shall be identified in Section 00210 SPECIAL PROVISIONS or as otherwise directed by the Construction Manager; All Trade Contractors agree to cooperate and alter their operations to maintain these more specified restrictions and sequences of the work.

3.3 SPECIFIC PROJECT REQUIREMENTS

- 3.3.1. Refer to the work category description and Section 00210 for specific information on scheduling requirements.

4. MUTUAL COOPERATION

- 4.1. Mutual cooperation between the Owner, the Architect, the Construction Manager, and the Trade Contractors to coordinate these construction and building operation requirements is anticipated and expected.

01018 USE OF SITE

- 1.1 Trade Contractor shall limit his use of the premises for his work and for storage to allow for (i) work by other Trade Contractors; (ii) Owner occupancy; and (iii) public use.
- 1.2 Limitations on site usage as well as specified requirements that impact site utilization are indicated on the drawings and by other contract documents. In addition to these limitations and requirements, the Construction Manager will administer allocation of available space equitably among entities needing both access and space so as to produce the best overall efficiency in performance as the total work of the project. Schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site.

1.3 ACCESS TO SITE

Use of Site: Limit use of Project site to areas within the project boundary as indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

Limits: Limit site disturbance, including earthwork and clearing of vegetation.

- 1.4 Trade Contractor shall assume full responsibility for the protection and safekeeping of products under his contract, stored on the site.
- 1.5 Move any stored products, under Trade Contractor's control, which interfere with operations of the Owner or separate Contractor.
- 1.6 Obtain and pay for the use of additional storage or work areas needed for operations.
- 1.7 Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor air intakes

01019 OWNER'S RIGHT TO OCCUPY

- I.1 The Owner, at his election, may from time to time occupy any parts of the project as the work in connection therewith is completed to such a degree as will, in the opinion of the Owner, permit of their use for the purposes for which they are intended. The Owner will, prior to any such partial occupancy, give notice to the Construction Manager thereof and such occupancy shall be based upon the following:
- a. Such occupancy shall not constitute an acceptance of work not performed in accordance with the Contract Documents or relieve Trade Contractors of liability to perform any work required by their Contract but not completed at the time of occupancy.
 - b. Trade Contractors shall be relieved of all maintenance costs on the units or parts occupied under this agreement.
 - c. Owner shall assume the risk of loss with respect to any unit or part occupied under the terms of this agreement.
 - d. The Trade Contractor shall not be required to furnish heat, light and water or other such services used in the units or parts occupied, without proper re-numeration therefore.

END OF SECTION

01019 CONTRACT CONSIDERATIONS

SECTION INCLUDES:

- I.1 Inspection and Testing Allowance
- I.2 Schedule of Values
- I.3 Application for Payment
- I.4 Change Procedures

I.1 INSPECTION & TESTING ALLOWANCES

If inspection and testing allowances have been assigned to the Trade Contractors, the following shall apply:

I.1.1 Costs included in allowances

- a. Cost of engaging an inspection or testing firm, execution of inspection or tests, reporting results.

I.1.2 Costs not included in the allowance:

- a. Incidental labor and facilities required to assist inspection or testing firm.
- b. Costs of testing laboratory services required by Contractor separate from Contract Document requirements.
- c. Costs of retesting upon failure of previous tests as determined by Architect-Engineer.

I.1.3 Payment Procedures:

- a. Submit one copy of the inspection or testing firm's invoice with next application for payment.
- b. Pay invoice on approval by Architect-Engineer.

I.1.4 Funds will be drawn from inspection and testing allowances only by Change Order.

I.2 SCHEDULE OF VALUES

- I.2.1 Submit schedule through Contractor's Trade Contractor Portal. Application for Payments cannot be processed until Schedule of Values is approved. Without prior approval of the Construction Manager, **no single line item can exceed \$150,000. Unless indicated otherwise, allowances and change orders must be listed as separate line items.**

The schedule of values must be itemized as follows:

- I.2.2 Format: Unless instructed otherwise, utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the major specification Section. Identify bonds, insurance, and permits separately.
- I.2.3 Allowances should be added as individual line items for each section in the Schedule of Values.
- I.2.4 Include within each line item, a directly proportional amount of Contractor's overhead and profit.
- I.2.5 Approved Change Orders will automatically be added as a line item in the Schedule of

Values through the Trade Contractor Portal.

I.3 APPLICATIONS FOR PAYMENT

- I.3.1 Pay Applications are to be created and submitted through the Trade Contractor Portal which conforms to the AIA G702 Form. The Trade Contractor Portal is the exclusive method of submitting a payment application.
- I.3.2 Payment Period: First of month to first of month unless agreed to otherwise.
- I.3.3 Waiver of liens and Sworn Statements shall accompany all Payment Requests unless agreed to otherwise. Also to be produced and submitted through the Trade Contractor Portal.

I.4 CHANGE PROCEDURES

- I.4.1 The Architect-Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by AIA A201, 1987 Edition, Paragraph 7.4.
- I.4.2 The Architect-Engineer may issue a change management document which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor will prepare and submit an estimate within five (5) calendar days.
- I.4.3 The Contractor may propose a change by submitting request for change to the Architect-Engineer, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Sections 01600 and 01600A.
- I.4.4 Stipulated Sum/Price Change Order: Based on change management document and Contractor's fixed price quotation; or, Contractor's request for a Change Order as approved by Architect-Engineer.
- I.4.5 Unit Price Change Order: For pre-determined unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of work, which are not pre-determined, execute Work under a change management document. Changes in Contract sum/Price or Contract Time will be computed as specified for Time and Material Change Order.
- I.4.6 Change Management Document: Architect-Engineer may issue a change authorization signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute the change.
- I.4.7 Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract. Architect-Engineer will determine the change allowable in Contract Sum/Price and Contract Time as provided in the Contract Documents.
 - a. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate

costs for changes in the Work.

- b. Execution of Change Orders: Architect-Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- c. Overhead and Profit: Overhead and Profit shall include the following:
- d. Supervision, Superintendents, Commercial General Liability and Umbrella Insurances, Wage of Time Keepers, Watchmen and Clerks, Small tools with material value of less than \$1,500.00, Incidentals, General Office Expense, and all other expenses not included in Labor Rates. The percentage fee for Overhead and Profit on the Contractor's own work shall be 15% of net cost. The percentage fee for Overhead and Profit on Subcontractor's work shall be 5%.

END OF SECTION

01020 ALLOWANCES

I. GENERAL

- I.1 Allowances will be established as directed in the Work Category Descriptions and are required to be included within the Trade Contractor's base bid. The amount included is an actual cost and does not include overhead and profit. Overhead and profit shall be included in the Trade Contractor's base bid, not in the allowance. Charges against the allowances will be at the Trade Contractor's net rate without overhead and profit as it is already included in the Contractor's base bid. These allowances are set up to be used only when authorized by the Construction Manager. Labor charged against the allowances will be in accordance with mutually accepted labor rates listed in each Trade Contractor's respective contract. Work expended by use of the allowances may be billed for each month in the Trade Contractor's monthly billing provided proper documentation and allowance authorizations are provided. In the event a balance remains within a specific allowance at the end of the project, a change order will be issued deducting the balance remaining in the allowance from the Trade Contractor's contract. All savings as a result of the Trade Contractor's non-use of these allowances will be the Owner's.

END OF SECTION

01030 SPECIAL PROJECT PROCEDURES

01031 ALTERATIONS

I.1 NON-ABATEMENT TRADE CONTRACTOR RESPONSIBILITIES

- I.2.1 Some areas of this project may contain asbestos in some locations. The Owner will attempt to remove or encapsulate all known asbestos prior to the start of renovations. This section contains the asbestos related requirements of all Trade Contractors working on this project.

I.3 GENERAL REQUIREMENTS

- I.3.1 All Federal, State and local laws, rules, regulations and ordinances for asbestos related work shall be adhered to, including but not limited to, OSHA, MIOSHA, EPA and DEQ.
- I.3.2 All Non-Abatement Trade Contractors working around asbestos containing materials are to have a minimum of 2-hours of awareness training on the health and safety aspects of asbestos.
- I.3.3 All Non-Abatement Trade Contractors involved with the disturbance of Category I non-friable asbestos (roof felts, floor tile, transit chimney, etc.) are required to have all workers receive a minimum of 8-hours "hands-on" OSHA approved training prior to beginning work.
- I.3.4 In addition a Non-Abatement Trade Contractor involved with the removal of Category I non-friable asbestos will have at least one on-site worker, employed by the Non-Abatement Trade Contractor, who has successfully completed an asbestos "Supervisor" course and received accreditation. The course shall meet the criteria of EPA's Model Accreditation Plan (40CFR Part 763) for Supervisor or its equivalent.
- I.3.5 Documentation of said training must be posted at the job site during the removal of asbestos containing material(s), disposal, and/or handling.
- I.3.6 Monitoring will be conducted pursuant to OSHA regulation 29 CFR 1926.1101.
- I.3.7 **THE NON-ABATEMENT TRADE CONTRACTOR IS TO STOP WORK AND NOTIFY THE CONSTRUCTION MANAGER ANY TIME SUSPECTED ASBESTOS CONTAINING MATERIALS ARE ENCOUNTERED BY ANY OF HIS/HER WORKERS.**
- I.3.8 All Non-Abatement Trade Contractors that will be removing Category I non-friable asbestos containing materials are to contact the Owner who will arrange and pay for the Environmental Consultant to provide air monitoring services.

I.4 EXCLUSIONARY STATEMENT FOR BUILDING CONSTRUCTION/RENOVATION MATERIALS

- I.4.1 All building materials/products used for renovations or replacement purposes are to be asbestos and lead-free. Asbestos and lead-free is to be defined as materials that contain 0% asbestos or lead. All Contractors are to be prepared to submit data, for a building material/product that he/she is proposing or required to use, to verify the absence of asbestos and lead.

I.4.2 The Non-Abatement Trade Contractors are to complete and sign the form titled "Exclusionary Statement for Building Construction/Renovation Materials".

I.5 NOTIFICATION

I.5.1 All Abatement Trade Contractors that are required to remove Category I non-friable asbestos are to fill out and submit to the Michigan Department of Natural Resources, the "**NOTIFICATION OF INTENT TO RENOVATE/DEMOLISH**", in accordance with the Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) and the Department of Labor and Economic Growth (DLEG).

END OF SECTION

01040 COORDINATION

01041 GENERAL

- I.1 The Construction Manager is ultimately responsible for coordination to complete all work shown on the drawings and specified herein independent of the location of the work on drawings and within the specifications. The arrangement of work within the specifications into Divisions and Sections shall be considered as given for convenience of reference only and shall not be held to conform to jurisdictional rules which may prevail in any particular trade. It shall be the responsibility of the Construction Manager to so arrange or group items of work under a particular trade to conform with the prevailing customs of that trade and best interest of the Owner.

01042 GENERAL INSTALLATION PROVISIONS

- I.1 PRE-INSTALLATION CONFERENCES: The Construction Manager shall hold pre-installation meeting at the project site well before installation of each unit of work, which requires coordination with other work. Installer and representatives of the manufacturers and fabricators who are involved in or affected by that unit of work, and with its coordination or interpretation with other work that has preceded or will follow shall attend this meeting. The Construction Manager will advise the Architect/Engineer of scheduled meeting dates.
- a. The Construction Manager shall record significant discussions of each conference, and record agreements and disagreements, along with the final plan of action. The Construction Manager shall then distribute the record of meeting promptly to everyone concerned, including the Owner and Architect/Engineer.
 - b. Do not proceed with the work if the pre-installation conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the work and reconvene pre-installation conference at the earliest possible date.
- I.2 Installer's Inspection of Conditions: Require the installer of each major unit of work to inspect the substrate to receive work and conditions under which the work is to be performed. The installer shall report all unsatisfactory conditions in writing to the Construction Manager. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.
- I.3 Coordinate enclosure of the work with required inspections and tests so as to minimize the necessity of uncovering work for that purpose.
- I.4 Mounting Heights: Where mounting heights are not indicated. Refer to the Construction Manager for decision. Products installed at a location not indicated or approved by the Architect or Construction Manager shall be relocated at the Trade Contractor's expense.

01043 COORDINATION OF PERMANENT UTILITY CONNECTIONS

- I.1 New utility connections shall be coordinated with local utilities and the Project Superintendent.

01044 MECHANICAL & ELECTRICAL COORDINATION

- I.1 All Trade Contractors shall make arrangements with the Construction Manager before connecting to existing facilities. If interruption of service is required, it shall be done at the convenience of the Owner as scheduled by the Construction Manager / General Contractor.

END OF SECTION

01045 CUTTING AND PATCHING

I. GENERAL

I.1 RELATED DOCUMENTS

Drawing and general provisions of contract, including General and Supplementary Conditions and other Division I Specification sections apply to work of this Section.

I.2 DESCRIPTION OF REQUIREMENTS

I.2.1 Definition: "Cutting and patching" includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original condition.

- a. "Cutting and patching" is performed for coordination of the work, to uncover work for access or inspection, to obtain samples for testing, to permit alterations to be performed or for other similar purposes.

I.3 RELATED WORK SPECIFIED ELSEWHERE

I.3.1 Refer to mechanical and electrical specifications sections for additional requirements and limitations on cutting and patching of mechanical and electrical work.

I.4 QUALITY ASSURANCE

I.4.1 Requirements for Structural Work: Do not cut and patch structural work in a manner that would result in a reduction of load-carrying capacity or of load-deflection ratio.

- a. Before cutting and patching the following categories of work, obtain the Construction Manager's approval to proceed:
 - Structural Steel - Miscellaneous structural metals, including lintels, equipment supports, stair systems and similar categories of work.
 - Structural Concrete - Foundation construction, Retaining walls, Structural decking, Exterior wall construction, Piping, ductwork, vessels and equipment. Reinforcing steel shall not be heated to bend or reshape a bar.
- b. Visual Requirements: Do not cut and patch work exposed on the building's exterior or in it's occupied spaces, in a manner that would, in the Architect/Engineer's opinion, result in lessening the building's aesthetic qualities. Do not cut and patch work in a manner that would result in substantial visual evidence of cut and patch work. Remove and replace work judged by the Architect/ Engineer to be cut and patched in a visually unsatisfactory manner.

2. PRODUCTS

2.1 MATERIALS

2.1.1 General: Use materials for cutting and patching that are identical to existing materials. If identical materials are not available, or cannot be used, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials for cutting and patching that will result in equal-or-better performance characteristics.

3. EXECUTION

3.1 INSPECTION

- 3.1.1 Inspect existing conditions of the project, including elements subject to damage or to movement during cutting and patching.
 - 3.1.2 After uncovering work, inspect the conditions affecting the installation of products or performance of the work.
 - 3.1.3 Report unsatisfactory or questionable conditions to the Construction Manager in writing; do not proceed with the work until the Construction Manager has provided further instructions.
- 3.2 PREPARATION
 - 3.2.1 Provide adequate temporary support as necessary to assure the structural value or integrity of the affected portion of the work.
 - 3.2.2 Provide devices and methods to protect other portions of the project from damage.
 - 3.2.3 Provide protection from the elements for that portion of the project, which may be exposed by cutting and patching work, and maintain excavations free from water.
- 3.3 PERFORMANCE
 - 3.3.1 Execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation or repairs. Cutting and patching shall be performed by individuals certified, licensed, or otherwise qualified as experienced and with sufficient training to perform the required task.
 - 3.3.2 Execute excavating and backfilling by methods which will prevent settlement or damage to other work.
 - 3.3.3 Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.
 - 3.3.4 Restore work which has been cut or removed; install new products to provide complete work in accord with requirements of Contract Documents.
 - 3.3.5 Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.
 - 3.3.6 Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes.
 - 3.3.7 For continuous surfaces refinish to nearest intersection. For an assembly, refinish the entire unit.

3.4 CLEANING

- 3.4.1 Thoroughly clean areas and spaces where work is performed or used as access to work. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

4. CUTTING & PATCHING FOR MECHANICAL WORK

- 4.1 The Mechanical Contractor shall be responsible for all cutting, core drilling, and patching for their work. Cutting and patching shall be performed by individuals certified, licensed, or otherwise qualified as experienced and with sufficient training to perform the required task.
- 4.2 The Mechanical Contractor shall be responsible for the accurate location of all openings necessary for the installation of the mechanical work. Any additional openings required to move his work due to an error in the initial layout shall be made at the expense of the Mechanical Contractor.

5. CUTTING & PATCHING FOR ELECTRICAL WORK

- 5.1 The Electrical Contractor shall be responsible for all cutting, core drilling, and patching for their work. Cutting and patching shall be performed by individuals certified, licensed, or otherwise qualified as experienced and with sufficient training to perform the required task.
- 5.2 The Electrical Contractor shall be responsible for the accurate location of all openings necessary for the installation of the electrical work. Any additional openings required to move his work due to an error in the initial layout shall be made at the expense of the Electrical Contractor.

END OF SECTION

01060 REGULATORY REQUIREMENTS

01061 APPLICABLE CODES

- I.1 Reference section 00210 for the list of applicable codes.

01062 WAGES, LABOR & EQUAL EMPLOYMENT OPPORTUNITY

- I.1 The Trade Contractor shall provide for labor needs from the ranks of working labor locally. The Trade Contractor shall enforce the same conditions upon all Trade Subcontractors engaged by the Trade Contractor for the performance of any portion of the work.
- I.2 Successful bidders shall be required to subscribe to the principles of equal opportunity in its employment practices, and shall be required to enforce the same conditions upon all Trade Subcontractors engaged by the Trade Contractor for the performance of any portion of the work.

01063 FIRE HAZARD CLASSIFICATION

- I.1 Fire hazard classifications for materials as specified in the technical specification shall be those established by publication in Current Building Materials List published by Underwriters' Laboratories, Inc., or certified to by notarized affidavit from Southwest Research Institute, or other agency acceptable to the State Construction Code Commission.
- I.2 Where compliances are established by publication in Building Materials List, Trade Contractor shall so represent in writing to the Construction Manager. Where compliances are to be established by affidavit, Trade Contractor shall submit properly notarized affidavit that the material has been tested in accordance with requirements of ASTM E84, ASTM E119, or other specified standard, and found to qualify for the specified classifications. Affidavit shall state the name of the testing agency. The affidavit for testing is to be certified by the manufacturer for material and by the installer for installation.
- I.3 Six copies of affidavits and other representations of compliance shall be submitted to the Construction Manager at time of shop drawing or sample submittal, whichever comes first.
- I.4 In addition, the Construction Manager and Trade Contractor shall have the said materials inspected upon receipt, also before installation, and shall submit upon request prior to final acceptance of project, six copies of properly notarized affidavits by the Construction Manager and Trade Contractor as to the inspection (naming the inspector and other witnesses), certifying that the materials covered by previously submitted affidavits or other representations of compliance with the requirements for specified classifications were received at the jobsite properly labeled or otherwise certified to, and said materials were installed, and in a manner to in no way harm said compliances.

2. FIRE MARSHAL AFFIDAVITS

- 2.1 The Conditions of the Contract and Division I - General Requirements, are a part of this Section.

- 2.2 The requirements specified hereinafter refer to compliance with Codes and Regulations of governing authorities referred to in Article 4 of the General Conditions.
- 2.3 Submit in triplicate, notarized affidavits for the products required as specified in the various technical sections of the specifications. Affidavits shall be submitted to the appropriate field office responsible for the project. Affidavit shall be signed and notarized, and in the following format:

AFFIDAVIT

This is to certify that, (Name of Product) which was or will be furnished to (Company making Application of Product) for (Job or Project Name and Address) is the same in all respects in content, and specifications for mixing and/or application as the specimen tested by (Name of Laboratory) on their project or test number (Test Number) dated (Date of Test).

Flame Spread	_____
Fuel Contributed	_____
Smoke Developed	_____

END OF SECTION

01070 ABBREVIATIONS & SYMBOLS

01071 LIST OF ABBREVIATIONS

ACI	American Concrete Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
ASTM	American Society for Testing Materials
BIM	Building Information Modeling
BOCA	Building Officials and Code Administrators
ICBO	International Conference of Building Officials
LEED	Leadership in Environmental and Energy Design (if applicable)
DOT	Department of Transportation
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
SMACNA	Sheet Metal & A/C Contractors National Association
UBC	Uniform Building Code
OSHA	Occupational Safety and Health Administration

END OF SECTION

01095 REFERENCE STANDARDS AND DEFINITIONS

I.1 RELATED DOCUMENTS

- a. General provisions of the Contract, including General and Supplementary Conditions, other Division I Specification Sections and Drawings, apply to this Section.

I.2 DEFINITIONS

- a. Basic Contract definitions are included in the General Conditions and Special Conditions.
- b. Indicated: The term "indicated" refers to graphic representations, notes, or schedules on the drawings, other paragraphs or schedules in the specifications, and similar requirements in the Contract Documents. Where terms such as "shown", "noted", "scheduled" and "specified" are used, it is to help the reader locate the reference; no limitation on location is intended.
- c. Regulation: The term "Regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the work.
- d. Furnish: The term "furnish" is used to mean "supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations."
- e. Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations."
- f. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."
- g. Installer: An "Installer" is the Contractor or an entity engaged by the Contractor, either as an employee, sub-contractor, or sub-sub-contractor, for performance of a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
- h. Unless otherwise indicated, the term "experienced" when used with the term "Installer" means having a minimum of 5 previous projects similar in size and scope to this project, being familiar with the precautions required, and having complied with requirements of the authority having jurisdiction.
- i. Trades: Use of titles such as "carpentry" is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter". It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.
- j. Assignment of Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities, and assignments are requirements over which the Contractor has no choice or option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with

the Contractor.

This requirement shall not be interpreted to conflict with enforcement of building codes and similar regulations governing the work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.

- k. Project Site: The space available to the Trade Contractors for performance of construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project Site is shown on the drawings and may or may not be identical with the description of the land upon which the Project is to be built.
- l. Testing Laboratories: A "testing Laboratory" is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

I.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- a. Specification Format: The Specifications are organized into Divisions and Sections based on either the Construction Specifications Institute's 16-Division format or the MASTERFORMAT sections 020000-480000.
- b. Specification Content: This Specification uses certain conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
 - 1) Abbreviated Language: Language used in Specifications and other Contract Documents is the abbreviated type. Implied words and meanings will be appropriately interpreted. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and the full context of the Contract Documents so indicates.
 - 2) Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the text, for clarity, subjective language is used to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.
 - 3) The words "shall be" shall be included by inference wherever a colon (:) is used within a sentence or phrase.
- c. Summary References: The Summary Article of each Specification Section includes references to Work Included, Related Work Specified Elsewhere, Products Furnished but not Installed by this Section, and similar phrases. These listings are provided as a guide to the Contractor to assist the Contractor in locating related information within the Specification. No guarantee regarding the absolute completeness of these references is intended or may be inferred nor shall the presence, or lack thereof, of any reference relieve the Contractor of the final responsibility for proper completion of the work.

I.4 INDUSTRY STANDARDS

- a. **Applicability of Standards:** Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference.
- b. **Publication Dates:** Where the date of issue of a referenced standard is not specified, comply with the latest referenced standard in effect at the time of Bid Opening.
- c. **Conflicting Requirements:** Where compliance with two or more standards is specified, and the standards establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different, but apparently equal, and uncertainties to the Architect for a decision before proceeding.
- d. **Copies of Standards:** Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1) Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source and maintain these standards, for reference by the Contractor, and Architect, in a convenient location within the temporary office.
- e. **Abbreviations and Names:** Trade association names and titles of general standards are frequently abbreviated. Where acronyms or abbreviations are used in the Project Manual, they mean the recognized name of the Trade organization, standards generating organization, authority having jurisdiction, or other entity applicable. Refer to the "Encyclopedia of Associations", published by Gale Research Company, available in most libraries.

I.5 SUBMITTALS

- a. **Permits, Licenses, and Certificates:** For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

PART 2 PRODUCTS

Not applicable.

PART 3 EXECUTION

Not applicable.

END OF SECTION

01100 ALTERNATES

I.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division I Specification Sections, apply to work of this Section.

I.2 DEFINITIONS

- I.2.1 Voluntary and Mandatory Alternates are defined as alternate products, materials, equipment, installations or systems for the work, which may, at the Owner's option, be selected to either add to or delete from the scope of the project.
- I.2.2 Alternates may, or may not, substantially change scope and general character of the work, and must not be confused with "allowances", "unit prices", "change orders", "substitutions", and other similar provisions.

I.3 COORDINATION

- I.3.1 Coordinate pertinent related work and modify surrounding work as required to properly integrate the work under each Alternate, and to provide the complete construction required by the plans and specifications. Each Alternate includes all related work required to provide the work described in the individual Alternate.

I.4 DESCRIPTION OF ALTERNATES

- I.4.1 Refer to Section 00210 for a description of the basic change added to or deleted from the scope of the project.
- I.4.2 The Owner reserves the right to select any Alternate following submission of the bid. If selected subsequent to the award and execution of the Agreement, the Alternate will be affected by Change Order and the sole consideration shall be the price quoted in the bid.
- I.4.3 Each contractor should review each alternate and include a "deduct or add" amount on the trade contract proposal form. At the end of each alternate is a summary of the Work Categories affected by the alternate.

I.4.4 RELATED DOCUMENTS

- a. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division I Specification sections, apply to work of this section.

I.4.5 DESCRIPTION OF REQUIREMENTS:

- a. Definition: An alternate is an amount proposed by Bidders and stated on the Bid Form that will be added to or deducted from Base Bid amount if the Owner decides to accept a corresponding change in either scope of work or in products, materials, equipment, systems or installation methods described in Contract Documents. Alternate Bid Pricing shall be firm for 90 days from date of award.

- b. Coordination: Coordinate related work and modify or adjust adjacent work as required to ensure that work affected by each accepted alternate is complete and fully integrated into the project.
- c. Notification: Immediately following award of Contract, prepare and distribute to each party involved, notification of the status of each alternate. Indicate whether alternates have been accepted, rejected or deferred for construction at a later date. Include a complete description of negotiated modifications to alternates, if any.
- d. Schedule: A "Schedule of Alternates" is included in Section 00210. Specification sections referenced in the Schedule contain requirements for materials and methods necessary to achieve the work described under each alternate.
 - 1) Include as part of each alternate, miscellaneous devices, appurtenances and similar items incidental to or required for a complete installation whether or not mentioned as part of the alternate.

01110 VOLUNTARY ALTERNATES

- I.1 Bidding of Voluntary Alternates is encouraged. It shall be understood that Voluntary Alternates cannot be considered as a basis for determining a low bid. Contractor may only be determined low bidder based upon the Contract Documents and specified bid alternates in Section 01100.

END OF SECTION

01150 MEASUREMENT AND PAYMENTS

I.1 DESCRIPTION

This Section describes the means and methods required for payment for work performed as an extra to the Contract.

I.2 CHANGES IN THE WORK

- I.2.1 The Owner and Architect reserve the right to make changes in the work without notice to sureties or in any way rendering the Contract void.
- I.2.2 Changes in the work will be described in Supplemental Instruction (SI), Construction Change Directive (CCD), Bulletins, Proposal Request, or Field Orders issued by the Architect or Construction Manager in accordance with the General Conditions and the Supplementary Conditions, and with procedures described in this Section.
- I.2.3 Unless specified otherwise, Bulletins and Proposal Requests are not authorization to proceed with the changes described, and Supplemental Instructions, Construction Change Directives or Field Orders countersigned by the Owner are authorization to proceed. The Trade Contractor will be authorized to proceed with extra work by an approved quotation or signed Field Order.
- I.2.4 No claims for additional compensation will be considered for changes in the work unless authorization to proceed has been given by a signed Construction Change Directive, Field Order or a Change Order issued by the Construction Manager.
- I.2.5 Promptly submit to the Construction Manager, a written detailed quotation of the additional cost, credit or statement noting no change upon the receipt of each Construction Change Directive, Bulletin or Field Order.
- I.2.6 Each quotation is subject to approval of the Construction Manager, Architect and the Owner, after which a Change Order will be issued to modify each Trade Contract.
- I.2.7 Regard each Construction Change Directive, Bulletin or Field Order as a complete unit and enumerate in detail as to labor, materials and related item in the quotation. Provide additional information as requested by the Construction Manager, Architect and/or Owner.
- I.2.8 Proceed promptly in accordance with, and upon receipt of a Change Order. The Contract Sum will be adjusted in accordance with pricing methods described in the General Conditions or as modified by the Supplementary Conditions and as specified in the contract.

END OF SECTION

01200 PROJECT MEETINGS

01215 PRE-CONSTRUCTION SITE INSPECTION

- I.1 Each Trade Contractor shall be held to have visited the site of the proposed work before submitting his proposal and to have familiarized himself with all existing conditions affecting the execution of his work in this project. No allowance or extra consideration on behalf of the Trade Contractor will subsequently be made by reason of failure to observe the site conditions, nor on behalf of any subcontractor for the same reason.

01225 PROGRESS MEETINGS

- I.1 At regular intervals, the Construction Manager shall hold meetings at the jobsite with the representatives of the various Trade Contractors engaged on the project, to coordinate the progress of the work. The Construction Manager shall notify all parties required to attend, the time and place of these meetings.
- I.2 The Construction Manager shall conduct and keep a written record of all such meetings, and distribute copies of them to the Architect, Owner, and all Trade Contractors interested in the matters covered.
- I.3 All Trade Contractors shall furnish to the Construction Manager's Field Representative, all available information concerning the conditions and progress of their work, including manpower used on a daily basis.

END OF SECTION

013000 SUBMITTALS

I. SHOP DRAWINGS, PRODUCT DATA & SAMPLES

I.1 DESCRIPTION OF REQUIREMENTS

A. GENERAL:

- a. This Section specifies requirements for submittals including shop drawings, product data, samples and other miscellaneous work related submittals. Shop drawings, product data samples and other work related submittals are required to amplify, expand and coordinate the information contained in the Contract Documents.
- b. Shop drawings are technical drawings and data that have been specially prepared for this project, including but not limited to the following items:
 - Fabrication and installation drawings.
 - Setting diagrams.
 - Shopwork manufacturing instructions.
 - Templates.
 - Patterns.
 - Coordination drawings (for use on site).
 - Schedules.
 - Design mix formulas.
 - Contractor's engineering calculations.
- c. Standard information prepared without specific reference to a project is not considered to be shop drawings.
- d. Product data includes standard printed information on manufactured products that has not been specially prepared for this project, including but not limited to the following items:
 - Manufacturer's product specifications & installation instructions.
 - Standard color charts.
 - Catalog cuts.
 - Roughing-in diagram and templates.
 - Standard wiring diagrams.
 - Printed performance curves.
 - Operational range diagrams.
 - Mill reports.
 - Standard product operating and maintenance manuals.
- e. Samples are physical examples of work, including but not limited to the following items:
 - Partial sections of manufactured or fabricated work.
 - Small cuts or containers of materials.
 - Complete units of repetitively used materials.
 - Swatches showing color, texture and pattern.

- Color range sets.
 - Units of work to be used for independent inspection and testing.
- a. Mock-ups are special forms of samples, which are too large or otherwise inconvenient for handling in the manner specified for transmittal or sample submittals.
- b. Miscellaneous submittals are work related, non-administrative submittals that do not fit in the three previous categories, including, but not limited to the following:
- Specially prepared and standard printed warranties.
 - Maintenance agreements.
 - Workmanship bonds.
 - Survey data and reports.
 - Project photographs.
 - Testing and certification reports.
 - Record drawings.
 - Field measurement data.
 - Operating and maintenance manuals.
 - Keys and other security protection devices.
 - Overrun stock.

I.2 SUBMITTAL PROCEDURES

- I.2.1 Coordination: Coordinate the preparation and processing of submittals with the performance of the work. Coordinate each separate submittal with other submittals and related activities such as testing, purchasing, fabrication, delivery and similar activities that require sequential activity.

Coordinate the submittal of different units of interrelated work so that one submittal will not be delayed by the Architect/Engineer's need to review a related submittal.

The Architect/Engineer reserves the right to withhold action on any submittal requiring coordination with other submittals until related submittals are forthcoming.

- I.2.2 Listing: Prepare a separate listing showing principal submittals and their initial submittal dates as required for coordination of the work. Organize the listing by the related specification number sequence. Submit the listing within 30 days of the date of commencement of the work.

- I.2.3 Coordination of Submittal Times: Prepare and transmit each submittal to the Construction Manager sufficiently in advance of the scheduled performance of related work and other applicable activities.

Transmit different kinds of submittals for the same unit of work so that processing will not be delayed by the Architect/Engineer's need to review submittals concurrently for coordination.

- I.2.4 Review Time: Allow sufficient time so that the installation will not be delayed as a result of the time required to properly process submittals, including time for resubmittal, if necessary.

- a. Allow 15 working days for the Architect/Engineer's initial processing of each submittal. Allow a longer time period where processing must be delayed for coordination with subsequent submittals. The Architect/ Engineer will advise the Construction Manager promptly when it is determined that a submittal being processed must be delayed for coordination.
- b. Allow 10 working days for reprocessing each submittal.
- c. No extension of time will be authorized because of the Trade Contractor's failure to transmit submittals to the Construction Manager sufficiently in advance of the work.

I.2.5 Submittal Transmittal: Transmit each submittal from the Trade Contractor to the Construction Manager, by use of a submittal form. Submittals received from sources other than the Trade Contractor will be returned to the sender "without action".

I.2.6 Submittal Form: The form required to be used for transmittal of submittals will be provided to the Trade Contractor by the Construction Manager.

- a. Record relevant information and requests for data on the submittal form. On the form, or on a separate sheet attached to the form, record deviations from the requirements of the Contract Documents, if any, including minor variations and limitations.

I.3 SPECIFIC SUBMITTAL REQUIREMENTS

I.3.1 General: Specific submittal requirements for individual units of work are specified in the applicable specification section. Comply with the requirements specified herein for each type of submittal.

I.4 SHOP DRAWINGS

I.4.1 Shop Drawings: Information required on shop drawings includes, dimensions, identification of specific products and materials which are included in the work compliance with specified standards and notations of coordination requirements with other work. Provide special notation of dimensions that have been established by field measurement. Highlight, encircle or otherwise indicate deviations from the contract documents on the shop drawings.

I.4.2 Coordination Drawings: Provide coordination drawings where required for the integration of the work, including work first shown in detail on shop drawings or product data. Show sequencing and relationship of separate units of work, which must interface in a restricted manner to fit in the space provided, or function as indicated. Coordination drawings are considered shop drawings and must be definitive in nature.

I.4.3 Do not distribute shop drawing copies without an appropriate final "Action" marking by the Architect/Engineer to be used in connection with the work.

I.4.4 PREPARATION: Submit newly prepared information, drawn to accurate scale. Indicate

the name of the firm that prepared each shop drawing and provide appropriate project identification in the title block.

I.4.5 Do not reproduce contract documents as the basis of shop drawings.

I.4.6 SUBMITTAL:

- a. One of the prints returned will be marked up and maintained by the Trade Contractor as a "Record Document".

I.5 PRODUCT DATA

I.5.1 **PRODUCT DATA:** General information required specifically as product data includes manufacturer's standard printed recommendations for application and use, compliance with recognized standards of trade associations and testing agencies, and the application of their labels and seals (if any), special notation of dimensions which have been verified by way of field measurement, and special coordination requirements for interfacing the material, product or system with other work.

I.5.2 **PREPARATION:** Collect required product data into a single submittal for each unit of work or system. Mark each copy to show which choices and options are applicable to the project. Where product data has been printed to include information on several similar products, some of which are not required for use on the project, or are not included in this submittal, mark the copies to show clearly that such information is not applicable.

I.5.3 **SUBMITTALS:** Product data submittal is required for information and record and to determine that the products, materials and systems comply with the provisions of the contract documents.

I.5.4 **SUBMITTAL:** The Architect/Engineer will retain one copy, the Owner's Representative one copy and will return the others marked with "Action" and corrections as required.

- a. Do not submit product data or allow its use on the project, until compliance with the requirements of the contract documents has been confirmed by the Trade Contractor.

I.5.5 **FINAL DISTRIBUTION:** Furnish copies of product data to trade contractors, suppliers, fabricators, manufacturers, installers, governing authorities and others as required for proper performance of the work.

I.5.6 **INSTALLATION COPY:** Do not proceed with installation of materials, products and systems until a copy of product data applicable to the installation is in the possession of the installer. Do not permit the use of unmarked copies of product data in connection with the performance of the work.

I.6 SAMPLES

I.7.1 Submit samples for the Architect/Engineer's visual review of general generic kind, color, pattern, and texture, and for a final check of the coordination of these characteristics with

other related elements of the work.

Samples are also submitted for quality control comparison of these characteristics between the final sample submittal and the actual work as it is delivered and installed.

- a. Refer to individual sections of these specifications for additional sample requirements.
- b. Documentation required specifically for sample submittals includes a generic description of the sample, the sample source, the product name or manufacturer, compliance with governing regulations and recognized standards.

I.7.2 PREPARATION: Where possible provide samples that are physically identical with the proposed material to be incorporated in the work; provide full scale, fully fabricated samples, cured and finished in the manner specified. Where variations in color, pattern, or texture are inherent in the material represented by the sample, submit not less than 4 units, which show the approximate limits of variations. Where samples are specified for the Architect/Engineer's selection of color, texture or pattern, submit a full set of available choices for the material or product.

- a. Refer to individual sections of these specifications for samples, which, because of their relatively high cost or other special considerations, are intended to be returned to the Contractor for incorporation in the work. Such samples must be in an undamaged condition at the time of use. On the transmittal form to the Architect/Engineer, indicate such special requests regarding the disposition of sample submittals.

I.7.3 DISTRIBUTION OF SAMPLES: Maintain the final submittal sets of samples, last returned by the Architect/Engineer, at the project site, available for quality control comparisons throughout the course of performing the work. In addition, final submittal sets may be used to obtain final acceptance of the work associated with each set.

Prepare and distribute additional sets of samples to subcontractors, suppliers, fabricators, manufacturers, installers, governing authorities, and others as required for proper performance of the work. Show final distribution on transmittal forms.

- a. Mockups and similar samples specified in individual work sections are special types of samples. Comply with sample submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

I.7 MISCELLANEOUS SUBMITTALS

I.7.1 INSPECTION AND TEST REPORTS: Process inspection and test reports in accordance with Product Data requirements.

I.7.2 WARRANTIES: Refer to Section 01740 for specific general requirements on warranties, product bonds, workmanship bonds and maintenance agreements. In addition to copies desired for the Trade Contractor's use, furnish at least 2 executed copies of such warranties, bonds or agreements. Provide at least 2 additional copies where required for maintenance manuals.

- I.7.3 **STANDARDS:** Where submittal of a copy of standards is indicated, submit at least 2 copies of standards for the Architect/Engineer's use. Where workmanship, whether at the project site or elsewhere is governed by a standard, furnish additional copies of the standard to fabricators, installers and others involved in the performance of the work.
- I.7.4 **CLOSEOUT SUBMITTALS:** Refer to Section 01700 and to individual sections of these specifications for specific submittal requirements of project closeout information, materials, tools, and similar items.
- I.7.5 **RECORD DOCUMENTS:** Furnish set of original documents as maintained on the project site. Along with original marked up record drawings provide electronic copies of marked up drawings.
- I.7.6 **OPERATING AND MAINTENANCE DATA:** Unless specified otherwise, furnish at least 4 bound copies of operating data and maintenance manuals, and one electronic copy.
- I.7.7 **MATERIALS AND TOOLS:** Refer to individual sections of these specifications for required quantities of spare parts, extra and overrun stock, maintenance tools and devices, keys, and similar physical units to be submitted.
- I.7.8 **GENERAL DISTRIBUTION:** Provide additional distribution of submittals to subcontractors, suppliers, fabricators, installers, governing authorities, and others as necessary for the proper performance of the work. Include such additional copies of submittals in the transmittal to the Architect/ Engineer where the submittals are required to receive "Action" marking before final distribution. Record distributions on transmittal forms.
- I.8 **ARCHITECT/ENGINEER'S ACTION:**
 - I.8.1 **GENERAL:** The Architect/Engineer will review each submittal, mark with appropriate "Action", and where possible return within 10 working days of receipt. Where the submittal must be held for coordination the Architect/Engineer will so advise the Trade Contractor via the Construction Manager without delay.
 - I.8.2 **ACTION STAMP:** The Architect/Engineer will stamp each submittal to be returned with a self explanatory action stamp, appropriately marked to indicate whether the submittal returned is for unrestricted use, final but restricted use (as marked), must be revised and resubmitted (use not permitted) or without action (as explained on the transmittal form). Refer to Section 00210 for action stamp markings.
 - I.8.3 **FINAL UNRESTRICTED RELEASE:** Where the submittals are marked as follows, the work may proceed provided it complies with the requirements of the contract documents; acceptance of the work will depend upon that compliance.
 - I.8.4 **MAKE CORRECTIONS NOTED:** When the submittals are marked as follows, the work may proceed provided it complies with both the Architect's/ Engineer's notations or corrections on the submittal and with the requirements of the contract documents; acceptance of the work will depend on that compliance.

- I.8.5 REVISE AND RESUBMIT: When the submittals are marked as follows, the work may proceed provided it complies with both the Architect's/Engineer's notations or corrections on the submittal and with the requirements of the contract documents, acceptance of the work will depend on that compliance. Revise the submittal and resubmit for Architect's/Engineer's verification of compliance.
- I.8.6 REJECTED: When the submittal is marked as follows, do not proceed with the work including purchasing, fabrication, delivery, or other activity. Revise the submittal or prepare a new submittal in activity. Revise the submittal or prepare a new submittal in accordance with the Architect's/Engineer's notations stating the reasons for returning the submittal; resubmit the submittal without delay. Repeat if necessary to obtain a different action marking. Do not permit submittals with the following marking to be used at the project site, or elsewhere where work is in progress.

END OF SECTION

01310 CONSTRUCTION SCHEDULES

I.1 EXECUTION OF THE WORK

I.2 CONSTRUCTION PLANNING

Within five (5) days after the award of each Trade Contract, all Trade Contractors shall submit the following scheduling information:

I.2.1 A Procurement Status Report, in a format acceptable to the Construction Manager, which shall itemize all material and equipment, submittal and review requirements, fabrication and delivery lead times, and delivery requirements needed to meet the Trade Contractor's schedule as well as the overall project schedule.

I.2.2 Each Trade Contractor shall submit their own detailed schedule, in a format acceptable to the Construction Manager, which incorporates: the procurement information of Article I.1.1-above, all known interfacing of other trades, the Trade Contractor's anticipated durations, and all other information the Trade Contractor feels is necessary to identify their requirements for the Construction Manager to coordinate with the Construction Manager's direction and scheduling.

I.3 CONSTRUCTION SCHEDULING

I.3.1 A detailed Construction Schedule will be prepared with the Trade Contractor's input immediately after award of bids and submittal of the above information. Section 00200 provides the "preliminary construction schedule" which describes the approximate durations of sequence of the projects. The completion dates provided are firm and must be achieved. It is intended that all bidders agree to accept the final schedule, and acknowledge that other Trade Contractor's work is paced by, or dependent upon, the various activities being able to commence and proceed with associated activities as scheduled. The approved Construction Schedule shall be regarded as a firm contractual commitment by all parties affected therein.

I.3.2 All Trade Contractors and their Trade Subcontractors recognize and shall accept modifications to the schedule which are reasonable, in the opinion of the Construction Manager for the general interest of the project, as a result of allowable time extensions (formally or informally approved) in any contract, and such modifications are inherent to the construction process and shall not qualify as a basis for extra compensation from the Construction Manager or Owner."

I.3.3 If a CPM network schedule is used to coordinate the work of the project, start and finish dates for each work activity will be furnished to the Trade Contractor to schedule his work. Periodically, these dates will be revised to reflect changed project conditions. The Construction Manager will attempt to schedule the start of the work of any Trade Contractor on the date for the activity, and the Trade Contractor agrees to cooperate in following that direction.

I.3.4 If it is apparent that a Trade Contractor is not going to complete his work in the time allotted, said Contractor must notify the Construction Manager within five (5) days after publication of the schedule. Adjustments may be made to accommodate a Trade Contractor, if the above notification is received and it is within the dates established.

Otherwise the schedule shall be deemed accepted by all parties and become the schedule for the Trade Contractor. Each Trade Contractor will be responsible to be familiar with the schedule and how it will effect or modify his operations, including his coordination with the activities of other Trade Contractors.

- I.3.5 It is expressly agreed that time is of the essence for the completion of work under his contract, and the Trade Contractor agrees to perform the work within the time and in the manner specified or within the time extensions the Owner may grant; provided, however, that the Trade Contractor may be liable for any damages suffered by the Owner due to failure of the Trade Contractor to perform the specified work within the specified time.
- I.3.6 The Trade Contractor, within five (5) days after being notified to commence work, agrees to commence work in the field of such points as the Construction Manager may designate, and to continue diligently to perform the work, and to fully complete all of his work to the satisfaction of the Construction Manager and Owner. The work shall be carried to completion with utmost speed.
- I.3.7 If the Trade Contractor delays progress for any reason other than those allowed by the General Conditions, and refuses to adequately man the project or to work overtime, the Construction Manager may accelerate the work of subsequent Trade Contractors and backcharge all costs to the late Trade Contractor. All direction in this regard will be given in writing to the Trade Contractor.

END OF SECTION

01370 SCHEDULE OF VALUES

I.1 REQUIREMENTS: The Christman Company requires that all Pay Applications and related information (Schedule of Values) be processed through its proprietary Trade Contractor Portal. Trade Contractor agrees to comply with the requirements of the portal. This is your only method of submitting a payment application.

I.1.1 There is No Fee associated with using the Portal.

I.1.2 This also includes Compliance related information such as the Sworn Statement, supporting Waivers, and Insurance Certificates.

END OF SECTION

01400 QUALITY CONTROL

01410 TESTING LABORATORY SERVICES

I.1 TESTING LABORATORY SERVICES

- I.1.1 **GENERAL:** All work (materials and installation procedures) as indicated in specifications, shall be tested and inspected by an independent testing and inspection agency, approved by the Architect/Engineer to provide the quality control requirements in accordance with these specifications. Results of these tests and inspections when performed in accordance with these specifications will not be disputed by either party. Failure of the Trade Contractor to provide quality control in accordance with this specification may result in the replacement of the work at the Trade Contractor's expense.
- I.1.2 **Owner Provided Testing –** Refer to Section 00210 and work category descriptions for testing services provided by the Owner, if applicable.

I.2 TRADE CONTRACTOR'S RESPONSIBILITY

- I.2.1 Unless identified otherwise, Trade Contractors are responsible for testing and/or balancing as defined in their work categories and/or designated specification sections.

I.3 TESTING & INSPECTION AGENCY RESPONSIBILITIES

- I.3.1 Perform all testing and inspection of the work in accordance with these specifications. Furnish qualified personnel and sufficient equipment in a timely manner when required by the Trade Contractor and/or Architect/Engineer to perform all testing and inspection in accordance with these specifications. Provide written reports, electronically and at least one hard copy, in a timely manner of the work tested and inspected. The reports shall include complete material test results and for in place material, a sketch showing the exact location where the test was taken on the project site. The inspection and testing agency and its representatives are not authorized to revoke, alter, relax, enlarge or release any requirements of the contract documents, nor to approve or accept any portion of the work.

Work will be checked by representatives of the testing agencies as it progresses, but failure to detect any defective work or product will not in any way prevent later rejection when such defect is discovered, nor will it obligate the Owner to final acceptance. When it appears that the work or product furnished is in non-conformance with the contract documents, the representative of the testing agency will direct the attention of the Architect/Engineer and Trade Contractor to such non- conformance.

I.4 AUTHORITY OF THE ARCHITECT/ENGINEER

- I.4.1 The Architect/Engineer may order from time to time additional tests and inspection beyond those required, if in his opinion, the subject work may not be meeting specification. The cost for these tests and inspections shall be born by the Trade Contractor if results indicate that work was NOT within the project specifications. The

Architect/Engineer may terminate the testing and inspection agency. The Trade Contractor shall then furnish to Construction Manager the name of an additional agency for approval. The Architect/Engineer may perform quality control tests and inspections.

END OF SECTION

Indoor Air Quality (IAQ) Management Plan - During Construction

Objective

Protect indoor air quality during construction for the safety of construction workers and for the assurance of a high quality indoor environment after building occupancy.

Plan

- Materials have been specified to minimize indoor air pollutants from material off-gassing. Subcontractors are to make every effort to meet the specified requirements for materials.
- Those materials and construction practices that do not specifically meet the requirements of the specifications, should be of the lowest toxicity available in the industry.
- For those materials and construction practices that introduce air quality concerns, use the following procedures to help prevent buildup of contaminants to the indoor environment.

Definitions

- Absorptive Materials: Gypsum board, acoustical ceiling tile and panels, carpet and carpet tile, materials containing/wrapped in fabrics, fibrous insulation/materials and other materials containing materials with similar absorptive characteristics.
- Contaminants: Gases (i.e. carbon monoxide, acetylene), paint, sealants and coating vapors, regulated pollutants, airborne mold and mildew, products that emit volatile organic compounds during installation, drying, or curing.
- Particulates: Dust, dirt, smoke, concrete dust, masonry dust, drywall dust, wood dust, silica, fiberglass and other airborne solid matter.

HVAC Protection

- Mechanical systems protection – all ductwork not being worked on should be covered to prevent the infiltration of particulate matter. Care should also be given to protect ductwork from collection of particulate matter during delivery to the site. All mechanical equipment that has openings where particulate matter could enter, should be covered at all times.
- If possible, avoid using permanently installed air handlers for temporary heating/cooling during construction – particularly during demolition.
- Do not store construction or waste materials in the mechanical room.
- Use temporary filtration media during construction to protect HVAC at each return air grille; filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 8 as determined by ASHRAE 52.2 – 1999. Isolate the return side of the HVAC system from the surrounding environment as much as possible. Return side shall have the heaviest work areas dampered off and all return system openings sealed with plastic. Return side shall be shut down whenever possible during heavy construction and demolition.
- When the system is off, all supply ducts, equipment and openings should be sealed with plastic for further protection.
- Provide continuous ventilation rate of one air change per hour minimum during construction. Provide additional ventilation as may be necessary to protect workers' health and avoid the accumulation of volatile compounds, dust and other harmful airborne contamination.

- Filtration media must have a Minimum Efficiency Reporting Value (MERV) of 8.
- Maintain a list, and cut sheet, of each air filter used during construction and at the end of construction. Include the MERV value, manufacturer name and model number.

Source Control

- Subcontractors to use low emitting products as specified. When limited resources are available, materials should be used that have the low toxicity emissions available.
- Use electrically powered equipment when feasible and switch from diesel to bottled gas for equipment such as generators or fork lifts.
- High levels of contaminant odor generated during removal of contaminated soils - consult Construction Manager and testing consultant upon first discovery of a contaminant odor. Respirators may need to be worn.
- Gaseous vapors generated during temporary heating operations – contractors to utilize explosive gas detectors that detect harmful levels of carbon monoxide, propane, natural gas, and smoke. Use electric or steam heaters for temporary heat when possible.
- Concrete floor sealing, block sealing and waterproofing - utilize fans, open windows, and respirators.
- Other- Allow sufficient time for dissipation of odor after installation of materials with elevated concentrations of VOC's and other moisture related/containing materials (i.e. fluid applied coatings, adhesives).
- Exhaust pollution sources to the outside through an available exhaust system or portable fan vented to the outside. Depending on the nature of the material and the location of the exhaust, special filtration may or may not be necessary.
- If exhausting the pollution sources is not feasible, the use of a portable air cleaner may be effective.

Pathway Interruption

- Erect barriers to contain the construction area. The barriers should be selected based upon the worst case contributor to dust or odor escaping from the site.
- Locate trash dumpsters, recycling centers and pollutions sources at reasonable distances from the site, so as not to affect the air quality of the surrounding areas.
- Depending on the weather conditions, ventilate using 100% outside air to exhaust contaminated air directly to the outside during installation of VOC-emitting materials.
- Depressurize the work area allowing the air pressure differential between construction and clean areas to contain dust and odors.

Housekeeping

- Isolate areas with high particulate concentration using solid physical barriers from floor to ceiling (plastic sheeting or similar).
- Asbestos abatement- A certified abatement firm and testing consultant will be hired to handle these situations. No trades are to be present in areas while abatement activities are taking place. Areas being abated shall be separated from trades/Owner occupants by a solid physical barrier.
- Control dust and particulate concentration with wetting agents or sweeping compounds.

- If vacuum cleaners are being used for cleaning activities, use high efficiency particulate air filters in them.
- Remove spills of high VOC-emitting materials immediately.
- Use low-toxic cleaning supplies for surfaces, equipment and worker's personal use.
- Do not allow water to accumulate in the building envelope or anywhere on-site. Take care to remove the accumulated water as soon as possible and disinfect the area if necessary.
- Do not install any building materials that have become wet. If building materials do become wet then dry the materials out completely before they are covered up. Failure to do this will result in harmful mold growth which will be very expensive to remediate after the fact.
- When performing sanding operations for gypsum board assemblies, provide the following protection:
 1. Isolate the space
 2. Provide plastic sheet separation during sanding
 3. Close and seal all air system devices and ductwork
 4. Sequence construction to avoid contamination of other spaces with gypsum dust
 5. Provide worker protection

Scheduling

- Consult manufacturers for appropriate dry out times of materials prior to arrival on site. Factory aging of materials with strong odor emissions should be considered prior to delivery of materials on-site.
- Absorptive materials should be sequenced to arrive on-site when moisture and humidity levels are at acceptable levels based upon manufacturer's written/acceptable requirements.
- Products that do not meet the specified requirements, due to limited availability of materials, should be stored in dry, well ventilated areas for odor dissipation (off-gassing/conditioning).
- If absorbent materials must be stored in high humidity on site, protect absorbent materials with an impermeable moisture barrier, preferably a barrier containing recycled content.
- Upon completion of construction, replace all filtration media immediately prior to occupancy.
- After construction ends consideration should be given for conducting a baseline indoor air quality testing procedure for the affected space in the building.

Building Flush Out

- The Construction Manager, with the help of the Mechanical and Controls Contractors, will conduct a building flush out with new filtration media at 100% outside air after construction ends and prior to testing. The building flush out shall comply with the latest LEED requirements for the *Construction IAQ Management Plan – Before Occupancy*

Management & Enforcement of Plan

Construction Manager:

Superintendent shall give a copy of this plan to all subcontractors and shall reinforce the requirements of this plan on a daily basis and reserves the right to modify or change the plan at his or her discretion based on the current safety situation of the site. A testing consultant will be hired to monitor and report

air contaminants and ventilation effectiveness at the discretion of the Superintendent. Project Engineer will support Superintendent in duct protection inspections throughout building.

Photo Documentation:

The Project Superintendent or Project Engineer shall document implementation of the IAQ Plan by taking at least 6 photos on at least 3 different occasions throughout the project. These photos should show each of the IAQ strategies described in this plan.

Architect:

Review compliance with plan during weekly site visits.

Owner:

Reserves the right at any time to verify compliance and request a team meeting to review project safety goals at his/her discretion.

Resources:

These guidelines were developed through referencing the SMACNA IAQ Guidelines for Occupied Buildings under Construction and the USGBC LEED-NC for New Construction Reference Guide.

- www.smacna.org
- www.usgbc.org

01500 TEMPORARY FACILITIES

I.1 DESCRIPTION OF REQUIREMENTS

- I.1.1 This section specifies requirements for temporary services and facilities, including such items as temporary utility services, temporary construction and support facilities, and project security and protection. Refer to Section 00210 for additional requirements.
- I.1.2 **USE CHARGES:** No cost or usage charges for temporary services or facilities are chargeable to the Owner or Architect/Engineer. The Construction Manager is responsible for these charges where indicated. In all other cases the Trade Contractor requiring same is responsible for the charges incurred. Cost or use charges for temporary services or facilities will not be accepted as a basis of claims for a change order.

I.2 PROTECTION OF EXISTING FACILITIES

- I.2.1 Each Trade Contractor shall provide and maintain proper shoring and bracing for existing underground utilities, sewers, and building foundations encountered during his excavation work, to protect them from collapse or other type of damage until such time as they are to be removed, incorporated into the new work, or can be properly backfilled upon completion of new work.
- I.2.2 Each Trade Contractor shall provide and maintain proper shoring and bracing for existing structures and finishes encountered during the execution of his work to protect from collapse or other type of damage until such time as they are to be removed, incorporated into the new work, or can be properly backfilled upon completion of new work.
- I.2.3 Each Trade Contractor shall provide and maintain temporary protection for new and existing work during the execution of his work to protect from dirt and damage. Any damage to new and/or existing work resulting from the lack of or inadequate temporary protection shall be this contractor's responsibility to restore.

01510 TEMPORARY UTILITIES

I.1 TEMPORARY ELECTRICAL POWER & LIGHTING

Unless identified otherwise, the following provisions shall apply:

- I.1.1 The temporary electrical power and lighting will be installed and maintained by the Electrical Trade Contractor (WC 28). Refer to Section 00210 to verify if the Owner shall pay for all power consumed for the temporary electrical service.
- I.1.2 All Trade Contractors shall obtain the power for their temporary electric requirements from the existing power source available on the site. All necessary lugs, transformers, disconnect switches, fuses, cable, posts, ground fault interrupters, etc., required for connection to the power source and distribution, including wires, cable, supports, etc., shall be provided by Trade Contractor, all as coordinated and approved by the Construction Manager. The Owner shall pay for all reasonable amounts of power consumed for the temporary electrical service. Electric heaters will not be allowed for heating temporary trailers and offices.
- I.1.3 Any electrical requirements for power or lighting beyond those listed in this paragraph

shall be the responsibility of the Trade Contractor requiring them.

I.1.4 Overtime work requiring standby electricians shall be at the expense of the Trade Contractor requiring same. Installation of temporary electrical power and lighting shall be as scheduled by the Construction Manager.

I.1.5 Electric welder machines will not be allowed to be used without the express permission and approval of the Construction Manager and Owner. The Trade Contractor would have to pay for all equipment and materials required to provide the distribution and power supply if permission were granted to use electric welders, all as coordinated and approved by the Construction Manager.

I.1.6 All temporary electrical installations shall be in compliance with the latest National Electrical Code or OSHA, whichever is more stringent.

I.2 TEMPORARY HEAT

I.2.1 Unless identified otherwise, all equipment and labor for temporary heat after building enclosure shall be furnished by the Mechanical Trade Contractor (WC 27). Refer to Section 00210 to verify if energy will be supplied by the Owner when the heating equipment is connected to the existing power system.

I.3 COLD WEATHER PROTECTION

I.3.1 Unless identified otherwise, each Trade Contractor shall provide the temporary heat and protection necessary to allow his work to continue during cold weather. The building shall be considered to be enclosed when the exterior walls, roofing and temporary closures to all wall and roof openings are in place.

I.4 TEMPORARY TELEPHONE SERVICE

I.4.1 Each Trade Contractor shall provide temporary job site telephone service as required at his own expense.

I.4.2 Telephone numbers for summoning aid, such as the Police Department, the Fire Department, physicians, ambulances, and rescue squads from outside sources shall be conspicuously posted by the Construction Manager at the site of the work.

I.5 TEMPORARY POTABLE WATER SUPPLY

I.5.1 Unless identified otherwise, the Mechanical Trade Contractor (WC 27) shall furnish, install, maintain, and remove if necessary, a temporary water supply system as required. Refer to Section 00210 to verify if Owner shall pay for water usage fees when connected to the Owner's existing system.

I.6 TEMPORARY TOILET FACILITIES

I.6.1 The Construction Manager shall provide and maintain adequate toilet facilities in a clean and sanitary condition for the use of all Trade Contractors. The use of chemical toilet facilities will be permitted.

I.7 FIRST AID

- I.7.1 The Trade Contractor shall provide a completely equipped first-aid kit, which shall be readily accessible at all times and shall be provided and maintained at the site of the work in a clean and orderly condition. The required number of employees who have been properly instructed shall be designated to be in charge of first aid work. At least one such employee shall be available at all times that the work is in progress.

I.8 TEMPORARY FIRE PROTECTION

- I.8.1 Each Trade Contractor shall be responsible for temporary fire protection related to his own work.
- I.8.2 Unless identified otherwise, The General Trades Contractor (WC 20) shall furnish fire extinguishers in accordance with OSHA, as required for the building. Each Trade Contractor shall furnish fire extinguishers in accordance with OSHA requirements when his work required additional extinguishers.

01520 CONSTRUCTION AIDS

I.1 HOISTING & SCAFFOLDING

- I.1.1 All hoisting required in the performance of each Trade Contractor will be provided by that Contractor. If a crane is 125 tons or greater, or is a tower crane, only certified operators are allowed. Trade Contractor is responsible for providing required documentation of certification of operators PRIOR to start of work.
- I.1.2 Each Trade Contractor shall provide his own scaffolding, which shall be in accordance with all OSHA safety requirements.

01530 BARRIERS

I.1 TEMPORARY SITE FENCE

- I.1.1 The temporary site fencing will be provided by the Construction Manager unless otherwise specifically noted.

I.2 TEMPORARY BARRICADES, TRAFFIC CONTROL & TRAFFIC LIGHTS

- I.2.1 Each Trade Contractor is responsible for the maintenance and replacement (when removed) of all temporary barricades, traffic control, and traffic lights. In addition, each Trade Contractor shall be responsible for installation of temporary barricades in accordance with MIOSHA requirements at openings created by that trade contractor.

01540 SECURITY

I.1 WATCHMAN

- I.1.1 Unless identified otherwise, the services of a watchman will not be provided by either the Owner or the Construction Manager. Each Trade Contractor shall be responsible for, and make good any loss not covered by the Builder's Risk Insurance and shall be responsible for the associated deductible costs.

01550 ACCESS ROADS & PARKING AREAS

I.1 CONSTRUCTION PARKING

I.1.1 Refer to Section 00210 for parking requirements.

01560 SPECIAL CONTROLS

I.1 **WORK INCLUDED:** The work covered by this Section of the Specifications pertains to Special Controls.

I.1.1 **LIMITING EXPOSURES OF WORK:** Each Trade Contractor shall supervise performance of the work in such a manner and by such means which will ensure that none of the work, whether completed or in progress, will be subjected to harmful, dangerous, damaging or otherwise deleterious exposure during the construction period. Such exposures include, where applicable, but not by way of limitation the following:

- Excessive static or dynamic loading.
- Excessive internal or external pressures.
- Excessively high or low temperatures.
- Thermal shock.
- Excessively high or low humidity.
- Air contamination or pollution.
- Water or ice.
- Solvents.
- Chemicals.
- Light.
- Puncture.
- Abrasion.
- Heavy traffic.
- Soiling.
- Bacteria.
- Insect infestation.
- Combustion.
- Electrical current.
- High speed operation, improper lubrication, unusual wear or other misuse.
- Incompatible interface.
- Destructive testing.
- Misalignment.
- Excessive weathering.
- Unprotected storage.
- Improper shipping or handling.
- Theft and Vandalism.

I.2 SPECIAL CONTROLS DESCRIPTIONS

I.2.1 **SPECIFICATIONS BY REFERENCE:** Where reference is made in the specifications to standards of any technical society, association, governmental agency, etc., said specifications or standards shall apply and be binding as though fully repeated therein and are to be considered as a part of these specifications.

- I.2.2 **RELATED WORK:** The contractor shall conduct his work in a manner to prevent air, water, and noise pollution by establishing adequate controls during the construction operations. All controls shall be in accordance with the applicable laws of the State of Michigan.
- A. **AIR POLLUTION:** The open burning of combustible wastes from clearing and grubbing operations and of waste construction materials will not be permitted. The Contractor shall dispose of all such wastes at sanitary landfill(s) licensed by the Michigan Department of Natural Resources.
 - I) **Dust Control:** The contractor shall maintain all traveled areas in a safe, dust-free condition at all times. To accomplish this, the Contractor shall remove any tracked materials such as mud, dirt, etc. from construction and haul roads, furnish and apply chloride treatment to temporary roads, furnish and install temporary road patches or surfaces, or any approved methods or systems.
 - B. **WATER POLLUTION:** The contractor will be required to perform all construction operations in a manner that will conform to the requirements of Act 347, Soil Erosion and Sedimentation Control Act. Methods to be used are indicated herein (Items No. 1 thru No. 46) and referenced with numbers and symbols to the plans when special details are designated. The contractor shall also be required to perform all work in conformance with the requirements of Act 346, Inland Lakes and Streams. The permits for the construction will be obtained by the Owner, unless otherwise noted in the work category description.
 - C. **NOISE POLLUTION:** The contractor shall exercise judgment in the conduct of operations, which by nature result in excessive noise. All such operations shall be coordinated with the Construction Manager and Owner to avoid disruption to Owner operations.
 - D. **CONSTRUCTION DEBRIS:** All construction debris shall be removed from the construction site(s) at regular intervals and disposed of at sanitary landfill(s) licensed by State department having authority.
 - E. **HOUSEKEEPING:** The project work areas shall be maintained in a neat and clean condition and all debris and waste materials shall be removed from work areas on a daily basis.
- I.2.3 **VEHICULAR AND PEDESTRIAN TRAFFIC CONTROL:** The contractor shall be responsible for providing, installing, and maintaining vehicular and pedestrian traffic control signs, lights, and barricades in conjunction with construction operations where applicable. Vehicular traffic control measures shall be in accordance with the Michigan Manual of Uniform Traffic Control Devices.
- A. **STREET CLOSING:** No street or roadway may be closed to traffic without prior written permission of the governing body having jurisdiction over the street or roadway.
 - B. **EXISTING TRAFFIC CONTROL SIGNS:** Existing traffic control signs which conflict with construction operations may be temporarily removed. The contractor shall provide traffic control for the duration of the sign displacement

and signs shall be replaced in the proper location immediately after construction operations adjacent to the sign locations are completed.

01590 FIELD OFFICES

- I.1 The Construction Manager shall maintain a temporary field office at the site, equipped with telephone, plan desk and plan files, properly heated and illuminated for his, the Architect's, and the Owner's exclusive use. Each Trade Contractor shall provide his own office as necessary. Temporary offices shall be arranged to avoid interfering with construction, and location shall be approved by the Construction Manager.

01595 SMOKING POLICY

- I.1 Refer to Section 00210 for Smoking Policy. Failure to comply with this policy may result in the loss of smoking privileges for all construction personnel on the project, and/or dismissal from the site. There will be no smoking in the Construction Manager's field office.

END OF SECTION

01600 MATERIAL AND EQUIPMENT

01610 MOVING MATERIALS

- I.1 If at any time it becomes necessary to move materials temporarily located on site, which is to enter into their final construction, the Trade Contractor furnishing the materials shall, when so directed by the Construction Manager, move them to another location at his own expense.

01620 STORAGE & PROTECTION

I.1 GENERAL

- I.1.1 Each Trade Contractor shall use the area designated by the Construction Manager for storage of materials, etc., but shall confine this area to a minimum within Contract limits as shown on the plans. Storage beyond this area will not be permitted. Roof areas shall NOT be used for the storage of windows, removals, debris or any other construction items. Storage on the site is very limited and Trade Contractors shall provide for the bulk of materials remote from the site. Refer to Section 00210 for project specific requirements.
- I.1.2 Each Trade Contractor shall provide suitable and sufficiently enclosed and covered spaces, with raised flooring, to protect materials and equipment from damage by weather or construction work.

01625 SALVAGING OF MATERIALS

I.1 GENERAL

- I.1.1 If applicable, materials or equipment shown on drawing or specified herein to be salvaged but not reused, shall become the property of the Owner and each Trade Contractor shall deliver said items to location designated by the Construction Manager. All items not specified to be salvaged for reuse or delivered to the Owner, will be removed from the project site and disposed of legally.

01631 PRODUCTS AND SUBSTITUTIONS

I.1 SUMMARY

Specified Herein: General Requirements for Substitutions and Product Acceptance.

I.2 SUBSTITUTION SUBMITTALS

- I.2.1 The following submittals shall be required for materials, assemblies, and component parts of assemblies where scheduled in the "Submittals" Section of Division I, specified in the Trade Sections or required by the Construction Manager or the Architect as a condition precedent to acceptance of a proposal material, a statement of:

- a. Product Certification
- b. Manufacturer's review of documents and conditions of use.
- c. Approval of proposed Applicator or Installer.
- d. Proposal for on-site instruction.
- e. Manufacturer's supervision of inspection.

I.2.2 Submittals shall be in same form as specified for Request for Acceptance of Materials described herein and, wherever practical should accompany such request.

I.2.3 Submit description of the complete system for each assembly listing all proposed components and acknowledging adjacent materials which are in contact with material or function as a part of the system.

I.2.4 Where one or more of these services are specified, they are considered to be an integral part of the new system. A proposal to delete any specified service will be considered as a reduction in Scope, subject to general conditions for changes in the work.

I.3 MODIFICATIONS

I.3.1 Letter of certification, or request for acceptance, shall indicate all modifications and clarifications to the Contract Documents, including additional instructions for installation or use, which are, in the opinion of the Manufacturer, necessary for proper performance.

I.3.2 If any of the services specified under this Section are not scheduled as a requirement but are normally recommended by the Manufacturer, notify the Construction Manager and the Architect of such recommendation.

I.3.3 Modifications and clarifications to the Contract Documents, which in the opinion of the Architect do not affect the finished quality of appearance of the Work, will be accepted, subject to the following conditions:

- a. Conform to the functional intent of system design.
- b. Accepted by all contracting parties, including Subcontractor and Manufacturer.
- c. Include all costs in the original bid price for adjustments to the scope of the Work including the work of other trades.

I.3.4 Modification which affect the scope of the work, or the work of other trades, and for any reason can not be settled prior to bidding, will be considered under the terms of the General Conditions as Changes in the Work.

I.4 PROTECTION CERTIFICATION

I.4.1 Product certification is a statement by the manufacturer that to the best of its knowledge, the material has not failed to perform when previously used for similar purposes and under similar conditions of use.

I.4.2 Obtain and submit statements from manufacturers and fabricators of materials, assemblies and component parts of assemblies that the product as delivered conforms to their published data.

I.4.3 Obtain manufacturer's approval for all variations from published recommendations for installation, operation and conditions of use.

I.4.4 It shall be the duty of the supplier of any material on this Work to submit evidence, upon request, that his material is in compliance with the applicable codes, ordinances and standards referenced therein, in the method in which the material is used in this project.

I.5 GENERAL REQUIREMENTS FOR SUBSTITUTIONS

I.5.1 The Contract Documents indicate and call for certain articles, devices, products, fixtures, materials and work by named manufacturers. The Contract shall be based on materials and work manufactured and supplied by those named.

I.5.2 Definitions:

- a. Specified Manufacturers or Materials: Those named in the Contract Documents.
- b. Substitutions: Manufacturers or materials, which are not named in the Contract Documents.

I.5.3 Trade Contractor's Responsibility: Manufacturers and trade names are specified to establish a standard. The fact that a product is named does not constitute a guarantee by the Architect that the named Manufacturers have agreed to provide or to modify their product in order to meet all requirements of the Contract Documents. It is the responsibility of the Trade Contractor to obtain assurances from its suppliers that the product it proposes to use will meet all requirements of the Contract Documents. The fact that a material or Manufacturer is a substitution shall not act to either increase or decrease the Trade Contractor's responsibility for performance.

I.5.4 Substitutions During Bidding:

- a. Substitutions shall be included in the proposal under the following conditions only and shall follow all requirements of "Acceptance of Substitutions". Paragraph I.5.6.
- b. When the Trade Contractor knows of another product of equal or better quality and performance, which is more readily available.
- c. When the trade contractor has had unsatisfactory experience with one or more of the specified products or has reason to believe that the specified manufacturer will not provide the necessary guarantees or assume responsibility for performance.

I.5.5 Substitutions After Contract:

- a. Substitutions proposed after execution of the Contract will, if approved by the Architect, be handled in accordance with Article 12 "Changes in the Work" as modified and supplemented herein. A **Request for Change** is sufficient authorization for the Trade Contractor's issuance of a purchase order.
- b. A change of Manufacturer or product previously approved will be considered and handled as a Change in the Work.
- c. Increases in the cost of materials or Work resulting from the failure of the Trade

Contractor to issue a purchase order within the time limits stated in the specified manufacturer's original proposal shall be the sole responsibility of the Trade Contractor and shall not be grounds for a substitution or an increase in the Contract Sum.

I.5.6 Acceptance of Substitutions:

- a. Substitutions will be considered for any manufacturer except where only one manufacturer is listed.
- b. In all cases where substitutions are proposed by the trade contractor, it shall be the sole responsibility of the trade contractor to provide adequate data and samples as required by the Architect to evaluate the substitution.
- c. Request for acceptance of substitution shall be presented not less than seven (7) days in advance of the date on which a decision by the Architect is required and shall:
 - 1) Include all information required by this Specification.
 - 2) State the reason for the substitution.
 - 3) Include accurate cost data if the substitute material involves a change in the Contract Sum, or if so requested by the Architect.
 - 4) Provide or make arrangements for the Manufacturer to provide complete data describing the proposed substitution, including samples and itemized comparison with the specified materials, and work, if requested by the Architect.
- d. The Architect shall not be obliged to justify his reason for rejecting a proposed substitution.
- e. In the event that a substitution is accepted conditionally on the Contractor's agreement to assume full responsibility for equality and performance, the Contract shall provide a full value warranty and agree to make good all damages resulting from the failure of the substitute product.

I.6 ACCEPTANCE OF MATERIALS AND MANUFACTURERS

I.6.1 Standard Materials:

- a. Architect's acceptance applies to the Manufacturer only and shall not act to permit any deviation from other requirements of the Specifications.
- b. Acceptance will be based on the Manufacturer's specifications at time of issuance of Bidding Documents. Deviations from such specifications shall be considered as a substitution.
- c. Requests for acceptance shall be in tabular form stating Specification paragraph and material selected, except as otherwise provided.
- d. Shop Drawings shall not indicate any material for which acceptance has not been received, unless accompanied by a separate request for approval. In no case shall Architect's review and return of Shop Drawings constitute and acceptance of

either specified or substitute manufacturers or materials.

I.6.2 Special Materials

- a. Special materials are materials, which are specified as requiring supervision or technical services by the manufacturer for proper installation.
- b. Request for acceptance of special materials shall include a letter from the manufacturer which letter shall contain all information required hereinafter.

I.6.3 Materials Involving Supplementary Warranty or Maintenance Contract:

- a. These materials shall be submitted as a request for acceptance over the signature of a qualified technical representative in the direct employment of the manufacturer or such other person as the manufacturer may authorize in writing. Request for acceptance shall contain the following information:
 - 1) Name of project.
 - 2) Name of Contractor, Subcontractor or other party to whom material is furnished.
 - 3) Reference to Specification Section and Article where material is specified and other Contract Documents necessary for identification.
 - 4) Statement of acceptance of documents, conditions, and performance requirements.
 - i. Statement that documents as issued are in accordance with manufacturer's recommendations for use of specified materials, or
 - ii. Recommended modification of detail, use, application or for substitution of different product by same manufacturer as being more suitable for the performance requirements of the warranty.
 - 5) Statement that detailed installation instructions will be provided.
 - 6) Extent of job site technical services, consultants or instructors proposed, if any.
 - 7) Statement that warranty will be provided.
 - 8) Special provisions required to keep warranty in force.
- b. Requests for acceptance may be in the form of a letter including the above items and addressed to the subcontractor responsible for installation of the material, or may be according to a sample form of Material Proposal, provided by the Architect.
- c. Upon receipt of the manufacturer's proposal, the subcontractor shall add his own statement agreeing to comply with the manufacturer's requirements and warranting his own workmanship.
- d. The contractor shall submit letter of endorsement and copies of all documents, including letters of comment, to the Architect for approval. In the event that the request for approval recommends a change in the work, modification of detail, or substitution of material, the contractor shall indicate his concurrence with the change as being within the scope of the contract or indicate the change in the Contract Sum for making such change, or state his objections to the change.

I.7 AIR POLLUTION CONTROL

- I.7.1 Request for approval of equipment, which may generate air pollutants, shall be accompanied by certification of compliance with approvals from all State and Local Air Pollution Control Authorities having jurisdiction.
- I.7.2 Request shall state that manufacturer has provided all information and complied with all requirements of the above agencies including requirements for in place monitoring and measurements.

I.8 INSPECTION AND TESTING

- I.8.1 In accordance with Sections of this Division applying to Laboratory Tests and Inspections, the Owner has the option to employ independent inspectors for certain portions of the Work and to have materials tested by an Independent Testing Laboratory.
- I.8.2 In addition to necessary samples of materials, manufacturer shall provide information and data required by the laboratories and inspectors for the proper performance of their work.
- I.8.3 Where certification by Independent Testing Laboratory is required to demonstrate compliance with a specified standard (ASTM, ANSI or similar), Laboratory Reports shall be dated not more than two years prior to submittal and shall refer to the issue of said standard current as of the issue date of the Contract Documents. Later issue or similar standards superseding the standards will be accepted subject approval by the Architect.

END OF SECTION

I 700 PROJECT CLOSEOUT

I.1 DESCRIPTION OF REQUIREMENTS

I.1.1 DEFINITIONS: Project closeout is the term used to describe certain collective project requirements, indicating completion of the Work that are to be fulfilled near the end of the Contract time in preparations for final acceptance and occupancy of the Work by the Owner, as well as final payment to each Trade Contractor and the normal termination of the Contract.

- a. Specific requirements for individual units of work are included in the appropriate sections in Divisions 2 through 42.

I.2 PREREQUISITES FOR SUBSTANTIAL COMPLETION

I.2.1 GENERAL: Complete the following before requesting the Construction Manager to coordinate inspections for certification of substantial completion, either for the entire Work or for portions of the Work. List known exceptions in the request.

- a. In the progress payment request that coincides with, the date substantial completion is claimed, show either 100% completion for the portion of the Work claimed as "substantially complete", or list incomplete items, the value of incomplete work, and reasons for the Work being incomplete.
- b. Include supporting documentation for completion as indicated in these contract documents.
- c. Advise Construction Manager of pending insurance change-over requirements.
- d. Submit special warranties, workmanship/maintenance bonds, maintenance agreements, final certifications, and similar documents.
- e. Obtain and submit releases enabling the Owner's full, unrestricted use of the Work and access to services and utilities. Where required, include occupancy permits, operating certificates and similar releases.
- f. Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar final record information.
- g. Deliver tools, spare parts, extra stocks of material and similar physical items to Construction Manager.
- h. Make the final change-over of locks and transmit keys to the Construction Manager. Advise the Construction Manager's personnel of the change over in security provisions.
- i. Complete start up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities and services from the project site, along with construction tools and facilities, mockups, and similar elements.
- j. Complete final cleaning up requirements, including touch-up painting of marred surfaces.
- k. Touch-up and otherwise repair and restore marred exposed finishes.
- l. Submit a statement showing an accounting of change-over requirements.

I.2.2 INSPECTION PROCEDURES: Upon receipt of the Trade Contractor's request for inspection, the Architect/Engineer will either proceed with inspection or advise the Construction Manager of unfilled prerequisites.

- a. Following the initial inspection, the Architect/Engineer will either prepare the certificate of substantial completion, or will advise the Construction Manager of work which must be performed before the certificate will be issued. The Architect/Engineer will repeat the inspection when requested and when assured that the Work has been substantially completed.

- b. Results of the completed inspection will form the initial "punchlist" for final acceptance.

I.3 PREREQUISITES FOR FINAL ACCEPTANCE

I.3.1 **GENERAL:** Complete the following before requesting the Architect / Engineer's final inspection for certification of final acceptance, and final payment as required by the General Conditions. List known exceptions, if any, in the request.

- a. Submit the final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
- b. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
- c. Submit a certified copy of the Architect/Engineer's final punchlist of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance and has been endorsed and dated by the Architect/Engineer.
- d. Submit consent of surety.
- e. Submit a final liquidated damages settlement statement, acceptable to the Owner where applicable.
- f. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

I.3.2 **REINSPECTION PROCEDURE:** The Architect/Engineer will reinspect the Work upon receipt of the Construction Manager's notice that the work, including punchlist items resulting from earlier inspections, has been completed, except for these items whose completion has been delayed because of circumstances that are acceptable to the Architect/Engineer.

- a. Upon completion of reinspection, the Architect/Engineer will either prepare a certificate of final acceptance, or will advise the Construction Manager of work that is incomplete or of obligations that have not been fulfilled, but are required for final acceptance.
- b. If necessary, the reinspection procedure will be repeated.

I.4 RECORD DOCUMENT SUBMITTALS

I.4.1 **GENERAL:** Specific requirements for record documents are indicated in the individual sections of these specifications. Other requirements are indicated in the General Conditions. General submittal requirements are indicated in the various "submittals" sections.

- a. Do not use record documents for construction purposes; protect from deterioration and loss provide access to record documents for the Architect/Engineer's reference during normal working hours.

I.4.2 **Record Drawings:** Maintain a record set contract drawings and shop drawings in a clean, undamaged condition. Mark up the set of record documents to show the actual installation where the installed work varies substantially from the work as originally shown. Mark whichever drawing is most capable of showing the actual "field" condition fully and accurately; however, where shop drawings are used for mark up, record a cross reference at the corresponding location on the working drawings. Give particular attention to concealed work that would be difficult to measure and record at a later date.

- a. Mark record sets with red erasable pencil and, where feasible, use other colors to distinguish between variations in separate categories of work.
- b. Mark up new information, which is known to be important to the Owner, but for some reason was not shown on either contract drawings or shop drawings.
- c. Note related change order numbers where applicable.
- d. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
- e. At the completion of the Trade Contractor's work, submit record sets of drawings to the Construction Manager showing all record drawing conditions.

I.4.3 RECORD SPECIFICATIONS: Maintain one complete copy of the Project Manual, including specifications addenda, bulletins, and one copy of other written construction documents such as change orders and similar modifications issued in printed form during construction. Mark these documents to show substantial variations in the actual work performed in comparison with the text of the specifications and modifications as issued. Give particular attention to substitutions, selection of options and similar information on work where it is concealed or cannot otherwise be readily discerned at a later date by direct observation. Note related record drawing information and product data, where applicable.

- a. Upon completion of the Work, submit record specifications to the Construction Manager for the Owner's records.

I.4.4 RECORD PRODUCT DATA: Maintain one copy of each product data submittal. Mark these documents to show significant variations in the actual Work performed in comparison with the submitted information. Give particular attention to concealed products and portions of the Work, which cannot otherwise be readily discerned at a later date by direct observation. Note related change orders and markup of record drawings and specifications.

- a. Upon completion of mark up, submit complete sets of record product data to the Construction Manager for the Owner's records.

I.4.5 MISCELLANEOUS RECORD SUBMITTALS: Refer to other sections of the specifications for requirements of miscellaneous record keeping and submittals in connection with the actual performance of the Work. Immediately prior to the date or dates of substantial completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to Construction Manager for the Owner's records.

I.4.6 MISCELLANEOUS MANUALS; Organize operating and maintenance data into suitable sets of manageable size. Bind data into individual binders properly identified and indexed. Unless identified otherwise, bind each set of data in a heavy duty 3 ring vinyl covered binder, with pocket folders for folded sheet information. Mark the appropriate identification on both front and spine of each binder. 3-ring vinyl covered binder, with pocket folders for folded sheet information. Mark the appropriate identification on both front and spine of each binder.

- a. Include the following types of information in operation and maintenance manuals:
 - Emergency instructions.
 - Spare parts listing.
 - Copies of warranties.
 - Wiring diagrams.
 - Recommended "turn around" cycles.
 - Inspection procedures.

- Shop drawings and product data.

2.1 EXECUTION

2.2 CLOSEOUT PROCEDURES

2.2.1 **GENERAL OPERATING AND MAINTENANCE INSTRUCTIONS:** Arrange for each installer of operating equipment and other work that requires regular or continuing maintenance, to meet at the site with the Owner's personnel to provide necessary basic instruction in the proper operation and maintenance of the entire Work. Where installers are not experienced in the required procedures, include instruction by the manufacturer's representatives.

- a. As part of this instruction provide a detailed review of the following items:
 - Maintenance manuals.
 - Record documents.
 - Spare parts and materials.
 - Tools.
 - Lubricants.
 - Fuels.
 - Identification systems.
 - Control sequences.
 - Hazards.
 - Cleaning.
 - Warranties, bonds, maintenance agreements and similar continuing commitments.
- b. As part of this instruction for operating equipment demonstrate the following procedures:
 - Start-up.
 - Shut down.
 - Noise and vibration adjustments.

2.3 FINAL CLEANING

2.3.1 **GENERAL:** Special cleaning requirements for specific units of Work are included in the appropriate sections of the specifications. General Cleaning during the regular progress of the Work is required by the General Conditions and Subcontract Agreements.

2.3.2 **CLEANING:** Provide final cleaning of the Work at the time indicated. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of work to the condition expected from a normal, commercial building cleaning and maintenance program. Comply with the manufacturer's instructions for operations.

Complete the following cleaning operations before requesting the Architect /Engineer's inspection for certification of substantial completion:

- a. Remove labels which are not required as permanent labels.
- b. Clean transparent materials, including mirrors and glass in doors and windows, to a polished condition. Remove substances, which are noticeable as vision obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
- c. Clean exposed exterior and interior hard surfaced finishes to a dust free condition, free of dust, stains, films and similar noticeable distracting substances. Leave concrete floors broom clean. Vacuum carpeted surfaces.
- d. Wipe surfaces of mechanical and electrical equipment clean. Remove excess

- lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
- e. Clean the project site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas to a broom clean condition; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even textured surface.

2.3.3 **REMOVAL OF PROTECTION:** Remove temporary protection devices and facilities, which were installed during the course of the work to protect previously, completed work during remainder of the construction period.

2.3.4 **COMPLIANCE:** Comply with safety standards and governing regulations for cleaning operation. Do not burn waste materials at site. Do not bury debris or excess materials on Owner's property. Do not discharge volatile or other harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

- a. Where extra materials of value remaining after completion of associated work have become Owner's property, dispose of these materials to the Owner's best advantage as directed.

END OF SECTION

01740 WARRANTIES

PART I - GENERAL

I.1 SUMMARY

- I.1.1 Specified Herein: Warranties and continuing services required to be provided by manufacturers of materials and systems where required for proper performance.
- I.1.2 The word "Guarantee" when appearing in any Contract Document or construction correspondence shall be defined as warranty in accordance with Article 3.5 of the General Conditions.

I.2 SUBMITTALS

- I.2.1 Submit warranties in accordance with Article 3.5 of the General Conditions as modified by Supplementary Conditions and additional requirements specified under the individual Trade Sections.
- I.2.2 Required types of warranties and additional services are scheduled and listed in the Trade Sections.
- I.2.3 In all cases where "Special Warranties" or "Service Contracts" are required, the request for approval of materials will be accepted by the Owner and the Architect on the understanding that manufacturer agrees to provide the specified warranty or other service unless stated otherwise in the request.
- I.2.4 The Owner will not be bound to accept any limitations or variations from the specified warranty, which were not filed with the request for acceptance and accepted prior to purchase of materials.
- I.2.5 Warranties shall be submitted prior to request for payment for 100% completion in each case, shall acknowledge the responsibilities defined under Supplementary Conditions and shall include:
 - a. Manufacturer's warranty that all materials comply with its published standards, comply with the requirements of the Specifications and where specified, are adequate for the proposed use.
 - b. Subcontractor's warranty that all workmanship complies with the requirements of the Specifications and of the manufacturer.
 - c. Contractor's warranty covering the entire work and accepting responsibility for all limitations imposed by the manufacturer or subcontractor except where such limitations have been previously accepted by the Architect.
 - d. Certification and verification of previously submitted information including statement of all limitations, required maintenance and similar conditions of the warranty.

I.3 STANDARD WARRANTIES

- I.3.1 A standard warranty is a warranty whose terms are essentially the same as normally

offered by the manufacturer of standard with the industry.

- I.3.2 General Conditions require that standard warranties apply as a minimum requirement notwithstanding the fact that submittal of a copy of the warranty is not required.
- I.3.3 Unless otherwise specified, a standard warranty shall be for a period on one (1) year from Date of Substantial Completion.
- I.3.4 Contractor shall obtain and furnish to the Owner from each manufacturer of materials or equipment incorporated into the Work a warranty at least as favorable to Owner as that customarily given by such manufacturer to others. Contractor shall inform itself as to any conditions precedent to the effectiveness of each manufacturer's warranty and comply with all such conditions (or obtain waivers thereof from the manufacturer) so that such warranty shall be fully effective. If any event occurs which might invalidate any manufacturer's warranty, contractor shall promptly notify the Owner and the Architect.
- I.3.5 All warranty periods shall commence on the Date of Substantial Completion except that, if it is discovered after said date that certain work or materials were not in fact in conformance with the requirements of the Contract Documents, the applicable warranty period shall re-commence from the completion of the repair or replacement of such Work to make it so conform.
- I.3.6 The fact that a manufacturer's warranty differs in its terms from those of the contractor or any subcontractor, the acceptance by the Owner of any warranty of a manufacturer or subcontractor, or the fact that the Owner has claimed initially on such warranty, shall not in any way release contractor from his warranty obligations under the contract.

I.4 SPECIAL WARRANTIES

- I.4.1 A special warranty is one whose terms, in addition to the standard coverage offered by the manufacturer, contain other special provisions, including:
 - a. Acknowledgment of specified list of items, which shall be specifically noted as being covered by the warranty.
 - b. Acknowledgment of specific conditions for use or exposure.
 - c. Extension of warranty to waive standard exceptions or to extend limits including time.
 - d. Requirements for specific performance by other trades including method of separation and protection from, or assurance of compatibility with, adjacent materials.
 - e. Assemblies and systems, which may include products of other manufacturers.
 - f. Conditions where certain performance criteria are specified and must be either acknowledged or actual limits are required to be determined by performance testing subject to Owner's review and acceptance.
 - g. Conditions where manufacturer's continuing involvement such as maintenance or advisory service is required.

I.4.2 Maintenance Service During Warranty Period:

- a. Reference to routine maintenance required to be performed by the Owner during

the warranty period shall be listed in the original submittal of proposed warranty.

- b. All other administration and maintenance service required during the warranty period, including installation of items repaired or replaced under the terms of the warranty shall be included in the original Contract.

I.5 SERVICE CONTRACTS

- I.5.1 Required types of Service Contract Proposals are scheduled under Schedule or Required Submittals and are listed in the Trade Sections.
- I.5.2 Where specified, the subcontractor or manufacturer originally supplying services and skills required for proper maintenance and agreeing to maintain availability of replacement parts and materials.
- I.5.3 The Service Contract is in addition to, and independent of, the Warranty and shall not act to either extend the Warranty or to reduce the contractor's responsibilities thereunder.
- I.5.4 Unless otherwise specified or agreed, Service Contracts shall be written for a period of five (5) years starting with the termination of similar services included under the warranty and shall include cancellation privilege annually when exercised at least 60 days prior to anniversary date.
- I.5.5 The contractor shall:
 - a. Prior to submittal of manufacturer of subcontractor for approval, verify that specified service is available and will be offered.
 - b. Secure from the manufacturer of subcontractor a bona fide proposal to perform the specified services.
 - c. When so directed, assist the Architect in obtaining proposals for the performance of the specified services by other competent parties.

I.6 ADVISORY AND INSPECTION SERVICE

- I.6.1 Advisory and Inspection Service consists of:
 - a. Periodic inspection on a regular scheduled basis. Include schedule of proposed inspections of the agreement.
 - b. All necessary information, including special training, where required to adequately instruct Owner's maintenance personnel in preventive maintenance repairs and treatments. If such maintenance work is recommended:
 - 1) Obtain or submit price quotations for recommended work.
 - 2) When so instructed by the Owner, make all necessary arrangements for the performance of the Work.

I.6.2 Parts and Materials Agreement:

- a. Where standard commercially available parts of materials are suitable for maintenance or repair, inform Owner concerning trade name or description and location where they may be obtained.
- b. Where parts or materials are not readily available maintain replacement stocks at a location as required to prevent undue delay in repairs or loss of use of equipment pending delivery.

I.7 MAINTENANCE SERVICE

- I.7.1 A Maintenance Service Contract is an agreement that in addition to Advisory and Inspection Service, the Manufacturer will provide, or otherwise make available through his agent, a regular maintenance service program scheduled during normal working hours.
- I.7.2 Proposals shall schedule proposed times for servicing and list the services to be performed.
- I.7.3 Maintenance service of equipment shall be performed solely by the original Equipment Contractor and shall not be assigned or transferred to any agent or subcontractor without the approval of the Owner.
- I.7.4 Repairs:
 - a. Permanent repairs shall be started within seven (7) days after notification by the Owner.
 - b. In the event that emergency and permanent repairs are not started within the specified time limits, or if the work is stopped without the Owner's consent, the Owner shall have the same options to have repairs performed by others as specified under Warranties without invalidating this agreement.
- I.7.5 Equipment maintenance shall include systematic examinations, and adjustments and lubrication of all equipment. The Equipment Maintenance Contractor shall repair and replace electrical and mechanical parts whenever required using only genuine standard parts recommended or produced by the manufacturer of the equipment.
- I.7.6 Addition work when so directed by the Owner shall be included under the work of the Maintenance Contract and the Contractor shall be reimbursed at the current prevailing rate for the cost of materials, labor and services. Such additional work shall include:
 - a. Repairs or replacement required as a result of negligence, abuse, or other actions contrary to the Equipment Contractor's operating instructions.
 - b. Improvement or additional equipment required by the Owner, Insurance Companies, or Governmental Authorities.
 - c. Except for emergency service, the additional cost for overtime work based on the difference between regular and overtime labor when the Owner requests that such work be performed outside of regular working and so authorized in writing.

- I.7.7 Additional requirements for specific maintenance contracts are specified in the various Trade Sections.

I.8 EMERGENCY CALL-BACK SERVICE

- I.8.1 Emergency Call-Back Service is an agreement to provide rescue and repair service on an emergency basis where required for the protection of life and property.
- I.8.2 Owner's agreement to permit manufacturers to assign agreement to an agent does not relieve manufacturer of responsibility to verify that service remains available for the specified time.
- I.8.3 Agreement shall remain in effect for the lifetime of all Warranties, Service Contracts and for such longer time as may be specified or agreed.
- I.8.4 Service shall be available on a 24 hour, 7-day basis and shall be performed within the following time limit after notification of emergency unless otherwise specified. Maintain emergency telephone number on file with the Owner for nights and weekends.

I.9 CERTIFICATION

- I.9.1 Product Certification: See Division I, Section titled "Material and Equipment".
- I.9.2 Workmanship Certification is a statement by the applicator or installer that all materials and workmanship in connection with the system have been furnished and installed in complete conformance with Contract Documents, and with the manufacturer's specifications and requirements for the particular type of use specified.
- I.9.3 A product certification where specified as a requirement shall be in a form similar to the following:

"We, the (Manufacturing Company), certify that the complete system as detailed and specified can be installed and will perform in accordance with the requirements of the specifications and the ASTM Standards referenced therein for the guarantee period of one year or such longer period as may be negotiated between the Owner and the (Manufacturing Company).

Upon completion of the Project we will inspect the work and certify to the Owner that the system as installed is in accordance with the Manufacturer's requirements or indicated in writing what remedial action is necessary in order that it does so conform."

END OF SECTION

017419 CONSTRUCTION WASTE MANAGEMENT

PART I - GENERAL

I.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division I Specification Sections, apply to this Section.
- B. 017419-1 TCC Waste Management Plan
- C. 017419-2 TCC LEED Misc Waste Diversion Form

I.2 SUMMARY

- A. This Section includes administrative and procedural requirements for the following:
 - 1) Salvaging non-hazardous demolition and construction waste.
 - 2) Salvaging Site Furnishings for owner's future use.
 - 3) Disposing of non-hazardous demolition and construction waste.
 - 4) Disposing of hazardous demolition and construction waste.
- B. Related Sections include the following:
 - 1. Division I Section "Summary of Multiple Contracts" for coordination of responsibilities for waste management.
 - 2. Division I Section "Temporary Facilities and Controls" for environmental-protection measures during construction, and location of waste containers at Project site.
 - 3. Division 02 Section "Structure Demolition" for disposition of waste resulting from demolition of buildings, structures, and site improvements[, and for disposition of hazardous waste].
 - 4. Division 02 Section "Selective Structure Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements.
 - 5. Division 04 Section "Unit Masonry" for disposal requirements for masonry waste.
 - 6. Division 04 Section "Stone Masonry" for disposal requirements for excess stone and stone waste.
 - 7. Division 31 Section "Site Clearing" for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.

I.3 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

I.4 PERFORMANCE REQUIREMENTS

- I. Demolition Waste:
 - a. Asphaltic concrete paving.
 - b. Concrete.
 - c. Concrete reinforcing steel.
 - d. Brick.
 - e. Concrete masonry units.
 - f. Wood studs.
 - g. Wood joists.
 - h. Plywood and oriented strand board.
 - i. Wood paneling.
 - j. Wood trim.
 - k. Structural and miscellaneous steel.
 - l. Rough hardware.
 - m. Roofing.
 - n. Insulation.
 - o. Doors and frames.
 - p. Door hardware.
 - q. Windows.
 - r. Glazing.
 - s. Metal studs.
 - t. Gypsum board.
 - u. Acoustical tile and panels.
 - v. Carpet.

- w. Carpet pad.
 - x. Demountable partitions.
 - y. Equipment.
 - z. Cabinets.
 - aa. Plumbing fixtures.
 - bb. Piping.
 - cc. Supports and hangers.
 - dd. Valves.
 - ee. Sprinklers.
 - ff. Mechanical equipment.
 - gg. Refrigerants.
 - hh. Electrical conduit.
 - ii. Copper wiring.
 - jj. Lighting fixtures.
 - kk. Lamps.
 - ll. Ballasts.
 - mm. Electrical devices.
 - nn. Switchgear and panel boards.
 - oo. Transformers.
2. Construction Waste:
- a. Masonry and CMU.
 - b. Lumber.
 - c. Wood sheet materials.
 - d. Wood trim.
 - e. Metals.
 - f. Roofing.
 - g. Insulation.
 - h. Carpet and pad.
 - i. Gypsum board.
 - j. Piping.
 - k. Electrical conduit.
 - l. Packaging:
 - 1) Paper.
 - 2) Cardboard.
 - 3) Boxes.
 - 4) Plastic sheet and film.
 - 5) Polystyrene packaging.
 - 6) Wood crates.
 - 7) Plastic pails.

I.5 ACTION SUBMITTALS

- A. Comply with Section 017419.1 Waste Management Project Specific Plan or submit an equally comprehensive Waste Management Plan.

1.6 INFORMATIONAL SUBMITTALS

- A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit three copies of report. Include the following information:
 - 1. Material category.
 - 2. Generation point of waste.
 - 3. Total quantity of waste in tons.
 - 4. Quantity of waste salvaged, actual in tons.
 - 5. Quantity of waste recycled, actual in tons.
 - 6. Total quantity of waste recovered (salvaged plus recycled) in tons.
 - 7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- B. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- C. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- D. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- E. Qualification Data: For Waste Management Coordinator and refrigerant recovery technician.
- F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.7 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division I Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
 - I. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.

2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

I.8 WASTE MANAGEMENT PLAN

- A. General: Comply with Section 017419.1 Waste Management Project Specific Plan in the following section, or submit an equally comprehensive Waste Management Plan.
- B. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:
 1. Total quantity of waste.
 2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
 3. Total cost of disposal (with no waste management).
 4. Revenue from salvaged materials.
 5. Revenue from recycled materials.
 6. Savings in hauling and tipping fees by donating materials.
 7. Savings in hauling and tipping fees that are avoided.
 8. Handling and transportation costs. Include cost of collection containers for each type of waste.
 9. Net additional cost or net savings from waste management plan.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

I.1 PLAN IMPLEMENTATION

- A. General: Implement waste management plan as approved by Construction Manager. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 1. Comply with Division I Section "Temporary Facilities and Controls" for operation, termination, and removal requirements.
- B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.

- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
 - 1. Distribute waste management plan to everyone concerned within three days of submittal return.
 - 2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 - 2. Comply with Division I Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

I.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until installation.
 - 4. Protect items from damage during transport and storage.
 - 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- B. Salvaged Items for Sale and Donation: Not permitted on Project site.
- C. Salvaged Items for Owner's Use:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area designated by Owner.
 - 5. Protect items from damage during transport and storage.
- D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.
- E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.
- F. Plumbing Fixtures: Separate by type and size.
- G. Lighting Fixtures: Separate lamps by type and protect from breakage.

- H. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

I.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to contractor.
- C. D. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
- D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
 - I. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
 - a. Inspect containers and bins for contamination and remove contaminated materials if found.
 - 2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
 - 4. Store components off the ground and protect from the weather.
 - 5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

I.4 RECYCLING DEMOLITION WASTE

- A. Asphaltic Concrete Paving: Grind asphalt to maximum 1-1/2-inch size.
 - I. Crush asphaltic concrete paving and screen to comply with requirements in Division 2 Section "Earthwork" for use as general fill.
- B. Asphaltic Concrete Paving: Break up and transport paving to asphalt-recycling facility.
- C. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
- D. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

- E. Metals: Separate metals by type.
 - 1. Structural Steel: Stack members according to size, type of member, and length.
 - 2. Remove and dispose of bolts, nuts, washers, and other rough hardware.
- F. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.
- G. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.
- H. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.
 - 1. Separate suspension system, trim, and other metals from panels and tile and sort with other metals.
- I. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
 - 1. Store clean, dry carpet and pad in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- L. Carpet Tile: Remove debris, trash, and adhesive.
 - 1. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- M. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
- J. Conduit: Reduce conduit to straight lengths and store by type and size.

I.5 RECYCLING CONSTRUCTION WASTE

I.6 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.

- C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION

SECTION 018119 – INDOOR AIR REQUIREMENTS

PART 1 – GENERAL

1.2. SECTION INCLUDES

- A. Overview of indoor air quality requirements and procedures, including product/material selection.

1.3. DEFINITIONS

- A. Volatile Organic Compounds (VOCs): Organic chemicals that produce vapors readily at room temperature and normal atmospheric pressure (e.g. gasoline, solvents, etc.). VOCs react with sunlight and nitrogen to form ground-level ozone, a chemical that has detrimental effect on human health, agricultural crops, forests, soil, groundwater and ecosystems.
- B. Carpet and Rug Institute (CRI) Green Label: a program established by the national trade association representing the carpet and rug industry to identify carpet products that have been tested by an independent laboratory and have met the criteria for low VOC emissions.

1.4. REFERENCES

- A. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA). IAQ
 - a. Guidelines for Occupied Buildings Under Construction. Second Edition, 2007.
- B. ASHRAE. ANSI/ASHRAE 52.2-1999: Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.
- C. EPA. EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air.
- D. State of California. South Coast Air Quality Management District (SCAQMD) Rule 1168. January 2005 (as amended).
- E. State of California. South Coast Air Quality Management District (SCAQMD) Rule 1113. January 2004 (as amended).
- F. Green Seal. Paints (GS-11). January 1997. May 1993.
- G. Green Seal. Anti-Corrosive Paints (GC-03). January 1997.
- H. U.S. Green Building Council. "Indoor Environmental Quality Credit 3: Construction IAQ
 - a. Management Plan and Credit 4: Low-Emitting Materials" Leadership in Energy and Design
 - b. Environmental Design Reference Guide for Green Building Design and Construction, 2009 Edition. USGBC. "Materials & Resources Credit 2: Construction Waste Management". Leadership in Energy and Environmental Design Reference Guide for Green Building Design and Construction, 2009 Edition.
- I. California Department of Health Services Standard Practice for the Treating of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

1.5. OBJECTIVES

- A. Meet or exceed the recommended Design Approaches of the Sheet Metal and Air Conditioning Contractors National Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 2nd Edition, 2007, Chapter 3.
- B. Protect construction workers and future building occupants from indoor air quality problems resulting from construction activities and building materials.

- C. Reduce the production and circulation of pollutants during construction.
- D. Protect equipment and absorptive materials stored and installed on-site from moisture, dust and dirt accumulation during construction.
- E. Prepare the building for occupancy following construction and prior to occupancy.

1.6. DESCRIPTION OF WORK

- A. The site superintendent (or other person designated by the Contractor) shall be responsible for all aspects of LEED coordination during construction related to indoor air quality management.
- B. Reference 018119-1 TCC Indoor Air Quality Management Plan – During Construction for the required Best Management Practices for Contractors and Sub-Contractors.

1.7. LEED START-UP MEETING

- A. Prior to mobilization on-site, the Contractor shall hold a start-up meeting with the Architect to review indoor air quality management requirements. This meeting shall include a review of:
 - 1. Indoor air quality management objectives.
 - 2. Indoor air quality management requirements and procedures.
 - 3. Indoor air quality management documentation and submittals.

1.8. LEED COORDINATION MEETING

- A. Prior to start of construction, the Contractor (in conjunction with the Architect) shall hold a coordination meeting with the construction team to explain the indoor air quality management requirements to the Sub-Contractors. This meeting shall include a review of:
 - 1. Indoor air quality management objectives.
 - 2. Indoor air quality management requirements and procedures.
 - 3. Indoor air quality management documentation and submittals.

1.9. SUBMITTALS

- A. Product VOC Identification
 - 1. Collect supporting documentation (MSDSs, product data sheets, letter from manufacturers, etc.) to document VOC emission rates for all adhesives, sealants, paints and coatings that are applied onsite and fall within the building weather barrier.
 - 2. Submit completed supporting product literature to the Contractor and Or Architect for review at least 14 days prior to ordering.
- B. Low Emitting Flooring Systems
 - 1. Collect supporting documentation (letters from manufacturers, product literature, etc.) for all carpet and hard surface flooring products used in the building.
 - 2. Submit completed supporting product literature to the Contractor and Or Architect for review at least 14 days prior to ordering..
- C. IAQ Management Inspection Log
 - 1. Contractor / Subcontractor shall keep a completed log. The log shall commence when the building is enclosed and carry through to building turnover.
- D. Photo Documentation Checklist
 - 1. Photographs shall be provided as specified in the checklist.
 - 2. Photographs will be taken on **six** different occasions during construction to prove continuous compliance.

2. PART 2 - PRODUCTS

2.1. GENERAL

- A. The VOC content limits listed in this section may be amended from time to time by their governing bodies. In the event that the VOC limits listed below are higher than the VOC limits in effect at the date of application for building permit, the VOC limits in effect at the date of application for building permit shall be used.
- B. Reference SECTION 016119 LEED PRODUCT REQUIREMENTS for product Indoor Air Quality / Emission requirements and acceptable levels.

3. PART 3 - EXECUTION

3.1. POLLUTANT SOURCE IDENTIFICATION

- A. Identify potential sources of indoor air pollutants on the construction site.
- B. Any construction activity or material that produces odor and/or dust is considered a source of air pollutants. Pollutant sources include, but are not limited to:
- C. Materials that produce detectable odor:

Paints	Coatings	Grouts
Stains	Adhesives	Epoxy Flooring
Sealants	Caulking	Solvents
Pesticides	Fuels	Cleaning Products

- D. Materials that create dust:

Concrete Products	Drywall	Wood Products
Acoustical Ceiling Tile	Insulation	Ceramic Tile

- E. Equipment that emit products of combustion or create odor and/or dust:

Generators	Compressors	Cutting Tools / Saws
Touché / Welders	Vehicles	Portable Heaters

- F. Construction activities that disrupt pollutants:

Demolition	Repair	Renovation
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- G. Other

Demolition	Repair	Renovation
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3.2. MINIMIZE POLLUTANTS

- A. Reference 018119-1 TCC Indoor Air Quality Management Plan – During Construction
- B. Additional measures include but are not limited for the minimization of pollutants generated inside the building from the sources identified under article 3.1:
 - 1. Smoking shall be prohibited inside the building at all times during construction and within 25 feet of building entrances once enclosed.
 - 2. Fuelling up equipment outside the building.
 - 3. Storing gasoline or solvents outside the building.
 - 4. Restricting outdoor vehicular/equipment traffic and operation where emissions can enter the building.
 - 5. Reducing on-site emissions by using equipment that burns propane/natural gas or is powered by electricity.
 - 6. Exhausting pollutant sources directly outside using temporary or permanent ventilation equipment. Where exhaust is not feasible, locally re-circulate air through a portable air cleaner.
 - 7. Collecting and bagging sawdust from woodworking tools.

8. Covering and/or sealing all indoor sources of odor and dust.
9. Using painting techniques that minimize odor (e.g roller instead of spraying).
10. Using cleaning practices that minimize dust (e.g. vacuum instead of sweeping).
11. Using cleaning products that minimize pollution, fumes, VOC's, etc.
12. Prohibiting the burning of garbage.

3.3. HOUSEKEEPING MEASURES

- A. Prevent the accumulation of moisture, dust and dirt in the building from the sources identified under article 3.1 using the following measures:
 1. Frequently cleaning interior surfaces to minimize dust and dirt accumulation.
 - a)Note: Localized cleaning should occur immediately after a construction activity is completed and/or at the end of each day. A full building clean-up must be performed at least once a week.
- B. Promptly clean all spills (fuels, lubricants, paints, adhesives, etc.).
- C. Clean or remove excess products.
 1. All Pollutant Containment, Housekeeping and HVAC protection measures will be reviewed by the Contractor and / or Architect during site visits.
 - a) All deficiencies identified by the Contractor and / or Architect must be remedied and documented in the IAQ Management Inspection Log within 48 hours of notification.
 - b) The Contractor shall clean or replace any equipment or materials that is incorrectly stored or improperly protected at no extra cost to the contract.

3.4. REMOVAL OF PROTECTION MEASURES

- A. All products/materials installed as a part of indoor air quality management measures shall be removed prior to building turnover. Any remedial work required as a result of removing the measures is the responsibility of the Contractor.

END OF SECTION 018119



TECHNICAL SPECIFICATION FOR ASBESTOS REMEDIATION

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BDN Inspection Project No.: P25-00966
BDN Specification Project No.: P25-01012

4/9/2025

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1.0 Bidder Submittals

- 1.1 The Contractor shall submit a base bid and any alternates and unit prices for the asbestos abatement as outlined in the scope of work section, as described in these project specifications. (Appendix A).
- 1.2 The Contractor shall provide a work schedule detailing the number of days the abatement will take, the length of shifts, and the number of workers per shift to complete the scope of work outlined within this bid specification (Appendix A).

2.0 Contractor Submittals

The successful bidder shall provide the following information to BDN and the owner's representative (GC/CM) prior to commencing any tasks related to this project. These tasks include area preparation, equipment mobilizing, etc. Additional submittals may be required for the Construction Manager, upon award.

2.1 Asbestos

1. Michigan Abatement Contractor's License
2. Proof that each of the employees assigned to this project has completed a physical complete with chest X-rays and pulmonary functions testing
3. Copies of Michigan Asbestos Abatement Supervisor and Asbestos Abatement Worker Accreditation Cards as issued by the Michigan Department of Labor and Economic Opportunity. Accreditation(s) must remain current for the duration of the project.
4. Current Proof of Asbestos Worker Training or Asbestos Supervisor Training
5. Proof that non-asbestos workers assigned to this project (for general labor, bag-out, etc.) have received 2-hour asbestos awareness training
6. Proof of employee respirator training and most recent fit test certification
7. Copies of the Environmental Protection Agency (EPA) and/or designated state agencies Notification of intent to Demolish as required under 40 CFR 61.22 (d).
8. Detailed work plan describing the number of employees who will be assigned to the project, the schedule (start and completion dates and times for each of the floors), equipment to be used within the work area, equipment, and recyclable materials decontamination, fire prevention procedures, and methods of removal of ACM. **This document will be reviewed and signed off prior to work commencing.**
9. Name and address of landfill proposed by Contractor.



2.2 General (if requested)

1. Written HAZCOM program and proof of employee training for working around ACM
2. Written confined space entry program and proof of employee training (if appropriate)
3. Written hot work program and proof of employee training (if burning is anticipated)
4. A written respiratory protection program
5. SDSs for all materials brought on-site before they're used
6. A written silica exposure control program
7. Proof of employee Drug Testing Program.

3.0 Project Conditions

3.1 Asbestos Project Contact:

BDN Industrial Hygiene Consultants, Inc., will provide an asbestos project manager for the project and can be reached at:

BDN Industrial Hygiene Consultants, Inc.
8105 Valleywood Lane, Portage, MI 49024
269-329-1237

3.2 Asbestos

Removal shall not occur until the 10-day notification has taken effect. Before asbestos abatement activities start, the Contractor **SHALL**:

1. Isolate the abatement area from all other areas of the Building. The Contractor shall isolate and seal all air ducts, doors, hallways, and other openings into the abatement area.
2. Post warning signs and barrier tape at all entrances or openings to the removal area in accordance with applicable regulations.

Provide in accordance with 29 CFR 1910.1001(f) of OSHA's Asbestos standard:

**DANGER
ASBESTOS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
AUTHORIZED PERSONNEL ONLY**

In addition, where the use of respirators and protective clothing is required in the regulated area, the warning signs shall include the following:

WEAR RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING IN THIS AREA

3. Construct a decontamination area, per regulations and require that all non-emergency access to the abatement be limited through the decontamination area. The location of the decontamination area shall be determined by the Contractor with the approval of the BDN representative on site.
4. The Contractor shall supply a sufficient number of Air Filtration Devices (AFD) to provide a minimum of 4 air changes per hour and negative pressure of .02" water column in the project areas where required, and must be measured by appropriate devices.
5. The Contractor shall assume full responsibility for the conduct of each of his employees, including subcontractors, while under contract for this project. Absolutely no employee will be allowed on the premises while under the influence of alcohol, controlled substances, or prescription medication, which may impair the employee in any way. This site will require additional background checks and fingerprinting prior to your first day on site.
6. The Contractor shall establish emergency and fire exit routes from the work area. Emergency response personnel (fire, police, and emergency technicians) shall have immediate access to the work area. In an emergency, preservation of life and treatment of seriously injured workers shall have priority over decontamination.
7. The Contractor shall faithfully comply with all federal, state, and local laws, standards, and regulations while carrying out this project.
8. The Contractor will provide and make all arrangements necessary to access utilities on site:
 - a) Access to sufficient electrical power shall be provided by the Owner.
 - b) Access to sufficient cold running water for decontamination and water for asbestos removal shall be provided by the Owner. The Contractor is responsible for supplying hot water for the purpose of decontamination. The Contractor shall ensure all residual water used in abatement or worker decontamination is filtered and disposed of appropriately.
9. Damage to the Owner's services or property caused as a result of the Contractor's actions shall be repaired to the Owner's satisfaction. All expenses resulting from repairs of damage shall be at the Contractor's expense.
10. The Contractor shall ensure that the dumpsters maintained on-site are locked at all times when not attended. In addition, the dumpsters shall have a hardtop and be appropriately labeled.
11. All waste shall be transported to an Owner-approved landfill.

3.3 Contractor Responsibilities

1. The Contractor shall provide all items, articles, materials, operations, or methods listed, required to be furnished or accomplished by reason of the plans or any other Contract Documents, including all labor, materials, equipment, and incidentals required or necessary for their completion.
2. Should any error or inconsistency be found by the Contractor in the Specifications or drawings, the Contractor shall contact BDN and the Construction Manager before proceeding with the work for proper adjustment. In no case shall work proceed until so authorized.
3. The Contractor shall be held to provide all labor and materials necessary for the entire completion of the work described in the Bid Documents and reasonably implied therefrom.
4. **Quantities listed in this document are for general information only and will not relieve the Contractor from the removal of all asbestos materials under their quoted price.**
5. A copy of the waste manifest shall be submitted to BDN and the owner or owner's representative following completion of the project.

4.0 General Project Conditions

4.1 Legal Requirements

1. The Contractor shall be licensed for asbestos abatement work in the State of Michigan as required by Michigan Public Act 55, effective June 8, 1993.
2. The Contractor shall use only employees who have received health and safety training, which, as a minimum, fulfills the training required by Michigan Public Act 147 (1986) and OSHA 29 CFR 1926.62.
3. The Contractor shall furnish all labor, supervision, materials (lien-free), employee training, employee physicals, insurance, and equipment necessary to carry out asbestos abatement procedures in accordance with OSHA, EPA, MIOSHA, and other applicable federal, state, and local government regulations.
4. The Contractor shall obtain prior approval to deposit asbestos-containing wastes at an Owner approved landfill.
5. The Contractor shall provide project notification to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and Michigan Department of Labor and Economic Opportunity (MLEO), Asbestos Programs at least 10 days prior to commencement of asbestos abatement work if required.



4.2 Referenced Standards

1. OSHA:

U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA), including:

Occupational Exposure to Asbestos, Tremolite,
Anthophyllite, and Actinolite; Final Rules
Title 29, Part 1910, Section 1001 and
Part 1926, Section 1101 of the
Code of Federal Regulations

Respiratory Protection
Title 29, Part 1910, Section 134 of the
Code of Federal Regulations

Construction Industry
Title 29, Part 1926, of the
Code of Federal Regulations

Subpart J, Fire Prevention
Title 29, Part 1926

Subpart T, Demolition
Title 29, Part 1926

Access to Employee Exposure and Medical Records
Title 29, Part 1910, Section 2 of the
Code of Federal Regulations

Hazard Communication
Title 29, Part 1910, Section 1200 of the
Code of Federal Regulations

Specifications for Accident Prevention Signs and Tags
Title 29, Part 1910, Section 145 of the
Code of Federal Regulations

2. EPA:

U. S. Environmental Protection Agency (EPA), including but not limited to:

National Emission Standard for Hazardous Air Pollutants (NESHAPS)
National Emission Standard for Asbestos
Title 40, Part 61, Sub-part A, and Sub-part M (Revised Sub-part B) of the
Code of Federal Regulations



3. DOT:

U. S. Department of Transportation, including but not limited to:

Hazardous Substances
Title 29, Part 171 and 172 of the
Code of Federal Regulations

4. State Requirements:

MIOSHA Rule 2205

Michigan Public Act 55

Michigan Public Act 147

Michigan Public Act 440

5. Local Requirements:

Abide by all local requirements which govern asbestos abatement work or hauling and disposal of asbestos waste materials.

6. Contractor Responsibility:

The Contractor shall assume full responsibility and liability for the compliance with all standards pertaining to work practices, hauling, disposal, and protection of workers, visitors to the sites, and persons occupying areas adjacent to the sites.

4.3 Worker Protection

1. All individuals entering the removal area during the project must comply with OSHA standard 29 CFR 1910.134 respiratory protection, including the selection of an approved respirator with HEPA filters or an approved supplied-air respirator. The individuals must have passed a medical examination as specified in the respiratory standard, must have completed a pulmonary function test, must have their doctor's permission to engage in activities while wearing a respirator, and must have passed a respiratory fit test as specified in 29 CFR 1910.134.
2. Any facial hair that interferes with the fit of a negative pressure respirator must be removed before the individual dons the respirator.
3. The minimum respiratory protection for workers shall be a half-mask air-purifying respirator equipped with HEPA filter cartridges approved by the National Institute for Occupational Safety and Health (NIOSH).



4. The Contractor shall have established a respirator usage program as specified in 29 CFR 1910.134, and shall have proof of formal employee training in respirator usage.
5. The Contractor shall have a sufficient quantity of replacement HEPA respirator filter cartridges stored on the worksite and shall be easily accessible to workers and Consultants.
6. The Contractor shall enforce proper worker decontamination and cleaning of worker respirators each time they exit the work area.
7. The Contractor shall keep a bound, written, and dated log of employees, regulators, and any other persons who enter the work area wearing respirators. The log shall be kept on-site at or near the enclosure for periodic review or with Project documents held by the project supervisor.
8. Should air sampling indicate that the airborne asbestos fiber concentration within the restricted area is in excess of the safe allowable limits for the respiratory protection worn, the Contractor shall provide for his/her employees with respiratory protection that will allow for safe working conditions.
9. The Contractor shall communicate the results of the air sampling to his/her employees by posting the air sampling results on the job site or in writing within 24 hours.
10. In the event the results of the personal breathing zone samples exceed the Permissible Exposure Limit (PEL) of 0.10 fibers/cc for asbestos, work will be stopped until the cause can be isolated.
11. Asbestos abatement personnel shall wear a powered air-purifying respirators (PAPR) respiratory protection until sufficient data has been collected through personal breathing zone sampling to assure the method of removal does not result in airborne concentrations in excess of the restrictive limits of the respirator. Respiratory protection requirements may be relaxed to negative pressure respirators when sufficient data has been generated and at the approval of the on-site industrial hygienist.
12. Workers shall wear disposable full-body coveralls, head covers, and appropriate footwear in the removal area. Reusable footwear (i.e., boots) may be left in the dirty room of the removal area between workdays, but must be either disposed of with other contaminated wastes or decontaminated thoroughly before removal from the dirty room.
13. The Contractor shall provide gloves, hard hats, goggles or safety glasses, and other personal protective equipment as may be appropriate for use by workers on the project site.

4.4 Worker Decontamination

1. The Contractor shall construct and isolate a decontamination area in accordance with 29 CFR 1926 Appendix F.



2. **Contractor's employees shall remove street clothes in the clean/changing room**, and dress in disposable coveralls, head covers, foot covers, and respiratory protection prior to entering negative pressure enclosure work areas.
3. When workers leave the work area, they shall remove their head coverings, disposable coveralls, and foot coverings in the "dirty" or "equipment" room, and while wearing a respirator, proceed to the shower. Respirators shall be removed while showering with Soap and water.
4. Because cold water showers discourage thorough worker decontamination, the Contractor must provide showers with water of at least 70 degrees Fahrenheit with independently adjustable hot and cold water controls for worker decontamination. The Contractor shall provide a portable water heater.
5. Workers shall shower as a minimum:
 - a. before lunch
 - b. at the end of each workday
 - c. any other time the worker leaves the contaminated area.

4.5 Prohibited Activities

Smoking, drinking, eating, or chewing gum or tobacco inside the contaminated area and surrounding work areas are prohibited. The Contractor shall immediately release any individual of the privilege of working on the project if the individual is smoking, eating, drinking, or chewing tobacco or gum inside the work area.

4.6 On-Site Industrial Hygienist Responsibilities

1. The Owner will contract with an industrial hygiene company such as BDN as the neutral third party to conduct air monitoring and assure Contractor compliance with applicable asbestos abatement standards, regulations, and procedures. Air monitoring procedures shall follow the NIOSH 7400 A method (third revision of May 19, 1989) and Appendix A of 29 CFR 1926.1101 (Construction standard) for asbestos. Air samples shall be collected, as stated below.
 - a. Background, baseline, or pre-abatement samples may be collected prior to the start of area preparation.
 - b. General (clean) area samples will be collected outside the restricted area to verify that the engineering controls established on this project are effective in preventing the spread of airborne asbestos fibers to uncontaminated areas. In the event that general area samples obtained outside the enclosure but in the regulated area are equal to or exceed 0.05 fiber/cc, work inside the removal area will cease. The cause will be identified and corrected before allowing the Contractor to resume the asbestos abatement activities.



- c. Personal breathing zone samples from personnel performing representative work activities/tasks within restricted areas will be collected. Verification of personal breathing zone samples can be taken at its discretion. Sample results shall be displayed within 24 hours of collection. If the airborne fiber concentration is in excess of the PEL, the Contractor shall document the steps taken to control and minimize the levels of airborne asbestos fibers. This monitoring does not relieve the Contractor of their OSHA responsibilities.
- d. Clearance samples shall be collected only after the on-site IH, and a representative of the Contractor has performed a visual examination on the removal area. If asbestos is detected subsequent to clearance sampling, the ACM shall be removed. Additional clearance samples may be required.

4.7 Negative Pressure Enclosure

- 1. The Contractor shall isolate the project areas from the remainder of the Building. Each area shall be pre-cleaned, and any suspect ACM and/or ACM debris found on ceilings, floors, or ledges shall be wetted and removed with the use of a HEPA vacuum prior to erecting the enclosure. The on-site IH shall inspect the integrity of the Contractor's barriers prior to the start of abatement in each area. The Contractor shall isolate work areas for the duration of the project by completely sealing off all openings to the area. Sealing of openings and fixtures of the work area shall include, but not be limited to, heating and ventilation ducts and openings, attic ventilation ducts extending downward into the floor, doors, windows, skylights, and lighting, electrical panels, and conduit openings. Sealing shall be accomplished with **6 mil polyethylene sheeting** or equivalent, taped, or glued into place. Enclosure walls shall be constructed of two layers of polyethylene sheeting taped into place. The floors of the enclosures shall be constructed of two layers of 6-mil polyethylene sheeting, or equivalent, taped, or glued into place. The Contractor is responsible for cleaning any glue or tape residue from any surface following the completion of the work.
- 2. If contaminated, movable objects are located within the removal area, the Contractor shall, while setting up the restricted area, vacuum, clean, and remove these from the removal area.
- 3. Airlocks for entrance in and out of the work area shall be constructed of 6 mil polyethylene sheeting and wooden or metal framing. The airlocks shall be contiguous from the work area, to the equipment (dirty) room, to the shower area, to the clean (change) room.
- 4. The Contractor shall provide ventilation controls that facilitate the movement of airborne fibers away from the worker in all removal areas. The equipment used for such ventilation controls shall have HEPA filters for filtering exhaust air that shall be exhausted to the outdoors unless otherwise directed by the Owner. In each restricted area, ventilation controls shall operate continuously throughout the project until final clearance sampling levels are attained.
- 5. The Contractor shall post lawfully required notification of asbestos removal, Contractor license, and training certificate of the Contractors personnel trained in the requirements of



the NESHAP standard adjacent to the entrance of the removal area, and to any other points of access to the work area.

6. It is the Contractor's responsibility for site security unless otherwise stated. The Contractor will follow all requirements of the Ingham County Jail's security program.

4.8 Methods of Asbestos Removal Within the NPE

1. Removal of all asbestos shall be with wet methods. All asbestos surfaces shall be sprayed with water and an acceptable wetting agent. A fine spray of this solution shall be applied to prevent fiber liberation preceding removal; fine spraying of surfaces shall be continued to minimize employee exposure.
2. Asbestos-containing materials shall be removed and placed into 6 mil, labeled bags while still wet. Bags will be labeled with legally required hazard warnings, sealed, washed, and placed into a second 6 mil, labeled, polyethylene bag, and must be labeled and sealed in accordance with federal and state regulations. (See asbestos waste disposal requirements)
3. Asbestos-containing material shall not be removed with power tools unless attached to a HEPA filtration unit.
4. All equipment used during removal shall be properly decontaminated prior to removal from the work area.
5. All plastic sheeting, cleaning materials, clothing, and other disposable materials used during removal shall be double-bagged in the same manner as asbestos-containing materials.
6. All transportation of asbestos-containing materials to the landfill shall be in vehicles with hard roofs. Transportation of asbestos-containing wastes in open pickup trucks or in pickup trucks with tarpaulins is expressly prohibited.

4.9 Decontamination of the NPE

1. The Contractor shall clean all surfaces in the work area with water and/or a HEPA-filter equipped vacuum. After the work area has been cleaned, the Contractor and the industrial hygienist shall conduct a thorough visual examination to certify the removal of all ACM. Upon completion of the visual inspection and approval of the industrial hygienist, the Contractor shall apply a sealant (encapsulant) to all potentially contaminated surfaces inside the removal area.
2. If after final clearance air sampling, the industrial hygienist finds the work area is not sufficiently decontaminated, the Contractor shall repeat the cleaning and encapsulation. This shall continue until no asbestos is found during the area inspection.



3. After the work area is found to be in compliance, all barriers, plastic sheeting, tape, and other wastes and debris shall be removed and disposed of as asbestos-containing wastes.

Remote decontamination may be proposed by the Abatement Trade Contractor as part of their Abatement Plan. Where a Mini Enclosure (ME) is specified, a pressure differential containment with a minimum two-stage decontamination facility concurrent with the containment will be constructed as outlined in these specifications prior to the removal of asbestos-containing materials or any other preparatory work which may involve disturbing the asbestos-containing material. A shower facility shall be located nearby pursuant to OSHA regulations 29 CFR 1926.1101. and must be equipped with Hot and Cold adjustable water, disposable towels, Soap, and shower facilities must comply with 29 CFR 1910.141(d)(3).

Any other removal method or practice that the Contractor intends to use should be described in their written work plan and approved by BDN prior to proceeding with the work. These work practices include but are not limited to; glove bag removal operations, regulated area set-up, whole structure removal, etc.

4.10 Asbestos Waste Disposal Requirements

The Contractor shall dispose of the asbestos-containing materials in disposal bags labeled as follows:

First Label:

Provide in accordance with 29 CFR 1910.1001(f) of OSHA's Asbestos standard:

**DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST**

Second Label:

Provide in accordance with U. S. Department of Transportation regulation on hazardous waste marking. 49 CFR parts 106, 107, 171 to 180. Published December 21, 1990.

**RQ, ASBESTOS, NA 2212
CLASS 9**

Third Label:

**Lansing Public Schools
2000 Lewton Place
Lansing, MI 48911**



Labels shall be applied to bags before bags are loaded onto vehicles or dumpsters to be transported to the landfill. All waste shall be transported to the landfill in an appropriate manner, and all waste shipment records shall be submitted to BDN following their receipt from the landfill.

5.0 Scope of Work

The project consists of removing all identified asbestos-containing materials within the Lewton School prior to demolition. This may include selective demolition to access hidden ACM.

5.1 Contractor Responsibilities

1. These project specifications are the responsibilities of the abatement Contractor. The Construction Manager or Consultant will approve **in writing**, prior to starting the project, any proposed deviations from these specifications. The information, which may be used to assist the Contractor in formulating his/her bid, is presented for informational purposes only and shall be verified by the Contractor or his/her representative at the time of the site inspection.
2. The Contractor will be responsible for removing all ACM within the work areas as identified in these specifications or found during abatement and demolition.
3. The Contractor is responsible for all selective demolition that may be required to access known asbestos-containing materials.
4. The Contractor is required to coordinate any Lock out/ Tag out activities with the Construction Manager, if applicable.
5. The Owner will provide electrical power for the Contractor to connect to his electrical panel to power equipment. It shall be the Contractor's responsibility to ensure all equipment and circuits are properly isolated prior to the commencement of work.
6. All equipment used on this project shall be in good repair with no exposed wires or insulation. All plugs shall be equipped with a ground. Extension cords shall be rated for "hard surface" and shall have watertight connectors.
7. Temporary light fixtures shall be general service, incandescent lamps of sufficient power for adequate illumination. Guard cages or tempered glass shall be used to protect the lamps. Exterior fixtures shall be used if exposed to moisture.
8. The Owner will provide a source of water for the duration of the project. The Contractor is responsible for the proper disposal of all wastewater generated on-site during the project to the sanitary sewer. All wastewater shall be properly filtered prior to disposal.



ASBESTOS-CONTAINING MATERIALS IDENTIFIED

Lewton School		
Material Description	Location of Material	Quantity
9"x9" Floor Tile (Mastic Negative)	Classrooms and Gym	21,500 sq. ft.
Caulk - Interior - Door Frame - Gray	Assumed present on door frames	100 sq. ft.
Sink Undercoating - Black	Classrooms, 15 single and 2 double	95 sq. ft.
Adhesive - Associated w/ Backsplash - Black	Classrooms 30A and 31A	50 sq. ft.
12"x12" Floor Tile	On shelving in Classrooms 8, 21, 22	150 sq. ft.
Caulk - Interior - Tan	Concessions / Serving Window	1 sq. ft.
Caulk - Exterior - Door Frame - Brown	Door 10 / Gym	1 sq. ft.
Caulk - Exterior - Brittle - White	Kitchen Exterior Window	1 sq. ft.
Waterproofing - Exterior - on Foundation - Black	60's Wing	5,000 sq. ft.

< 1% MATERIALS IDENTIFIED

Lewton School		
Material Description	Location of Material	Quantity
Caulk - Interior - Window Frame	1950's Classrooms	58 sq. ft.
Glazing - Interior - Window	Main Office	3 sq. ft.
Glazing - Interior - Door System	100A East Entry	7 sq. ft.
Debris	Mechanical Room Windowsill	1 sq. ft.
Caulk - Exterior - Window Frame - Gray	1950's Windows	11 sq. ft.
Caulk - Exterior - Window Frame - Dark Gray	1950's Windows	21 sq. ft.
Caulk - Exterior - Door & Window System	Door 1 and Door 2	2 sq. ft.
Glazing - Exterior - Door System	Door 1	1 sq. ft.

ASSUMED ASBESTOS-CONTAINING MATERIALS IDENTIFIED

Lewton School		
Material Description	Location of Material	Total Quantity
Door - Interior - Metal - Tagged	Throughout	19 ct.
Visual Display Board Glue Pods	Not Observed	
Door - Interior - Wood	Throughout	74 ct.
Speaker	Throughout	17 ct.
Door - Exterior - Metal	Throughout	22 ct.
Door - Interior - Wood - Tagged	Rooms 16, 5, & 7 (FS-10,25,49)	3 ct.
Gaskets	Mechanical Room and Tunnels	~ 20 sq. ft.
Boiler	Mechanical Room	1 ct.
Electrical Equipment	Mechanical Room	1 ct.

6.0 Project Notes

1. This Specification requires the removal of all ACM, including < 1% materials, prior to demolition, or with coordination with the demolition contractor.
2. Depth of waterproofing on the 1960's wing foundation is estimated. It is the contractor's responsibility to confirm actual depth and subsequent quantity.
3. All painted surfaces are assumed to be lead-containing, and lead-safe work practices should be utilized during your work.
4. No ACM Pipe Insulation was observed. Some exploratory demolition will be required to confirm no hidden ACM is present. Please ensure unit price sheet is completed and note the line items with larger quantities.
5. No adhesive was observed behind mirrors, chalkboards, white boards, or the majority of casework trim. Exploratory demolition once the building is unoccupied will be required to confirm no suspect ACM adhesives are present.
6. All 9" Floor Tile shall be removed. Mastic was negative.
7. All interior door frames are assumed to have associated ACM caulk and shall be removed by the abatement contractor.
8. All windows in the original 1950's school shall be removed (positive glazing) along with any associated frame caulk.

Please refer to the asbestos building inspection report provided in Appendix B for further detail regarding sampling results, locations, identified materials, etc.

These project specifications have been prepared by BDN Industrial Hygiene Consultants, Inc., located in Portage, Michigan. We appreciate the opportunity to be of service on this project. If you have any questions concerning this report, please do not hesitate to call me at 517-930-8162.

A handwritten signature in black ink, reading "Nick Donaldson", with a horizontal line underneath.

Nick Donaldson
Michigan Asbestos Project Designer A-56406



BID FORM

Project Title: Lansing Public Schools Lewton Abatement

Project Location: 2000 Lewton Place, Lansing, MI 48911

BDN Inspection Project No.: P25-00966

BDN Specification Project No.: P25-01012

Bid Due Date:

The undersigned, having carefully reviewed the specification for the above-named project; and become thoroughly familiar with all conditions affecting the work required by those specifications, prepared by BDN Industrial Hygiene Consultants dated 4/9/2025 hereby proposed to provide all materials, labor, services, etc., required thereby for the base bid sum of:

<i>Cost Written Out (Words)</i>	<i>Cost in Figures</i>

TAXES, PERMITS, BONDS, AND FEES: bid sum includes all applicable taxes, permits, bonds and fees, required by all legal authorities at the location of work.

Alternates

The contractor agrees that prices quoted for requested alternates (quoted below) shall be accepted as full compensation or credit for work described in the drawings, specifications, and instructions to bidders.

Item No.	Description	Add or Deduct?	Amount

Voluntary Alternates

The contractor agrees that voluntary alternates for materials, methods, and/or equipment specified if accepted by the Owner, will be added to or deducted from the base bid. Attached additional information on letterhead if needed. Label clearly as Lansing Public Schools Lewton.

Description	Add or Deduct?	Amount

Addendum Acknowledgment

Please acknowledge that the following addenda(s) have been received, are hereby acknowledged, and their execution is included in sums listed herein.

Addendum No.	Description	Date

Performance & Payment Bonds

The additional cost to provide Performance and Payment Bonds, if required, will be \$_____ for the Base Bid plus _____% of any accepted requested or voluntary alternate(s)

Agreement

Undersigned agree(s) that this proposal shall remain open during such sixty (60) days after the due date of the opening. Undersigned further agrees that this proposal shall remain open during such a sixty (60) day period. The signature below serves as an acknowledgement that Bidder understands the Bid Documents and Appendices, and Bidder assumes full responsibility for the cost impact of same. Undersigned also acknowledges that Owner reserves right to accept or reject any and all bids with or without cause and/or to waive informalities in bidding.

Non-Collusive Certification

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of knowledge and belief.

- A. The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or any competitor;
- B. Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor;
- C. No attempt has been made or will be made by the bidder to insure any other person, partnership, or corporation to submit or not to submit a bid for the purpose of restricting competition;

- D. The person signing this bid or proposal certifies that he has fully informed themselves regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in its behalf.

Schedule

The contractor agrees to complete the work within the dates specified by the schedule laid out by the General Contractor / Construction Manager. Please provide below the specific duration of the abatement scope of work at each location.

Lewton		
Estimated Project Duration:		Days
Shift duration:		Hours
Crew size:		Members

Unit Rates

In order to increase or decrease the project amount, all prospective bidders shall be required to provide unit price costs for potential items that may require removal.

#	Description of Material	Amount	Units
1.	Straight pipe insulation (one glove bag)	\$	ln. ft.
2.	Straight pipe insulation (Per 100 feet)	\$	100 ln. ft.
3.	Pipe joint / fitting insulation (one glove bag)	\$	glove bag
4.	Pipe joint / fitting insulation (Per 100 feet)	\$	100 ln. ft.
5.	Asbestos-containing debris clean-up and disposal	\$	sq. ft.
6.	Fire doors (tagged or untagged)	\$	Each door
7.	Door system removal w/ frame	\$	each
8.	Floor tile removal without mastic	\$	sq. ft.
9.	Exterior building caulk	\$	sq. ft.
10.	Interior building caulk	\$	sq. ft.
11.	Window glazing	\$	sq. ft.
12.	Gaskets and/or Valves	\$	Each
13.	Mobilization charges once Contractor off site	\$	per call out

The owner may choose to conduct additional work utilizing a time and material hourly rate.

Hourly Rate (Abatement Contractor): _____

Hourly Rate (General Laborer): _____

The Contractor may add any qualifying statements or explanations for the above-proposed unit costs.

I hereby certify that all pricing is reasonably accurate at the time of this proposal and that cost is reflective of the scope of work as outlined in the bid specification, site walk, RFI's, and addenda's.

Company Name: _____
Name: _____
Title: _____
Signature: _____

Any additional notes the Contractor would like to provide:

TECHNICAL SPECIFICATIONS
FOR
**LEWTON ELEMENTARY
BUILDING AND SITE DEMOLITION
LANSING SCHOOL DISTRICT
LANSING, MICHIGAN**

MAY 2ND, 2025

A/E NO. 2616-01G

OWNER
LANSING SCHOOL DISTRICT
519 WEST KALAMAZOO STREET
LANSING, MICHIGAN 48933
(517) 755-1000

ARCHITECTS/ENGINEERS
KINGSCOTT ASSOCIATES, INC
950 TRADE CENTRE WAY #130
PORTAGE, MICHIGAN 49002
(269) 381-4880

CONSTRUCTION MANAGER
THE CHRISTMAN COMPANY
208 NORTH CAPITOL AVENUE
LANSING, MICHIGAN 48604
(517) 482-1488

Kingscott Associates, Inc.
Architects/Engineers
Portage, Michigan

Lewton Elementary School
Building & Site Demolition
Lansing School District
Lansing, Michigan

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DIVISIONS 3 THRU 28 (NOT USED)

DIVISION 31 - EARTHWORK

311000 SITE CLEARING
311018 SOIL EROSION CONTROL
312000 EARTH MOVING

DIVISION 32 AND 33 (NOT USED)

Kingscott Associates, Inc.
Architects/Engineers
Portage, Michigan

Lewton Elementary School
Building & Site Demolition
Lansing School District
Lansing, Michigan

SECTION 003132 GEOTECHNICAL INFORMATION

PART 1 – GENERAL

1.1 GEOTECHNICAL REPORT

- A. An investigation of the site in the vicinity of the building was made for the limited purpose of establishing design parameters to be used by the Architect. Test pit logs and test boring logs from this report are bound into this Project Manual for Bidder's Information.

1.2 INTERPRETATION OF GEOTECHNICAL INFORMATION

- A. Although bidders are encouraged to study this information, the Owner does not present the information to the Contractor as either a fully accurate or a comprehensive indication of subsurface conditions. Bidders are invited to make additional investigations at their own expense.
- B. No claim for extra cost or extension of time resulting from a reliance by the Contractor on information presented in a geotechnical report, boring log, soil testing log, or underground storage tank investigation shall be allowed, except as provided in the General Conditions.



GEOTECHNICAL EVALUATION REPORT

LEWTON ELEMENTARY SCHOOL RECONSTRUCTION
LANSING, MICHIGAN

SME Project Number: 098329.00
February 13, 2025





2663 Eaton Rapids Road
Lansing, MI 48911-6310

T (517) 887-9181

www.sme-usa.com

February 13, 2025

Lansing School District
c/o Mr. Marc A. Alexa
Vice President
Plante Moran Realpoint
3000 Town Center, Suite 100
Southfield, Michigan 48075

Via E-mail: Marc.Alexa@plantemoran.com

RE: Geotechnical Evaluation Report
Lewton Elementary School Reconstruction
2000 Lewton Place
Lansing, Michigan 48911
SME Project No. 098329.00

Dear Mr. Alexa:

We have completed our geotechnical evaluation for the referenced project. This report presents the results of our observations and analyses, our geotechnical and pavement recommendations, and a discussion of potential construction considerations based on the information disclosed by the borings.

We appreciate this opportunity to be of service. If you have questions or require additional information, please contact me.

Sincerely,

SME

A handwritten signature in blue ink that reads "Alexandra R. Costanzo".

Alexandra R. Costanzo, PE
Project Manager

Enclosure: SME Geotechnical Evaluation Report; Dated February 13, 2025

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APPENDIX A

- BORING LOCATION DIAGRAM (FIGURE NO. 1)
- BORING LOG TERMINOLOGY
- BORING LOGS (B1 THROUGH B15)
- USACE DCP DATA SHEETS (B13 THROUGH B15)

APPENDIX B

FIELD TESTING PROCEDURES

LABORATORY TESTING PROCEDURES

LIMITATIONS PERTAINING TO SUBSURFACE CONDITIONS

APPENDIX C

IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL-ENGINEERING REPORT

GENERAL COMMENTS

1. INTRODUCTION

This report presents the results of the geotechnical evaluation performed by SME for the proposed Lewton Elementary School Reconstruction. This evaluation was conducted in general accordance with the scope of services outlined in SME Proposal No. P04181.24, dated October 30, 2024. Our services for this evaluation were authorized by Marc Alexa with Plant Moran Realpoint.

SME received a site plan drawing that included the proposed site plan, an outline of the existing site features, and the suggested locations for 15 soil borings information which was used in the evaluation and preparation of this report. SME also received a site plan drawing created by Kingscott titled "Lewton School" dated November 15, 2024. Plans were also provided by Kingscott of the existing building foundations and tunnel system. These plans were created by Simpson and Hartwick Architects, dated September 18, 1956, and included sheet numbers E-1 of 3, 2 of 11, and 3 of 11.

SME completed 15 borings (B1 through B15) at the project site on November 25 through 27, 2024. Refer to the boring logs included in Appendix A for the specific depth of each individual boring. The approximate boring locations are depicted on Image No. 1 and on the Boring Location Diagram located in Appendix A (Figure No. 1). Soil descriptions and the field and laboratory test results are presented on the boring logs. Exploration and laboratory testing procedures are presented in Section 4.

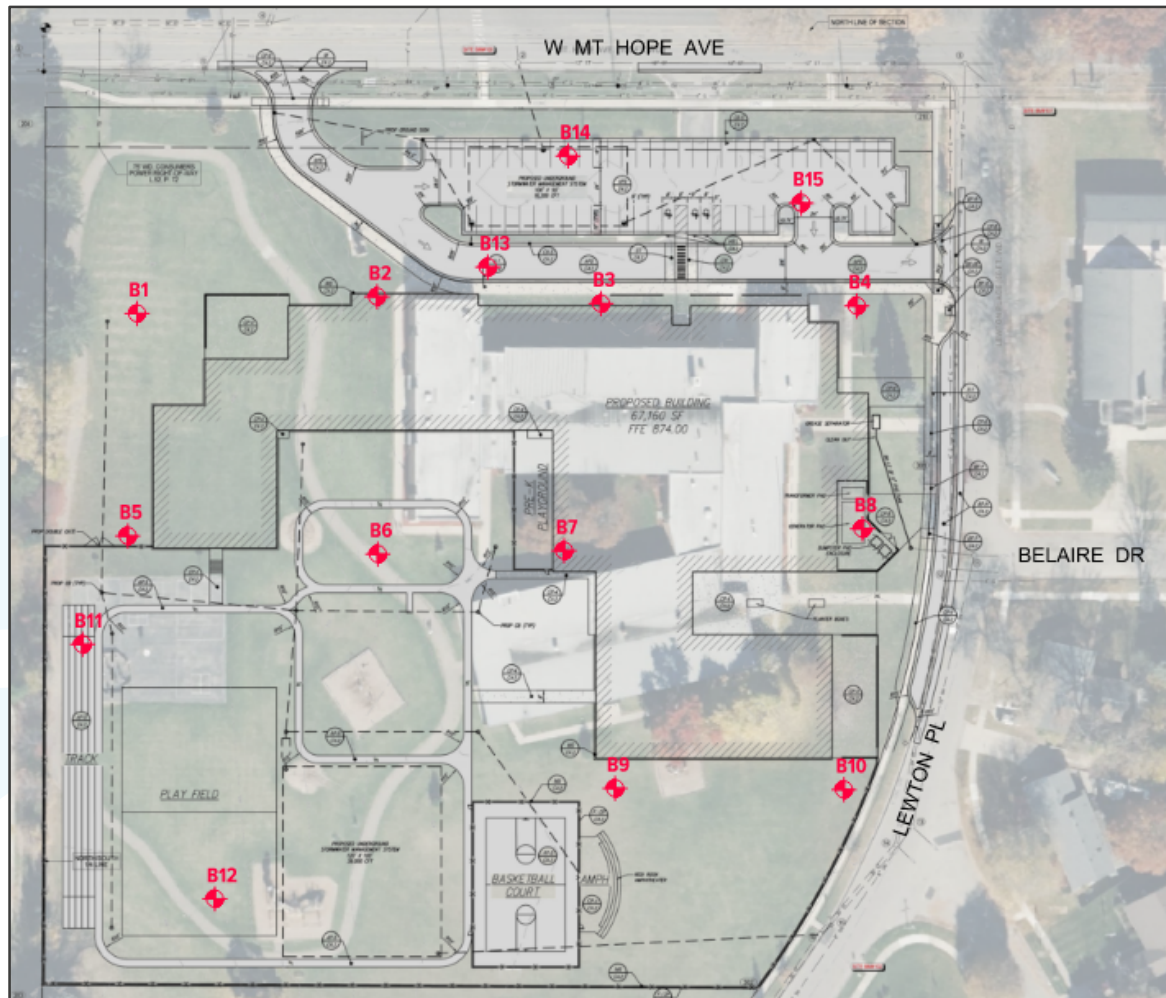


IMAGE NO. 1: Excerpt from Figure No. 1 in Appendix A – Boring Location Diagram (north facing upward).

1.1 SITE CONDITIONS

The project site is located at the existing Lewton Elementary School at 2000 Lewton Place, Lansing, Michigan. The proposed development site currently consists of the existing building, playground, fields, walking paths, grass covered areas and a paved parking lot (see Image No. 2). We understand, based on provided plans, that there are below-grade tunnels and an underground boiler room within the existing building.

Based on the referenced topographic survey, the ground surface elevations across the site range from about 867 to 874 feet with the lower areas located in the fields on the west side of the site. We assume the existing finished floor elevation (FFE) of the school is currently at about 874 feet with the underground tunnels estimated to be between 862 and 866 feet.

1.2 PROJECT DESCRIPTION

The project will consist of the demolition of the existing Lewton Elementary School (approximately 45,000 square feet) and reconstructing in-place a one-story, slab-on-grade new school building, with a plan area of about 67,160 square feet and a FFE of 874 feet. Based on our experience with similar types of projects, we anticipate structural loads will include maximum column loads of up to 150 kips and maximum wall loads of up to 3 kips per linear foot. However, specific structural loading information has not been provided to us at this time. We expect up to 7 feet of fill will be required to achieve final subgrade levels in the proposed building area.



IMAGE NO. 2: Aerial photo of site (north facing up).

A new parking lot and bus loop will be constructed in the area of the existing pavements on the north side of the building. We anticipate the new pavement areas will be surfaced with hot mix asphalt (HMA) pavement, and the anticipated traffic profile will consist of passenger vehicles, school buses, delivery trucks and garbage trucks. Grading plans were not provided to SME, however, based on the proposed improvements we anticipate minimal cuts and fills of less than about 2 feet will be required to establish the design pavement subgrade elevations.

The recommendations of this report are based on the information provided above and the results of the field and laboratory evaluation. Contact SME if the final design information is different than discussed herein.

1.3 SUBSURFACE CONDITIONS

Refer to the boring logs for the soil conditions at the specific boring locations. In summary, the soil conditions observed in the borings generally consisted of 4 to 11 inches surficial topsoil, 2 to 4 inches of asphalt pavement, or 6 to 7 inches of sand and gravel base over sand and clay fill and then clays and sands extending to the explored depths of the borings.

Clay fill at borings B2, B3, B6 through B8, and B10 extends below the surface materials to a depth of about 3 to 6 feet below the ground surface, or to elevations in the range of about 867.5 to 869.5 feet. The clay fill is in a very stiff to hard condition. Sand fill at borings B13 and B14 extends below the surface materials to a depth of about 2.5 to 7 feet below the ground surface, or to elevations in the range of about 863.5 to 896.5 feet. The sand fill is in a loose condition and contained varying amounts of silt, clay, and topsoil seams.

Buried topsoil was encountered at two boring locations (B2 and B13) at depths ranging from 4 to 5.5 feet below the existing ground surface, or elevations ranging from 866.5 to 868 feet. We believe the buried topsoil was left in place and filled over during the construction of the existing building and surrounding fields/parking areas.

Native stiff to hard lean clay, stiff silty clay (B1), loose clayey sand (B2 and B12), loose to medium dense sand, loose silty sand (B3 and B9) extended from below the surface materials and fill to the termination depths of the borings.

Groundwater was observed in the borings as summarized in the table.

TABLE 1: GROUNDWATER SUMMARY TABLE

BORING NO.	INITIAL DEPTH OF G.W. (feet) ¹	G.W. DEPTH UPON COMPLETION OF DRILLING (feet) ¹	INITIAL G.W. ELEVATION (feet) ¹	G.W. ELEVATION UPON COMPLETION OF DRILLING (feet) ¹
B1	6.5	19.0	860.5	848
B2	9.5	16.0	862.5	856
B3	16.5	16.5	856.5	856.5
B4	17.0	17.0	856	856
B5	5.0	17.0	863	851
B6	19.5	19.5	851.5	851.5
B7	Note 2			
B8	Note 2			
B9	17.0	17.0	856	856
B10	16.0	18.0	857	855
B11	3.5	8.0	864.5	860
B12	8.0	8.0	861	861
B13	9.0	9.0	863	863
B14	Note 2			

BORING NO.	INITIAL DEPTH OF G.W. (feet) ¹	G.W. DEPTH UPON COMPLETION OF DRILLING (feet) ¹	INITIAL G.W. ELEVATION (feet) ¹	G.W. ELEVATION UPON COMPLETION OF DRILLING (feet) ¹
B15	Note 2			
Min.	9.5	16	851.5	848
Max.	18.5	33	864.5	863

NOTES:

1. Depths and elevations are reported to the nearest ½ foot.
2. Groundwater was not encountered.

In cohesive soils (clays), a long time may be required for the groundwater level in the borehole to reach an equilibrium position. Therefore, the use of groundwater observation wells (piezometers) is necessary to accurately determine the hydrostatic groundwater level within cohesive soils as observed at this site. However, a change in color from brown to gray is oftentimes an indicator of the long-term groundwater level. This color change was observed at 11 borings below depths ranging from about 8.5 to 13.5 feet below the ground surface (below about elevations 858.5 to 865.5 feet).

Refer to the Field Testing Procedures in Appendix B for additional information about groundwater level measurements. If more information regarding groundwater levels at this site is required, then we recommend performing additional subsurface assessment(s).

2. ANALYSIS AND RECOMMENDATIONS

2.1 SITE PREPARATION AND EARTHWORK

2.1.1 EXISTING FILL CONSIDERATIONS

We consider the fill to be undocumented or uncontrolled since the origin of the existing fill is not known, we are not aware of records documenting the fill placement and any compaction operations, and because of the variable composition and density of the fill, including buried organic soils. We assume the fill was placed during the previous rounds of development. See Table 2 below for the depths of the existing fills and organic materials.

Based on the locations of the existing tunnels and the foundations, we assume the existing fill will be removed near the underground structures incidental to removing the tunnels. However, where underground structures are not present, we recommend removing all undocumented fill and organic soil within the proposed building footprint, extending a minimum of 5 feet beyond the planned footprint. Consider excavating test pits to better determine the nature and extent of the buried organics. Where organic soils are not encountered, consideration may be given to supporting slabs-on-grade on suitably prepared existing fill, but all undocumented fill located within the building footprint and underlain by organic soils should be removed and replaced with engineered fill. We assume fill within the existing building was placed in a controlled manner and will generally be suitable to remain in place unless organics and/or other deleterious materials are encountered within the fill during demolition and/or construction. If the inorganic fill overlying the organic soil is properly segregated from the organic soil, the upper inorganic fill may be reused as engineered fill.

TABLE 2: DEPTH OF EXISTING FILLS AND ORGANICS AT BUILDING BORING LOCATIONS

BORING NUMBER	EXISTING SURFACE ELEVATION (FEET)	EXISTING FILL DEPTH (FEET)	EXISTING FILL ELEVATION (FEET)
B1	867	N/A	N/A
B2	872	5.5	866.5
B3	873	4.5	868.5
B4	873	N/A	N/A
B5	868	N/A	N/A
B6	871	3	868
B7	874	6	868
B8	874	6	868
B9	873	3.5	869.5
B10	873	3.5	869.5

Where organic soils are not encountered, and provided the subgrade soils are evaluated by SME at the time of construction and prepared as described below, pavements may be constructed as planned without undercutting existing fill or removing buried organic soils. Subgrade improvements including compaction in-place and/or removal of unsuitable materials and replacement with engineered fill could be necessary to achieve suitable subgrade conditions.

There are inherent risks of greater than typical settlement and poor structural performance associated with constructing structures over undocumented fills. We believe the associated risks at this site could include visible cracking and differential movements of floor slabs on-grade. The risks of constructing pavements over the existing fills include differential settlements that could lead to cracking, areas of ponded surface water (i.e., birdbaths), and the need for greater than typical maintenance. These risks can be significantly reduced by removing at least a portion of the fill from beneath floor slabs and pavements and replacing it with engineered fill.

The incidence and severity of cracking and movements associated with constructing the proposed floor slabs and pavements over the existing fill at this site can be reduced, but not eliminated, by thoroughly evaluating the condition of the fill during construction, remediating unsuitable materials that are identified, and improving the subgrade as recommended in the following report sections.

Evaluation of the existing fill during construction must be conducted by SME and may include probing the existing fill areas with a hand auger, testing several feet below the subgrade surface using a cone penetrometer, observing the condition of the fill in shallow test pits and in foundation excavations, and observing the response of the surface of the fill when subjected to a proofroll. The contractor needs to be prepared to assist SME by excavating test pits, as needed. Unsuitable fills must be remediated as recommended in the report sections below.

Prior to issuing this report, SME discussed our findings regarding undocumented fill, particularly in the area northwest/west of the existing building. It appears feasible to remove the undocumented fill from beneath the proposed building footprint, segregate the suitable sands and clays from those containing organics, and reuse the segregated fill as engineered fill to backfill depressions resulting from foundation and tunnel demolition. The resulting low area would then be backfilled using suitable onsite materials or would be backfilled using imported granular fill.

The following report sections are based on the assumption that the Owner is willing to accept the increased risks described above, and that the existing suitable fills will remain in-place and be used to support floor slabs, foundations, and pavements, with existing suitable undocumented fill beyond the current building footprint segregated for reuse as engineered fill to backfill depressions resulting from tunnel and foundation excavations. If the owner does not accept the stated risks, then undercut the existing fill from beneath the building footprint and replace it with engineered fill.

Engineered fill shall be selected and placed per the requirements outlined in Section 2.1.4 of this report.

2.1.2 GENERAL SITE SUBGRADE PREPARATION

During demolition of the existing building, remove all below-grade portions of the building, including floor slabs, foundations, foundation walls, and utilities. After demolition, clear the proposed building area of asphalt, Portland cement concrete (PCC), vegetation, topsoil, and other deleterious materials to expose suitable underlying inorganic subgrade soils. Completely remove tree root mats, if any.

Extend the clearing and stripping a minimum of 10 feet beyond the limits of the proposed building and pavement areas, and areas to receive engineered fill. Based on the boring information, we expect a mixture of sands and clays will be exposed once stripping is complete, including sand and clay fill. Remove the undocumented fill from within the proposed building footprint, segregating the inorganic soils from buried topsoil and fill containing construction debris.

Reroute existing utilities that are within the building footprint to outside of the building area. Remove abandoned utilities and backfill the resulting excavations with granular engineered fill. If it is necessary for existing utilities to be abandoned in-place, the utilities must not conflict with the proposed construction, they must be fully grouted, and the suitability of the existing backfill must be verified for structural support. Do not abandon utilities in-place within the zone of influence of proposed foundations.

The contractor needs to remove ponded surface water and prevent run-off from reaching foundation excavations and areas of prepared subgrade. The contractor needs to also establish positive surface drainage at the onset of construction to mitigate the potential for subgrade disturbance. To reduce the potential of subgrade disturbance across the site, restrict construction traffic to dedicated areas of the site that can be controlled and stabilized as needed.

Backfill depressions resulting from demolition activities with engineered fill to establish a uniform subgrade elevation. After stripping and removal of deleterious materials and after cuts are made to achieve subgrade elevations, but prior to placing fill (except backfill relating to demolition activities as described elsewhere in this section, we recommend the exposed subgrade soils be subjected to a comprehensive proofrolling program. The purpose of proofrolling is to locate areas of unsuitably loose or soft subgrade. Proofrolling should be performed with a fully loaded, tandem-axle truck or other similar pneumatic-tired construction equipment. Areas of unsuitable (i.e., wet, loose, or soft) subgrade revealed during proofrolling should be mechanically improved (compacted) in-place. If it is not possible to compact the unsuitable subgrade, it may be necessary to remove the unsuitable soils and replace them with engineered fill.

The subgrade soils are sensitive to disturbance when exposed to water. If the subgrade is exposed to water, it may be necessary to improve the disturbed subgrade or remove and replace the soils with engineered fill, crushed aggregate, or crushed concrete.

After the exposed subgrade is proofrolled and improved as needed, and after the surface is thoroughly compacted, engineered fill may be placed on the prepared subgrade to establish final design subgrade levels. Refer to Section 2.1.4 of this report for materials and compaction requirements for engineered fill.

2.1.3 SUBGRADE PREPARATION FOR FLOOR SLABS

Prior to concrete placement for ground-supported floor slabs, SME should observe and test the floor slab subgrade to identify areas that were disturbed during construction activities and to verify the final subgrade conditions are suitable for floor slab support. Unsuitable subgrade identified by SME should be improved by compaction in place or removed and replaced with engineered fill. Final subgrade areas that are accessible with large equipment should be proofrolled, and areas inaccessible to proofrolling equipment should be evaluated with hand-operated equipment, such as cone penetrometers, hand auger probes, and density gauges.

We anticipate the final floor slab subgrade within the building area will consist of engineered fill placed overlying natural soils or on suitably prepared natural soils. We recommend a subgrade modulus of 150 pounds per cubic-inch (pci) for the design of floor slabs supported on dense-graded crushed aggregate or crushed concrete over properly prepared subgrade as described above. A subgrade modulus of 125 pci is recommended for design of slabs constructed above MDOT Class II sand over properly-prepared subgrade. The recommended subgrade modulus k (30) is based on correlations with soil type developed from plate load tests conducted using a 30-inch-diameter bearing plate with 0.05-inches of deflection.

We recommend providing a minimum 6-inch-thick slab subbase consisting of an approved MDOT Class II granular material to provide a leveling surface for construction of the slab and a moisture capillary break between the slab and the underlying soils. MDOT 21AA dense-graded aggregate can be used as subbase material, instead of the MDOT Class II granular material, for improved stability, greater resistance to disturbance due to construction traffic, and a higher design subgrade modulus. The thickness of dense-graded aggregate required to stabilize and protect the subgrade will depend on the condition of subgrade soils during construction and the type and volume of construction equipment to traffic the prepared subgrade. The leveling surface must be compacted per Section 2.1.4.

Place a vapor retarder below floor slabs to receive an impermeable floor finish/seal or a floor covering which would retard vapor transmission. The location of the vapor retarder (relative to the subbase) needs to be determined by the design Architect/Engineer based on the intended floor usage, planned finishes, and ACI recommendations.

Separate floor slabs by isolation joints from structural walls and columns to permit relative movement. Allow a minimum of 6 inches of engineered fill between the bottom of the slab and the top of the shallow foundation below.

The slab-on-grade subgrade soils should be protected from frost action during winter construction. Frozen soils (if present) must be thawed and compacted or removed and replaced prior to slab-on-grade construction.

Concrete mixes are regularly changing to optimize performance and economy. We recommend using only concrete contractor(s) with substantial experience in concrete mixing, placement and curing methods (e.g., to prevent undesirable slab curling, shrinkage, segregation, bleeding, etc.). The contractor may need to retain a concrete mix designer to develop the appropriate mix(es) for the project. We recommend using only specific type(s) of well-established concrete mixes that have been 'tried and tested' to deliver successful long-term performance for each specific type of concrete application.

2.1.4 ENGINEERED FILL REQUIREMENTS

The fill needs to be free of frozen soil, significant organics, and construction debris, potentially expansive and/or chemically active materials, particle sizes hindering compaction, cobbles, and boulders. If the proposed engineered fill soils contain more than four percent organics, or debris larger than 6 inches in nominal diameter, do not use soils for engineered fill. Also, if debris material is significantly variable in nature, suspect in origin, or greater than about five percent of the soil (by weight), do not use soils for engineered fill.

Spread fill in level layers with a loose thickness appropriate for the type of equipment used to obtain compaction, but not exceeding 9 inches thick. Thinner lifts will be required in confined spaces and where compaction is achieved with walk-behind rollers/compactors or plate compactors mounted on a backhoe or excavator (e.g., Ho-Pac®). Compact the fill to a minimum of 95 percent of the maximum dry density as determined in accordance with the Modified Proctor test. Sand fill should be compacted with a smooth-drum vibratory roller or vibratory plate compactors, including either walk-behind types or plate compactors mounted on a backhoe or excavator (hoe-pac), while clay fill should be compacted with a sheepsfoot roller at a moisture content of ± 2 percent of optimum.

Based on the information from the borings, existing site soils are generally suitable for use as engineered fill provided these soils meet the requirements listed in the previous paragraph. As discussed in Section 2.1.1, consider removing the existing fill from the west and northern portions of the planned building footprint (outside the existing building), segregating soil suitable for reuse as engineered fill from organic soils and soils that are otherwise unsuitable for reuse. Stockpile the suitable soils and use them to backfill depressions resulting from demolition of the existing building. If the site cannot be stripped concurrently with demolition, the salvaged fill may be replaced as engineered fill in the same area from where it was removed. If on-site soils are not salvaged to backfill depressions related to demolition, we recommend importing granular engineered fill for this purpose. Imported fill should meet the requirements of MDOT Class II granular material.

Clays, silty sands, and clayey sands are difficult to compact in confined areas where compaction by hand-operated equipment is required and should not be used where drainage is required. The clays can be reused in open areas where large compaction equipment can operate. Also, the clayey soils may require drying prior to use as engineered fill. Based on our experience, we believe the moisture content of the clays is likely to be near or above the optimum moisture content of the soil. Some of the clays may require discing, aeration, and drying to allow for proper compaction in areas where a minimum of 95 percent of the maximum dry density is required. For the clayey and silty sands, the contractor should separate soils containing appreciable clay and/or silt from the cleaner sands and moisture-condition soils as-needed by aerating and drying overly wet soils or adding water to overly dry soils so that the required density can be achieved during compaction.

The need for moisture-conditioning will be affected by seasonal weather conditions at the time the earthwork is performed, and the condition of the site soils. If the site soils cannot be suitably moisture conditioned, it will be necessary for the contractor to import greater quantities of granular fill (sand) to use as engineered fill on the site, and it may be necessary to export the existing wet soils if suitable on-site disposal areas are not available. Alternatively, during wetter periods, soil can be chemically modified using lime kiln dust to lower moisture contents. The project specifications should include provisions for moisture conditioning of soils to be placed and compacted on-site as engineered fill. Contractors should anticipate the need for moisture conditioning and structure their bids accordingly.

In utility trenches or foundation excavations, and in other areas where compaction is accomplished primarily by smaller plate compaction equipment, an approved granular material containing relatively low amounts of silt or clay, such as MDOT Class II granular material, should be used as backfill. Based on the borings, we anticipate the on-site natural soils and inorganic sand fill with USCS designation "SP-SM" should mostly meet MDOT Class II gradational requirements and be suitable for reuse in areas requiring drainage backfill. Perform grain size analysis at the time of construction to confirm. Thinner lift sizes may be required to achieve the required density in areas where smaller compaction equipment is used. MDOT Class II granular material should also be used in areas requiring drainage.

We recommend utility trenches excavated into the site clays be capped with at least 18 inches of engineered clay fill at the final subgrade level to provide more uniform support for slabs and pavements. Capping the utility trenches with clay will also reduce the potential for infiltration of water into the sand-filled trenches that can lead to premature pavement distress.

Coarse crushed aggregate used to backfill undercuts or to stabilize subgrades need to consist of a well graded crushed natural aggregate or clean crushed concrete ranging from 1 to 3 inches in size with no more than seven percent by weight passing the No. 200 sieve. Spread the crushed material in layers not exceeding 12 inches and compact with a vibratory compactor until no further densification is observed. In cases where granular engineered fill will be placed over the crushed aggregate, choke the surface of the coarse crushed material with a layer of at least six inches of MDOT 21AA dense-graded aggregate and cover the surface with a suitable non-woven geotextile fabric to prevent migration of the granular engineered fill into the coarser crushed material.

2.2 SHALLOW FOUNDATIONS

2.2.1 SUBGRADE VERIFICATION

Geotechnical foundation design recommendations are provided based on borings covering only a small area of the site. On-site observations and testing of the foundation subgrades are necessary to verify the subgrade exposed at the foundation bearing surface is consistent with the borings and is suitable for the design soil bearing pressure. By preparing this geotechnical evaluation report, SME is best suited to observe and test foundation subgrades during construction and to verify the geotechnical recommendations of this report and the geotechnical related design requirements of this project are incorporated into the construction. The recommendations of this report are based on the assumption SME will further evaluate the bearing soils during construction.

2.2.2 SHALLOW FOUNDATIONS

Shallow spread foundations are recommended for support of the proposed building. A maximum net allowable bearing pressure of 3,000 pounds per square-foot (psf) can be used to design shallow isolated (column) and continuous (wall) foundations supported on suitable natural soils or engineered fill overlying native soils. As discussed in Section 2.1.1, do not construct foundations on undocumented fill. This design bearing pressure will achieve a global safety factor of three or more for general shear failure. Suitable bearing soils were observed below the surface materials, existing fill, and buried topsoil at the boring locations. The deepest fill was observed at borings B2 (5.5 feet), B7 (6 feet), and B8 (6 feet), with buried topsoil at boring B2. Therefore, undercuts will be needed during foundation construction, and mass undercutting is recommended in the northeastern portion of the planned building footprint (see Section 2.1.1).

Once each foundation area is exposed, SME must observe and test foundation subgrade conditions to verify suitable soils are encountered or improvements are performed, as needed, prior to foundation construction. In granular soils, SME will utilize a test method capable of testing the soils several feet below the design bearing level. Unsuitable soils must be mechanically improved (i.e., compacted) in-place. Compaction in-place is feasible only where loose sands are encountered. Where unsuitable soils cannot be mechanically improved in-place, deepen the foundation excavations (undercut unsuitable/undocumented fill soils) to encounter suitable bearing material below. Foundations can then be constructed to bear directly at this lower level where suitable subgrade is encountered, or the design bearing level can be reestablished with engineered fill (refer to Section 2.1.4).

Oversize undercuts that are backfilled with engineered fill to the design bearing level laterally by extending excavations outward on a two vertical to one horizontal slope from the edge of the foundation as shown on Image No. 3.

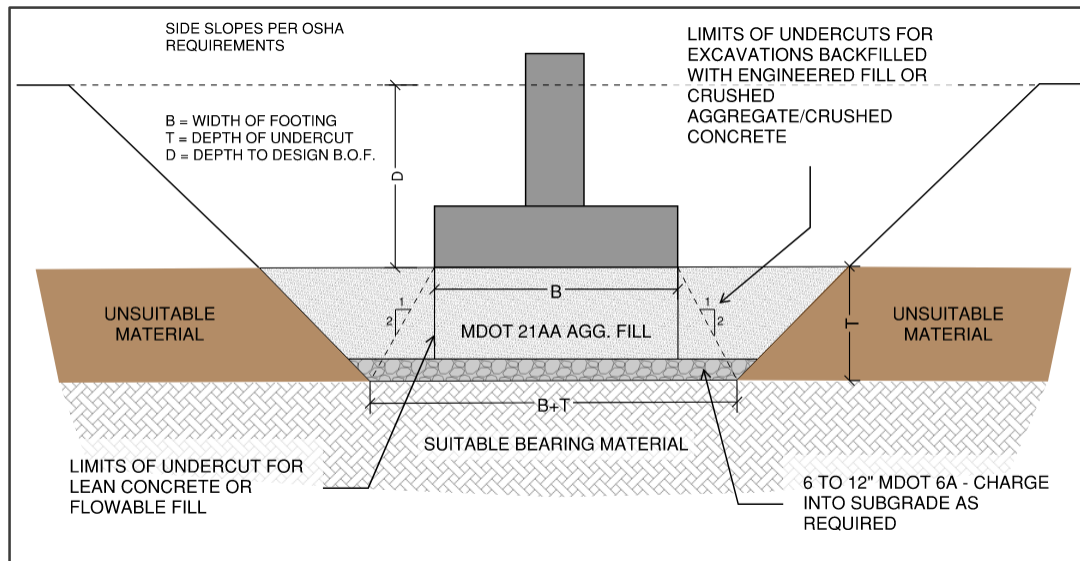


IMAGE NO. 3: Foundation Undercutting Diagram

Exterior foundations must have a minimum embedment of 42 inches below the lowest adjacent exterior grade in unheated areas for protection against frost movement during normal winters. Interior foundations in heated areas can be constructed at shallower levels on suitable soils but deeper undercuts through fill soils may be required. Footing trenches need to be excavated to a level bearing surface, cleaned of mud and loose cuttings, and protected against water accumulation from rainfall, surface drainage, or excavation sidewall seepage prior to placing concrete.

Place foundation concrete as soon as foundation excavations have been completed, and the design bearing pressure verified to reduce the potential for disturbance of the foundation subgrade. In cases where the excavation will remain exposed for a longer period of time, protect the subgrade soils with a concrete mud mat and protect the bearing soils and foundations from freezing if the work is performed during seasonally cold weather.

For frost heave considerations, vertical excavation sidewalls must be maintained during foundation concrete placement and the sidewalls must not be allowed to “mushroom out” near the top. If vertical earthen sidewalls cannot be maintained, it will be necessary to slope back the foundation excavations and form foundation sidewalls to maintain vertical faces for foundations and reduce the potentially adverse effects resulting from frost heave. Where clays and clayey sands are encountered in the excavation sidewalls, they are expected to be generally suitable for bank-formed foundations. Where relatively clean and/or loose sands are encountered, it may be necessary to over-excavate and form foundations.

Use a minimum width of 18 inches to design continuous (wall) foundations and a minimum dimension of 30 inches to design isolated (column) foundations for bearing capacity and settlement considerations. In cases where structural loading is light, the minimum recommended foundation sizes, and not the design bearing pressure, may govern the sizes of the foundations.

Total settlements for shallow spread foundations bearing on suitable sands are estimated to be 1 inch or less, and differential settlements are estimated to be less than one-half of the total settlement. These settlement estimates are based on the boring information, the design maximum net allowable soil bearing pressure, the anticipated design structural loads (outlined in Section 1.2), our experience with similar structures and soil conditions, and field verification of suitable bearing soils by SME. Sands and clays settle at differing rates, with settlement in sand occurring within a short period of time (weeks to months) as compared to clays (years). Where sands are encountered within the foundation zone of influence, initial differential settlement could be greater than ½ inch.

2.3 SEISMIC SITE CLASS

Based on the subsurface information obtained from the borings to a maximum depth of 20 feet, seismic site Class D applies to this site in accordance with the most current version of the Michigan Building Code (MBC) referencing Table 20.3-1 in ASCE Standard ASCE/SEI 7.

2.4 PAVEMENT DESIGN RECOMMENDATIONS

The following sections of the report present our recommendations for the proposed standard-duty parking lot pavement and heavy-duty HMA drive lane pavement described in Section 1.2.

2.4.1 TRAFFIC

Specific traffic loading information for the pavements was not provided to SME. We understand the pavement areas will be primarily trafficked by school buses, light-duty passenger vehicles, and occasional delivery trucks and garbage/recycling haulers. For design purposes, we have assumed up to eight buses per school day will traffic the bus loop (assumed two trips per day including morning and afternoon). In addition, we have assumed up to two delivery trucks per day and two garbage/recycling haulers per week will traffic the site. We anticipate each bus will traffic the site twice per day (once for morning drop-off and once for afternoon pick-up). We assumed a 200-day school year in our design calculations. We have assumed that the parking areas will experience two-hundred light-duty passenger vehicles per day.

Based on our assumptions, we estimate less than about 180,000 Equivalent Single Axle Loads (ESALs) will occur over a 20-year period in the heavy-duty pavement areas (i.e., main drive lane/bus loop) and less than about 50,000 ESALs will occur over a 20-year period in the light-duty vehicle parking areas. Based on the estimated traffic, we expect environmental factors will be the leading cause of pavement aging and deterioration in the light-duty pavement areas at this site. Should the actual site traffic conditions vary from the traffic assumptions stated herein, contact SME so we can review and revise our recommendations, as necessary.

2.4.2 SUBGRADE SUPPORT CONDITIONS FOR PAVEMENTS

In-situ California Bearing Ratio (CBR) estimates were calculated from the USACE DCP tests performed on the subgrade soils and aggregate base. CBR is an index commonly used in pavement design that gives an indication of the aggregate base and subgrade support characteristics. The USACE has developed relationships to estimate the CBR value from the results of the DCP test. Table 3 shows the general aggregate base and subgrade support conditions for various ranges of average estimated in-situ CBR values based on the DCP test results. Table 4 summarizes the subgrade support conditions encountered below the surface materials.

TABLE 3: GENERAL AGGREGATE BASE AND SUBGRADE SUPPORT CONDITIONS

SUPPORT CONDITIONS	CBR RANGE FOR AGGREGATE BASE MATERIALS (%)	CBR RANGE FOR SUBGRADE SOILS (%)
Good	>80	>10
Marginal	60 to 80	5 to 10
Poor	30 to 60	3 to 5
Very Poor	<30	<3

TABLE 4: SUBGRADE SUPPORT CONDITIONS SUMMARY

BORING NO.	SUBGRADE MATERIAL	DEPTH FROM SURFACE (IN)		AVERAGE CBR (%)	CONDITION
		FROM	TO		
B13	Sand Fill	11	26	11.1	Good
B14	Sand Fill	10	26	10.2	Good
B15	Sand	10	27	24.7	Good

2.4.3 BURIED TOPSOIL AND EXISTING FILL CONSIDERATIONS

The buried topsoil encountered in boring B13 is not considered suitable for support of the proposed pavements, and must be removed (i.e., undercut) and replaced with suitable engineered fill as discussed in Section 2.1.4. As discussed previously, perform test pits or additional borings as needed to further delineate the presence and depth of the buried topsoil and overlying fill within this area. If the additional soil information is obtained prior to construction, the information will assist with construction planning and estimating.

There are inherent risks with constructing pavements over existing, undocumented fills anticipated to remain in-place throughout the site. We believe these risks of poor pavement performance are moderate and can be reduced (but not eliminated) provided the fill is evaluated and prepared as recommended in Sections 2.1.1 and 2.1.2 of this report, and in this section below. We believe the existing fill may be suitable for pavement support, provided:

- The pavement subgrades properly evaluated by SME and prepared as described in Section 2.4.4 of this report.
- The final pavement subgrade passes a proofroll, and unsuitable fill areas are undercut and replaced with engineered fill as described in Section 2.1.4 of this report.
- The Owner accepts the associated risks for poor pavement performance as described below.

If the existing fill will remain in place, further evaluation of the existing fill during construction must be conducted by SME. Further evaluation should include observing the condition of the fill in hand auger borings or shallow test pits, testing the fill using a dynamic cone penetrometer (DCP), observing the condition of the fill in the sides of the excavations (such as for utilities), and observing the response of the surface of the fill when subjected to a proofroll. Existing fill to remain in place should be of sufficient strength and free of deleterious materials, such as excessive debris and organics. Unsuitable existing fill that cannot be improved in place should be removed (i.e., undercut) and replaced with engineered fill that is placed and compacted per the requirements outlined in Section 2.1.4 of this report.

The recommendations provided in the following report sections are based on the assumptions that suitable existing fill will remain in place and be used to support the proposed pavement section. If the Owner does not accept the stated assumptions and risks, please contact SME for revised recommendations.

2.4.4 SUBGRADE PREPARATION FOR PAVEMENTS

The pavement areas should be cleared of existing pavement, unsuitable fill, and other deleterious materials to expose the underlying inorganic subgrade soils. Based on the borings performed in the proposed pavement areas (borings B13 through B15), we expect the exposed subgrade soils at the design subgrade level in the pavement areas will consist predominantly of sand fill, except for boring B15 where native sands were encountered extending to about 3.5 feet below the existing ground surface. Additionally, at boring B13, buried topsoil was encountered below the sand fill extending to a depth of about 4 feet below the existing ground surface. Soils classified as topsoil or buried topsoil, or with an organic content of greater than four percent should be removed and replaced with engineered fill. In

general, the pavement subgrade should be prepared in accordance with Sections 2.1.1, 2.1.2 and 2.1.4 of this report, and as follows.

As noted above, the buried topsoil as encountered in boring B13 is not considered suitable for support of the pavements and must be completely removed. The removal of the organics should extend out from the edge of the pavements on a 2:1 (V:H) slope. Excavations to remove poor/organic soils must be backfilled with engineered fill placed in accordance with the recommendations provided in Section 2.1.4 of this report.

After stripping surficial materials, cutting to design subgrade levels, removing/replacing any organics or deleterious materials, but prior to raising grades, compact the exposed subgrade to a minimum of 95 percent of the maximum dry density determined by the modified Proctor test. Subgrade preparation and the aggregate base layers need to extend out to at least 18 inches beyond the edge of the pavements to provide lateral support for the outer edges. Proofroll the resulting subgrade using a fully loaded tandem axle dump truck. Improve areas exhibiting deflection greater than ½-inch as described in Section 2.1.2. Place and compact engineered fill as presented in Section 2.1.4.

Prior to the placement of the aggregate base, we recommend fine-grading the subgrade to slope downward toward the stormwater drainage structures. Fine-grading of the underlying subgrade will be critical to minimize low-spots below the aggregate base where water can pond, likely resulting in moisture changes and undesirable early pavement distress. Fine-grading the subgrade is important for drainage of perched groundwater, and to achieve a uniform thickness of base course to be placed throughout each of the pavement sections. Also, we recommend installing underdrains at/through low-spots in the prepared subgrade to facilitate drainage of perched groundwater.

Limit construction traffic on the prepared subgrade once the aggregate base layer is placed. Use designated haul roads and staging areas for heavy construction vehicles and equipment/materials storage. Haul roads should be constructed using a layer of crushed stone, possibly in combination with a high-strength woven geotextile fabric or geogrid, if necessary, to stabilize and protect the subgrade. Contact SME for assistance with the type and quantity of stabilization required based on field conditions during construction.

The final subgrade elevation in both cut and fill areas should be proofrolled, as described above, and any loose or soft areas should be recompacted, undercut and replaced with engineered fill or crushed aggregate, or stabilized by other means as recommended by SME based on the site conditions at the time of construction. The criteria for the final proofroll should be a maximum of ½-inch of deflection or rutting. Once the subgrade passes the final proofroll, we recommend the pavement layers be placed soon thereafter to avoid further subgrade disturbance. If additional subgrade disturbance occurs prior to pavement placement, we recommend the subgrade be reevaluated by SME, possibly including another proofroll, to evaluate the severity and identify locations of disturbance.

Unit prices for undercutting and engineered fill should be obtained from bidders, and contingencies for that work could be included in the project budget.

Based on the borings, laboratory tests, climate moisture/temperature effects, and assumed implementation of our recommended subgrade preparations, we have estimated a subgrade resilient modulus of 4,000 psi for determining the pavement design sections.

2.4.5 RECOMMENDED PAVEMENT SECTIONS

We have prepared the pavement design recommendations herein based on our experience with similar projects and AASHTO pavement design methodology. The design pavement sections presented herein are anticipated to provide a useful service life of 20 years if constructed and maintained properly. Maintenance activities including patching and crack sealing need to be performed at periodic intervals to maintain the pavement surface.

The recommended heavy-duty HMA pavement section should be used in areas where regular school buses, delivery truck, or garbage/recycling hauler traffic will occur. The recommended light-duty HMA pavement section should be used in areas trafficked primarily by light-duty passenger vehicles, where regular truck or bus traffic will not occur. The recommended light-duty and heavy-duty HMA pavement sections are provided in the following table.

TABLE 5: RECOMMENDED HMA PAVEMENT SECTIONS – CAR PARKING (LIGHT-DUTY) AND DRIVES AND BUS LOOP (HEAVY-DUTY)

LAYER	MATERIAL	MINIMUM THICKNESS (INCHES)	
		LIGHT-DUTY	HEAVY-DUTY
HMA Wearing Course	MDOT 5EL ⁽¹⁾	1.5	2.0
HMA Leveling Course	MDOT 4EL ⁽¹⁾	2.5	2.5
Aggregate Base	MDOT 21AA Crushed Natural Aggregate or Crushed Limestone	8.0	10.0
Sand Subbase	MDOT Class II	12.0	12.0

NOTES:

1) As modified in Section 2.4.6 – HMA Material Recommendations.

2.4.6 HMA MATERIAL RECOMMENDATIONS

We recommend following the MDOT 2020 Standard Specifications for Construction as related to the proposed pavement construction, unless modified herein. Asphalt binder grade PG64-28 should be used in production of the heavy-duty HMA pavement. Asphalt binder grade PG58-28 should be used in production of the standard-duty HMA pavement. Reclaimed Asphalt Pavement (RAP) should be maintained within MDOT Tier 1 (0 to 17 percent RAP binder by weight) for wearing course mixtures and MDOT Tier 2 (18 to 27 percent RAP binder by weight) for leveling course mixtures.

The asphalt mixtures should be designed for target air voids of three percent and should be compacted to between 94 to 97 percent of the theoretical maximum density as determined per ASTM D2041. We recommend a bond coat of SS-1h emulsion be required between asphalt layers at a rate of 0.1 gallons/square-yard. If a significant time period elapses between placement of subsequent pavement layers, the existing pavement surface should be evaluated, and the surface should be suitably cleaned to remove dust and debris prior to placing the bond coat.

2.4.7 BASE MATERIAL CONSIDERATIONS

The aggregate base should be compacted to a minimum of 95 percent of the maximum dry density determined in accordance with ASTM D1557. We recommend extending the base layer a minimum of one foot beyond the edge of pavement to provide edge support.

2.4.8 PAVEMENT DRAINAGE RECOMMENDATIONS

The pavement system must be properly drained to reduce the potential of frost heaving and softening of the subgrade due to water infiltrating through cracks. The infiltrated water, if not properly drained, is expected to adversely affect the pavement performance. The new pavement surface needs to be designed and installed to provide positive drainage at a minimum slope of 1.5 percent (maximum of two percent).

We recommend installing edge/underdrains, where feasible, to facilitate subsurface drainage. Extend edge/underdrains a minimum of 25 feet along the uphill direction at curb inlets and a minimum of 25 feet in four radial directions from catch basins located at low points, if any. Connect edge/underdrains to proposed drainage structures. Excavate the edge/underdrain trenches to a minimum depth of 18 inches

below the bottom of the sand subbase and a minimum of 12 inches wide. We recommend the edge/underdrains consist of a 6-inch-diameter, perforated, corrugated plastic drainpipe. Wrap the trench in a nonwoven geotextile fabric and backfilled with aggregate meeting MDOT 34R gradational requirements. The fabric should be overlapped on top. The trench should be backfilled to the proposed bottom elevation of the sand subbase.

3. EXCAVATION AND GROUNDWATER MANAGEMENT

Significant groundwater seepage into shallow excavations less than 8.5 feet deep (i.e., approximate elevations ranging from 858.5 to 864.5 feet) is expected to be controlled using conventional sump pit and pump operations. However, groundwater infiltration and/or accumulations from precipitation events, surface run-off, or perched groundwater conditions could be encountered above the anticipated groundwater level. Higher capacity dewatering would be necessary for excavations extending more than one foot below the groundwater level in the granular soils at this site. A working surface of either crushed aggregate or crushed concrete may be required to protect the exposed subgrade where seepage is encountered. Multiple pumps in slotted casings could be embedded within the crushed concrete/crushed aggregate to maintain reasonably dry excavations.

Based on the site history and boring logs, there is potential for random areas of undocumented fill with variable depths within the proposed building and pavement areas. We recommend the bid documents require prospective contractors to include unit prices for excavating disturbed soils and other unsuitable soils and replacing them with engineered fill. Also, establish a contingency in the construction budget for this work. Actual quantities can be verified during construction by measuring excavation volumes, counting truck loads, or a combination of the two methods. SME can assist with estimating quantities for establishing the contingency if desired.

Take care during demolition and earthwork operations to protect adjoining and adjacent utility structures. Do not undermine existing structures. Where necessary, install temporary shoring/bracing to properly shore/brace existing structures and protect them from distress.

Vibration levels can be felt at levels well below those required to cause structural damage. Consider vibration monitoring during demolition and construction, as it could reduce the risk of potentially nuisance damage claims from surrounding property and utility owners.

The contractor must provide safely sloped excavations or adequately constructed and braced shoring systems in accordance with federal, state, and local safety regulations for individuals working in an excavation that may expose them to the danger of moving ground. If material is stored or heavy equipment is operated near an excavation, use appropriate shoring to resist the extra pressure due to the superimposed loads.

Handle, transport, and dispose excavated materials and groundwater in accordance with applicable environmental regulatory requirements. Refer to the project environmental consultant for additional information regarding handling and/or disposal of onsite soils and/or groundwater.

4. EVALUATION PROCEDURES

4.1 FIELD EXPLORATION

The proposed number, locations, and depths of the borings were determined jointly by Plante Moran Realpoint and SME. SME located the borings in field and obtained the existing latitude and longitudes at the boring locations using our hand-held global positioning system (GPS). The elevations on the boring logs are rounded to the nearest 1-foot and based on the provided topographic map.

The borings were advanced using a rotary drill rig equipped with continuous flight augers. The borings included soil sampling based on Split-Barrel Sampling procedures.

Groundwater level measurements were recorded during and immediately after completion of each boring. After completion of drilling and obtaining groundwater level measurements, the boreholes were backfilled with auger cuttings. The borings performed through existing asphalt pavement were topped with asphalt cold patch.

The Field Testing Procedures in Appendix B provides more detailed descriptions of field tests typically performed by SME and referenced in this report.

Soil samples recovered from the field exploration were taken to our laboratory for further observations and testing.

Upon completion of the laboratory testing, boring logs were prepared and include the soil descriptions, penetration resistances, pertinent field observations, and the results of the laboratory testing. Each log also includes the estimated existing ground surface elevation. Explanations of symbols and terms used on the boring logs are provided on the Boring Log Terminology sheet included in Appendix A.

Soil samples are normally retained in our laboratory for 60 days and are then disposed, unless instructed otherwise.

4.2 LABORATORY TESTING

The laboratory testing program consisted of visually classifying the recovered samples in accordance with ASTM D-2488. Based on the laboratory testing, we prepared soil descriptions and assigned a group symbol for the various soil strata observed based on the Unified Soil Classification System (USCS). In addition, moisture content and hand penetrometer tests were performed on portions of cohesive samples obtained.

The Laboratory Testing Procedures in Appendix B provides descriptions of the laboratory tests. The results of the laboratory tests are presented on the boring logs and included in Appendix A.

5. SIGNATURES

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APPENDIX A

BORING LOCATION DIAGRAM (FIGURE NO. 1)

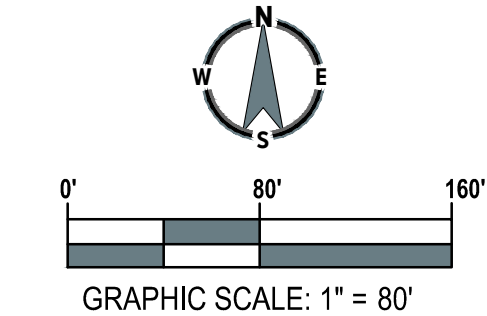
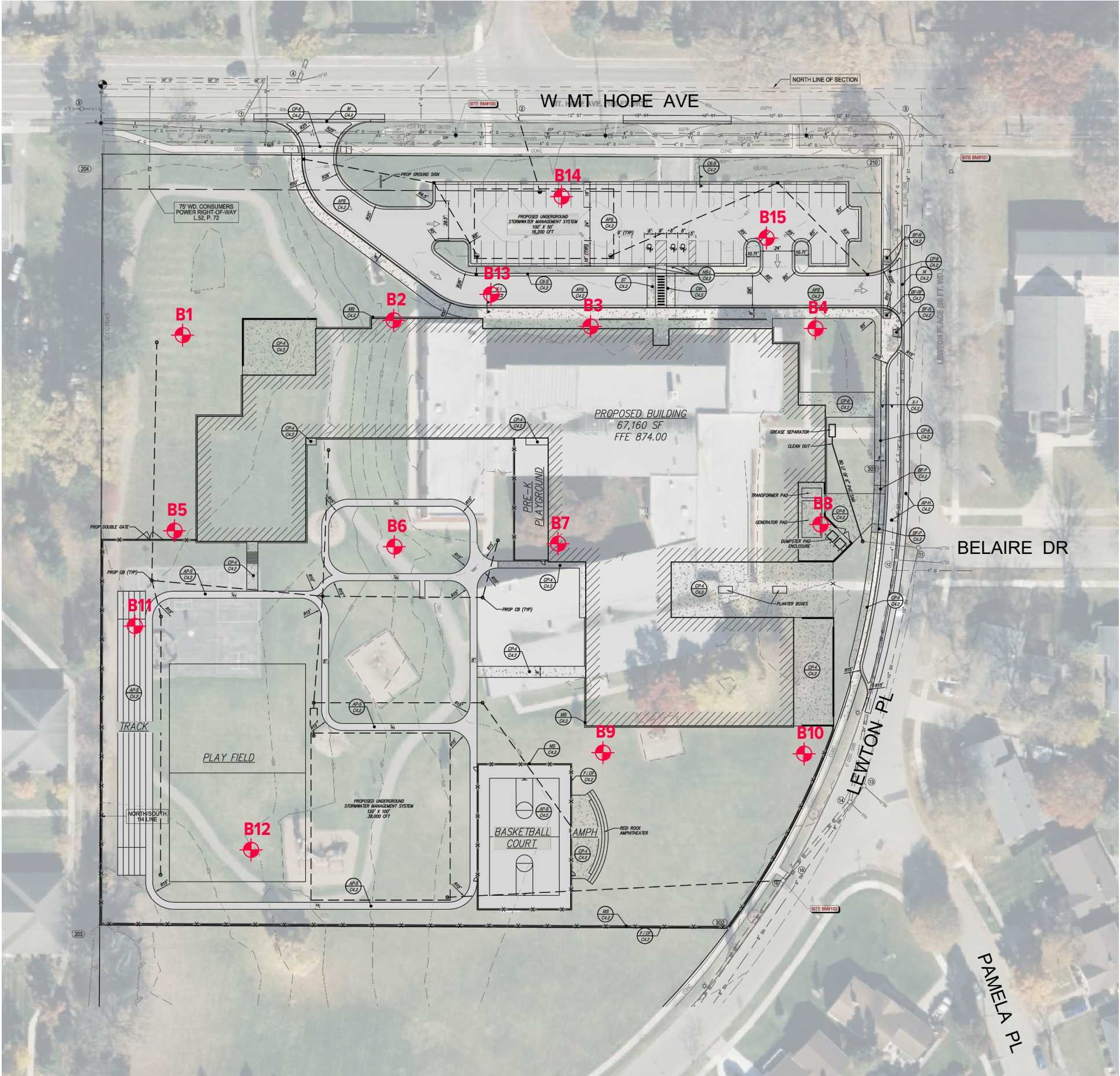
BORING LOG TERMINOLOGY

BORING LOGS (B1 THROUGH B15)

USACE DCP DATA SHEETS (B13 THROUGH B15)

\\sme-inc\pz\WIP\098329.00\CAD\Design Files\BLD\Rev\0\098329.00-BLD.dwg

PLOT DATE: Dec 12, 2024 - 9:26am - julie.blake



LEGEND

APPROXIMATE BORING LOCATION



LOCATION MAP

NOT TO SCALE



- NOTES:
1. BASE DRAWING INFORMATION PROVIDED FROM A PDF/DRAWING TITLED "PAVING & LAYOUT PLAN" (SHEET NO. C4.1), PREPARED BY KINGSCOTT, DATED 11-15-2024.
 2. BASE DRAWING INFORMATION TAKEN FROM BING MAPS WITH A CLIPPED IMAGE DATE ON 12-11-2024.



Project
**LEWTON
ELEMENTARY SCHOOL
RECONSTRUCTION**

Project Location
LANSING, MICHGAN

Sheet Name
**BORING LOCATION
DIAGRAM**

No.	Revision Date

Date
12-11-2024

CADD
JAB

Designer
ARC

Scale
AS NOTED

Project
098329.00

Figure No.
1

DRAWING NOTE: SCALE DEPICTED IS MEANT FOR 11" X 17"
AND WILL SCALE INCORRECTLY IF PRINTED ON ANY
OTHER SIZE MEDIA
NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR
CONSENT OF SME
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BORING LOG TERMINOLOGY

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART		
COARSE-GRAINED SOIL (more than 50% of material is larger than No. 200 sieve size.)		
Clean Gravel (Less than 5% fines)		
GRAVEL More than 50% of coarse fraction larger than No. 4 sieve size		GW Well-graded gravel; gravel-sand mixtures, little or no fines
		GP Poorly-graded gravel; gravel-sand mixtures, little or no fines
Gravel with fines (More than 12% fines)		
		GM Silty gravel; gravel-sand-silt mixtures
		GC Clayey gravel; gravel-sand-clay mixtures
Clean Sand (Less than 5% fines)		
SAND 50% or more of coarse fraction smaller than No. 4 sieve size		SW Well-graded sand; sand-gravel mixtures, little or no fines
		SP Poorly-graded sand; sand-gravel mixtures, little or no fines
Sand with fines (More than 12% fines)		
		SM Silty sand; sand-silt-gravel mixtures
		SC Clayey sand; sand-clay-gravel mixtures
FINE-GRAINED SOIL (50% or more of material is smaller than No. 200 sieve size)		
SILT AND CLAY Liquid limit less than 50%		ML Inorganic silt; sandy silt or gravelly silt with slight plasticity
		CL Inorganic clay of low plasticity; lean clay, sandy clay, gravelly clay
		OL Organic silt and organic clay of low plasticity
SILT AND CLAY Liquid limit 50% or greater		MH Inorganic silt of high plasticity, elastic silt
		CH Inorganic clay of high plasticity, fat clay
		OH Organic silt and organic clay of high plasticity
HIGHLY ORGANIC SOIL		PT Peat and other highly organic soil

OTHER MATERIAL SYMBOLS		

LABORATORY CLASSIFICATION CRITERIA	
GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}^2}{D_{10} \times D_{60}}$ between 1 and 3
GP	Not meeting all gradation requirements for GW
GM	Atterberg limits below "A" line or PI less than 4
GC	Atterberg limits above "A" line with PI greater than 7
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{D_{30}^2}{D_{10} \times D_{60}}$ between 1 and 3
SP	Not meeting all gradation requirements for SW
SM	Atterberg limits below "A" line or PI less than 4
SC	Atterberg limits above "A" line with PI greater than 7
<p>Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:</p> <p>Less than 5 percent.....GW, GP, SW, SP More than 12 percent.....GM, GC, SM, SC 5 to 12 percent.....Cases requiring dual symbols</p> <ul style="list-style-type: none"> • SP-SM or SW-SM (SAND with Silt or SAND with Silt and Gravel) • SP-SC or SW-SC (SAND with Clay or SAND with Clay and Gravel) • GP-GM or GW-GM (GRAVEL with Silt or GRAVEL with Silt and Sand) • GP-GC or GW-GC (GRAVEL with Clay or GRAVEL with Clay and Sand) <p>If the fines are CL-ML:</p> <ul style="list-style-type: none"> • SC-SM (SILTY CLAYEY SAND or SILTY CLAYEY SAND with Gravel) • SM-SC (CLAYEY SILTY SAND or CLAYEY SILTY SAND with Gravel) • GC-GM (SILTY CLAYEY GRAVEL or SILTY CLAYEY GRAVEL with Sand) 	
PARTICLE SIZES	
Boulders	- Greater than 12 inches
Cobbles	- 3 inches to 12 inches
Gravel- Coarse	- 3/4 inches to 3 inches
Gravel- Fine	- No. 4 to 3/4 inches
Sand- Coarse	- No. 10 to No. 4
Sand- Medium	- No. 40 to No. 10
Sand- Fine	- No. 200 to No. 40
Silt and Clay	- Less than (0.074 mm)
PLASTICITY CHART	

VISUAL MANUAL PROCEDURE	
<p>When laboratory tests are not performed to confirm the classification of soils exhibiting borderline classifications, the two possible classifications would be separated with a slash, as follows:</p> <p>For soils where it is difficult to distinguish if it is a coarse or fine-grained soil:</p> <ul style="list-style-type: none"> • SC/CL (CLAYEY SAND to Sandy LEAN CLAY) • SM/ML (SILTY SAND to SANDY SILT) • GC/CL (CLAYEY GRAVEL to Gravelly LEAN CLAY) • GM/ML (SILTY GRAVEL to Gravelly SILT) <p>For soils where it is difficult to distinguish if it is sand or gravel, poorly or well-graded sand or gravel; silt or clay; or plastic or non-plastic silt or clay:</p> <ul style="list-style-type: none"> • SP/GP or SW/GW (SAND with Gravel to GRAVEL with Sand) • SC/GC (CLAYEY SAND with Gravel to CLAYEY GRAVEL with Sand) • SM/GM (SILTY SAND with Gravel to SILTY GRAVEL with Sand) • SW/SP (SAND or SAND with Gravel) • GP/GW (GRAVEL or GRAVEL with Sand) • SC/SM (CLAYEY to SILTY SAND) • GM/GC (SILTY to CLAYEY GRAVEL) • CL/ML (SILTY CLAY) • ML/CL (CLAYEY SILT) • CH/MH (FAT CLAY to ELASTIC SILT) • CL/CH (LEAN to FAT CLAY) • MH/ML (ELASTIC SILT to SILT) 	
DRILLING AND SAMPLING ABBREVIATIONS	
2ST	- Shelby Tube - 2" O.D.
3ST	- Shelby Tube - 3" O.D.
AS	- Auger Sample
GS	- Grab Sample
LS	- Liner Sample
NR	- No Recovery
PM	- Pressuremeter
RC	- Rock Core diamond bit. NX size, except where noted
SB	- Split Barrel Sample 1-3/8" I.D., 2" O.D., except where noted
VS	- Vane Shear
WS	- Wash Sample
OTHER ABBREVIATIONS	
WOH	- Weight of Hammer
WOR	- Weight of Rods
SP	- Soil Probe
PID	- Photo Ionization Device
FID	- Flame Ionization Device
DEPOSITIONAL FEATURES	
Parting	- as much as 1/16 inch thick
Seam	- 1/16 inch to 1/2 inch thick
Layer	- 1/2 inch to 12 inches thick
Stratum	- greater than 12 inches thick
Pocket	- deposit of limited lateral extent
Lens	- lenticular deposit
Hardpan/Till	- an unstratified, consolidated or cemented mixture of clay, silt, sand and/or gravel, the size/shape of the constituents vary widely
Lacustrine	- soil deposited by lake water
Mottled	- soil irregularly marked with spots of different colors that vary in number and size
Varved	- alternating partings or seams of silt and/or clay
Occasional	- one or less per foot of thickness
Frequent	- more than one per foot of thickness
Interbedded	- strata of soil or beds of rock lying between or alternating with other strata of a different nature
DESCRIPTION OF RELATIVE QUANTITIES	
<p>The visual-manual procedure uses the following terms to describe the relative quantities of notable foreign materials, gravel, sand or fines:</p> <p>Trace - particles are present but estimated to be less than 5%</p> <p>Few - 5 to 10%</p> <p>Little - 15 to 25%</p> <p>Some - 30 to 45%</p> <p>Mostly - 50 to 100%</p>	

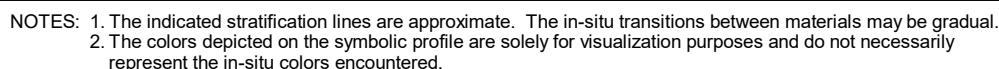
CLASSIFICATION TERMINOLOGY AND CORRELATIONS			
Cohesionless Soils		Cohesive Soils	
Relative Density	N ₆₀ (N-Value) (Blows per foot)	Consistency	Undrained Shear Strength (kips/ft ²)
Very Loose	0 to 4	Very Soft	<2
Loose	5 to 10	Soft	2 - 4
Medium Dense	11 to 30	Medium	5 - 8
Dense	31 to 50	Stiff	9 - 15
Very Dense	51 to 80	Very Stiff	16 - 30
Extremely Dense	Over 81	Hard	> 30
<p>Standard Penetration 'N-Value' = Blows per foot of a 140-pound hammer falling 30 inches on a 2-inch O.D. split barrel sampler, except where noted. N60 values as reported on boring logs represent raw N-values corrected for hammer efficiency only.</p>			



BORING DEPTH: 20 FEET

PROJECT LOCATION: Lansing, Michigan

CHECKED BY: ARC



BACKFILL METHOD: Auger Cuttings

2/12/25 8:18:11 PM



BORING B 2

PAGE 1 OF 1

BORING DEPTH: 20 FEET

PROJECT NAME: Lewton Elementary School Reconstruction

PROJECT NUMBER: 098329.00

CLIENT: Plante Moran Realpoint

PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 11/27/24

COMPLETED: 11/27/24

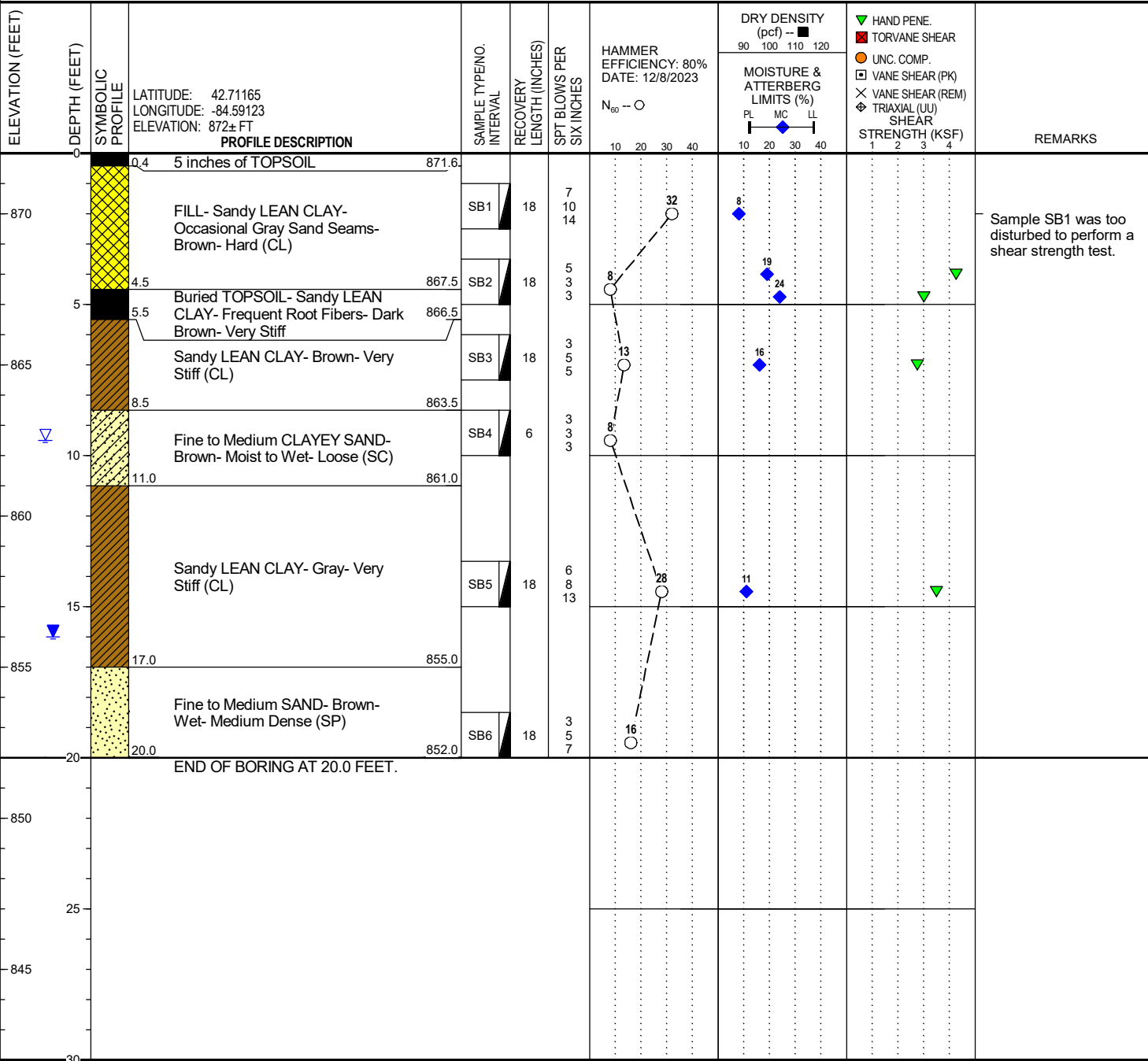
BORING METHOD: Solid-stem Augers

DRILLER: RM

RIG NO.: 531 (CME55 LCX ATV)

LOGGED BY: SMM

CHECKED BY: ARC



GROUNDWATER & BACKFILL INFORMATION

DEPTH (FT) ELEV (FT)

▽ DURING BORING: 9.5 862.5

▽ AT END OF BORING: 16.0 856.0

BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.

2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

2/12/25 8:18:13 PM



BORING B 3

PAGE 1 OF 1

BORING DEPTH: 20 FEET

PROJECT NAME: Lewton Elementary School Reconstruction

PROJECT NUMBER: 098329.00

CLIENT: Plante Moran Realpoint

PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 11/27/24

COMPLETED: 11/27/24

BORING METHOD: Solid-stem Augers

DRILLER: RM

RIG NO.: 531 (CME55 LCX ATV)

LOGGED BY: SMM

CHECKED BY: ARC

ELEVATION (FEET)	DEPTH (FEET)	SYMBOLIC PROFILE	LATITUDE: 42.71164 LONGITUDE: -84.59070 ELEVATION: 873± FT	PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	RECOVERY LENGTH (INCHES)	SPT BLOWS PER SIX INCHES	HAMMER EFFICIENCY: 80% DATE: 12/8/2023 N ₆₀ -- O	DRY DENSITY (pcf) -- ■ 90 100 110 120	MOISTURE & ATTERBERG LIMITS (%) PL MC LL	HAND PENE. TORVANE SHEAR UNC. COMP. VANE SHEAR (PK) VANE SHEAR (REM) TRIAXIAL (UU) SHEAR STRENGTH (KSF)	REMARKS
	0			0.4 5 inches of TOPSOIL 872.6								
				FILL- Sandy LEAN CLAY- Occasional Light Gray Sand Seams- Dark Brown, Brown, and Dark Gray- Very Stiff (CL)	SB1	18	3 3 5	11	16			
870					SB2	18	3 3 4	9	11			
	5			4.5 868.5								
				Sandy LEAN CLAY- Brown- Very Stiff (CL)	SB3	18	4 6 6	16	11			
865					SB4	18	6 8 8	21	11			
	10			11.5 861.5								
				Sandy LEAN CLAY- Frequent Sand Layers below 16.5 feet- Gray- Hard to Stiff (CL)	SB5	18	6 10 12	29	11			4.5+
860												
	15											
					SB6	18	5 6 9	20	10			
855												
	20			20.0 853.0								
				END OF BORING AT 20.0 FEET.								
850												
	25											
845												
	30											

GROUNDWATER & BACKFILL INFORMATION

DEPTH (FT) ELEV (FT)

▽ DURING BORING:

16.5 856.5

▽ AT END OF BORING:

16.5 856.5

BACKFILL METHOD:

Auger Cuttings

NOTES:

1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.

2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

2/12/25 8:18:14 PM



BORING B 4

PAGE 1 OF 1

BORING DEPTH: 20 FEET

PROJECT NAME: Lewton Elementary School Reconstruction

PROJECT NUMBER: 098329.00

CLIENT: Plante Moran Realpoint

PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 11/25/24

COMPLETED: 11/25/24

BORING METHOD: Solid-stem Augers

DRILLER: RM

RIG NO.: 531 (CME55 LCX ATV)

LOGGED BY: SMM

CHECKED BY: ARC

ELEVATION (FEET)	DEPTH (FEET)	SYMBOLIC PROFILE	LATITUDE: 42.71164 LONGITUDE: -84.59010 ELEVATION: 873± FT	PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	RECOVERY LENGTH (INCHES)	SPT BLOWS PER SIX INCHES	HAMMER EFFICIENCY: 80% DATE: 12/8/2023 N ₆₀ -- O	DRY DENSITY (pcf) -- ■ 90 100 110 120	MOISTURE & ATTERBERG LIMITS (%) PL MC LL	HAND PENE. TORVANE SHEAR UNC. COMP. VANE SHEAR (PK) VANE SHEAR (REM) TRIAxIAL (UU) SHEAR STRENGTH (KSF)	REMARKS
	0			0.9 11 inches of TOPSOIL								
					SB1	18	3	8				
							3					
870				Fine SILTY SAND- Brown- Moist- Loose (SM)			3					
					SB2	18	4	11	10		▼	
	5						4					
				Sandy LEAN CLAY- Occasional Silt and Sand Seams- Brown- Stiff to Very Stiff (CL)		5	4					
					SB3		5		11		▼	
							6					
865					SB4	18	5		11			
							8				▼	
	10						12					
860					SB5	18	7		11		▼	
				Sandy LEAN CLAY- Occasional Wet Sand Layers below 17 feet- Gray- Very Stiff to Stiff (CL)			10					
							10					
	15											
855					SB6	18	4		13		▼	
							4					
							4					
	20			END OF BORING AT 20.0 FEET.			6					
850												
	25											
845												
	30											

GROUNDWATER & BACKFILL INFORMATION

DEPTH (FT) ELEV (FT)

▼ DURING BORING: 17.0 856.0

▼ AT END OF BORING: 17.0 856.0

BACKFILL METHOD: Auger Cuttings

NOTES:

1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.

2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.



BORING DEPTH: 20 FEET

PROJECT NUMBER: 098329.00

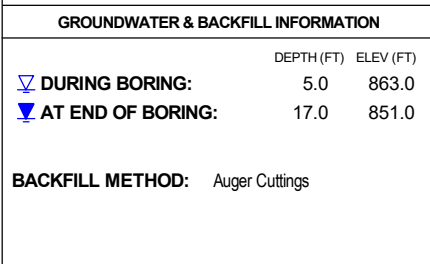
PROJECT LOCATION: Lansing, Michigan

COMPLETED: 11/26/24

BORING METHOD: Solid-stem Augers

RIG NO.: 531 (CME55 LCX ATV) **LOGGED BY:** SMM

CHECKED BY: ARC



NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

2/12/25 8:18:16 PM



BORING B 6

PAGE 1 OF 1

BORING DEPTH: 20 FEET

PROJECT NAME: Lewton Elementary School Reconstruction

PROJECT NUMBER: 098329.00

CLIENT: Plante Moran Realpoint

PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 11/26/24

COMPLETED: 11/26/24

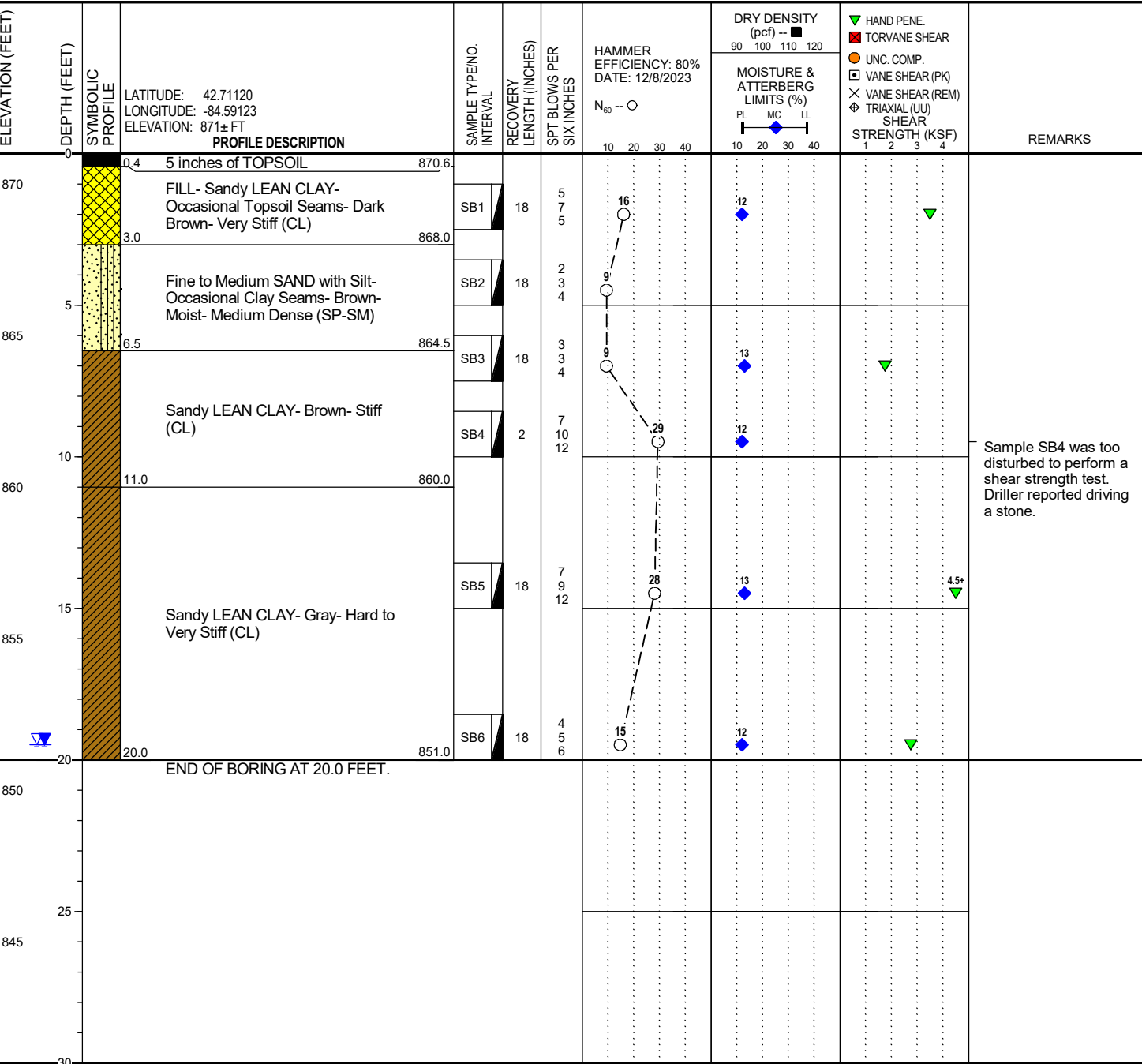
BORING METHOD: Solid-stem Augers

DRILLER: RM

RIG NO.: 531 (CME55 LCX ATV)

LOGGED BY: SMM

CHECKED BY: ARC



GROUNDWATER & BACKFILL INFORMATION

DEPTH (FT) ELEV (FT)

▼ DURING BORING: 19.5 851.5

▼ AT END OF BORING: 19.5 851.5

BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

2/12/25 8:18:17 PM



BORING B 7

PAGE 1 OF 1

BORING DEPTH: 20 FEET

PROJECT NAME: Lewton Elementary School Reconstruction

PROJECT NUMBER: 098329.00

CLIENT: Plante Moran Realpoint

PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 11/27/24

COMPLETED: 11/27/24

BORING METHOD: Solid-stem Augers

DRILLER: RM

RIG NO.: 531 (CME55 LCX ATV)

LOGGED BY: SMM

CHECKED BY: ARC

ELEVATION (FEET)	DEPTH (FEET)	SYMBOLIC PROFILE	LATITUDE: 42.71121 LONGITUDE: -84.59079 ELEVATION: 874± FT	PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	RECOVERY LENGTH (INCHES)	SPT BLOWS PER SIX INCHES	HAMMER EFFICIENCY: 80% DATE: 12/8/2023 N ₆₀ -- O	DRY DENSITY (pcf) -- ■ 90 100 110 120	MOISTURE & ATTERBERG LIMITS (%) PL MC LL	LEGEND ▼ HAND PENE. ■ TORVANE SHEAR ● UNC. COMP. □ VANE SHEAR (PK) × VANE SHEAR (REM) ⊕ TRIAXIAL (UU) SHEAR STRENGTH (KSF) 1 2 3 4	REMARKS
	0			4 inches of TOPSOIL								
					SB1	18	7 9 11	27	13			
870	5			FILL - Sandy LEAN CLAY- Occasional Root Fibers- Brown and Dark Brown- Very Stiff to Hard (CL)	SB2	18	4 4 4	11	13			4.5+
					SB3	18	4 4 5	12	7			
865	10			Sandy LEAN CLAY- Occasional Sand Layers- Brown- Very Stiff (CL)	SB4	18	5 7 10	23	11			
					SB5	18	6 8 11	25	13			4.5+
860	15			Sandy LEAN CLAY- Gray- Hard (CL)								
					SB6	18	6 7 9	21	11			
855	20			END OF BORING AT 20.0 FEET.								
850	25											
845	30											

GROUNDWATER & BACKFILL INFORMATION

GROUNDWATER WAS NOT ENCOUNTERED

BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

2/12/25 8:18:19 PM



BORING B 8

PAGE 1 OF 1

BORING DEPTH: 20 FEET

PROJECT NAME: Lewton Elementary School Reconstruction

PROJECT NUMBER: 098329.00

CLIENT: Plante Moran Realpoint

PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 11/25/24

COMPLETED: 11/25/24

BORING METHOD: Solid-stem Augers

DRILLER: RM

RIG NO.: 531 (CME55 LCX ATV)

LOGGED BY: SMM

CHECKED BY: ARC

ELEVATION (FEET)	DEPTH (FEET)	SYMBOLIC PROFILE	LATITUDE: 42.71125 LONGITUDE: -84.59009 ELEVATION: 874± FT	PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	RECOVERY LENGTH (INCHES)	SPT BLOWS PER SIX INCHES	HAMMER EFFICIENCY: 80% DATE: 12/8/2023 N ₆₀ -- O	DRY DENSITY (pcf) -- ■ 90 100 110 120	MOISTURE & ATTERBERG LIMITS (%) PL MC LL	▼ HAND PENE. ■ TORVANE SHEAR ● UNC. COMP. □ VANE SHEAR (PK) × VANE SHEAR (REM) ◆ TRIAXIAL (UU) SHEAR STRENGTH (KSF) 1 2 3 4	REMARKS
	0			0.7 8 inches of TOPSOIL 873.3								
	5			FILL- Sandy LEAN CLAY- Occasional Root Fibers- Brown and Dark Brown- Hard (CL)	SB1	18	4 7 7	19	7		4.5+	
	10			6.0 868.0	SB2	18	4 3 5	11	14		4.5+	
	15			Sandy LEAN CLAY- Brown- Hard to Very Stiff (CL)	SB3	18	6 8 8	21	12		4.5+	
	20			11.0 863.0	SB4	18	5 6 8	19	12			
	25			Sandy LEAN CLAY- Gray- Very Stiff to Stiff (CL)	SB5	18	6 8 8	21	15			
	30			20.0 854.0	SB6	18	4 5 5	13	11			
				END OF BORING AT 20.0 FEET.								
	35											
	40											
	45											
	50											
	55											
	60											
	65											
	70											
	75											
	80											
	85											
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	245											
	250											
	255											
	260											
	265											
	270											
	275											
	280											
	285											
	290											
	295											
	300											

GROUNDWATER & BACKFILL INFORMATION

GROUNDWATER WAS NOT ENCOUNTERED

BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

2/12/25 8:18:20 PM



BORING B 9

PAGE 1 OF 1

BORING DEPTH: 20 FEET

PROJECT NAME: Lewton Elementary School Reconstruction

PROJECT NUMBER: 098329.00

CLIENT: Plante Moran Realpoint

PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 11/26/24

COMPLETED: 11/26/24

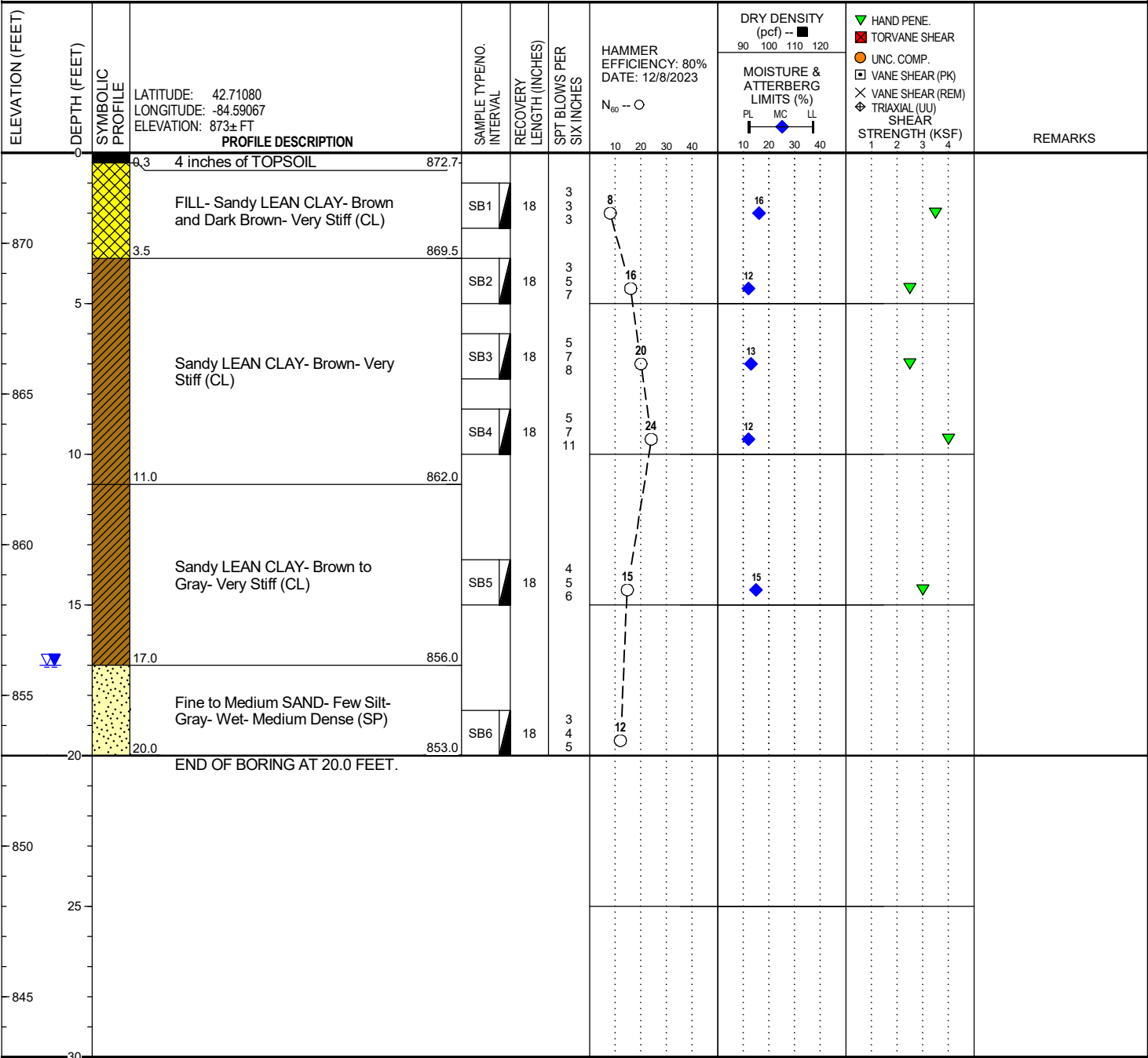
BORING METHOD: Solid-stem Augers

DRILLER: RM

RIG NO.: 531 (CME55 LCX ATV)

LOGGED BY: SMM

CHECKED BY: ARC



GROUNDWATER & BACKFILL INFORMATION

DEPTH (FT) ELEV (FT)

▽ DURING BORING: 17.0 856.0

▽ AT END OF BORING: 17.0 856.0

BACKFILL METHOD: Auger Cuttings

NOTES:

1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.

2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

2/12/25 8:18:21 PM



BORING B10

PAGE 1 OF 1

BORING DEPTH: 20 FEET

PROJECT NAME: Lewton Elementary School Reconstruction

PROJECT NUMBER: 098329.00

CLIENT: Plante Moran Realpoint

PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 11/26/24

COMPLETED: 11/26/24

BORING METHOD: Solid-stem Augers

DRILLER: RM

RIG NO.: 531 (CME55 LCX ATV)

LOGGED BY: SMM

CHECKED BY: ARC

ELEVATION (FEET)	DEPTH (FEET)	SYMBOLIC PROFILE	LATITUDE: 42.71080 LONGITUDE: -84.59013 ELEVATION: 873± FT	PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	RECOVERY LENGTH (INCHES)	SPT BLOWS PER SIX INCHES	HAMMER EFFICIENCY: 80% DATE: 12/8/2023 N ₆₀ -- O	DRY DENSITY (pcf) -- ■ 90 100 110 120	MOISTURE & ATTERBERG LIMITS (%) PL MC LL	▼ HAND PENE. ■ TORVANE SHEAR ● UNC. COMP. □ VANE SHEAR (PK) × VANE SHEAR (REM) ◆ TRIAXIAL (UU) SHEAR STRENGTH (KSF) 1 2 3 4	REMARKS
	0			0.5 6 inches of TOPSOIL 872.5								
				FILL- Sandy LEAN CLAY- Occasional Gray Silt Seams- Brown and Dark Brown- Hard (CL)	SB1	18	2 3 5	11	12		4.5+	
870				3.5 869.5	SB2	18	6 7 8	20	11		4.5+	
	5			Sandy LEAN CLAY- Brown- Hard to Very Stiff (CL)	SB3	18	5 7 10	23	11		4.5+	
865				9.5 863.5	SB4	18	6 7 8	20	11			
	10											
860				Sandy LEAN CLAY- Occasional Sand Layers below 16 feet- Gray- Very Stiff to Medium (CL)	SB5	18	3 4 6	13	15			
	15											
855					SB6	18	3 4 4	11	13			
	20			20.0 853.0								
				END OF BORING AT 20.0 FEET.								
850												
	25											
845												
	30											

GROUNDWATER & BACKFILL INFORMATION

DEPTH (FT) ELEV (FT)

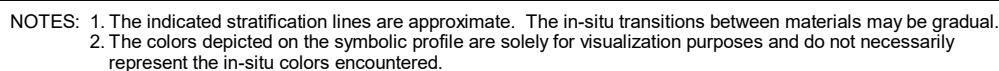
▼ DURING BORING: 16.0 857.0

▼ AT END OF BORING: 18.0 855.0

BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.

2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.



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BORING B12

PAGE 1 OF 1

BORING DEPTH: 10 FEET

PROJECT NAME: Lewton Elementary School Reconstruction

PROJECT NUMBER: 098329.00

CLIENT: Plante Moran Realpoint

PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 11/26/24

COMPLETED: 11/26/24

BORING METHOD: Solid-stem Augers

DRILLER: RM

RIG NO.: 531 (CME55 LCX ATV)

LOGGED BY: SMM

CHECKED BY: ARC

ELEVATION (FEET)	DEPTH (FEET)	SYMBOLIC PROFILE	LATITUDE: 42.71061 LONGITUDE: -84.59161 ELEVATION: 869± FT	PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	RECOVERY LENGTH (INCHES)	SPT BLOWS PER SIX INCHES	HAMMER EFFICIENCY: 80% DATE: 12/8/2023 N ₆₀ -- O	DRY DENSITY (pcf) -- ■ 90 100 110 120	MOISTURE & ATTERBERG LIMITS (%) PL MC LL	HAND PENE. TORVANE SHEAR UNC. COMP. VANE SHEAR (PK) VANE SHEAR (REM) TRIAXIAL (UU) SHEAR STRENGTH (KSF)	REMARKS
	0			4 inches of TOPSOIL								
	0.3			868.7								
	2.0			Sandy LEAN CLAY- Brown- Very Stiff (CL)	SB1	18	3	5		21		
							2					
				Fine to Medium CLAYEY SAND- Brown- Moist- Loose (SC)			2					
	3.5			865.5								
865					SB2	18	4	9		11		
							3					
							4					
	5											
				Sandy LEAN CLAY- Brown- Stiff to Hard (CL)	SB3	18	4	16		12		
							5					
							7					
860					SB4	18	7	25		11		
							8					
							11					
	10.0			859.0							4.5+	
				END OF BORING AT 10.0 FEET.								
855												
	15											
850												
	20											
845												
	25											
840												
	30											

GROUNDWATER & BACKFILL INFORMATION

DEPTH (FT) ELEV (FT)

▽ DURING BORING: 8.0 861.0

▽ AT END OF BORING: 8.0 861.0

BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

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BORING B13

PAGE 1 OF 1

BORING DEPTH: 10 FEET

PROJECT NAME: Lewton Elementary School Reconstruction

PROJECT NUMBER: 098329.00

CLIENT: Plante Moran Realpoint

PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 11/25/24

COMPLETED: 11/25/24

BORING METHOD: Solid-stem Augers

DRILLER: RM

RIG NO.: 531 (CME55 LCX ATV)

LOGGED BY: SMM

CHECKED BY: ARC

ELEVATION (FEET)	DEPTH (FEET)	SYMBOLIC PROFILE	LATITUDE: 42.71170 LONGITUDE: -84.59097 ELEVATION: 872± FT	PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	RECOVERY LENGTH (INCHES)	SPT BLOWS PER SIX INCHES	HAMMER EFFICIENCY: 80% DATE: 12/8/2023 N ₆₀ -- ○	DRY DENSITY (pcf) -- ■ 90 100 110 120		MOISTURE & ATTERBERG LIMITS (%) PL MC LL		STRENGTH (KSF) 1 2 3 4	REMARKS
									MOISTURE & ATTERBERG LIMITS (%) PL MC LL					
870	0		0.3 4 inches of ASPHALT 871.7	SB1	18	3	8	8		26				
	0.9 7 inches of SAND and GRAVEL 871.1													
	2.5 FILL- Fine to Medium SILTY SAND- Occasional Topsoil Seams- Brown and Dark Brown- Moist- Loose (SM) 869.5		SB2	18	2	8	16							
	4.0 Buried TOPSOIL- Sandy LEAN CLAY- Few Gravel- Dark Brown- Very Stiff 868.0													
865	5		Sandy LEAN CLAY- Frequent Sand Layers below 7 feet- Brown- Very Stiff to Stiff (CL)	SB3	18	3	13	15						
				SB4	18	3	9	13						
	10													
END OF BORING AT 10.0 FEET.														
860														
15														
855														
20														
850														
25														
845														
30														

GROUNDWATER & BACKFILL INFORMATION

DEPTH (FT) ELEV (FT)

▽ DURING BORING: 9.0 863.0

▽ AT END OF BORING: 9.0 863.0

BACKFILL METHOD:

Auger Cuttings capped with Asphalt Cold Patch & EPCO Hole Plug

NOTES:

1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

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BORING B14

PAGE 1 OF 1

BORING DEPTH: 10 FEET

PROJECT NAME: Lewton Elementary School Reconstruction

PROJECT NUMBER: 098329.00

CLIENT: Plante Moran Realpoint

PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 11/25/24

COMPLETED: 11/25/24

BORING METHOD: Solid-stem Augers

DRILLER: RM

RIG NO.: 531 (CME55 LCX ATV)

LOGGED BY: SMM

CHECKED BY: ARC

ELEVATION (FEET)	DEPTH (FEET)	SYMBOLIC PROFILE	LATITUDE: 42.71190 LONGITUDE: -84.59078 ELEVATION: 871± FT	PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	RECOVERY LENGTH (INCHES)	SPT BLOWS PER SIX INCHES	HAMMER EFFICIENCY: 80% DATE: 12/8/2023 N ₆₀ -- O	DRY DENSITY (pcf) -- ■ 90 100 110 120	MOISTURE & ATTERBERG LIMITS (%) PL MC LL	HAND PENE. TORVANE SHEAR UNC. COMP. VANE SHEAR (PK) VANE SHEAR (REM) TRIAXIAL (UU) SHEAR STRENGTH (KSF)	REMARKS
870	0			4 inches of ASPHALT								
	0.8			6 inches of SAND and GRAVEL								
					SB1	18	2	9				
							2					
							5					
	5			FILL- Fine to Medium SAND with Silt- Occasional Clay Layers- Few Gravel- Brown- Moist- Loose to Medium Dense (SP-SM)	SB2	18	3	7				
							3					
							2					
865												
					SB3	18	5					
							7	23				
							10					
	7.5											
				Sandy LEAN CLAY- Brown- Stiff (CL)								
					SB4	18	7		13			
							7					
							7					
							7					
	10			END OF BORING AT 10.0 FEET.								
860												
	15											
855												
	20											
850												
	25											
845												
	30											

GROUNDWATER & BACKFILL INFORMATION

GROUNDWATER WAS NOT ENCOUNTERED

BACKFILL METHOD: Auger Cuttings capped with Asphalt Cold Patch

NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

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BORING B15

PAGE 1 OF 1

BORING DEPTH: 10 FEET

PROJECT NAME: Lewton Elementary School Reconstruction

PROJECT NUMBER: 098329.00

CLIENT: Plante Moran Realpoint

PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 11/25/24

COMPLETED: 11/25/24

BORING METHOD: Solid-stem Augers

DRILLER: RM

RIG NO.: 531 (CME55 LCX ATV)

LOGGED BY: SMM

CHECKED BY: ARC

ELEVATION (FEET)	DEPTH (FEET)	SYMBOLIC PROFILE	LATITUDE: 42.71182 LONGITUDE: -84.59023 ELEVATION: 872± FT	PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	RECOVERY LENGTH (INCHES)	SPT BLOWS PER SIX INCHES	HAMMER EFFICIENCY: 80% DATE: 12/8/2023 N ₆₀ -- O	DRY DENSITY (pcf) -- ■ 90 100 110 120	MOISTURE & ATTERBERG LIMITS (%) PL MC LL	HAND PENE. TORVANE SHEAR UNC. COMP. VANE SHEAR (PK) VANE SHEAR (REM) TRIAxIAL (UU) SHEAR STRENGTH (KSF)	REMARKS
	0			4.3 4 inches of ASPHALT 871.7								
	0.8			6 inches of SAND and GRAVEL 871.2								
				Fine to Medium SAND with Silt and Gravel- Dark Brown- Moist-Medium Dense (SP-SM)	SB1	18	5 6 5	15				
870												
	5				SB2	18	4 5 5	13	12			
				Sandy LEAN CLAY- Occasional Silt Seams- Brown- Very Stiff to Hard (CL)	SB3	18	4 6 6	16	13			
865												
	10				SB4	18	4 7 8	20	13		4.5+	
	10.0			END OF BORING AT 10.0 FEET.								
860												
	15											
855												
	20											
850												
	25											
845												
	30											

GROUNDWATER & BACKFILL INFORMATION

GROUNDWATER WAS NOT ENCOUNTERED

BACKFILL METHOD: Auger Cuttings capped with Asphalt Cold Patch

NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

**USACE DCP DATA SHEET**

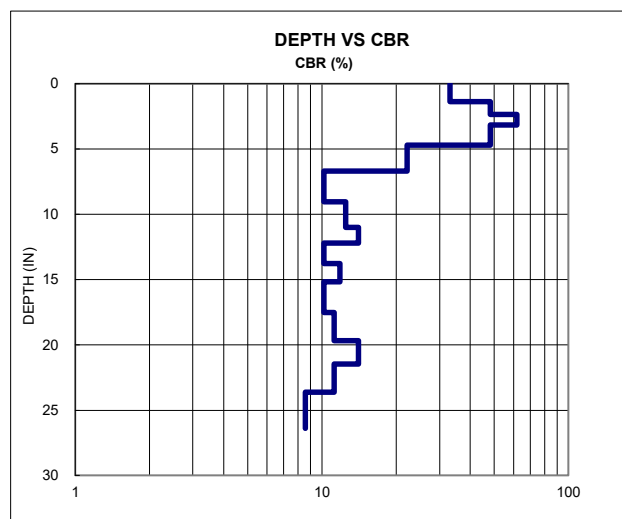
PROJECT: Lepton Elementary School Reconstruction
PROJECT NO.: 098329.00
LOCATION: Lansing, Michigan
CLIENT: Plante Moran Realpoint
DATE: 11/25/24
BY: RM
DEPTH TO START OF TEST FROM SURFACE: 0

BORING:	B13
LATITUDE:	42.7117
LONGITUDE:	-84.591
GROUND EL.:	872± FT

[illegible]

Hammer Blow Factor: 1 for 17.6 lb Hammer and 2 for 10.1 lb Hammer

NOTES: 1) Refer to corresponding Boring Log for soil and groundwater information.



CBR Ranges for Subgrade Conditions

CBR < 3: Very Poor

CBR 5-10: Marginal

CBR 3-5: Poor

CBR >10: Good

Depth to Groundwater From Surface

During Drilling: **See Note 1**

Upon Completion: **See Note 1**

Depth of Frost From Surface : See Note 1

[illegible]



USACE DCP DATA SHEET

PROJECT: Lewton Elementary School Reconstruction
PROJECT NO.: 098329.00
LOCATION: Lansing, Michigan
CLIENT: Plante Moran Realpoint
DATE: 11/25/24
BY: RM
DEPTH TO START OF TEST FROM SURFACE: 0

BORING: B14

LATITUDE: 42.7119

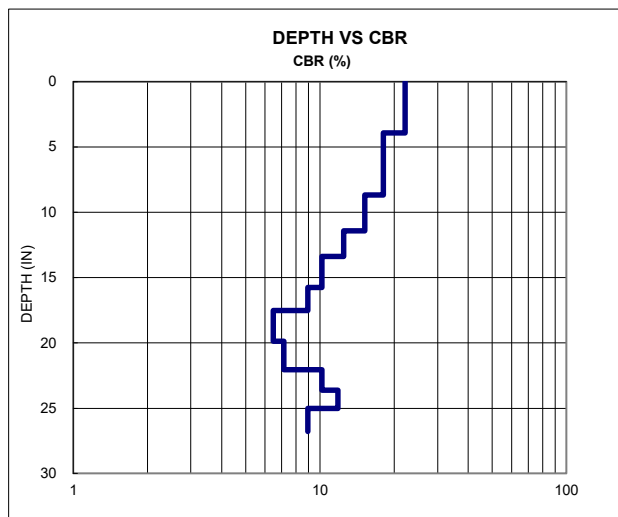
LONGITUDE: -84.5908

GROUND EL.: 871± FT

[illegible]

Hammer Blow Factor: 1 for 17.6 lb Hammer and 2 for 10.1 lb Hammer

NOTES: 1) Refer to corresponding Boring Log for soil and groundwater information.



CBR Ranges for Subgrade Conditions

CBR< 3: Very Poor

CBR 5-10: Marginal

CBR 3-5: Poor

CBR >10: Good

Depth to Groundwater From Surface

During Drilling: **See Note 1**

Upon Completion: **See Note 1**

Depth of Frost From Surface : See Note 1

[illegible]



USACE DCP DATA SHEET

PROJECT: Lewton Elementary School Reconstruction

PROJECT NO.: 098329.00

LOCATION: Lansing, Michigan

CLIENT: Plante Moran Realpoint

DATE: 11/25/24

BY: RM

BORING: B15

LATITUDE: 42.71182

LONGITUDE: -84.5902

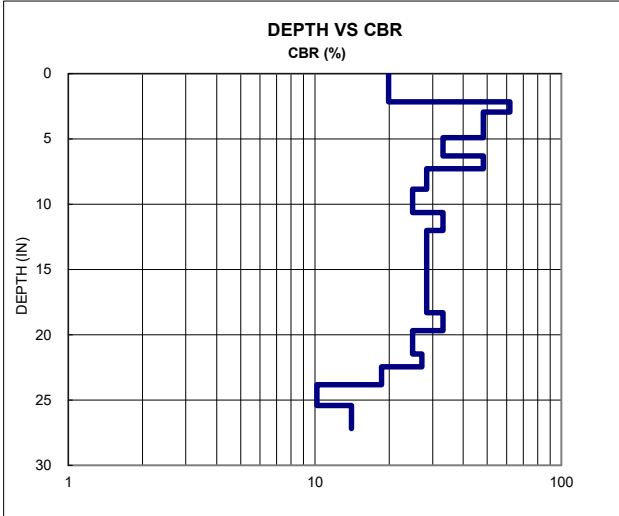
GROUND EL.: 872± FT

DEPTH TO START OF TEST FROM SURFACE: 0 inches

No. of Blows	Accum. Pen. (mm)	Pen. per Blow Set (mm)	Pen. per Blow (mm)	Hammer Blow Factor	CBR (%)	Depth from Surface (inches)	Comment	Average CBR (%)
0	320	0						
5	375	55	11	1	19.9	2.2		
5	395	20	4	1	61.8	3.0		
5	420	25	5	1	48.1	3.9		
5	445	25	5	1	48.1	4.9		
5	480	35	7	1	33.0	6.3		
5	505	25	5	1	48.1	7.3		
5	545	40	8	1	28.4	8.9		36.6
5	590	45	9	1	24.9	10.6		
5	625	35	7	1	33.0	12.0		
5	665	40	8	1	28.4	13.6		
5	705	40	8	1	28.4	15.2		
5	745	40	8	1	28.4	16.7		
5	785	40	8	1	28.4	18.3		
5	820	35	7	1	33.0	19.7		
5	865	45	9	1	24.9	21.5		
3	890	25	8	1	27.2	22.4		
3	925	35	12	1	18.6	23.8		
2	965	40	20	1	10.2	25.4		
3	1010	45	15	1	14.1	27.2		24.7

Hammer Blow Factor: 1 for 17.6 lb Hammer and 2 for 10.1 lb Hammer

NOTES: 1) Refer to corresponding Boring Log for soil and groundwater information.



CBR Ranges for Subgrade Conditions

CBR< 3: Very Poor CBR 5-10: Marginal

CBR 3-5: Poor CBR >10: Good

Depth to Groundwater From Surface

During Drilling: See Note 1

Upon Completion: See Note 1

Depth of Frost From Surface :

See Note 1

From	To	Material
		See Note 1

APPENDIX B
FIELD TESTING PROCEDURES
LABORATORY TESTING PROCEDURES
LIMITATIONS PERTAINING TO SUBSURFACE CONDITIONS

FIELD TESTING PROCEDURES

STANDARD PENETRATION TESTS

The Standard Penetration Tests (SPT) generally follow the American Standard Test Method (ASTM) D-1586 “Standard Test Method for SPT and Split-Barrel Sampling of Soils”. It is typically performed using a 2-inch O.D. split-spoon sampler, which is driven to obtain samples at selected intervals. The number of blows of a 140-pound hammer dropping 30 inches is recorded for each of three or four, 6-inch penetration intervals for an 18 or 24-inch drive at each sample location. The sum of blow counts for the second and third 6-inch penetration intervals equals the raw (uncorrected) N-value for a given sample interval (i.e. 5-4-2, $N = 6$). We periodically calibrate SME’s drill rig auto-hammers. The hammer efficiency determined from this calibration is used to calculate the corrected N-values (N_{60}), as reported on the logs. When sampling in rock or hard soil, where a penetration of 6 inches or less was obtained for 50 hammer blows, the actual blow count and depth of penetration in inches for that interval is recorded (i.e. 50/2”). When sampling in very loose or very soft soil, where a penetration of more than 6 inches is obtained for a single hammer blow, the actual depth of penetration for that hammer blow is recorded (i.e. 1-0-0). Where the sampling equipment advanced under its own weight, “WOH” (weight of hammer) and the corresponding penetration depth are shown on the boring logs.

INFILTRATION TESTS

In-situ infiltration tests generally follow the double-ring infiltrometer field test procedures outlined in Appendix E in the Low Impact Development (LID) Manual for Michigan (dated 2008) prepared by the Southeast Michigan Council of Governments (SEMCOG). This procedure is also referenced in the States of Indiana, Ohio, and Kentucky applicable local manuals. The double-ring infiltrometer field test set-up consists of performing a boring or test pit to the test depth, installing an outer 6-inch-diameter standpipe and an inner 4-inch-diameter standpipe, and then driving the standpipes a suitable distance, per the referenced manual, below the bottom of the test depth. Soil is pre-soaked with approximately 12 inches of water for approximately one hour. The water drop rate per the last 30 minutes of the soaking period determines the subsequent interval for infiltration readings (i.e., 10- or 30-minute intervals). After completing the soaking period, standpipes are filled with water to a height of approximately 12 inches above the test depth, and water level changes in the standpipes are measured with a water level measuring tape with markings every 0.01 feet and recorded after the time intervals. This procedure is repeated until a minimum of four consecutive height changes within 1/4-inch of one another are measured. The height drop that occurred during the final time interval or the average stabilized rate is used to calculate the infiltration rate. After completion of the double-ring infiltrometer field test, the standpipes are removed, and the test hole is backfilled.

DYNAMIC CONE PENETROMETER (DCP)

USACE TESTS

Dynamic Cone Penetrometer (DCP) testing designed by the U.S. Army Corps of Engineers (USACE) is conducted to estimate the California Bearing Ratio (CBR) of the subgrade materials and existing pavement sub-layers. The USACE DCP consists of a 5/8-inch-diameter steel rod with a steel cone attached to one end driven by a sliding dual mass hammer. The rate of penetration per blow is measured at selected penetration, or hammer drop, intervals. CBR is an index commonly used in pavement design that provides an indication of subgrade support characteristics. The Corps of Engineers developed relationships to estimate the CBR value from the results of the USACE DCP test.

SME DCP TESTS

SME Dynamic Cone Penetrometer (DCP) test consists of dropping a 10-pound slide hammer that falls 24 inches and drives a rod with a 1-1/8-inch conical tip into the subgrade. The number of hammer drops required to drive the cone penetrometer are recorded for each six-inch increment and are used to estimate the relative density of the granular soils. The DCP blow counts were used to estimate Standard Penetration Test resistances (N-values) commonly used in geotechnical evaluations, based on empirical correlations developed by SME.

PRESSUREMETER TESTING

Pressuremeter testing in the field models the static loading characteristics of the soil and the resulting analyses based on pressuremeter test results are considered to be a more accurate indicator of the ultimate foundation bearing pressure, and associated settlement, than analyses using empirical correlations based on dynamic test methods, such as the Standard Penetration Test (SPT) and/or dynamic cone penetrometer (DCP) tests. Results of the SPT and/or DCP were recorded, at the pressuremeter test locations and depths to provide additional information on the relative density of the in-place subgrade, and to correlate the pressuremeter test results with data obtained at other site locations. The pressuremeter test depths were selected to provide representative information corresponding to the bearing soils anticipated within the stress influence zone of the proposed footings at the design bearing levels.

In the pressuremeter test, a radial expandable cylindrical probe is inserted into a prepared borehole at the selected testing depth. After obtaining N-values from driving a standard 2-inch O.D. diameter split-spoon sampler, borehole preparation consisted of then driving a 3-inch O.D. split-spoon sampler (or using a roller bit with wash rotary methods) to develop the appropriately sized borehole diameter for the pressuremeter probe. The cylindrical probe was inserted into the borehole to the sampling depth and then expanded against the sides of the borehole by pressurizing fluid within the system using a hydraulic screw-jack console positioned at the ground surface.

Simultaneous measurements of pressure and volume change within the probe were observed at the pressuremeter console and recorded. The pressure was incrementally increased until the maximum probe volume was reached, or until significant creep deformation (soil failure) was observed.

MUCK PROBE

The muck probe consists of a smooth rod about 1/2-inch in diameter manually pushed into the subgrade until encountering significant resistance (determined “by feel”), presumably indicating the bottom of organic soil stratum.

VANE SHEAR TESTING

In-situ vane shear testing generally follows the American Standard Test Method (ASTM) D-2573 “Standard Test Method for Field Vane Shear Test in Cohesive Soil”. Per the ASTM, the field vane shear test consists of placing a four-bladed vane (sized based on the expected cohesive soil strength) in the undisturbed soil and rotating it from the surface at a constant rate to determine the torque required to shear a cylindrical surface with the vane. This torque, or moment, is then converted to the unit shearing resistance of the failure surface by limit equilibrium analysis. Friction of the vane rod and instrument is either minimized during readings by an open hole, casing, or accounted for and subtracted from the total torque to determine the torque applied to the vane. After initially shearing the soil to determine the peak “undisturbed” ultimate shear strength, the test can be repeated to determine the remolded “residual” ultimate shear strength. The ratio of the peak shear strength divided by the remolded shear strength equals the degree of sensitivity.

DEGREE OF SENSITIVITY

DEGREE OF SENSITIVITY	DESCRIPTION
2	Insensitive
4	Moderately Sensitive
8	Extra Sensitive

ELECTRICAL RESISTIVITY TESTING

Field or laboratory resistivity testing generally follows the American Standard Test Method (ASTM) G-57 “Standard Test Method for Measurement of Soil Resistivity Using the Four-Electrode Method”.

FIELD TESTING

Per the ASTM, the field Wenner four-electrode method requires four metal electrode probes placed with equal separation at various distances in a straight line. The probes are inserted in the surface of the soil to a depth not exceeding 5 percent of the minimum separation of the electrodes (or 12 inches maximum, whichever is less). The electrode

separation is selected with consideration of the soil strata location and depth of interest. A voltage is impressed between the outer electrodes and the voltage drop between the inner electrodes is measured. The resulting resistivity measurement represents the average resistivity of a hemisphere of soil of a radius equal to the electrode separation.

LABORATORY TESTING

Soil is tamped into a soil box to resemble the compaction where the soil sample was taken until the soil is level with the top of the box. Two brass pins are inserted at the premanufactured distances into the soil sample with two endpins connected to the box. The four test leads are connected to the soil box. A voltage is impressed between the two endpins to measure the resistance, and soil resistivity is calculated based on the product-specified conversion.

CONE PENETRATION TESTING

Cone Penetration Tests (CPT) measures the soil resistance to the penetration of a standard 10 square centimeter (cm) projected area. The cone is hydraulically pushed into the soil at approximately a 2 cm per second rate. Soil resistance is recorded in kilograms per square cm at 20 cm depth intervals. Soil friction values are measured by a friction sleeve at each test interval.

LABORATORY TESTING PROCEDURES

VISUAL ENGINEERING CLASSIFICATION

Visual classification was performed on recovered samples. The appended General Notes and Unified Soil Classification System (USCS) sheets include a brief summary of the general method used visually classify the soil and assign an appropriate USCS group symbol. The estimated group symbol, according to the USCS, is shown in parentheses following the textural description of the various strata on the boring logs appended to this report. The soil descriptions developed from visual classifications are sometimes modified to reflect the results of laboratory testing.

MOISTURE CONTENT

Moisture content tests were performed by weighing samples from the field at their in-situ moisture condition. These samples were then dried at a constant temperature (approximately 110° C) overnight in an oven. After drying, the samples were weighed to determine the dry weight of the sample and the weight of the water that was expelled during drying. The moisture content of the specimen is expressed as a percent and is the weight of the water compared to the dry weight of the specimen.

HAND PENETROMETER TESTS

In the hand penetrometer test, the unconfined compressive strength of a cohesive soil sample is estimated by measuring the resistance of the sample to the penetration of a small calibrated, spring-loaded cylinder. The maximum capacity of the penetrometer is 4.5 tons per square-foot (tsf). Theoretically, the undrained shear strength of the cohesive sample is one-half the unconfined compressive strength. The undrained shear strength (based on the hand penetrometer test) presented on the boring logs is reported in units of kips per square-foot (ksf).

TORVANE SHEAR TESTS

In the Torvane test, the shear strength of a low strength, cohesive soil sample is estimated by measuring the resistance of the sample to a torque applied through vanes inserted into the sample. The undrained shear strength of the samples is measured from the maximum torque required to shear the sample and is reported in units of kips per square-foot (ksf).

LOSS-ON-IGNITION (ORGANIC CONTENT) TESTS

Loss-on-ignition (LOI) tests are conducted by first weighing the sample and then heating the sample to dry the moisture from the sample (in the same manner as determining the moisture content of the soil). The sample is then re-weighed to determine the dry weight and then heated for 4 hours in a muffle furnace at a high temperature (approximately 440° C). After cooling, the sample is re-weighed to calculate the amount of ash remaining, which in turn is used to determine the amount of organic matter burned from the original dry sample. The organic matter content of the specimen is expressed as a percent compared to the dry weight of the sample.

ATTERBERG LIMITS TESTS

Atterberg limits tests consist of two components. The plastic limit of a cohesive sample is determined by rolling the sample into a thread and the plastic limit is the moisture content where a 1/8-inch thread begins to crumble. The liquid limit is determined by placing a 1/2-inch thick soil pat into the liquid limits cup and using a grooving tool to divide the soil pat in half. The cup is then tapped on the base of the liquid limits device using a crank handle. The number of drops of the cup to close the gap formed by the grooving tool 1/2 inch is recorded along with the corresponding moisture content of the sample. This procedure is repeated several times at different moisture contents and a graph of moisture content and the corresponding number of blows is plotted. The liquid limit is defined as the moisture content at a nominal 25 drops of the cup. From this test, the plasticity index can be determined by subtracting the plastic limit from the liquid limit.

LIMITATIONS PERTAINING TO SUBSURFACE CONDITIONS

EXISTING FILL

It is sometimes difficult to distinguish between existing fill present at a site and natural soils based on samples and cuttings from small-diameter boreholes, especially if portions of the fill do not contain man-made materials, debris, topsoil, or organic layers, and when the fill appears similar in composition to the local natural soils. Therefore, consider the delineation of fill described on the logs, if encountered, to be approximate.

The composition of existing site fill, if encountered, may change abruptly over short distances and will vary from what is reported on the logs. The descriptions of debris within fill may not accurately indicate the quantity, composition, or size of the debris, and may not fully include the types of debris existing within the site fills. Perform test pits if existing fill is encountered to further evaluate the condition of the fill, particularly if the fill will be utilized for support of overlying structures and/or other improvements.

GROUNDWATER

Hydrostatic groundwater levels, and perched groundwater conditions, will fluctuate throughout the year, based on variations in precipitation, evaporation, run-off, and other factors. The groundwater information reported on the logs represent conditions at the time the readings were taken and may vary from the groundwater conditions encountered at other times.

SUBSURFACE PROFILE

The profile described in this report and included on the logs is a generalized description of the conditions observed. The stratification depths described in this report and shown on the logs indicate a zone of transition from one soil type to another. They are not meant to delineate exact depths of change between soil types. Soil conditions may vary between or away from the exploration locations. Refer to the logs for the soil descriptions, rock descriptions (when applicable), and results of the field and laboratory tests at the specific exploration locations.

If only borings with hollow-stem or solid-stem augers are performed, consider thickness measurements of surficial materials reported on the logs (e.g., gravel, asphalt, concrete, aggregate base) to be approximate since mixing of the surface materials with the underlying subgrade can occur while advancing the augers, and it is difficult to measure the thickness of surface materials in small-diameter boreholes. Perform additional evaluations for more accurate measurements of surface materials, such as test pits for topsoil and gravel thicknesses, coring for pavement thicknesses, and hand sampling for aggregate thickness.

RADON

The need for radon control systems for this project was not evaluated as part of our current scope of services. Contact the local building authority to verify whether radon control systems are necessary to meet the applicable local building codes or other requirements. If radon control methods are required, incorporate the recommendations regarding the below-slab leveling course materials and vapor retarders presented in this report with the specific materials and measures necessary to meet the applicable radon control methods. Contact SME for further recommendations.

APPENDIX C

IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL-ENGINEERING REPORT GENERAL COMMENTS

Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer

will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the “Findings” Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site’s subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual site-wide subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report’s Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals’ misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals’ plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note*

conspicuously that you’ve included the material for information purposes only. To avoid misunderstanding, you may also want to note that “informational purposes” means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled “limitations,” many of these provisions indicate where geotechnical engineers’ responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a “phase-one” or “phase-two” environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer’s services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer’s recommendations will not of itself be sufficient to prevent moisture infiltration.* Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists.*



**GEOPROFESSIONAL
BUSINESS
ASSOCIATION**

Telephone: 301/565-2733

e-mail: info@geoprofessional.org www.geoprofessional.org

GENERAL COMMENTS

BASIS OF GEOTECHNICAL REPORT

This report has been prepared in accordance with generally accepted geotechnical engineering practices to assist in the design and/or evaluation of this project. If the project plans, design criteria, and/or other project information referenced in this report and utilized by SME to prepare our recommendations are changed, the conclusions and recommendations contained in this report are not considered valid unless the changes are reviewed, and the conclusions and recommendations of this report are modified or approved in writing.

The discussions and recommendations contained in this report are based on the available project information, described in this report, and the geotechnical data obtained from the field exploration at the locations indicated in the report. Variations in soil and groundwater conditions commonly occur between or away from sampling locations. The nature and extent of the variations may not become evident until the time of construction. If significant variations are observed during construction, SME must be contacted to reevaluate the recommendations of this report.

In the process of obtaining and testing samples and preparing this report, procedures are followed that represent reasonable and accepted practice in the field of geotechnical engineering. Specifically, field logs are prepared during the field exploration that describe field occurrences, sampling locations, and other information. Samples obtained in the field are frequently subjected to additional testing and reclassification in the laboratory and differences may exist between the field logs and the report logs.

The engineer preparing the report reviews the field logs, laboratory classifications, and test data and then prepares the report logs. Our recommendations are based on the contents of the report logs and the information contained therein.

REVIEW OF DESIGN DETAILS, PLANS, AND SPECIFICATIONS

Retain SME to review the design details, project plans, and specifications to verify those documents are consistent with the recommendations contained in this report.

REVIEW OF REPORT INFORMATION WITH PROJECT TEAM

Implementation of our recommendations may affect the design, construction, and performance of the proposed improvements, along with the potential inherent risks involved with the proposed construction. The client and key members of the design team, including SME, should discuss the issues covered in this report so the issues are understood and applied in a manner consistent with the owner's budget, tolerance of risk, and expectations for performance and maintenance.

FIELD VERIFICATION OF GEOTECHNICAL CONDITIONS

SME needs to be retained to continue our services through construction so we may observe and evaluate the actual subsurface conditions relative to the recommendations made in this report, and so we can verify the recommendations of this report are properly implemented during construction. This may avoid misinterpretation of our recommendations by other parties and will allow us to review and modify our recommendations if variations in the site subsurface conditions are encountered.

PROJECT INFORMATION FOR CONTRACTOR

This report and any future addenda or other reports regarding this site needs to be made available to prospective contractors prior to submitting their proposals for their information only and to supply them with facts relative to the subsurface evaluation and laboratory test results. If the selected contractor encounters subsurface conditions during construction, which differ from those presented in this report, the contractor needs to promptly describe the nature and extent of the differing conditions in writing and SME needs to be notified so we can verify those conditions. The construction contract needs to include provisions for dealing with differing conditions, and contingency funds for potential problems during earthwork and foundation construction. We would be pleased to assist with the development of contract provisions based on our experience.

The contractor needs to be prepared to handle environmental conditions encountered at this site, which may affect the excavation, removal, or disposal of soil; dewatering of excavations; and health and safety of workers. Any Environmental Assessment reports prepared for this site need to be made available for review by bidders and the successful contractor.

THIRD PARTY RELIANCE/REUSE OF THIS REPORT

This report has been prepared solely for the use of our Client for the project specifically described in this report. This report cannot be relied upon by other parties not involved in the project, unless specifically allowed by SME in writing. SME also is not responsible for the interpretation by other parties of the geotechnical data and the recommendations provided herein.



*Passionate People Building
and Revitalizing our World*





Summary of Scanning for Underground Storage Tanks (UST's)

Prepared For: Triterra

Prepared By:

Brian Chmielewski

brian.chmielewski@gprsinc.com

Senior Project Manager-Great Lakes

517.512.0018

July 2, 2014

July 2, 2024

Triterra

Attn: Don McNabb

Email: don.mcnabb@triterra.us

Site: 2000 Lewton Place, Lansing, Michigan

We appreciate the opportunity to provide this report for our work completed on July 1, 2024

PURPOSE

The purpose of this project was to search for any suspected underground storage tanks (USTs) or suspected UST-related piping/anomalies remaining on the property. The scope of work consisted of one location measuring approximately 5,000 square feet. The interiors of buildings were excluded from the scope of this.

EQUIPMENT

- **Underground Scanning GPR Antenna.** The antenna with frequencies ranging from 250 MHz-450 MHz is mounted in a stroller frame which rolls over the surface. The surface needs to be reasonably smooth and unobstructed in order to obtain readable scans. Obstructions such as curbs, landscaping, and vegetation will limit the feasibility of GPR. The data is displayed on a screen and marked in the field in real time. The total depth achieved can be as much as 8' or more with this antenna but can vary widely depending on the types of materials being scanned through. Some soil types such as clay may limit maximum depths to 3' or less. As depth increases, targets must be larger in order to be detected and non-metallic targets can be especially difficult to locate. Depths provided should always be treated as estimates as their accuracy can be affected by multiple factors. For more information, please visit: [Link](#)
- **GPS.** This handheld GPS unit offers accuracy down to 4 inches; however, the accuracy will depend on the satellite environment and obstructions and should not be considered to be survey-grade. Features can be collected as points, lines, or areas and then exported into Google Earth or overlaid on a CAD drawing. For more information, please visit: [Link](#)

PROCESS

Initial GPR scans were collected in order to evaluate the data and calibrate the equipment. Based on these findings, a scanning strategy is formed, consisting of scanning the entire area in a grid with 5.0 foot scan spacing in order to locate any potential UST's that may remain at the site. The GPR data is viewed in real time and anomalies in the data were located and marked on the surface along with their depths using paint. Relevant scan examples were saved and will be provided in this report.


LIMITATIONS

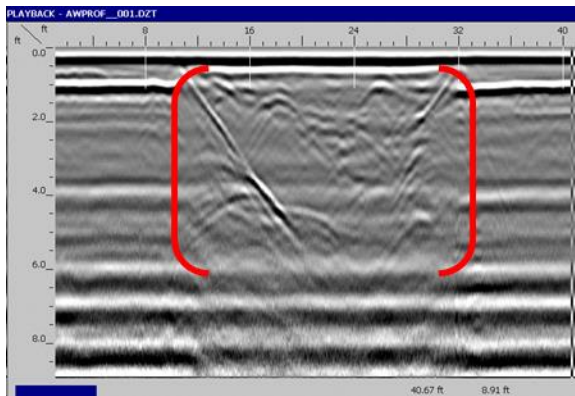
Please keep in mind that there are limitations to any subsurface investigation. The equipment may not achieve maximum effectiveness due to soil conditions, above ground obstructions, reinforced concrete, and a variety of other factors. No subsurface investigation or equipment can provide a complete image of what lies below. Our results should always be used in conjunction with as many methods as possible including consulting existing plans and drawings, exploratory excavation or potholing, visual inspection of above-ground features, and utilization of services such as One Call/811. Depths are dependent on many factors so depth accuracy can vary throughout a site and should be treated as estimates only. Relevant scan examples were saved and will be provided in this report.

FINDINGS

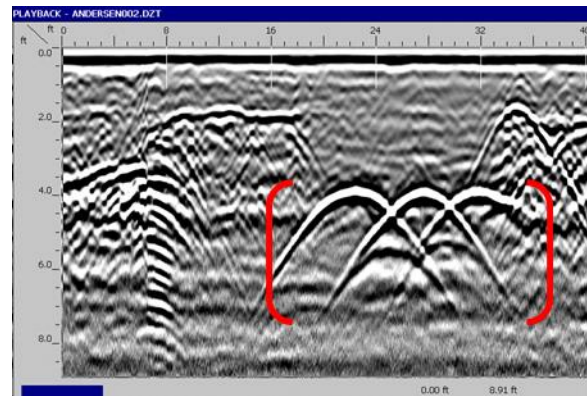
The subsurface conditions at the time of the scanning allowed for maximum GPR depth penetration of three feet in most areas. Multiple utilities were observed during the scanning; however, utility locating was not part of the scope of this project. The equipment and methods used did not detect reactions from potential UST's. The potential exists for USTs to remain onsite if they are located outside of the scan area, beneath a limitation listed in this report and/or if they are deeper than three feet below ground surface, the effective GPR penetration depth observed at this site. The following pages will provide further explanation of the findings.



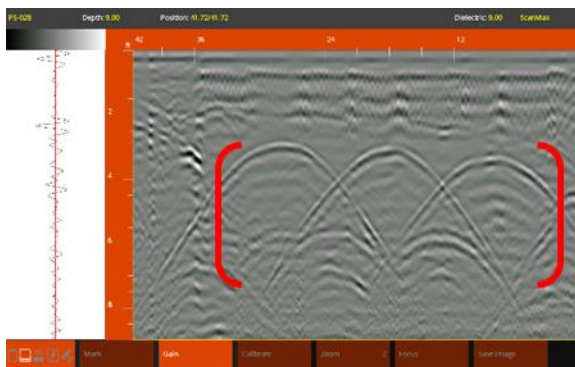
Prepared for: Triterra Prepared By: Brian Chmielewski Date of Scanning: 07/01/2024	Terms and Conditions GPRS does not provide land survey or civil engineering data collection or documentation. This is provided as a reference map of the field markings and is not survey-grade.	LEGEND				2000 Lewton Place, Lansing, Michigan	Prepared by: 
		(White Line)	SCAN BOUNDARY				



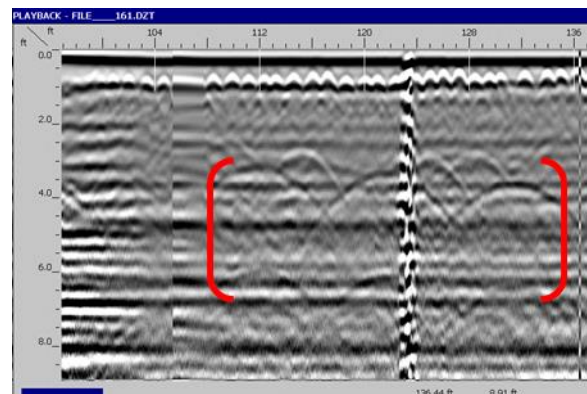
Sample GPR data screenshot showing a possible former tank pit or excavation. The change in the data from the excavation is apparent but GPR cannot determine whether this is due to a tank removal or whether tanks may still exist beyond the maximum depth penetration of the GPR signal.



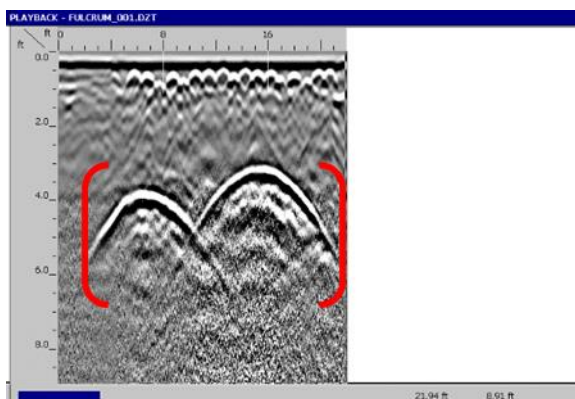
Sample GPR data screenshot showing three reactions from probable USTs. The diameters cannot be determined from these hyperbolas but they can be seen to be larger than a reaction from a typical utility.



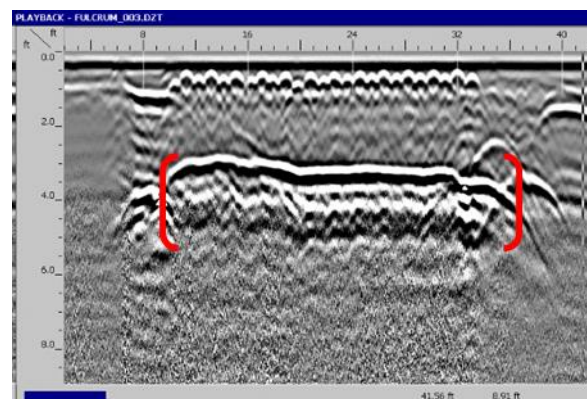
Sample GPR data screenshot showing three reactions from known USTs at an active fueling station. The concrete above the USTs is reinforced with wire mesh.



Sample GPR data screenshot showing three reactions from known USTs at an active fueling station. These USTs are non-metallic and therefore have a weaker reflection that is more difficult and sometimes impossible to identify in the GPR data.



Sample GPR data screenshot showing two potential USTs. These reactions are larger than a typical utility but large utilities can look identical to a UST.



Sample GPR data screenshot showing a scan collected parallel along the top one of the suspected USTs shown in the data to the left. A parallel scan is used to determine a clear beginning and end to the reaction to the reaction which is an indicator of a UST and to determine an approximate length.

Sample Data Screenshots.
(Not taken from this project)

Location:
previously collected from various sites





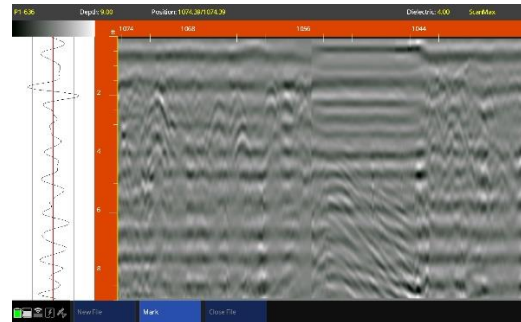
Picture 1: View of survey area facing west.



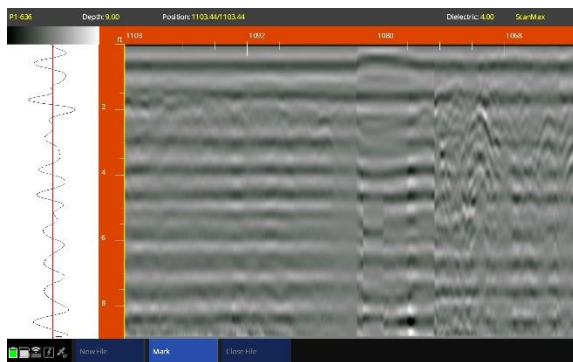
Picture 2: View of survey area facing south.



Picture 3: View of survey area facing west.



Picture 4: Screenshot of GPR data collected within the scan boundary



Picture 5: Screenshot of GPR data collected within the scan boundary

GPR Data Screenshots and Photos

2000 Lewton Place, Lansing, Michigan



CLOSING

GPRS, Inc. has been in business since 2001, specializing in underground storage tank location, concrete scanning, utility locating, and shallow void detection for projects throughout the United States. I encourage you to visit our website (www.gprsinc.com) and contact any of the numerous references listed.

The subsurface conditions at the time of the scanning allowed for maximum GPR depth penetration of three feet in most areas. Multiple utilities were observed during the scanning; however, utility locating was not part of the scope of this project. The equipment and methods used did not detect reactions from potential UST's. The potential exists for USTs to remain onsite if they are located outside of the scan area, beneath a limitation listed in this report and/or if they are deeper than three feet below ground surface, the effective GPR penetration depth observed at this site.

GPRS appreciates the opportunity to offer our services, and we look forward to continuing to work with you on future projects. Please feel free to contact us for additional information or with any questions you may have regarding this report.

Signed,



Brian Chmielewski
Senior Project Manager—Great Lakes



Direct: 517.512.0018
brian.chmielewski@gprsinc.com
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Reviewed,



Bruce Lemmon
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Kingscott Associates, Inc.
Architects/Engineers
Portage, Michigan

Lewton Elementary School
Building & Site Demolition
Lansing School District
Lansing, Michigan

SECTION 012200 UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
 - 1. Section 312000 "Earth Moving".

1.3 DEFINITIONS

- A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. 1: for undercut and replacement of poor soils.

1. Description: Unit price to include disposal of poor soils and import and placement of one of the following soil type, each with geotextile fabric up to proposed subgrade elevation.
 - a. 1" x 3" crushed concrete
 - b. 21AA crushed concrete
 - c. Class II conventional granular fill
2. Unit of measurement: Cubic yard of installed material.
3. Unit Price: Dollars per cubic yard.

END SECTION 012200

SECTION 013300
ARCHITECT'S SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting RFI's, Shop Drawings, Product Data, Samples, and other submittals.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Architect's responsive action.
- B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL PROCEDURES

- A. General: Electronic copies of CAD Drawings of the Contract Documents will be provided by Architect for Contractor's use in preparing submittals. See 1.4 below.
- B. All submittals must be in electronic form. Paper copies are not acceptable unless specifically listed. The architect will review, stamp and return an electronic document for the contractor's use. Copies of the reviewed shop drawings shall be provided by the contractor for distribution as required by the Construction Manager.
- C. Each submittal item shall be submitted in its entirety as one complete package including all information required to fully review the item. Material sample, data, warranty and maintenance information, and drawings shall come as one package. Submittals missing required components and / or without product selections identified will be rejected without review.
- D. Compliance Certificate: Refer to the attached Compliance Certificate. Compliance Certificates are to be used by contractors to indicate the products/devices intended for use in this project without the need and time for product data submittals. Contractors shall use Compliance Certificates whenever possible to expedite the work and limit paper work. Items listed on the form must be approved products listed in the specifications. No substitutions allowed. Select one (1) source for each category, sign this sheet, and submit as the contractor's commitment to use products required by the contract documents. No further product data submittals are required for this section. Physical sample, color samples, or layout shop drawings must be submitted where required by the specification. Refer to the attached specification list for sections that are subject to this certificate. **NOTE: Not all specification sections listed below will apply to the project listed above. There might not be specification sections included that are in the**

project listed above, in that case coordinate with architect at post bid interview for submittal requirements.

- E. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- F. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.
- G. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - 1. RFI's, request for information: Allow 5 working days for initial response for each RFI. Allow additional time if coordination with subsequent RFI is required, or when additional information is need for the response.
 - 2. Shop drawings, sample, and product data:
 - a. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 - b. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 - c. Resubmittal Review: Allow 15 days for review of each resubmittal.
 - d. Sequential Review: where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
 - e. Submissions that are large or of multiple submissions or requires detailed or lengthy review by the Architect or his consultant may require additional time.
 - f. Submissions for products or material that require a long lead time for delivery shall be noted as such and marked "Top Priority" so the architect may expedite the process. The architect will expedite reviews when the contractor legitimately can't submit within a reasonable time due to construction schedule. Failure to submit in a timely manner or to allow sufficient time for initial review and resubmittal reviews may result in project delays, additional service charges by the architect, or other penalties for the contractor.

- H. Identification: Place a permanent label or title block on each submittal for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
 2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
 3. Include the following information on label for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name and address of Contractor.
 - e. Name and address of subcontractor.
 - f. Name and address of supplier.
 - g. Name of manufacturer.
 - h. Submittal number or other unique identifier, including revision identifier.
 - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06100.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01.A).
 - i. Number and title of appropriate Specification Section.
 - j. Drawing number and detail references, as appropriate.
 - k. Location(s) where product is to be installed, as appropriate.
 - l. Other necessary identification.
- I. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.
- J. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
1. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.
- K. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form including electronic submittals. Architect will discard submittals received from sources other than the Construction Manager. Architect will return any submittal with a transmittal, which doesn't fully list, and properly identify the enclosed items.
- L. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked "Review or reviewed with comments."
- M. Distribution: Furnish copies of reviewed submittals to the Construction Manager, manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

1.4 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

- A. General: At Contractor's written request, copies of Architect's CAD files will be provided to the Contractor for Contractor's use in connection with Project, subject to the following conditions:
 - 1. The Architect will provide, electronic data files, compatible with AutoCAD for contractor's convenience and use in the preparation of shop drawings. **Refer to Terms and Conditions at the end of this specification.** Requests for electronic data shall be in written form through the architect. Prior to the release of electronic files, the Architect will require a signed waiver of release. Contractors should allow a minimum of 1-week for this process.

PART 2 - RFI'S – REQUEST FOR INFORMATION

- 1. All RFI's shall be submitted to the Architect in electronic form. PDF's and Word files are acceptable.
- 2. PDF RFI forms shall include an editable text area for response, date, and signature.
- 3. RFI's shall be distributed by e-mail. E-mail title shall be specific to job name, and RFI number. This is mandatory for proper tracking.
- 4. Faxed and Hand written RFI's are not acceptable and will be rejected.

PART 3 - PRODUCTS

3.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
 - 1. Submittal Types:
 - a. Shop Drawing
 - b. Product Data
 - c. Sample
 - d. Other
- B. Kingscott Review Stamp Statement: "Reviewed only for the limited purpose of checking for conformance with the design concept expressed in the Contract Documents. Dimensions, quantities, accuracy, assembly methods, installation methods, coordination with other trades and field verification are the responsibility of the contractor."
 - 1. The following Actions will be taken:
 - a. Reviewed with no exceptions
 - b. Reviewed with Exceptions
 - c. Revise and resubmit
 - d. Rejected
- C. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. Use the Material Compliance form when permitted and whenever possible to save time and paper work.
 2. If information must be specially prepared for submittal because standard data are not suitable for use, submit as Shop Drawings, not as Product Data.
 3. Mark each copy of each submittal to show which products and options are applicable. Unmarked submittals will be rejected. Failure to mark appropriate products will result in rejection of the submittal.
 4. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Manufacturer's catalog cuts.
 - e. Wiring diagrams showing factory-installed wiring.
 - f. Printed performance curves.
 - g. Operational range diagrams.
 - h. Compliance with specified referenced standards.
 - i. Testing by recognized testing agency.
 5. Number of Copies: Submit one electronic copy of Product Data, unless otherwise indicated. Architect will return one electronic copy. See the Construction Manager's submittal requirements for final record and distribution copy requirements.
- D. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal of Architect's CAD Drawings is otherwise permitted.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.
 - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - f. Shop work manufacturing instructions.
 - g. Templates and patterns.
 - h. Schedules.
 - i. Notation of coordination requirements.
 - j. Notation of dimensions established by field measurement.
 - k. Relationship to adjoining construction clearly indicated.
 - l. Seal and signature of professional engineer if specified.
 - m. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
 3. Number of Copies: Submit one opaque (bond) copy, and one electronic copy of each submittal. Architect will return one electronic copy for printing and distribution.

- E. Samples: **Submit Physical Samples** for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of appropriate Specification Section.
 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available. **Scanned color charts, samples, etc. will be REJECTED. Send physical samples, color charts, etc. as described in each specification section.**
 - a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
 5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection. **Scanned color charts, samples, etc., will be REJECTED. Send physical samples, color charts, etc. as described in each specification section.**
 - a. Number of Samples: Submit three sets of Samples. Architect will retain one Sample set; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.

3.2 DELEGATED DESIGN

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit four copies of a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 4 - EXECUTION

4.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions prior to submission for review. It is the contractor's responsibility to review and identify major discrepancy with the contract documents, and significant missing information. Documents with discrepancies and substantially missing information shall be returned for revisions prior to submission to the Construction Manager.
- B. Mark with approval stamp before submitting to the Construction Manager.
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

4.2 CONSTRUCTION MANAGER'S REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions prior to submission for review. It is the Construction Manager's responsibility to review and identify major discrepancy with the contract documents, and significant missing information. Documents with discrepancies and substantially missing information shall be returned for revisions prior to submission to the Architect.
- B. Mark with approval stamp before submitting to Architect.
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

4.3 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that do not bear Contractor's and Construction Managers approval stamp, and have not been fully reviewed and will return them without action.
- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
 1. Reviewed with no exceptions.
 2. Reviewed with exceptions.
 3. Revise and resubmit.
 4. Rejected.

- C. Partial submittals are not acceptable, will be considered non-responsive, and will be returned without review.
- D. Incomplete submittals with substantial missing information, will be considered non-responsive, and will be returned without review.
- E. Non-complaint submittals, will be considered non-responsive, and will be returned without review.
- F. Submittals not required by the Contract Documents will not be reviewed and will be discarded.

SUBMITTALS REQUESTED BY SPECIFICATION SECTION						
<i>This is a general guide, but may vary by project.</i>						
Given the age of digital submittal, product information and images, and multiple files can be compiled into one complete product data page. When this complete product data sheet is submitted, it becomes an acceptable option to help limit physical samples and paper.						
SECTION. NO.	SECTION TITLE	PRODUCT DATA	SAMPLE	SHOP DRAWINGS	MATERIAL COMPLIANCE	TESTING
033000	CAST-IN-PLACE CONCRETE	X		X		X
042000	UNIT MASONRY/BRICK	X	X (BRICK)			
047200	CAST STONE	X	X			
051200	STRUCTURAL STEEL FRAMING			X		
052100	STEEL JOIST			X		
053100	STEEL DECKING				X	
054000	COLD-FORMED METAL FRAMING			X		
055000	METAL FABRICATIONS			X		
055113	METAL PAN STAIRS			X		
055213	PIPE AND TUBE			X		
061000	ROUGH CARPENTRY				X	
061053	MISCELLANEOUS ROUGH CARPENTRY				X	
061063	EXTERIOR ROUGH CARPENTRY				X	
061600	SHEATHING				X	
061753	SHOP-FABRICATED WOOD TRUSSES			X		
062013	EXTERIOR FINISH CARPENTRY		X		X	
062023	INTERIOR FINISH CARPENTRY		X		X	
071326	SELF-ADHERING SHEET	X			X	
072100	THERMAL INSULATION	X			X	
072119	FOAMED-IN-PLACE INSULATION	X			X	
072500	WEATHER BARRIERS	X			X	
072600	VAPOR RETARDERS	X			X	
073113	ASPHALT SHINGLES		X			

SECTION. NO.	SECTION TITLE	PRODUCT DATA	SAMPLE	SHOP DRAWINGS	MATERIAL COMPLIANCE	TESTING
074113.16	STANDING-SEAM METAL ROOF PANELS		X			
074213.13	FORMED METAL WALL PANELS		X	X		
074213.19	INSULATED METAL WALL PANELS		X	X		
075323	ETHYLENE- PROPYLENE-DIENE- MONOMER (EPDM) ROOFING			X		
075423	THERMOPLASTIC POLYOLEFIN (TPO) ROOFING			X		
076200	SHEET METAL FLASHING AND TRIM		X			
077100	ROOF SPECIALTIES	X			X	
077129	MANUFACTURED ROOF EXPANSION JOINTS	X			X	
077200	ROOF ACCESSORIES	X			X	
078413	PENETRATION FIRESTOPPING				X	
078443	JOINT FIRESTOPPING				X	
079200	JOINT SEALANTS	X	X			
079219	ACOUSTICAL JOINT SEALANTS	X	X			
081213	HOLLOW METAL DOORS AND FRAMES			X		
081416	FLUSH WOOD DOORS		X	X		
083113	ACCESS DOORS AND FRAMES				X	
083313	COILING COUNTER DOORS			X		
083323	OVERHEAD COILING DOORS			X		
083513	FOLDING DOORS			X		
083613	SECTIONAL DOORS			X		

SECTION. NO.	SECTION TITLE	PRODUCT DATA	SAMPLE	SHOP DRAWINGS	MATERIAL COMPLIANCE	TESTING
084113	ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS		X	X		
084413	GLAZED ALUMINUM CURTAIN WALLS		X	X		
084523	FIBERGLASS- SANDWICH-PANEL ASSEMBLIES	X			X	
085113	ALUMINUM WINDOWS		X	X		
087100	DOOR HARDWARE			X		
088000	GLAZING	X			X	
088300	MIRRORS				X	
089119	FIXED LOUVERS		X	X		
092116.23	GYPSON BOARD SHAFT WALL ASSEMBLIES				X	
092216	NON-STRUCTURAL METAL FRAMING				X	
092900	GYPSON BOARD				X	
093013	CERAMIC TILE	X			X	
095113	ACOUSTICAL PANEL CEILING				X	
096513	RESILIENT BASE & ACCESSORIES				X	
096516	RESILIENT SHEET VINYL	X				
096519	RESILIENT TILE FLOORING	X				
096566	RESILIENT ATHLETIC FLOORING	X				
096813	TILE CARPET	X				
096816	SHEET CARPET	X				
097200	WALL COVERINGS	X				
098433	SOUND ABSORBING WALL UNITS	X				
098436	SOUND ABSORBING CEILING UNITS	X				
099113	EXTERIOR PAINTING		X			
099123	INTERIOR PAINTING		X			
099600	HIGH PERFORMANCE COATINGS		X			

SECTION. NO.	SECTION TITLE	PRODUCT DATA	SAMPLE	SHOP DRAWINGS	MATERIAL COMPLIANCE	TESTING
101100	VISUAL DISPLAY BOARDS			X	X	
101200	DISPLAY CASES			X	X	
101423	PANEL SIGNAGE		X	X		
102113	TOILET COMPARTMENTS	X		X		
102116	SHOWER AND DRESSING COMPARTMENTS	X		X		
102123	CUBICAL CURTAINS AND TRACK	X			X	
102800	TOILET, BATH, AND LAUNDRY ACCESSORIES (CONTRACTOR TO VERIFY QUANTITIES				X	
104413	FIRE PROTECTION CABINETS				X	
104416	FIRE EXTINGUISHERS				X	
105113	METAL LOCKERS		X	X		
105613	METAL SHELVING				X	
105626	MOBILE STORAGE SHELVING			X	X	
113100	RESIDENTIAL APPLIANCES				X	
115123	LIBRARY STACK SYSTEMS		X	X		
115213	PROJECTION SCREENS				X	
115313	LABORATORY FUME HOODS		X	X		
116143	STAGE CURTAINS		X	X		
116623	GYMNASIUM EQUIPMENT		X	X		
126600	TELESCOPING STANDS		X	X		
122113	HORIZONTAL BLINDS	X				
122413	VERTICLE BLINDS	X				
122413	ROLLER SHADES (OPERABLE SHOP DRAWINGS)	X		X	X	

SECTION. NO.	SECTION TITLE	PRODUCT DATA	SAMPLE	SHOP DRAWINGS	MATERIAL COMPLIANCE	TESTING
123__	CASEWORK AND COUNTERTOPS		X	X		
124816	ENTRANCE FLOOR GRILLS	X				

Material Compliance Form

Name of Building:

Owner:

Bid Package #:

A/E #:

Cc:

Material Compliance Submittal Section:

This document is to be used by this contractor to indicate the products/devices intended for use in this project without the need for product data submittals. Items listed are approved products in the specifications. No substitutions allowed. Select one (1) source for each category, sign this sheet, and submit as the contractor's commitment to use products required by the contract documents. **No further product data submittals are required for this section. However, physical sample, color samples, or layout shop drawings must be submitted where required by the specification.**

As contractor for work specified under the section named above, I agree to use only the products/devices listed below that were listed in the specification section.

Contractor:

Date:

Print Name: **Filled out by Contractor**

Title:

Signature: _____

Notary:

County:

Date Commission Expires:

Print Name:

Signature: _____

Filled out by Contractor and Notary used from Contractor

Reviewed By: Construction Manager, Inc.

Date:

Print Name: **Filled out by Construction Manager**

Signature: _____

Reviewed By: Kingscott Associates, Inc.

Date:

Print Name:

Signature: _____

Filled out by Architect

List the manufacturer's name and model number(s) for each item being submitted in this division. Provide all relevant information not covered by the model number to show full compliance with each requirement of the specification. This will include but is not limited to color, finish, size, thickness and all other selectable option. Note: Use location for each listed item when several different products in this division are used in specific locations.

Specification Section:

Manufacturer's Name:

Model Number:

096519
096519

Shaw Commercial
Shaw Commercial

Uncommon Ground 6 #0188V (LVT-1)
Skyline #02560 (LVT-2)

095113
095113
095113
095113

Armstrong
Armstrong
Armstrong
Armstrong

#1713 (CP-1)
#3101 (CP-2)
Armstrong Prelude XL (ME-1 grid)
Armstrong Axiom Classic Trim (ME-2 grid and trim)

Material Compliance Form

Name of Building:

Owner:

Bid Package #:

A/E #:

Cc:

Material Compliance Submittal Section:

This document is to be used by this contractor to indicate the products/devices intended for use in this project without the need for product data submittals. Items listed are approved products in the specifications. No substitutions allowed. Select one (1) source for each category, sign this sheet, and submit as the contractor's commitment to use products required by the contract documents. **No further product data submittals are required for this section. However, physical sample, color samples, or layout shop drawings must be submitted where required by the specification.**

As contractor for work specified under the section named above, I agree to use only the products/devices listed below that were listed in the specification section.

Contractor:

Date:

Print Name:

Title:

Signature: _____

Notary:

County:

Date Commission Expires:

Print Name:

Signature: _____

Reviewed By: Construction Manager, Inc.

Date:

Print Name:

Signature: _____

Reviewed By: Kingscott Associates, Inc.

Date:

Print Name:

Signature: _____

List the manufacturer's name and model number(s) below for each item being submitted in this division. Provide all relevant information not covered by the model number to show full compliance with each requirement of the specification. This will include but is not limited to color, finish, size, thickness and all other selectable option. Note: Use location for each listed item when several different products in this division are used in specific locations.

Specification Section:

Manufacturer's Name:

Model Number:

Electronic Media Authorization

Media Fee Schedule:

1 to 6 Drawings – No Fee

No more than six (6) drawings

Signed waiver required prior to release

Project Name: _____ KAI Project# _____

Name : _____ Company: _____

Address: _____

City, State, Zip: _____

Phone: _____ Email: _____

Autocad file version: _____

Signature: _____ Date: _____

By signing, you are agreeing to the Terms and Conditions on the following page

Documents Requested:	KAI DWG #	Issued Date on DWG
----------------------	-----------	--------------------

_____	_____	_____
_____	_____	_____
_____	_____	_____

Approved by: _____ Date: _____

Return Form to:
Kingscott Associates

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Kingscott will furnish to you electronic files after the completion of the Electronic Media Authorization Form. Under no circumstances, shall a delivery of the electronic files for use by you, be deemed a sale by Kingscott.

Kingscott Associates, Inc.
Architects/Engineers
Portage, Michigan

Lewton Elementary School
Building & Site Demolition
Lansing School District
Lansing, Michigan

SECTION 024116
STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Demolition and removal of buildings and site improvements.
 - 2. Removing below-grade construction.
 - 3. Disconnecting, capping or sealing, and removing site utilities.
 - 4. Salvaging items for reuse by Owner.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse. Include fasteners or brackets needed for reattachment elsewhere.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified refrigerant recovery technician.
- B. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed

according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.6 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.
- D. Predemolition Conference: Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be demolished.
 - 2. Review structural load limitations of existing structures.
 - 3. Review and finalize building demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review and finalize protection requirements.
 - 5. Review procedures for noise control and dust control.
 - 6. Review procedures for protection of adjacent buildings.
 - 7. Review items to be salvaged and returned to Owner.

1.7 PROJECT CONDITIONS

- A. Buildings to be demolished will be vacated and their use discontinued before start of the Work.
- B. Buildings immediately adjacent to demolition area will be occupied. Conduct building demolition so operations of occupied buildings will not be disrupted.
 - 1. Provide not less than 72 hours' notice of activities that will affect operations of adjacent occupied buildings.
 - 2. Maintain access to existing walkways, exits, and other facilities used by occupants of adjacent buildings.
 - a. Do not close or obstruct walkways, exits, or other facilities used by occupants of adjacent buildings without written permission from authorities having jurisdiction.
- C. Owner assumes no responsibility for buildings and structures to be demolished.
 - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Universal Wastes: Demolition contractor is responsible for the removal of all universal wastes of unknown quantities, including but not limited to, bulbs, ballasts, chemicals, refrigerants, thermostats, etc.

- F. On-site storage or sale of removed items or materials is not permitted.

1.8 COORDINATION

- A. Arrange demolition schedule so as not to interfere with Owner's on-site operations or operations of adjacent occupied buildings.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. Satisfactory Soils: Comply with requirements in Section 312000 "Earth Moving."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting demolition operations.
- B. Review Project Record Documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
- D. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.
- E. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

3.2 PREPARATION

- A. Refrigerant: Remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction before starting demolition.
- B. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities serving buildings and structures to be demolished.
 - 1. Arrange to shut off indicated utilities with utility companies.
 - 2. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.
 - 3. Cut off pipe or conduit a minimum of 24 inches below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of authorities having jurisdiction.

- C. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of demolition.
- D. Salvaged Items: Comply with the following:
 - 1. Clean salvaged items of dirt and demolition debris.
 - 2. Store items in a secure area until delivery to Owner.
 - 3. Transport items to storage area designated by Owner.
 - 4. Protect items from damage during transport and storage.

3.3 PROTECTION

- A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.
- B. Existing Utilities: Maintain utility services to remain and protect from damage during demolition operations.
 - 1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
 - 2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.
 - a. Provide at least 72 hours' notice to occupants of affected buildings if shutdown of service is required during changeover.
- C. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated.
 - 1. Protect adjacent buildings and facilities from damage due to demolition activities.
 - 2. Protect existing site improvements, appurtenances, and landscaping to remain.
 - 3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
 - 4. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 5. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.
 - 6. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.
 - 7. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.
- D. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

3.4 DEMOLITION, GENERAL

- A. General: Demolish indicated buildings and site improvements completely. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.
 2. Maintain fire watch during and after flame cutting operations.
 3. Maintain adequate ventilation when using cutting torches.
 4. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- B. Engineering Surveys: During demolition, perform surveys to detect hazards that may result from building demolition activities.
- C. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
 2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
- D. Explosives: Use of explosives is not permitted.

3.5 DEMOLITION BY MECHANICAL MEANS

- A. Proceed with demolition of structural framing members systematically, from higher to lower level. Complete building demolition operations above each floor or tier before disturbing supporting members on the next lower level.
- B. Remove debris from elevated portions of the building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
1. Remove structural framing members and lower to ground by method suitable to minimize ground impact and dust generation.
- C. Salvage: Items to be removed and salvaged are indicated on Drawings. Meet with Owner and Owner's representative prior to demolition activities to verify salvage items.
- D. Below-Grade Construction: Demolish foundation walls and other below-grade construction.
1. Remove below-grade construction, including basements, foundation walls, and footings, completely.
- E. Existing Utilities: Abandon existing utilities and below-grade utility structures. Cut utilities flush with grade.
- F. Existing Utilities: Demolish and remove existing utilities and below-grade utility structures.
1. Piping: Disconnect piping at unions, flanges, valves, or fittings.
 2. Wiring Ducts: Disassemble into unit lengths and remove plug-in and disconnecting devices.

3.6 SITE RESTORATION

- A. Below-Grade Areas: Rough grade below-grade areas ready for further excavation or new construction.
- B. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

3.7 REPAIRS

- A. Promptly repair damage to adjacent buildings caused by demolition operations.

3.8 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and legally dispose of them in an EPA-approved landfill acceptable to authorities having jurisdiction.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Do not burn demolished materials.

3.9 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.
 - 1. Clean roadways of debris caused by debris transport.

END OF SECTION 024116

Kingscott Associates, Inc.
Architects/Engineers
Portage, Michigan

Lewton Elementary School
Building & Site Demolition
Lansing School District
Lansing, Michigan

SECTION 311000 SITE CLEARING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.
- B. CAD files will be made available for use in construction staking. Contact the engineer regarding applicable fee and requirements for signing of the CAD File Transfer Agreement.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Protecting existing trees, shrubs and other vegetation to remain.
 - 2. Removing existing trees, shrubs and other vegetation.
 - 3. Clearing and grubbing.
 - 4. Stripping and stockpiling topsoil.
 - 5. Removing above-grade and below-grade site improvements.
 - 6. Disconnecting, capping or sealing, and abandoning site utilities in place or removing site utilities.
 - 7. Temporary erosion and sedimentation control measures.
- B. Related Sections include the following:
 - 1. Division 31 2000 Section "Earth Moving" for soil materials, excavating, backfilling, and site grading.
 - 2. Division 32 9200 Section "Turf and Grasses" for finish grading including preparing and placing planting soil mixes and testing of topsoil material.

1.03 DEFINITIONS

- A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.
- B. Tree Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless otherwise indicated.

1.04 MATERIAL OWNERSHIP

- A. Except for stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site unless otherwise noted on the plans.

1.05 SUBMITTALS

- A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.
- B. Record drawings, according to Closeout Procedures.
 - 1. Identifying and accurately locating capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.06 QUALITY ASSURANCE

- A. Preinstallation Conference: Conduct conference at Project site.

1.07 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by owner or authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Owner before award of Contract. Contractor is to confirm that this authority has been obtained before beginning work on adjoining property.
- C. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.
- D. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.
- E. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

PART 2 PRODUCTS

2.01 SOIL MATERIALS

- A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Division 31 2000 Section "Earth Moving."
 - 1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site. Contractor is responsible for doing an independent earthwork computation and including all necessary import and/or export of materials in their bid.

PART 3 EXECUTION

3.01 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction. If said points will be disturbed, establish new points prior to removal.
- B. Locate and clearly flag trees and vegetation to remain or to be relocated.
- C. Protect existing site improvements to remain from damage during construction.
 - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.02 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction and the sediment and erosion control drawings, whichever is more stringent.
- B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- C. Remove erosion and sedimentation controls only after all areas are restored and stabilized.

3.03 TREE PROTECTION

- A. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.
 - 1. Do not store construction materials, debris, or excavated material within fenced area.
 - 2. Do not permit vehicles, equipment, or foot traffic within fenced area.
 - 3. Maintain fenced area free of weeds and trash.
- B. Do not excavate within tree protection zones, unless otherwise indicated.
- C. Where excavation for new construction is required within tree protection zones, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.
 - 1. Cover exposed roots with burlap and water regularly.
 - 2. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
 - 3. Coat cut faces of roots more than 1-1/2 inches in diameter with emulsified asphalt or other approved coating formulated for use on damaged plant tissues.
 - 4. Backfill with soil as soon as possible.
- D. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Engineer.

3.04 UTILITIES

- A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed
 - 1. Arrange with utility companies to shut off indicated utilities.
 - 2. Owner will arrange to shut off indicated utilities when requested by Contractor.

- B. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Engineer not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Engineer's written permission.
- C. Excavate for and remove underground utilities indicated to be removed.

3.05 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction.
 - 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 - 2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
 - 3. Grind stumps and remove roots, obstructions, and debris extending to a depth of 18 inches below exposed subgrade.
 - 4. Use only hand methods for grubbing within tree protection zone.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
 - 1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.06 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
 - 1. Remove subsoil and nonsoil materials from topsoil, including trash, debris, weeds, roots, and other waste materials.
- C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile topsoil material in locations approved by the Owner or Engineer.

3.07 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
 - 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.
 - 2. Paint cut ends of steel reinforcement in concrete to remain to prevent corrosion.

3.08 DISPOSAL

- A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, other vegetation and waste materials including trash and debris, and legally dispose of them off Owner's property.

1. Burning of materials on project property is prohibited.

END OF SECTION

Kingscott Associates, Inc.
Architects/Engineers
Portage, Michigan

Lewton Elementary School
Building & Site Demolition
Lansing School District
Lansing, Michigan

SECTION 311018 SOIL EROSION CONTROL

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. CAD files will be made available for use in construction staking. Contact the engineer regarding applicable fee and requirements for signing of the CAD File Transfer Agreement.

1.2 SUMMARY

- A. The work under this Section includes, but not limited to all work necessary for effective soil erosion control in conformance with Part 91, Act 451, PA 1994, the Soil Erosion and Sedimentation Control Act, Michigan Department of Natural Resources Environmental Protection Act guidelines and all pertinent local enforcing agency rules and regulations, having jurisdiction.
- B. Related Sections include the following:
 - 1. Division 31 2000 Section "Earth Moving."

1.3 STANDARDS

- A. General: Perform all work under this Section in accordance with all pertinent rules and regulations, including, but not necessarily limited to those mentioned above and these Specifications.
- B. Conflicts: Where provisions of pertinent rules and regulations conflict with these Specifications, the more stringent provisions shall govern.

PART 2 - PRODUCTS

2.1 SEED, FERTILIZER, MULCH

- A. Refer to other Specification Section in Part 3.

PART 3 - EXECUTION

3.1 GENERAL

- A. Standards: Provide all materials and promptly take all actions necessary to achieve effective erosion control in accordance with the Soil Erosion and Sedimentation Control Act, Michigan Department of Natural Resources guidelines, local enforcing agency guidelines and these Specifications.
- B. Site evaluation: Prior to start of the Work, conduct a field evaluation of the site along with representatives of the Engineer/Architect and the local enforcing agency.
- C. Permits: Contractor is responsible for obtaining all pertinent permits including a Soil Erosion Control Permit if required from the county or local enforcing agency. Submit the NPDES Notice of Coverage when the soil erosion permit is received if not already done.

3.2 SEEDING AND MULCHING

- A. General
 - 1. All bare soil, unless otherwise required by the Contract Documents, shall be seeded, fertilized and mulched to create a protected condition. Use seed mix as indicated on the plans (if different seed mixes are indicated on the civil and landscape plans, the mix indicated on the landscape plans shall override). Critical areas shall be sodded as approved by the Engineer/Architect and as shown on the plans.
 - 2. Seeding and mulching shall be performed immediately upon completion of a phase or section of the Work or as approved by the Engineer/Architect.
 - 3. In all cases, seeding and mulching shall be performed within thirty (30) calendar days from the time the area was first disturbed.
 - 4. During any period of time which the soil is unprotected, provide erosion control structures as necessary to minimize erosion and to keep any eroded soils on the site and out of ditches, rivers, storm sewers and wetlands.
 - 5. Refer to the plans for notes regarding the use of turf reinforcement matting and/or mulch blankets (on all slope exceeding 1 vertical to 10 horizontal).
- B. Seed: Seed shall be applied uniformly at a minimum rate of 48 pounds per acre.
- C. Fertilizer: Fertilizer shall be applied uniformly at a minimum rate of 250 pounds per acre.
- D. Mulch: Mulch shall be uniformly applied at a rate of two (2) tons per acre, or equal, on all seeded areas that have a slope of less than 1 vertical to 10 horizontal. Refer to note A5. above for additional slope stabilization requirements.

3.3 DITCH AND RIVERS

- A. When reasonably possible, banks of ditches and rivers disturbed under this Work shall be protected within 24 hours of disturbance, but in no case shall banks be left unprotected more than 7 calendar days.

3.4 STEEP SLOPES

- A. Emulsion

1. On slopes greater than 10%, use erosion control blankets or turf reinforcement matting to hold seed in place. Refer to plan notes.
- B. Other methods: Chemical self-adhering mulch and other mulch anchoring methods may be used as approved by the Engineer/ Architect.

3.5 SITE IMPROVEMENTS CONSTRUCTION

- A. During construction of the site improvements conform to the following general rules:
 1. Minimize the amount of earth disturbed at any one time.
 2. Establish a construction sequence which includes adequate erosion control.
 3. Provide ground cover, even if only temporary, so as to stabilize an area and minimize erosion.
 4. As much as practicable, direct storm water away from the construction area. Direct diverted storm water to any stable area.
 5. Collect runoff from the site in sediment basins, traps or through filters.
 6. Establish an inspection and maintenance schedule, paying special attention to the beginning of the various stages of construction. Employ a certified storm water operator and keep a log of the soil erosion and sedimentation control measures in accordance with the NPDES requirements.
 7. Keep in mind that the primary objective is to keep the soil on the site.
 8. Once final stabilization of the site is complete, and the governing agency has granted its approval, remove all temporary erosion control structures.
 9. Control site runoff during all periods of site construction to ensure that excess surface runoff does not reach adjacent properties. This is especially critical during stages when the land has been stripped but not yet graded.

3.6 CLEANING

- A. Perform cleaning of all areas affected by work under this section and leave the site in a neat and tidy state. Contractor shall keep Adjacent Roads clean and free of debris.

END OF SECTION 31 1018

Kingscott Associates, Inc.
Architects/Engineers
Portage, Michigan

Lewton Elementary School
Building & Site Demolition
Lansing School District
Lansing, Michigan

SECTION 312000 EARTH MOVING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. All earthwork operations shall confirm to the current Michigan Department of Transportation standards and specifications.
- C. CAD files will be made available for use in construction staking. Contact the engineer regarding applicable fee and requirements for signing of the CAD File Transfer Agreement.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Preparing subgrades for slabs-on-grade, walks, pavements, lawns, and plantings.
 - 2. Subbase course for concrete walks and pavements.
 - 3. Base course for asphalt paving.
 - 4. Excavation and backfill for utility trenches.
- B. Related Sections include the following:
 - 1. Division 31 1000 Section "Site Clearing" for site stripping, grubbing, removing topsoil, and protecting trees to remain.

1.3 DEFINITIONS

- A. Backfill: Soil materials used to fill an excavation.
- B. Base Course: Layer placed between the subbase course and asphalt paving.
- C. Bedding Course: Layer placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Drainage Course: Layer supporting slab-on-grade used to minimize capillary flow of pore water.

- F. Engineered Fill: Fill placed and compacted to densities specified herein, in a controlled manner using lift thickness limited herein, monitored and tested by the Testing Agency or independent Geotechnical Inspector.
- G. Excavation: Removal of material encountered above subgrade elevations.
- H. Fill: Soil materials used to raise existing grades.
- I. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material 3/4 cu. yd. (0.57 cu. m) or more in volume.
- J. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- K. Subbase Course: Layer placed between the subgrade and base course for asphalt paving, or layer placed between the subgrade and a concrete pavement or walk.
- L. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- M. Undercutting: Necessary excavation of poor quality soils which occur below the existing Topsoil and any uncontrolled fill soils as described in the Geotechnical Investigation.
- N. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 SUBMITTALS

- A. Product Data: For the following:
 - 1. Drainage fabric if required for the project .
 - 2. Separation fabric if required for the project.
- B. Test Reports: Testing Agency shall submit the following reports directly to the architect and shall copy the contractor:
 - 1. Analysis of soil materials, whether procured on or off site, and including fill, backfill, and borrow materials.
 - 2. In-place density test reports.
 - 3. Moisture-density relationship test reports.
 - 4. Compressive strength or bearing test reports.
- C. Material Test Reports: Interpreting test results for compliance of the following with requirements indicated:
 - 1. Classification according to ASTM D 2487 of each on-site or borrow soil material proposed for fill and backfill.

1.5 QUALITY ASSURANCE

A. Testing Agency Services

1. The Owner will secure and pay for the services of a qualified, independent geotechnical engineer to classify existing soil materials, to recommend and to classify proposed borrow materials when necessary, to verify compliance of materials with specified requirements, and to perform required field and laboratory testing. Geotechnical engineer shall be acceptable to the architect and the owner and shall be licensed to practice in the state in which the project is located.

B. Pre-excavation Conference: Conduct conference at Project site to comply with requirements in Division 01 3100 Section "Project Management and Coordination" for meetings.

1.6 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect or Owner and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Architect and Owner not less than three (3) calendar days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Architect's or Owner's written permission.
3. Contact utility-locator service for area where Project is located before excavating.

B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

PART 2 – PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials without additional cost to Owner when sufficient satisfactory soil materials are not available from excavations. Contractor is responsible for doing an independent earthwork calculation and including any import of appropriate fill material required to bring the site to the proposed grades.

B. Satisfactory Soil Material (ASTM D 2487): Free of stones larger than 2 inches in any dimension, trash, debris, organic material, other objectionable material and classified as follows:

1. GP (poorly graded gravel).
2. GM (silty gravel).
3. GC (clayey gravel).
4. SW (well-graded sand).
5. SP (poorly graded sand).
6. SM (silty sand).

C. Unsatisfactory Soil Material (ASTM D 2487):

1. SC (clayey sand).
2. CL (lean clay).
3. ML (silt).
4. OL (organic clay).
5. OL (organic silt).
6. CH (fat clay).
7. MH (elastic silt).
8. OH (organic clay).
9. OH (organic silt).
10. PR (peat).

D. Backfill and Fill: Satisfactory soil materials.

E. Subbase: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; Generally either an MDOT Class II sand or 21AA gravel will meet this requirement. Refer to the plans for specific requirements.

F. Base: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; Generally either an MDOT Class II sand or 21AA gravel will meet this requirement. Refer to the plans for specific requirements.

G. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; Generally either an MDOT Class II sand or 21AA gravel will meet this requirement.

1. Clean granular fill meeting MDOT Class II grading requirements.
2. On-site granular deposits within the excavation can be used as engineered fill if approved by the geotechnical engineer and if selective excavation procedures are employed to manage existing clay deposits.
3. Import fill as required to make-up volumes necessary to raise the building site.
4. Refer to the plans for specific requirements.

H. Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; Generally either an MDOT 3G, 5G, 6A, or 34R will meet this requirement. Bedding requirements of the agencies having jurisdiction over the utility installation take precedence over these specifications.

I. Drainage Fill: Washed, narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; Generally either an MDOT 6A or 34R will meet this requirement. Refer to the plans for specific requirements.

J. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 ACCESSORIES

A. Drainage Fabric: Nonwoven geotextile, specifically manufactured as a drainage geotextile; made from polyolefins, polyesters, or polyamides; with minimum properties determined according to ASTM D 4759 and referenced standard test methods.

- B. Separation Fabric: Woven geotextile, specifically manufactured for use as a separation geotextile; made from polyolefins, polyesters, or polyamides; with minimum properties determined according to ASTM D 4759 and referenced standard test methods.

PART 3 – EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- C. Provide erosion-control measures approved by agency having jurisdiction to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.2 EXPLOSIVES

- A. Explosives: Explosives are prohibited for use on the Project site.

3.3 EXCAVATION, GENERAL

- A. General: Excavation includes the removal of any materials necessary to achieve the required subgrade elevations and includes reuse or disposal of such materials.
- B. Unnecessary Excavation: The expense of excavation of materials outside of limits indicated or ordered in writing by the architect and the correction thereof to the satisfaction of the architect shall be borne by the contractor.
 - 1. Unnecessary excavation under footings: Either deepen footings to bear on actual subgrade elevation without changing top elevations or place concrete fill up to required elevation, as required by the architect.
 - 2. Unnecessary excavation other than under footings: Either place compacted fill or otherwise correct conditions, as required by the architect.
- C. Approval of Subgrade: Notify the Testing Agency when required elevations have been reached.
 - 1. When required by the architect due to the unforeseen presence of unsatisfactory materials or other factors, perform additional excavation and replace with approved compacted fill material in accordance with the architect's or geotechnical engineer's instructions.
 - 2. Payment for unforeseen additional work will be made in accordance with established unit prices or, if none, in accordance with provisions for changes in the work. No payment will be made for correction of subgrades improperly protected against damage

from freeze-thaw or accumulation of water, or for correction of otherwise defective subgrades.

- D. Excavation Stabilization: Slope faces of excavations to maintain stability in compliance with requirements of governing authorities. Do not use shoring and bracing where faces can be sloped.

3.4 EXCAVATION FOR STRUCTURES

- A. Do not proceed with excavations for building structures until Subgrade Preparation operations are complete and tested.
- B. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch (25 mm). Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 - 2. Pile Foundations: Stop excavations from 6 to 12 inches (150 to 300 mm) above bottom of pile cap before piles are placed. After piles have been driven, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete pile caps.
 - 3. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch (25 mm). Do not disturb bottom of excavations intended for bearing surface.
- C. Coordinate excavations with Dewatering operations as required to allow construction of foundations to dry.

3.5 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.

3.6 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
- B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches (300 mm) higher than top of pipe or conduit, unless otherwise indicated.
- C. Trench Bottoms: Excavate and shape trench bottoms in accordance with the plans and standard details. Excavate trenches a minimum 4 inches (100 mm) deeper than bottom of pipe elevation to allow for bedding course (excavate deeper as required by the regulating agency). Hand excavate for bell of pipe. Remove projecting stones and sharp objects along trench subgrade.

1. Excavate trenches a minimum 4 inches (100 mm) deeper than bottom of pipe elevation to allow for bedding course (excavate deeper as required by the regulating agency). Hand excavate for bell of pipe. Remove projecting stones and sharp objects along trench subgrade. Provide bedding course per the plan notes and/or details.

3.7 SUBGRADE PREPARATION AND INSPECTIONS

- A. Perform mass earthwork operations to remove all existing topsoil and other organic materials in their entirety within the footprint of the proposed building and pavement areas. Buried objects should be removed in their entirety.
- B. Notify Testing Agency when excavations have reached required subgrade elevations.
- C. Proof-roll subgrade in the presence of the Testing Agency to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 1. Completely proof-roll subgrade in one direction repeating proof-rolling in direction perpendicular to the first direction. Limit vehicle speed to 3 mph.
 2. Proof-roll subgrade with heavy pneumatic-tired equipment or loaded 10-wheel, tandem-axle truck weighing not less than 15 tons.
 3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by the Testing Agency, and replace with engineered fill as directed.
- D. If Testing Agency determines that unsatisfactory soil is present, continue excavations and replace with compacted backfill or fill materials as directed.
 1. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
- E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities.

3.8 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill may be used at no additional cost to the Owner.

3.9 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.10 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
 - 2. Surveying locations of underground utilities for record documents.
 - 3. Inspecting and testing underground utilities.
 - 4. Removing concrete formwork.
 - 5. Removing trash and debris.
 - 6. Removing temporary shoring and bracing, and sheeting.
 - 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

3.11 UTILITY TRENCH BACKFILL

- A. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- B. Place and compact initial backfill of subbase material, free of particles larger than 1 inch (25 mm), to a height of 12 inches (300 mm) over the utility pipe or conduit. All pipe backfill to be done according to the details shown on the plans or the requirements of the regulating agency.
- C. Fill voids with approved backfill materials while shoring and bracing, and as sheeting is removed.

3.12 FILL

- A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.
- B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- C. Place and compact fill material in layers to required elevations as follows:
 - 1. Under grass and planted areas, use satisfactory soil material.
 - 2. Under walks and pavements, use satisfactory soil material as long as the geotechnical engineer deems the material to be suitable and the compaction requirements can be met.
 - 3. Under steps and ramps, use engineered fill.
 - 4. Under building slabs, use engineered fill.
 - 5. Behind walls, use engineered drainage fill.
 - 6. Under footings and foundations, use engineered fill.
 - 7. Over excavated areas, use engineered fill or lean concrete.

3.13 MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within two (2) percent of optimum moisture content.
 - 1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

3.14 COMPACTION OF BACKFILLS AND FILLS

- A. Place backfill and fill materials in layers not more than 8 inches (200 mm) in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 698 and ASTM D 1557:
 - 1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches (300 mm) of existing subgrade and each layer of backfill or fill material at 95 percent.
 - 2. Under walkways, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill material at 95 percent.
 - 3. Under lawn or unpaved areas, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill material at 88 percent.

3.15 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish Subgrades to required elevations within plus or minus 1 inch.
- C. Grading Inside Grading Lines: Finish subgrade to a tolerance of ½ inch, when tested with a 10 foot straight-edge.
- D. Contractor shall confirm that the proposed grades shown on the plans will not create a ponding water condition (i.e. an unintended low spot or pavement grades of less than 1%).

3.16 SUBSURFACE DRAINAGE

- A. Drainage Piping: Drainage pipe is specified in Division 33 4100 Section for foundation drainage and under-slab drainage systems.
- B. Subsurface Drain: Place a layer of drainage fabric around perimeter of drainage trench. Place a 6 inch course of filter material on drainage fabric to support drainage pipe. Encase drainage in a minimum of 12 inches of filter material and wrap in a drainage fabric, overlapping sides and ends at least 6 inches.
 - 1. Compact each course of filter material to 95 percent of maximum dry unit weight according to ASTM D 698.

- C. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade. Overlay drainage backfill with one layer of drainage fabric, overlapping sides and ends at least 6 inches.
 - 1. Compact each course of filter material to 95 percent of maximum dry density according to ASTM D 698.

3.17 SUBBASE AND BASE COURSES

- A. If indicated on the plans or deemed necessary by the geotechnical engineer, install separation fabric on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
- B. Under pavements and walks, place subbase course on separation fabric according to fabric manufacturer's written instructions if fabric is called for on the plan or deemed necessary by the geotechnical engineer.
- C. Under pavements and walks, place base on prepared subbase or subgrade as follows:
 - 1. Place base course material over subbase (or subgrade if subbase is not indicated).
 - 2. Compact subbase and base courses at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.
 - 3. When thickness of compacted subbase or base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.
- D. Pavement Shoulders: Place shoulders along edges of subbase and base course to prevent lateral movement. Construct shoulders, at least 12 inches wide, of satisfactory soil materials and compact simultaneously with each subbase and base layers to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.18 DRAINAGE COURSE

- A. Under slabs-on-grade, if indicated on the plans, place drainage fabric on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
- B. Under slabs-on-grade, place drainage course on prepared subgrade and as follows:
 - 1. Compact drainage course to required cross sections and thickness to no less than 95 percent of maximum dry unit weight according to ASTM D 698.
 - 2. When compacted thickness of drainage course exceeds 6 inches, place materials in equal layers, with no more than 6 inches thick or less than 3 inches thick when compacted.

3.19 FIELD QUALITY CONTROL

- A. Testing Agency: Construction Manager/Owner will engage a qualified independent Geotechnical engineering testing agency to perform field quality-control testing.

- B. Allow testing agency to inspect and to test any subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work. Comply with requirements.
- C. Testing agency will test compaction of soils in place according to ASTM D 1556. ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable.
- D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate and remove and replace soil to depth required, recompact and retest until specified compaction is obtained.

3.20 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces becomes eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
- C. Protect all existing trees, bushes, plants, etc. indicated to remain during construction activities.

3.21 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Unless otherwise indicated on the drawings, remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.
 - 1. Do not burn materials on the Owner's property.

END OF SECTION 31 2000

DEVELOPMENT TEAM

CIVIL ENGINEER
SPALDING D&DECKER
905 SOUTH BOULEVARD EAST
ROCHESTER HILLS, MICHIGAN 48307
CONTACT: CRAIG GENGLER
EMAIL: CGENGLER@SDA-ENG.COM
PHONE (248) 844-5400

ARCHITECT
KINGSCOTT
259 E. MICHIGAN AVENUE, SUITE 308
KALAMAZOO, MICHIGAN 49007
CONTACT: SAMI SZESZULSKI
EMAIL: SSZESZULSKI@KINGSCOTT.COM
PHONE: (800) 632-7815

OWNER
LANSING SCHOOL DISTRICT
519 W. KALAMAZOO STREET
LANSING, MI 48933
517-755-1000

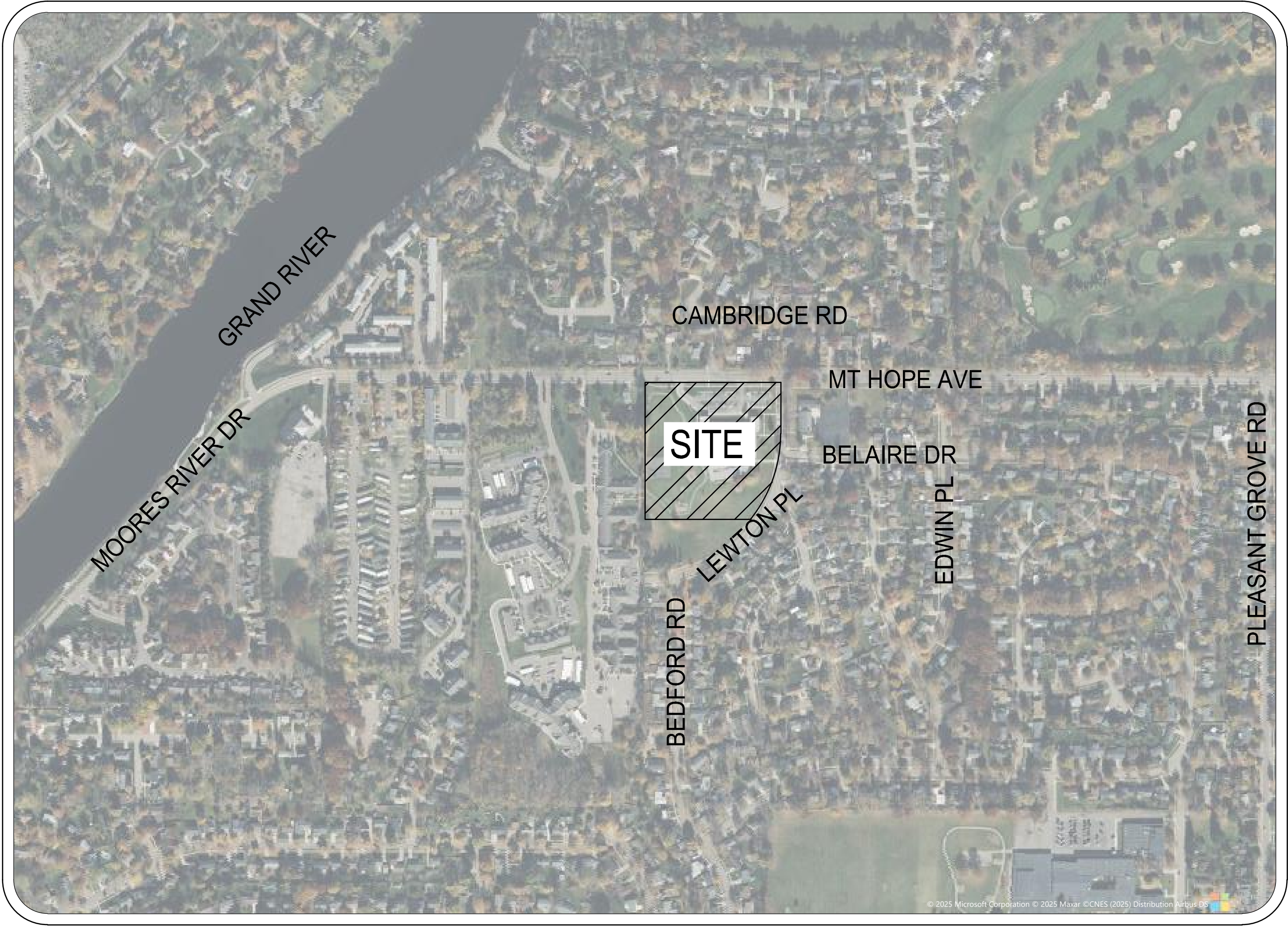
GOVERNING AGENCIES

PLANNING
CITY OF LANSING
DEPARTMENT OF ECONOMIC DEVELOPMENT & PLANNING
316 N. CAPITOL AVE.
LANSING, MI 48933
CONTACT SUSAN STACHOWIAK
PHONE 517-483-4085

ENGINEERING
CITY OF LANSING
PUBLIC SERVICE DEPARTMENT - ENGINEERING
124 W. MICHIGAN AVE.
LANSING, MI 48933
CONTACT DANIEL DANKE
PHONE 517-483-4461

FIRE DEPT.
CITY OF LANSING FIRE DEPARTMENT
120 E. SHIAWASSEE ST
LANSING, MI 48933
CONTACT MARK BURGER
PHONE 517-483-4200

LANSING SCHOOL DISTRICT
LEWTON SCHOOL
2000 LEWTON PLACE
LANSING, MICHIGAN 48915



LOCATION MAP
NTS

PROJECT NARRATIVE

THE NEW LEWTON SCHOOL WILL BE APPROXIMATELY 68,000 SQUARE FEET. SITE FEATURES INCLUDE PATHWAYS BETWEEN PLAYGROUND AREAS, COMMUNITY COURT, AND ON GRADE PARKING WITH CIRCULATION TO AND FROM THE PROPERTY.

WETLANDS

THERE ARE NO EXISTING WETLANDS ON-SITE.

CIVIL SHEET INDEX	
Sheet Number	Sheet Title
C1.1	GENERAL PLAN - FOR REFERENCE
C2.1	DEMOLITION PLAN
C3.1	SESC PLAN
C3.2	SESC DETAILS
EX1.0	1956 ORIGINAL FOUNDATION PLAN
EX1.1	1956 ORIGINAL ALT FOUNDATION PLAN
EX1.2	1956 ORIGINAL TUNNEL PLAN
EX1.3	1956 ORIGINAL UNDERGROUND AND TUNNEL PIPING PLAN
EX1.4	1956 ORIGINAL TUNNEL HEATING AND PLAN
EX1.5	1956 ORIGINAL REVISED TUNNEL PIPING PLAN
EX1.6	1969 ADDITION SITE PLAN
EX1.7	1969 ADDITION FLOOR PLAN PART A
EX1.8	1969 ADDITION FLOOR PLAN PART B
EX1.9	1969 ADDITION MECH PLANS PART A
EX1.10	1969 ADDITION MECH PLANS PART B

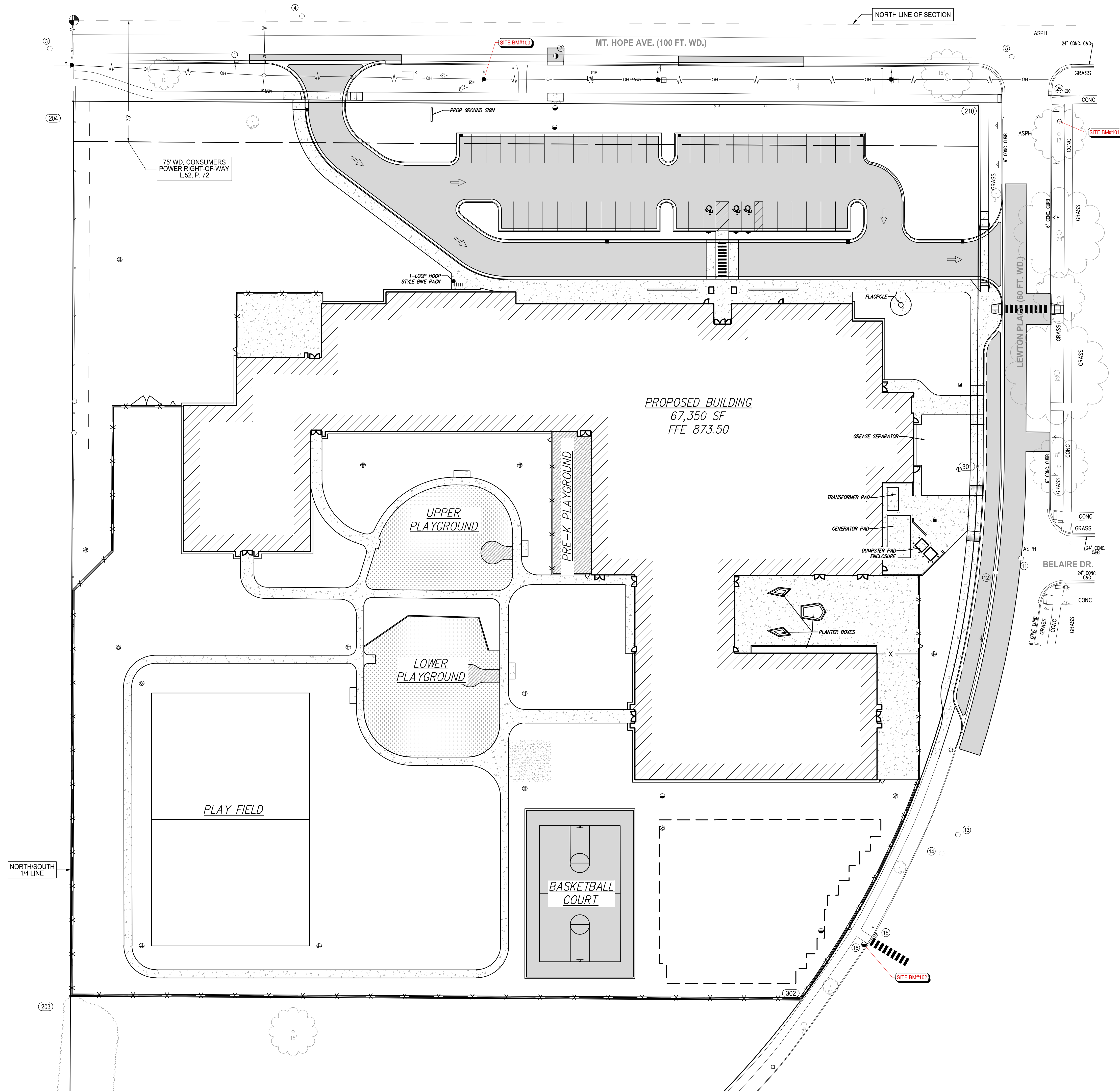


Lewton School Demo
Lansing School District

2000 Lewton Pl.
Lansing, MI 48915



REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	5/2/2025
KEY PLAN	



KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

NOT FOR CONSTRUCTION



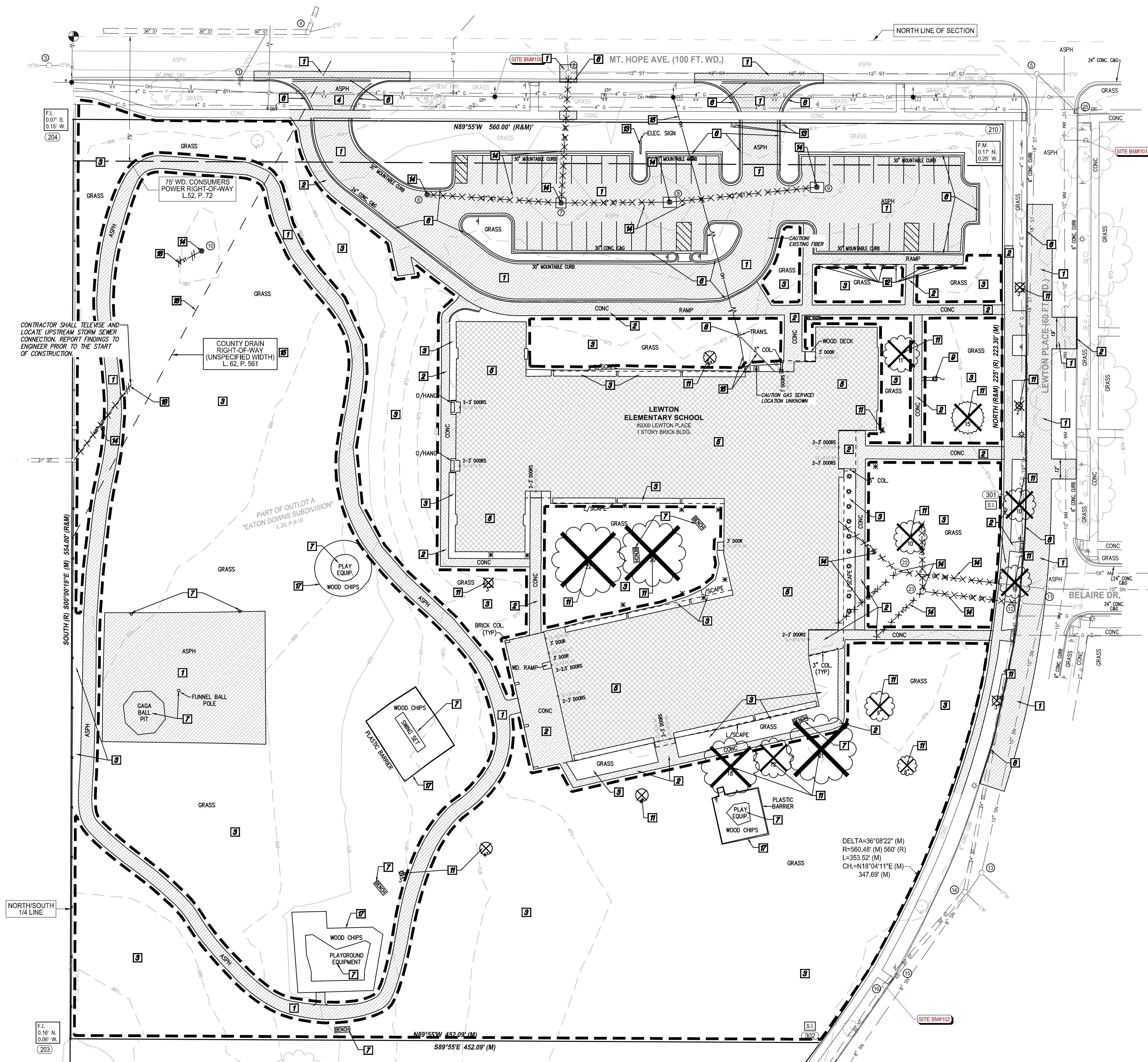
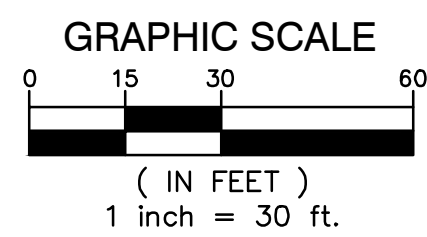
REVISIONS/REVIEW	DATE
DESIGN DEVELOPMENT	5/2/2025

KEY PLAN

LEGEND	
--- PROPOSED WATERMAIN	● PROPOSED SAN MANHOLE (SAM)
--- PROPOSED SANITARY	● PROPOSED STORM MANHOLE (SM)
--- PROPOSED STORM SEWER	■ PROPOSED CATCH BASIN (CB)
--- PROPOSED GAS MAIN	□ PROPOSED INLET (INL)
--- PROPOSED ELECTRIC	--- PROPOSED END SECTION (ES)
● PROPOSED HYDRANT	② PROPOSED FIELD CATCH BASIN (FSB) W/ BENTONITE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
● PROPOSED GATE VALVE & WELL (GVW)	③ UTILITY CROSSING (SEE DATA TABLE)
● PROPOSED TAPPING SLEEVE VALVE & WELL (TSVM)	CB --- STRUCT. TYPE
STANDARD BITUMINOUS PAVEMENT	2 --- STRUCT. NO.
HEAVY-DUTY BITUMINOUS PAVEMENT	STORM SEWER STRUCTURE
DEEP-STRENGTH BITUMINOUS PAVEMENT	SANITARY SEWER STRUCTURE
CONCRETE PAVEMENT	20 --- STRUCT. NO.
CONCRETE SIDEWALK	10 --- STRUCT. NO.
MILL PAVEMENT	200 --- STRUCT. TYPE

L.S.D. NO. **SB-0064**
 JOB NO. **2616.01G**
 SHEET TITLE
GENERAL PLAN
 FOR REFERENCE
 SHEET NO.
C1.1

© KINGS COTT ASSOCIATES, INC. KALAMAZOO, MICHIGAN



DEMOLITION PHASING NOTES

DEMOLITION TO BE DONE IN PHASES:

PHASE 1 DEMOLITION ITEMS FOR LSD NO. SB-0063:

1 BUILDING

7 TREES

ASSOCIATED UTILITY POLES (IF APPLICABLE)

PHASE 2 DEMOLITION ITEMS FOR LSD NO. SB-0064:

ALL OTHERS NOT LISTED IN PHASE 1

DEMOLITION NOTES

- REMOVE ASPHALT PAVEMENT TO FULL DEPTH. SAWCUT FULL DEPTH WHERE NEW PAVEMENT WILL BE PLACED ADJACENT TO EXISTING PAVEMENT. EXCAVATE EXISTING AGGREGATE BASE AND SUBGRADE AS NECESSARY TO INSTALL NEW PAVEMENT SECTION AS SHOWN ON THE PAVING PLANS, INCLUDING NEW AGGREGATE BASE.
- REMOVE CONCRETE PAVEMENT TO FULL DEPTH. SAWCUT FULL DEPTH TO NEAREST JOINT WHERE NEW PAVEMENT WILL BE PLACED ADJACENT TO EXISTING PAVEMENT.
- CLEAR AND GRUB TO THE LIMITS SHOWN. INCLUDE REMOVAL OF ALL STUMP, POSTS, FENCEPOSTS, GRAVEL, BRICKS, CHIMNEYS, GRASS, AND TREES NOT INDICATED FOR PROTECTION, INCLUDING ROOTS. STRIP TOPSOIL AND STOCKPILE ON SITE IN DESIGNATED LOCATION.
- REMOVE ASPHALT PAVEMENT TO FULL DEPTH (ASSUMED TO BE "X" BASED ON THE GEOTECH REPORT). EXISTING AGGREGATE BASE TO REMAIN, REPAIR, AND COMPACTED FOR PLACEMENT OF NEW ASPHALT PAVEMENT. SAWCUT FULL DEPTH WHERE NEW PAVEMENT WILL BE PLACED.
- DEMOLITION OF EXISTING BUILDING. EARTHWORK CONTRACTOR SHALL ASSUME THAT THE EXISTING PAD WILL BE BACKFILLED AFTER DEMOLITION SO THAT THE GRADES GENERALLY MATCH THE SURROUNDING GROUND ELEVATIONS. AREAS WHERE FOOTINGS AND BASEMENTS EXIST WILL BE FILLED APPROPRIATELY WITH CLASS 2 CRUSHED FILL AFTER DEMOLITION, AND COMPACTED TO 95% OF MAXIMUM DENSITY. REFER TO ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND ELECTRICAL DEMO PLANS FOR COMPLETE BUILDING DEMOLITION.
- REMOVE EXISTING CONCRETE CURB AND GUTTER.
- REMOVE AND SALVAGE RECREATIONAL AND ATHLETIC EQUIPMENT, BENCHES, BLEACHERS, ETC. THAT FALL WITHIN THE CONSTRUCTION AREA. STAGE IN ON SITE LOCATION AS SPECIFIED BY OWNER (UNLESS NOTED ON THE PLANS).
- PROTECT EXISTING UTILITIES AND UTILITY STRUCTURES TO REMAIN.
- REMOVE EXISTING FLAREPOLE INCLUDING ANY FOOTINGS OR FOUNDATIONS IF PRESENT.
- PROTECT EXISTING TREES AND LANDSCAPING TO REMAIN DURING CONSTRUCTION. SEE TREE PROTECTION DETAIL THIS SHEET.
- REMOVE EXISTING TREE (INCLUDING STUMPS AND ROOTS).
- EXISTING SIGNAGE AND MARKINGS WITHIN THE CLEARING LIMITS ARE TO BE REMOVED AND SALVAGED. STAGE IN ON SITE LOCATION AS SPECIFIED BY OWNER.
- PROTECT EXISTING SIGNS TO REMAIN DURING CONSTRUCTION.
- REMOVE EXISTING UTILITY PIPE AND STRUCTURES. BACKFILL WITH CLASS 2 FILL AND COMPACT TO 95% OF MAXIMUM DENSITY. INSTALL WATERPROOF BULKHEAD AT STRUCTURES TO REMAIN. GROUT PIPE ENDS THAT REMAIN.
- REMOVE AND DISPOSE OF EXISTING OVERHEAD ELECTRICAL LINES. CONTRACTOR TO COORDINATE REMOVAL OF OVERHEAD ELECTRIC WITH THE CONTRACTOR TO KEEP ANY EXISTING BUILDING OVERSTANDING ELECTRICAL LINES ACTIVE UNTIL BUILDING DEMOLITION PROCESS BEGINS.
- ABANDON EXISTING COUNTY DRAIN EASEMENT PER INDIAN COUNTY DRAIN COMMISSION STANDARDS. COORDINATE WITH I.C.D.C. AND RECORD DRAIN EASEMENT ABANDONMENT.
- REMOVE EXISTING PLASTIC BARRIERS AROUND PLAYGROUND EQUIPMENT.
- ABANDON EXISTING STORM SEWER PIPE IN PLACE. CONTRACTOR TO CONFIRM NO BUNDLING, CUT AND INSTALL WATERPROOF CAP AT EXISTING PIPES AND INSTALL WATERPROOF BULKHEAD AT STRUCTURES WHERE PIPE IS TO BE ABANDONED IN PLACE. FILL WITH FLOWABLE GROUT.

ALL DEPRESSIONS CREATED BY DEMOLITION PROCEDURES SHALL BE BACKFILLED WITH CLASS 2 FILL MATERIAL IN 8" LIFTS COMPACTED TO 95% OF MAXIMUM DENSITY. UP TO PROPOSED SUBGRADE.

CONTRACTOR IS RESPONSIBLE FOR DOING AN EARTHWORK CALCULATION FOR CUT AND FILL REQUIREMENTS, AND IS RESPONSIBLE FOR INCLUDING IMPORT AND EXPORT OF MATERIALS IN THEIR BILL. ALL EXCESS MATERIAL (INCLUDING TOPSOIL, CLEAN FILL, AND WASTE MATERIAL) SHALL BE REMOVED FROM THE SITE.

CONTRACTOR TO PROTECT EXISTING WALKS, PAVEMENT, CURBS, GUTTERS, WALLS, FENCES, GATES, LANDSCAPING AND TREES TO REMAIN DURING CONSTRUCTION.

KINGSCOTT ASSOCIATES, INC. WILL PREPARE AND INCLUDE SPECIFICATION SECTION 02200 UNIT PRICES FOR UNDERCUT AND REPLACEMENT OF POOR SOILS. UNIT PRICE TO INCLUDE DISPOSAL OF POOR SOILS AND IMPORT AND PLACEMENT OF 17"X3" CRUSHED CONCRETE OR 3/4" MAX CRUSHED CONCRETE WITH GEOTEXTILE FABRIC, UP TO PROPOSED SUBGRADE.

PROTECT GEOTECHNICAL BORINGS DURING DEMOLITION.

LEGEND

- | | |
|--|--|
| --- PROPOSED WATERMAIN | ● PROPOSED SAN MANHOLE (SAN) |
| --- PROPOSED SANITARY | ● PROPOSED STORM MANHOLE (SM) |
| --- PROPOSED STORM SEWER | ● PROPOSED CATCH BASIN (CB) |
| --- PROPOSED GAS MAIN | ● PROPOSED INLET (INL) |
| --- PROPOSED ELECTRIC | ● PROPOSED END SECTION (ES) |
| ● PROPOSED HYDRANT | ● PROPOSED FIELD CATCH BASIN (FCB) W/ BREEZIE COVER OR STANDPIPE (SP) W/ BAR GRADE COVER |
| ● PROPOSED GATE VALVE & WELL (GVW) | ● UTILITY CROSSING (SEE DATA TABLE) |
| ● PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVM) | ● STORM SEWER STRUCTURE |
| STANDARD BITUMINOUS PAVEMENT | ● SANITARY SEWER STRUCTURE |
| HEAVY-DUTY BITUMINOUS PAVEMENT | ● WATERMAIN STRUCTURE |
| DEEP-STRENGTH BITUMINOUS PAVEMENT | |
| CONCRETE PAVEMENT | |
| CONCRETE SIDEWALK | |

Lewton School Demo
Lansing School District

2000 Lewton Pl.
Lansing, MI 48915



REVISIONS/REVIEW DATE
CONSTRUCTION DOCUMENTS 5/2/2025

KEY PLAN

LSD NO. **SB-0063**
JOB NO. **2616.01G**

SHEET TITLE
DEMOLITION PLAN

SHEET NO.
C2.1

Lewton School Demo

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915



REVISIONS/REVIEW DATE
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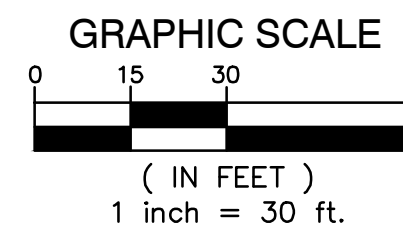
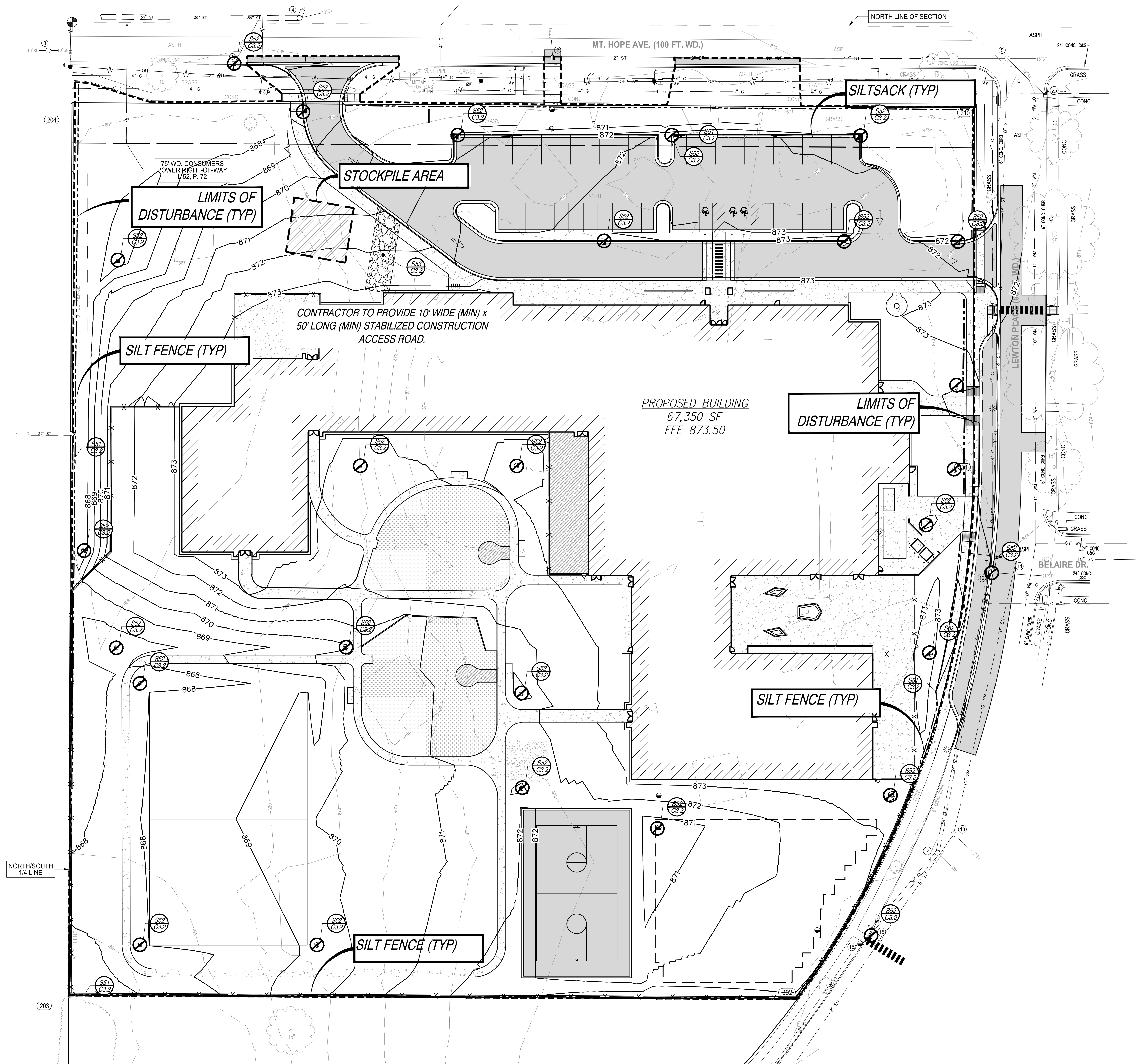
KEY PLAN

LSJ NO. SB-0063
JOB NO. 2616.01G

SHEET TITLE
SESC PLAN

SHEET NO.

C3.1



LEGAL DESCRIPTION

OWNER: LANSING SCHOOL DISTRICT
TAX PARCEL ID: 33-01-01-30-201-001
ADDRESS: 2000 LEWTON PLACE

OWNER: CITY OF LANSING
TAX PARCEL ID: 33-01-01-30-201-011
ADDRESS: 2122 LEWTON PLACE

COM 554 FT S OF NW COR OUTLOT A, THE PAR. 1 TO N LINE OUTLOT A TO WLY LINE LEWTON PLACE, SWLY ON WLY & NLY LINE LEWTON PLACE TO SW COR OUTLOT A, N TO BEG. ETON DOWNS SUB.

LEGEND

- | | |
|---|---|
| --- PROPOSED WATERMAIN | ● PROPOSED SAN MANHOLE (SAN) |
| --- PROPOSED SANITARY | ● PROPOSED STORM MANHOLE (SM) |
| --- PROPOSED STORM SEWER | ● PROPOSED CATCH BASIN (CB) |
| --- PROPOSED GAS MAIN | ● PROPOSED INLET (INL) |
| --- PROPOSED ELECTRIC | --- PROPOSED END SECTION (ES) |
| ● PROPOSED HYDRANT | ● PROPOSED FIELD CATCH BASIN (FCB) W/ RETRACTION COVER OR STANDPIPE (SP) W/ BAR GRATE COVER |
| ○ PROPOSED GATE VALVE & WELL (GVW) | ○ PROPOSED UTILITY CROSSING (SEE DATA TABLE) |
| ○ PROPOSED TAPPING SLEEVE VALVE & WELL (TSVW) | ○ PROPOSED STRUCT. TYPE |
| ■ STANDARD BITUMINOUS PAVEMENT | ○ PROPOSED STRUCT. NO. |
| ■ HEAVY-DUTY BITUMINOUS PAVEMENT | ○ PROPOSED STRUCT. TYPE |
| ■ DEEP-STRENGTH BITUMINOUS PAVEMENT | ○ PROPOSED STRUCT. NO. |
| ■ CONCRETE PAVEMENT | ○ PROPOSED STRUCT. TYPE |
| ■ CONCRETE SIDEWALK | ○ PROPOSED STRUCT. NO. |
| ■ MILL PAVEMENT | ○ PROPOSED STRUCT. TYPE |

GRADING LEGEND

- | | |
|--------------------------------------|---------------------------------------|
| --- EXISTING ELEVATION | ● TP 000.00 TOP OF PAVEMENT ELEVATION |
| --- PROPOSED TOP OF CURB ELEVATION | ● TW 000.00 TOP OF WALK ELEVATION |
| --- PROPOSED TOP OF GUTTER ELEVATION | ● FG 000.00 FINISH GRADE ELEVATION |
| --- OUTSIDE GRADE ELEVATION | ● TW 000.00 TOP OF WALL ELEVATION |
| --- EXISTING CONTOURS | ● ME 000.00 MATCH EXISTING ELEVATION |
| --- PROPOSED CONTOURS | --- FLOW ARROW |

SOIL EROSION CONTROL DEVICES

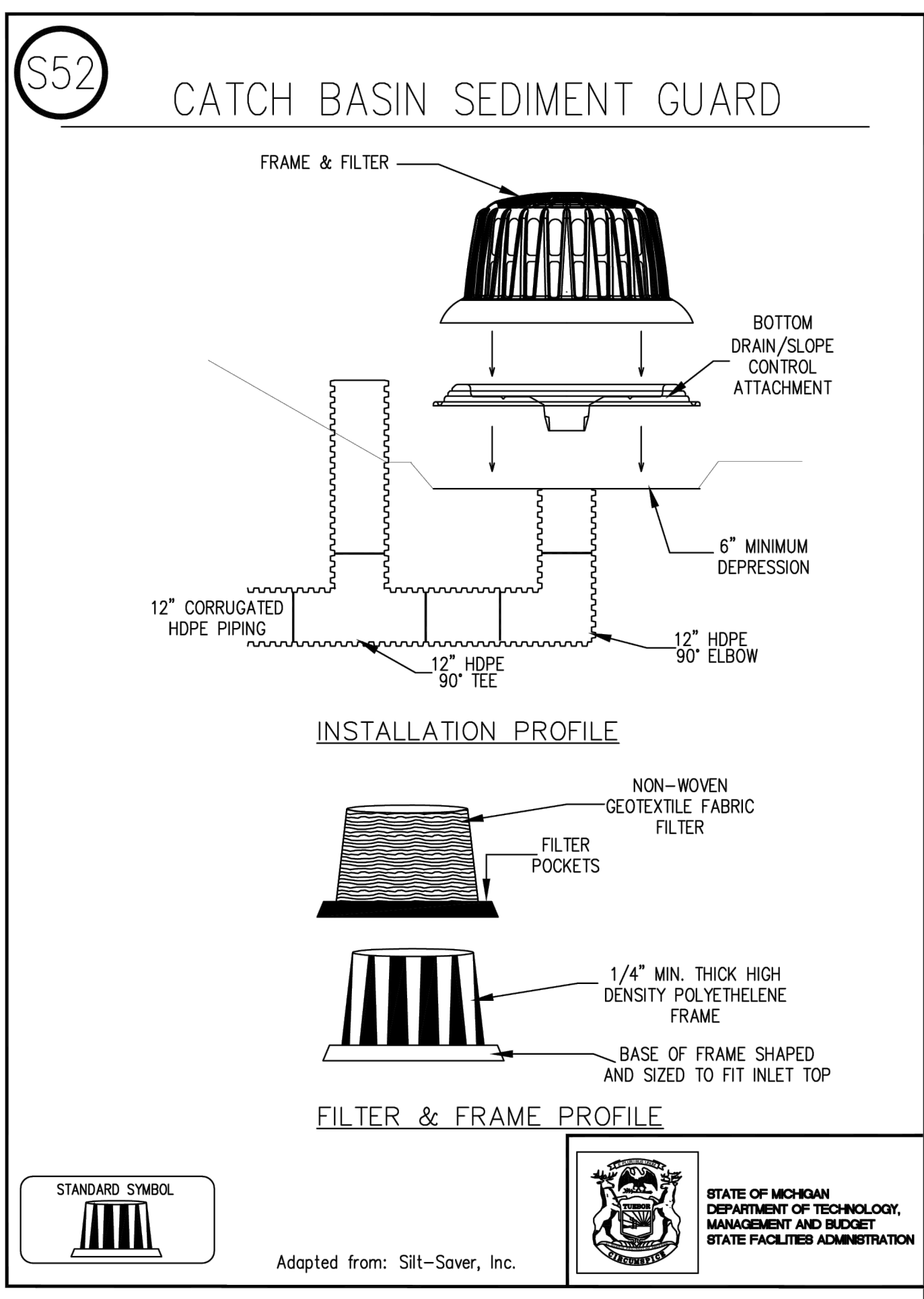
- (SEE SHEET C03.3 FOR SESC DETAILS)
- INLET FILTERS
 - 24" SILT FENCE

SITE NOTES:

APPROX. GROSS ACREAGE DISTURBED = 6.46± ACRES
DISTANCE TO NEAREST BODY OF WATER (GRAND RIVER) = 1,789 FEET

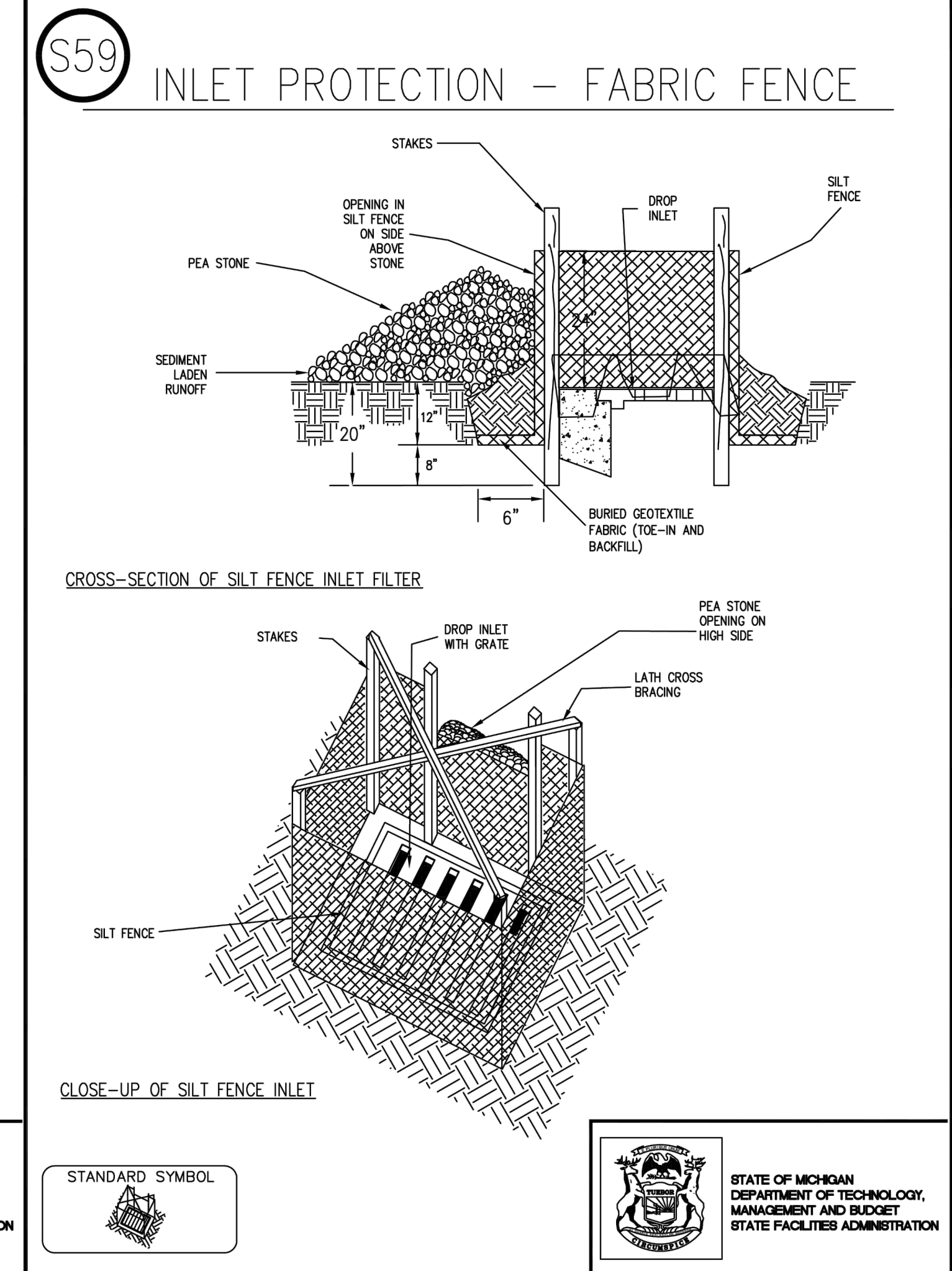
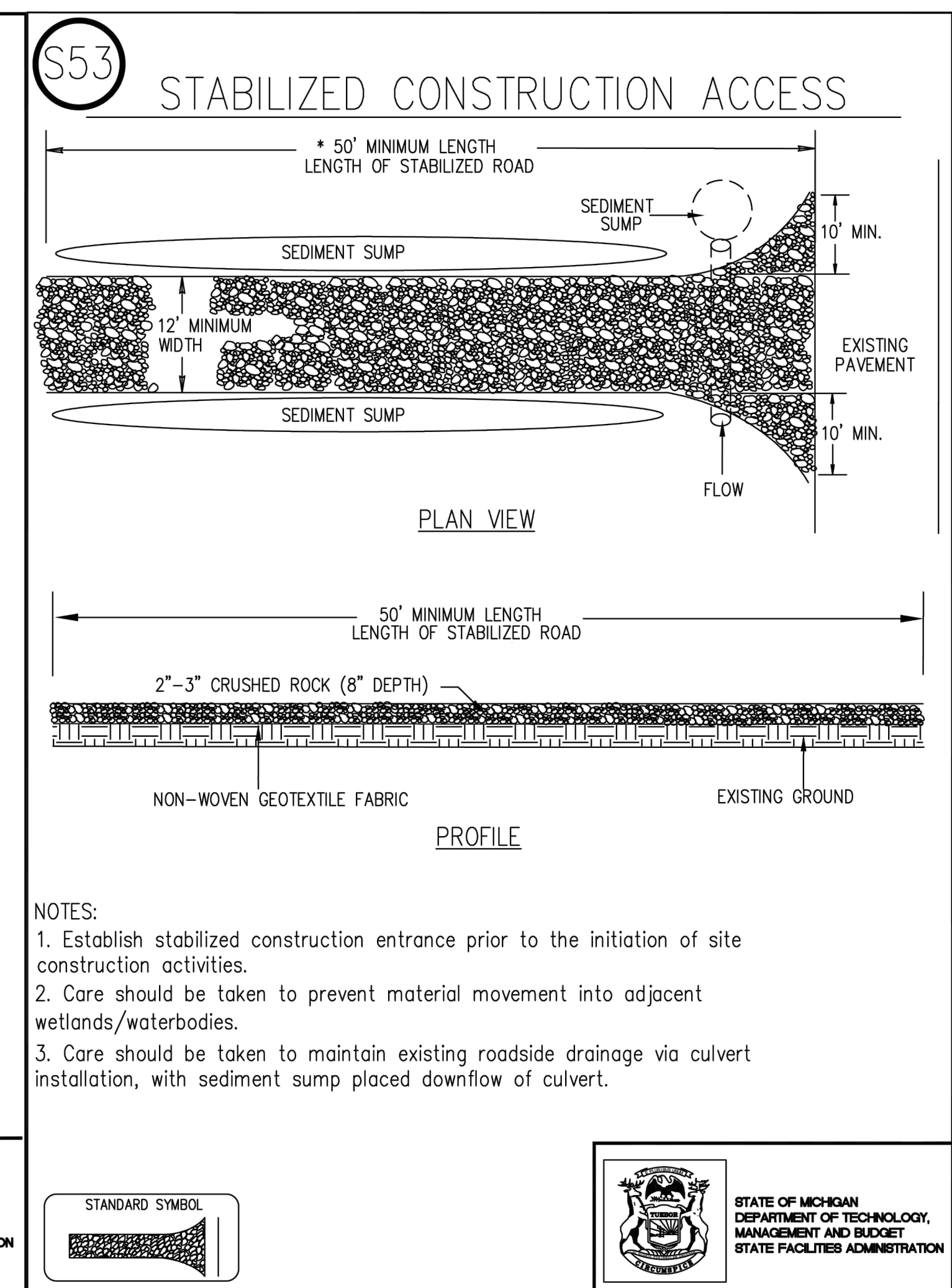
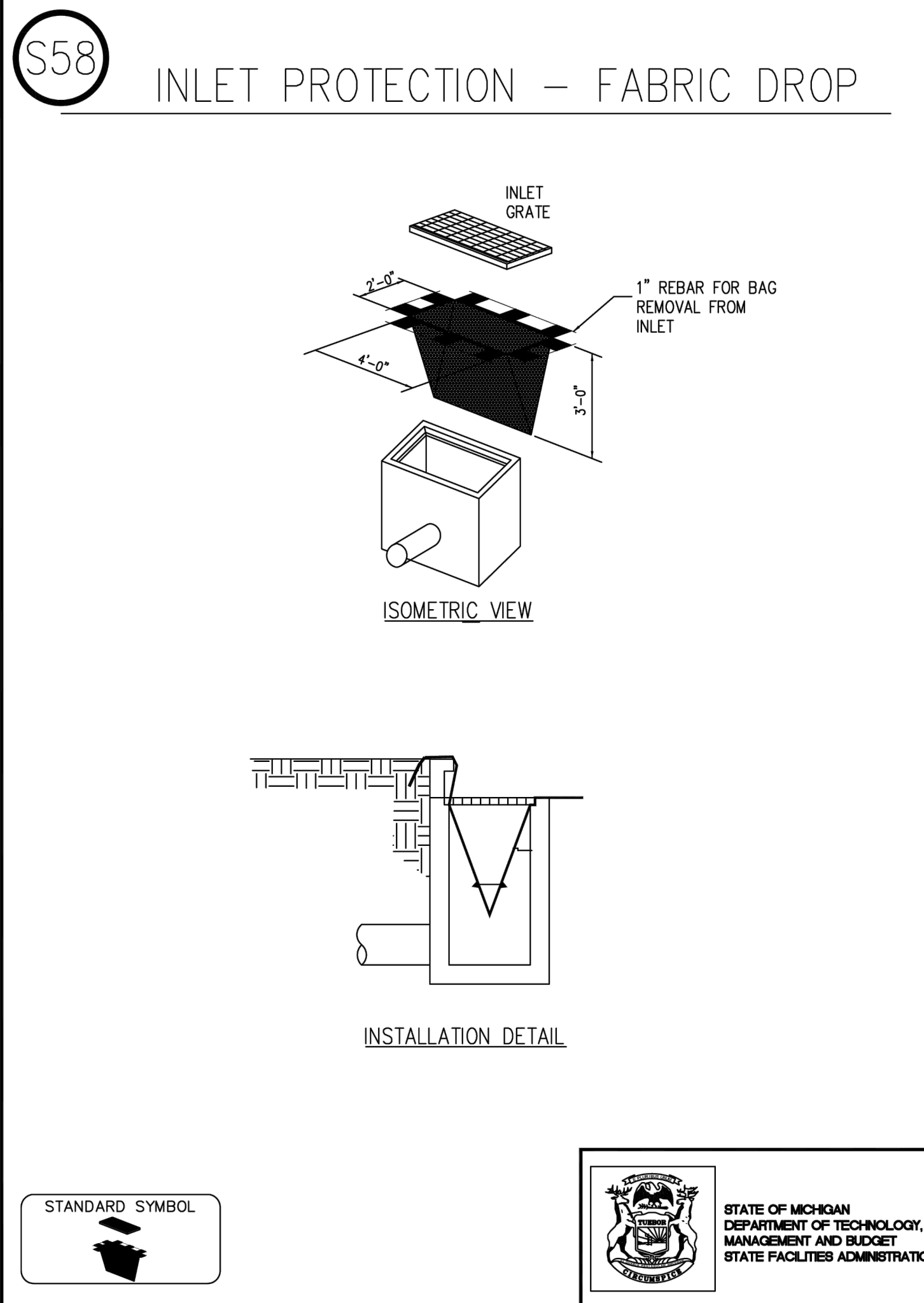
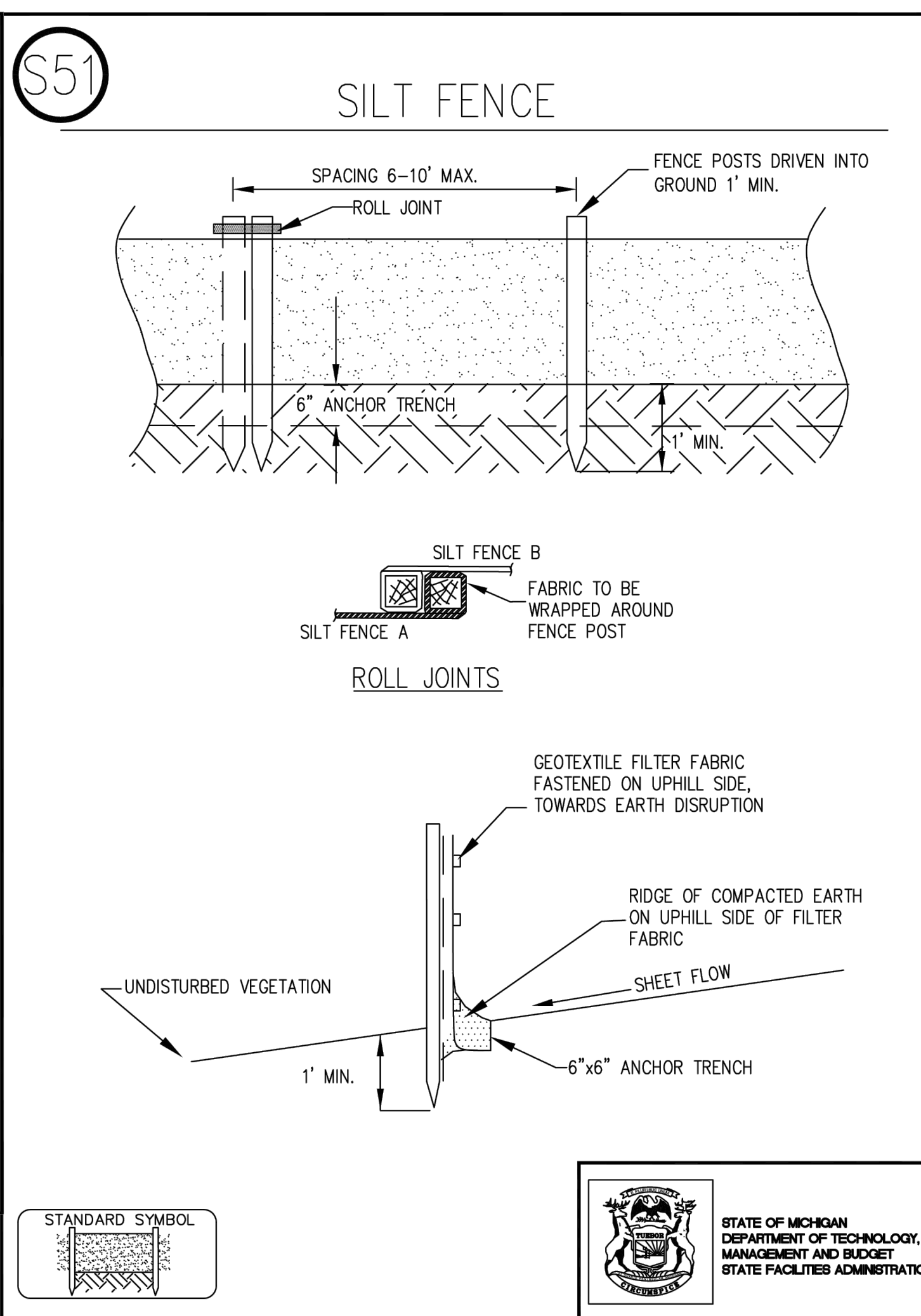
SOIL TYPES:
UB: Urban land-Marquette complex, 2 to 12 percent slopes

THIS PROJECT SHALL BE CONSTRUCTED IN COMPLIANCE WITH PART 91 OF ACT 451 OF 1994, AS AMENDED. THE SOIL EROSION AND SEDIMENT CONTROL ACT.



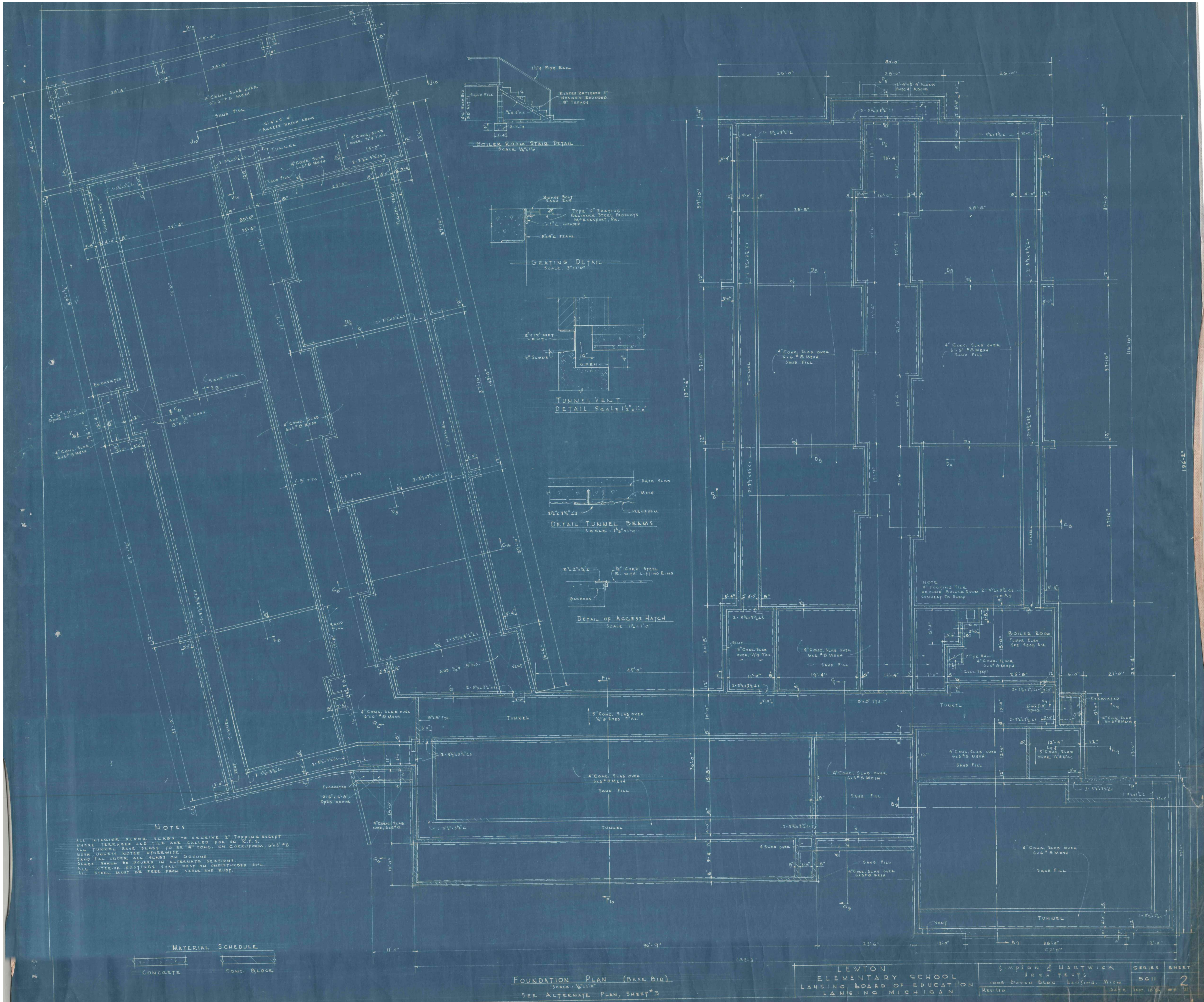
SOIL EROSION/SEDIMENTATION CONTROL NOTES

1. ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF CITY OF LANSING.
2. DAILY INSPECTIONS SHALL BE MADE BY THE CONTRACTOR TO DETERMINE EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL DEVICES, AND ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
3. EROSION AND ANY SEDIMENT FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS. WATERWAYS INCLUDE BOTH NATURAL AND MANMADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES AND PONDS.
4. EROSION AND SEDIMENT CONTROL DEVICES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CONSTRUCTION. SEDIMENT CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTING OF SILT OFF THE SITE.
5. CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL DEVICES AS REQUIRED AND AS DIRECTED ON THESE PLANS. HE SHALL REMOVE TEMPORARY DEVICES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES, AND OTHER EARTH CHANGES HAVE BEEN ACCOMPLISHED AND APPROVED BY THE CHARTER TOWNSHIP OF COMMERCE.
6. DEBRIS FROM PROJECT WILL BE LEFT ON THE SITE BY DELIVERY OR CONSTRUCTION VEHICLES THROUGH THE USE OF CLEAN STONE EXITS SHOULD THE STONE BECOME LESS EFFECTIVE IT WILL BE REPLACED. ALL CONSTRUCTION TRAFFIC WILL USE THE CLEAN STONE EXIT.
7. DUST CONTROL WILL BE EXERCISED AT ALL TIMES WITHIN THE PROJECT BY THE CONTRACTORS. SPRINKLING TANK TRUCKS WILL BE AVAILABLE AT ALL TIMES TO BE USED ON HAUL ROUTES OR OTHER PLACES WHERE DUST BECOMES A PROBLEM.
8. IMMEDIATELY AFTER SEEDING, MULCH ALL SEEDING AREAS WITH UNWEATHERED SMALL GRASS STRAW OR HAY. SPREAD UNIFORM AT A RATE OF 1.0 TO 2.0 TONS PER ACRE OR 0.10 POUNDS PER SQUARE FEET. ANCHOR MULCH WITH DISC TYPE MULCH ANCHORING TOOL.
9. ALL MUD, DIRT, AND DEBRIS TRACKED ONTO EXISTING ROADS FROM THIS SITE SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR OR BUILDER. ALL MUD, DIRT, AND DEBRIS TRACKED OR SPILLED ONTO PAVED SURFACES WITHIN THIS SITE SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.
10. PERMANENT SOIL EROSION CONTROL DEVICES FOR ALL SLOPES, CHANNELS, DITCHES OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 15 CALENDAR DAYS AFTER FINAL GRADING OR FINAL EARTH CHANGES HAVE BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH CHANGE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH CHANGE ACTIVITY OCCURS, TEMPORARY SOIL EROSION CONTROL DEVICES SHALL BE IMPLEMENTED WITHIN 30 CALENDAR DAYS. ALL TEMPORARY SOIL EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION DEVICES ARE IMPLEMENTED AND/OR ESTABLISHED. ALL PERMANENT SOIL EROSION CONTROL DEVICES WILL BE IMPLEMENTED AND ESTABLISHED BEFORE A CERTIFICATE OF INSURANCE IS ISSUED.
11. ALL CONTRACTORS ARE TO KEEP EXCAVATED MATERIAL ON SITE. PARTICULAR CARE SHOULD BE TAKEN WHEN WORKING ALONG THE PERIMETER OF THE SITE. IN NO EVENT SHALL THE WORK AREA EXTEND BEYOND THE LIMITS INDICATED ON THE PLANS.
12. THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT BY THE CONTRACTOR.





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Kingscott Associates Inc. 2025/01/20
Kingscott Associates Inc. 2025/01/20



Lewton School Demo

Lansing School District

2000 Lewton Pl,
Lansing, MI 48915



ISSUANCES DATE
CONSTRUCTION DOCUMENTS 5.2.2025

JOB NO. 2616.01G

SHEET TITLE
1956 ORIGINAL FOUNDATION PLAN
FOR REFERENCE

SHEET NO.

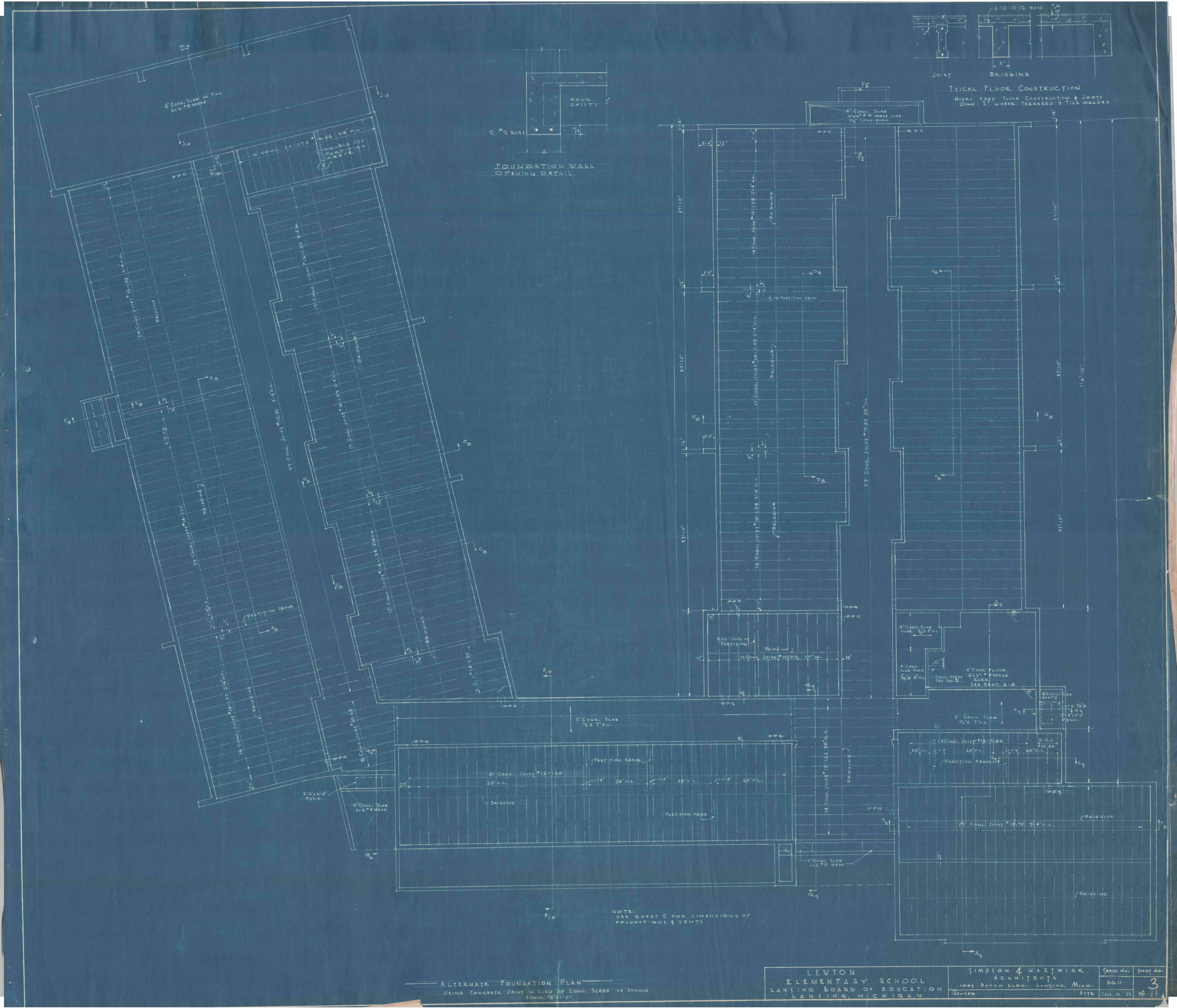
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PROJECT: LEWTON SCHOOL DEMO
DRAWN BY: J. L. LAM
DATE: 08/10/2024



Lewton School Demo

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915



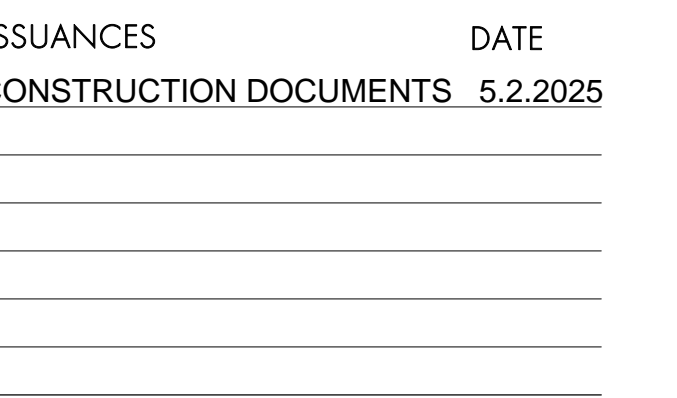
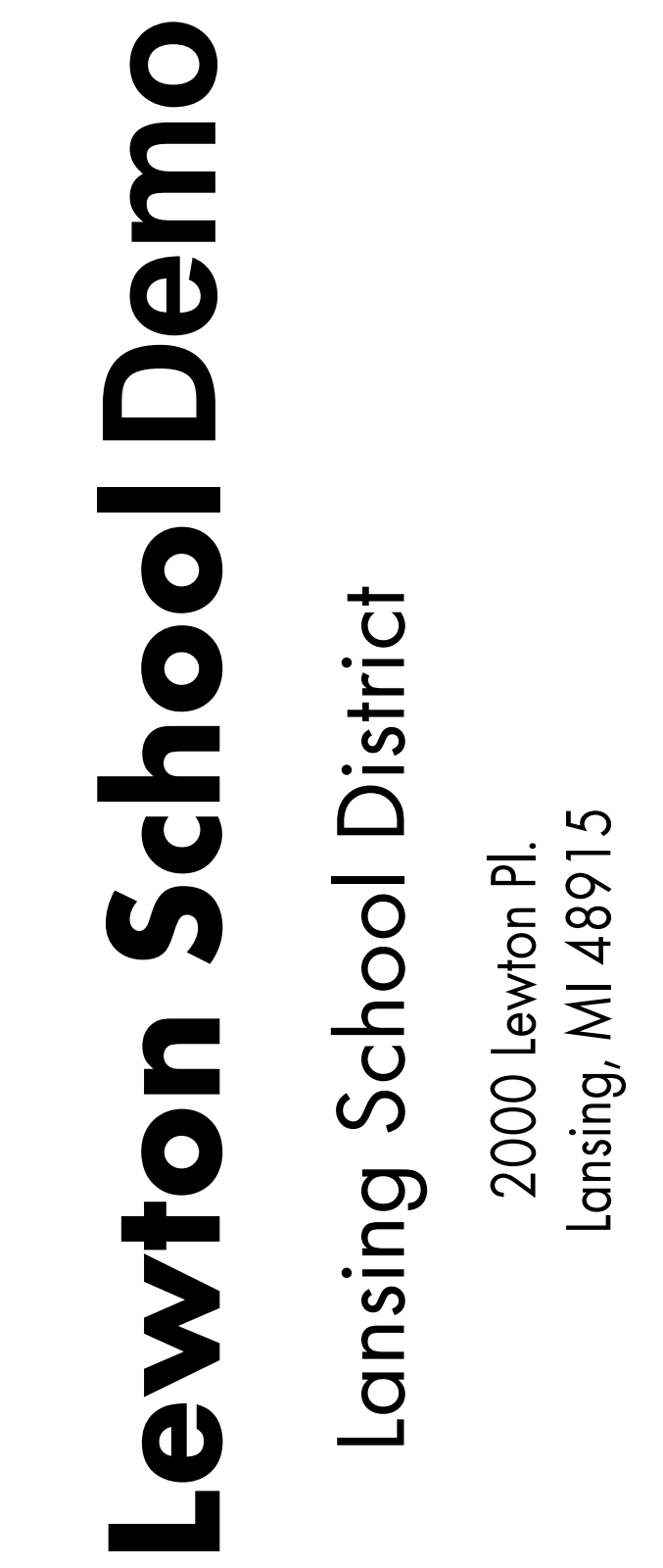
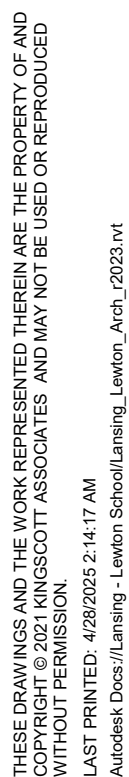
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	5.2.2025

JOB NO.	2616.01G
SHEET TITLE	1956 ORIGINAL ALT FOUNDATION PLAN FOR REFERENCE

SHEET NO.

EX 1.1

KINGSCOTT ASSOCIATES, INC. KALAMAZOO, MICHIGAN



HEET NO.

EX 1.2

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Lewton School Demo

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

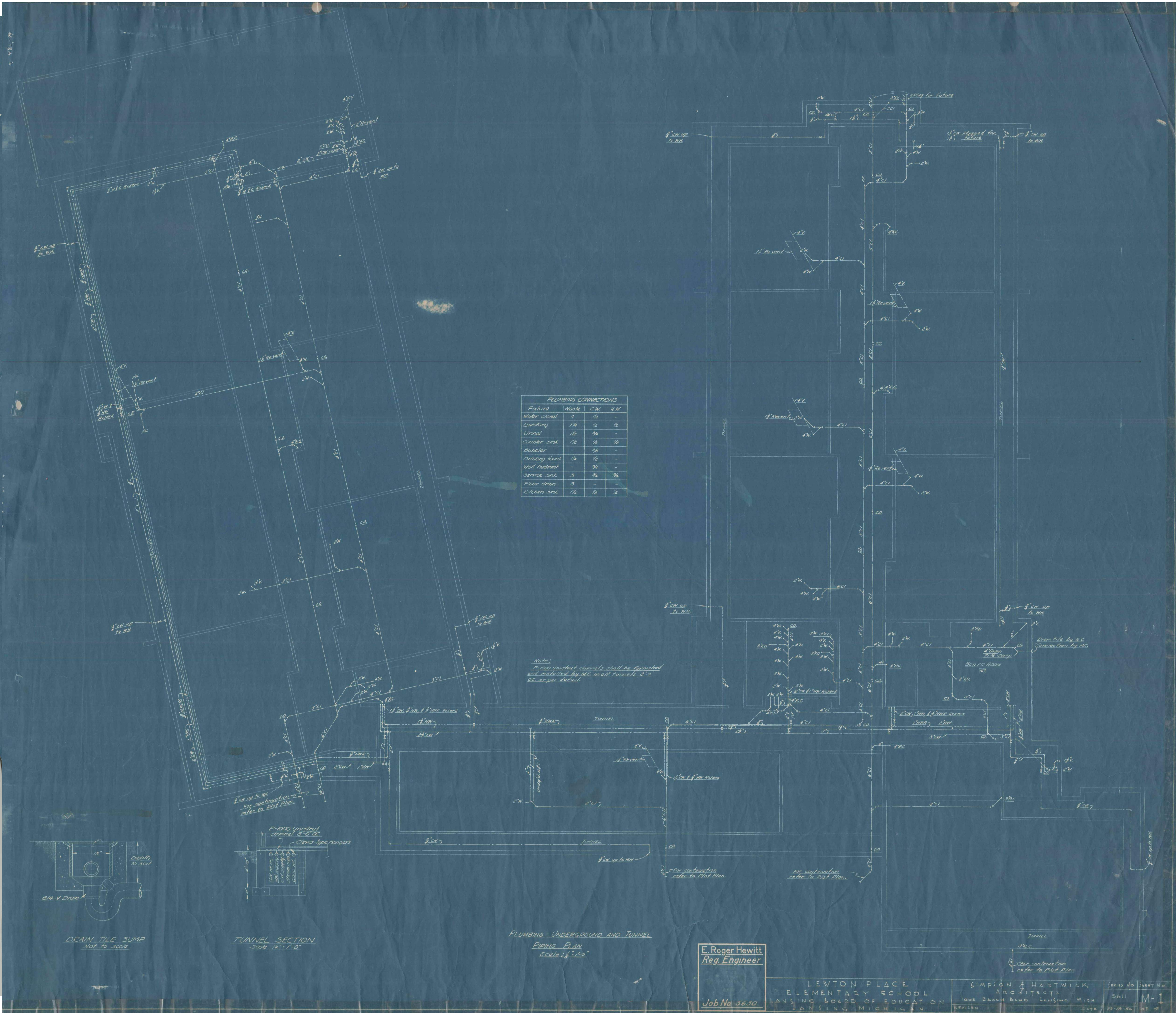


ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	5.2.2025

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SHEET TITLE	1956 ORIGINAL UNDERGROUND AND TUNNEL PIPING PLAN - FOR REFERENCE
SHEET NO.	

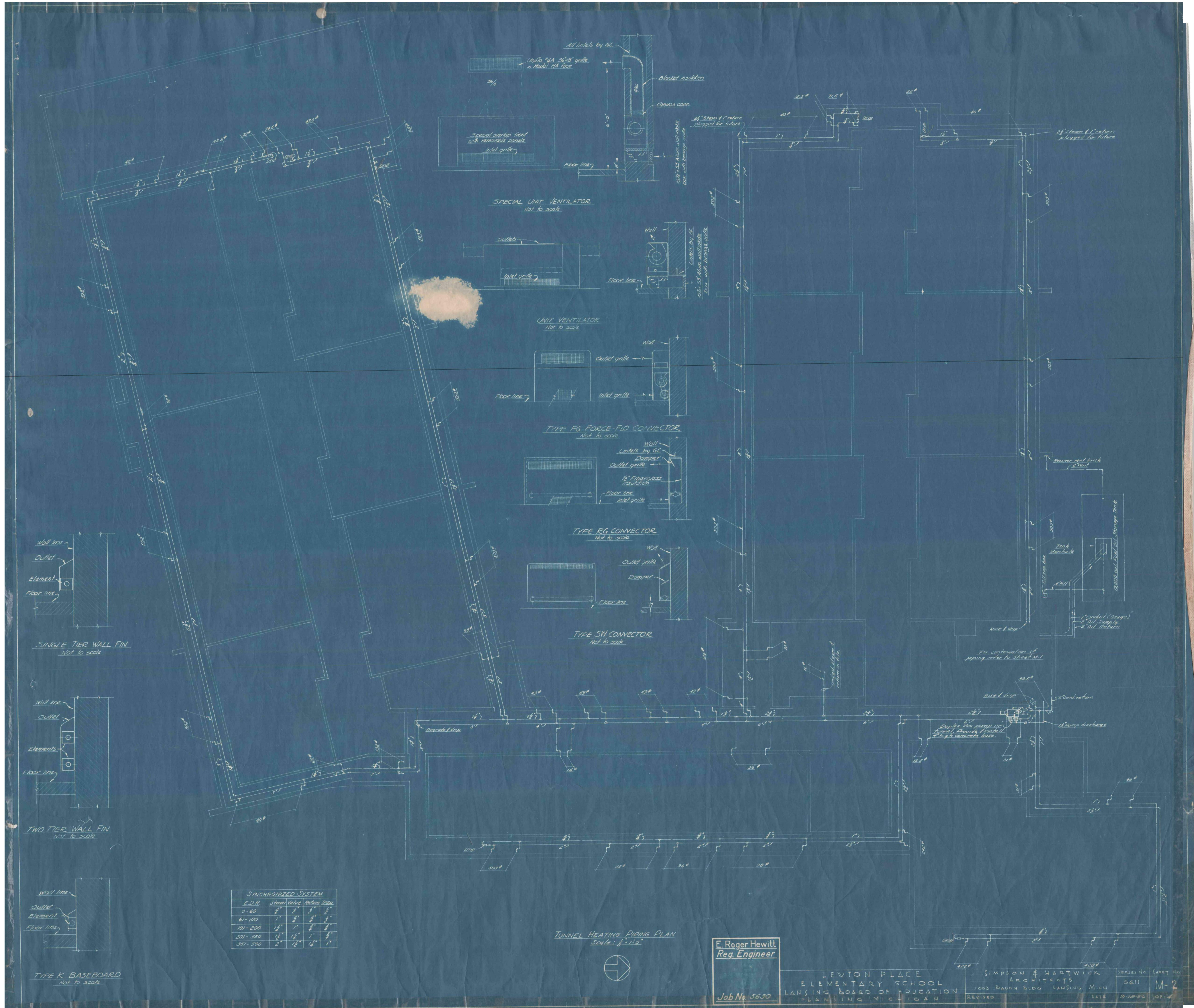
EX 1.3

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Lewton School Demo

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

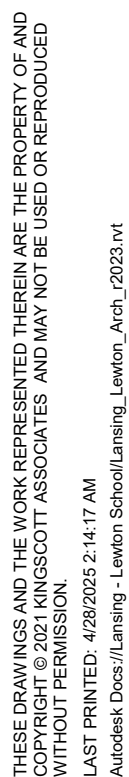


ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	5.2.2025

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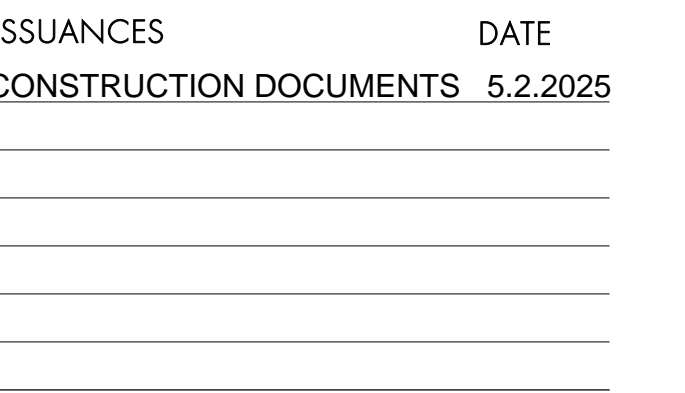
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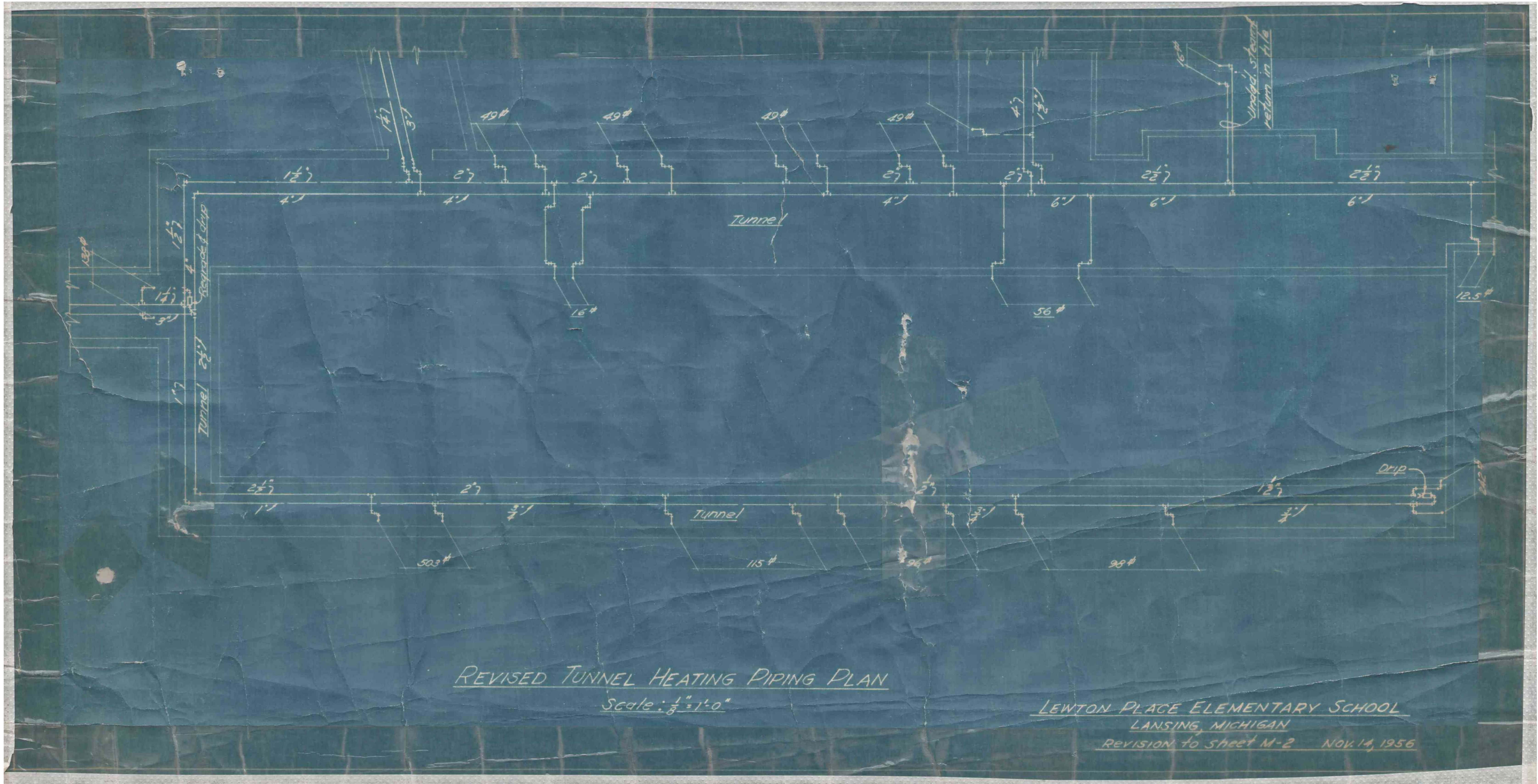
Lansing School District

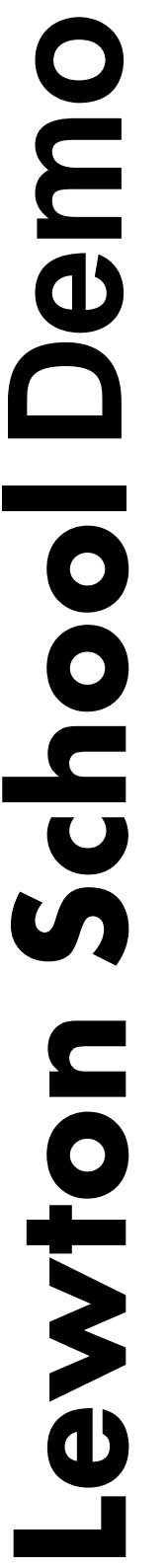
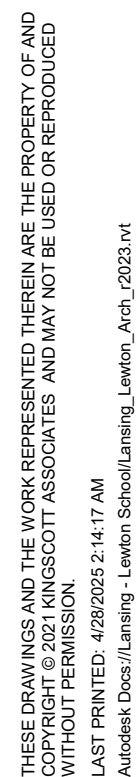
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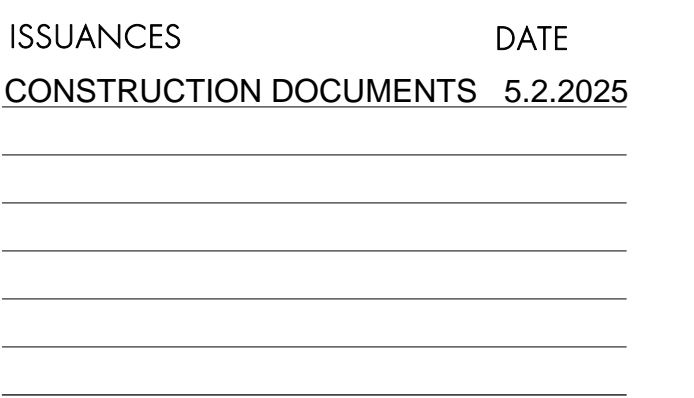
KINGSCOTT ASSOCIATES INC. KALAMAZOO, MICHIGAN





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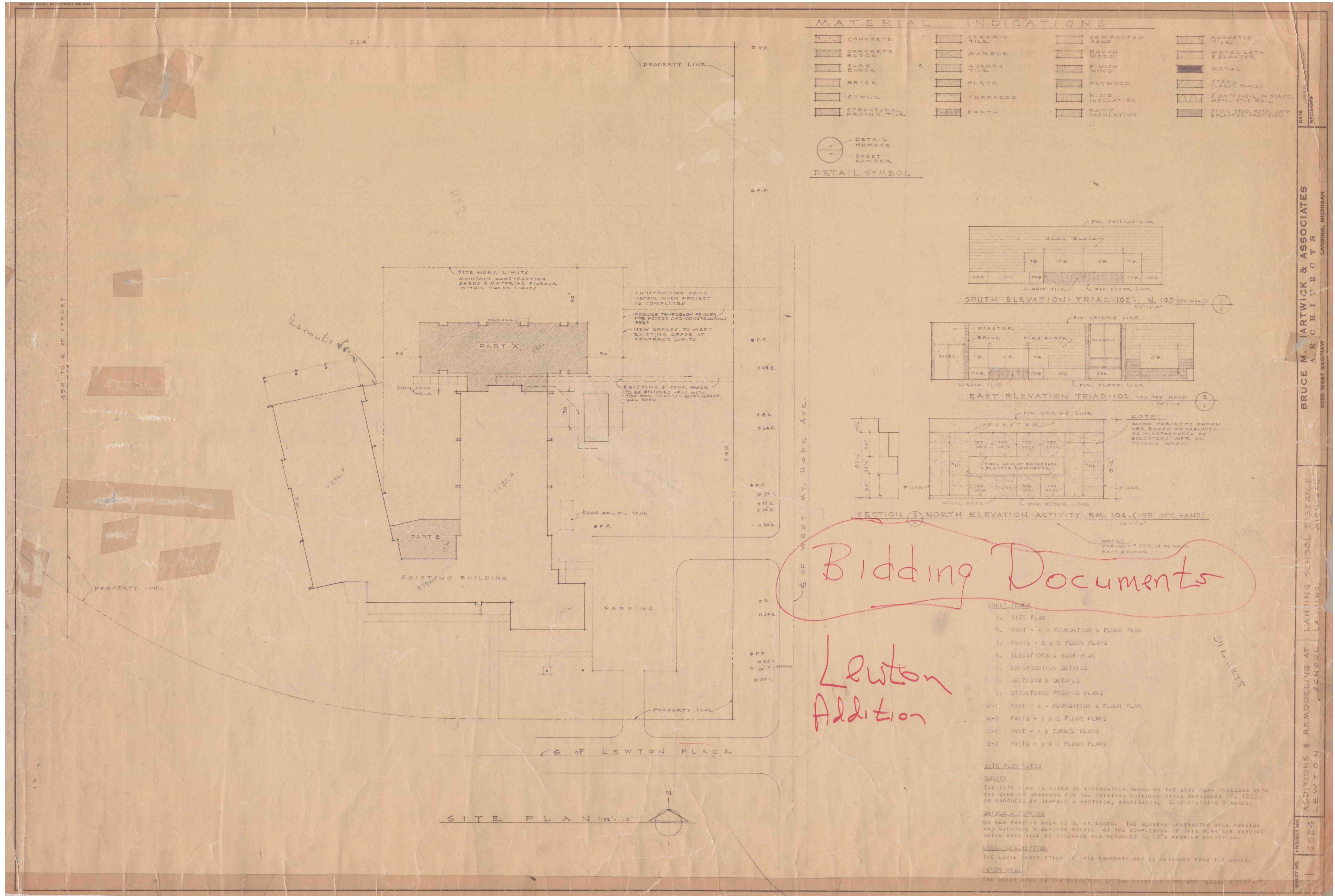
JOB NO. 2616.01G

SHEET TITLE
1969 ADDITION SITE PLAN
FOR REFERENCE

SHEET NO.

EX 1.6

KINGSCOTT ASSOCIATES INC. KALAMAZOO, MICHIGAN





Lewton School Demo

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915



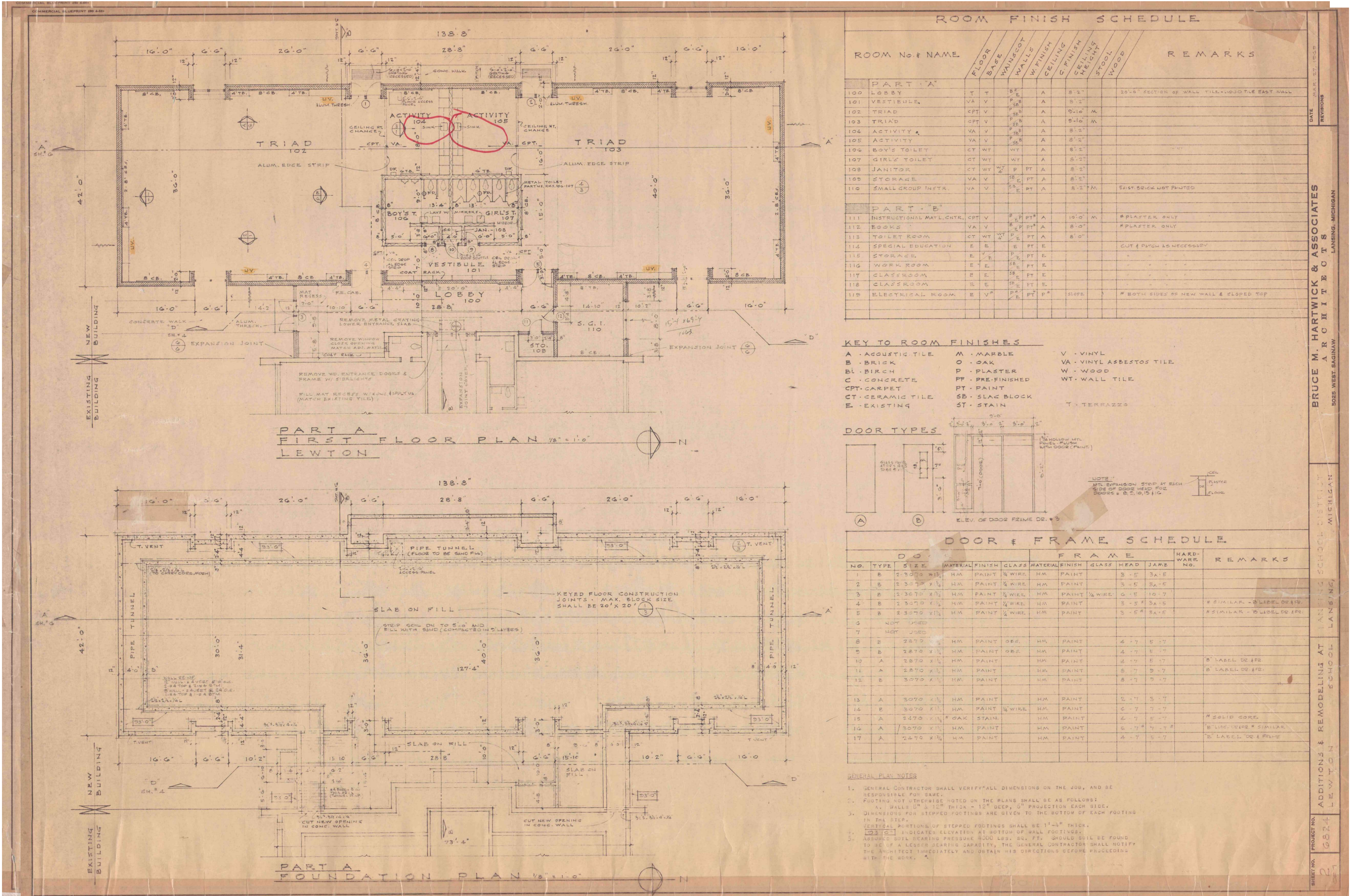
ISSUANCES DATE
CONSTRUCTION DOCUMENTS 5.2.2025

JOB NO. 2616.01G
SHEET TITLE
1969 ADDITION FLOOR PLAN PART A
FOR REFERENCE

SHEET NO.

EX 1.7

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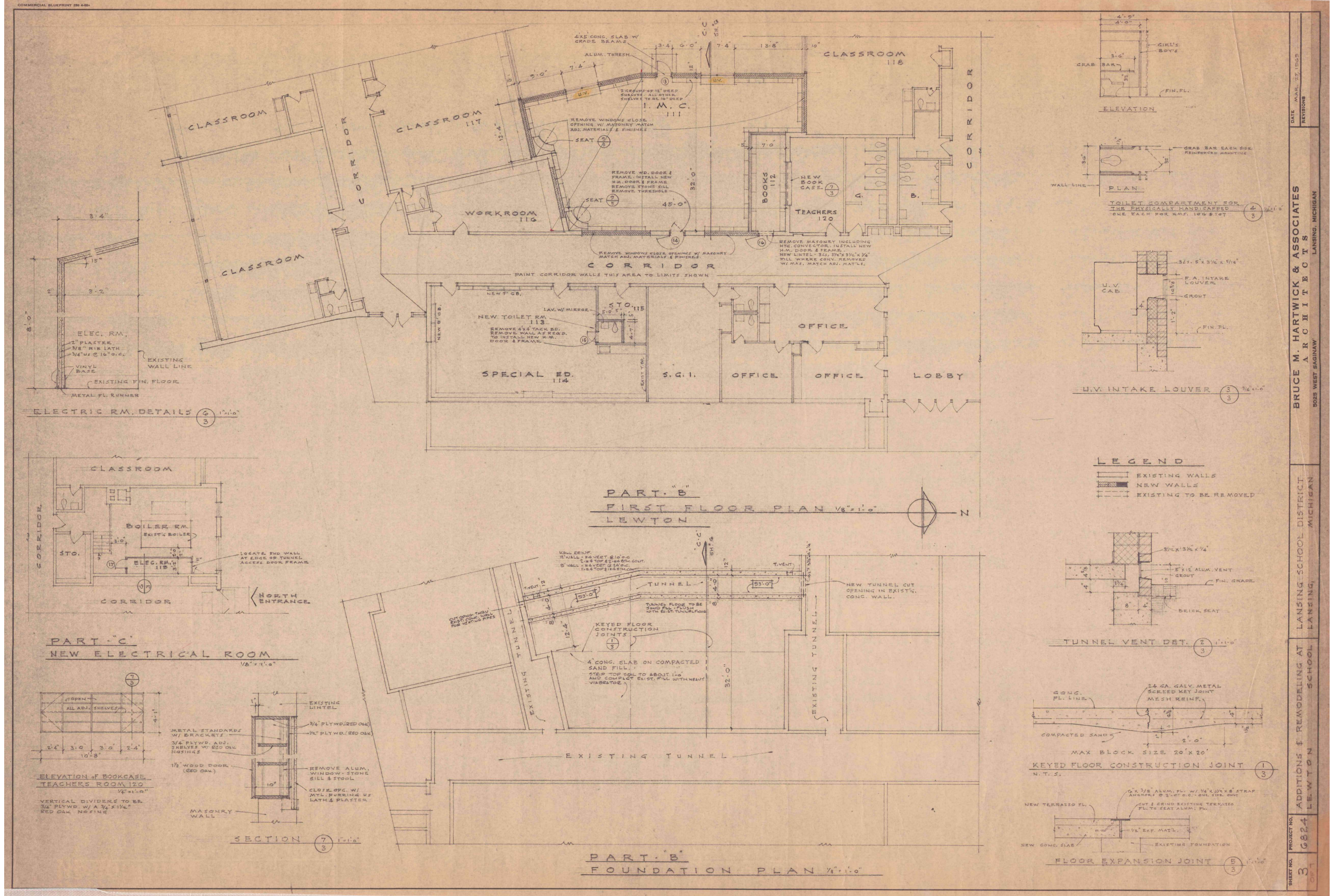




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PROJECT NO. 2616.01G
SHEET NO. 3
DATE: MAR. 22, 2023

COMMERCIAL BLUEPRINT 200 4-80



Lewton School Demo

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915



ISSUANCES DATE
CONSTRUCTION DOCUMENTS 5.2.2025

JOB NO. 2616.01G
SHEET TITLE
1969 ADDITION FLOOR PLAN PART B
FOR REFERENCE

SHEET NO.

EX 1.8

KINGSCOTT ASSOCIATES INC. KALAMAZOO, MICHIGAN

Lewton School Demo

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915



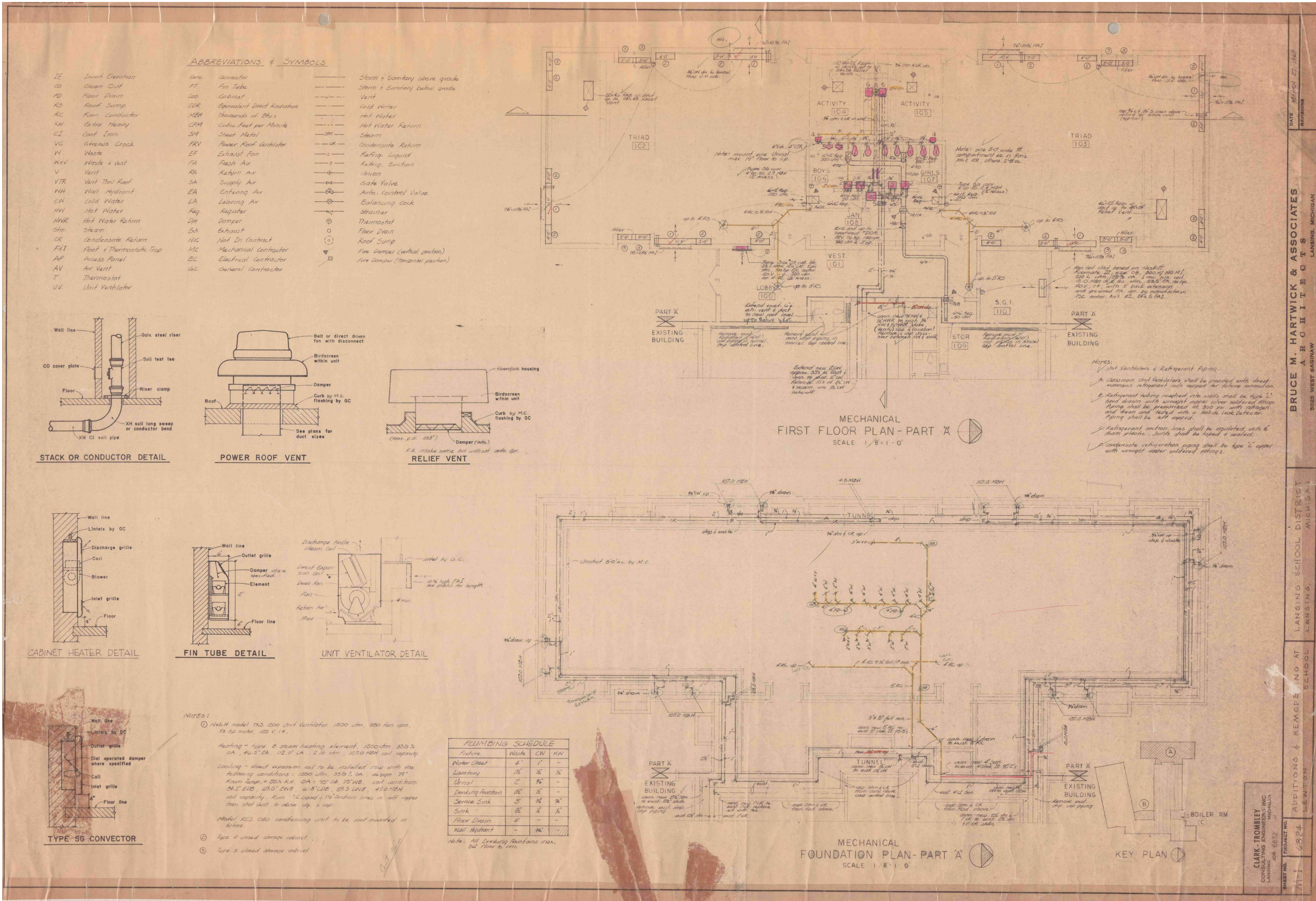
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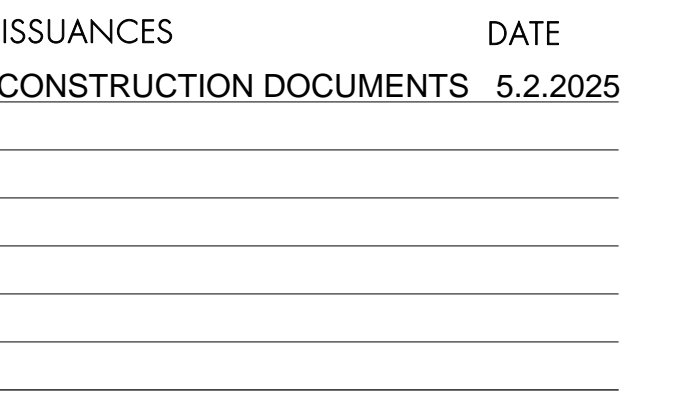
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SHEET TITLE
1969 ADDITION MECH PLANS PART A
FOR REFERENCE

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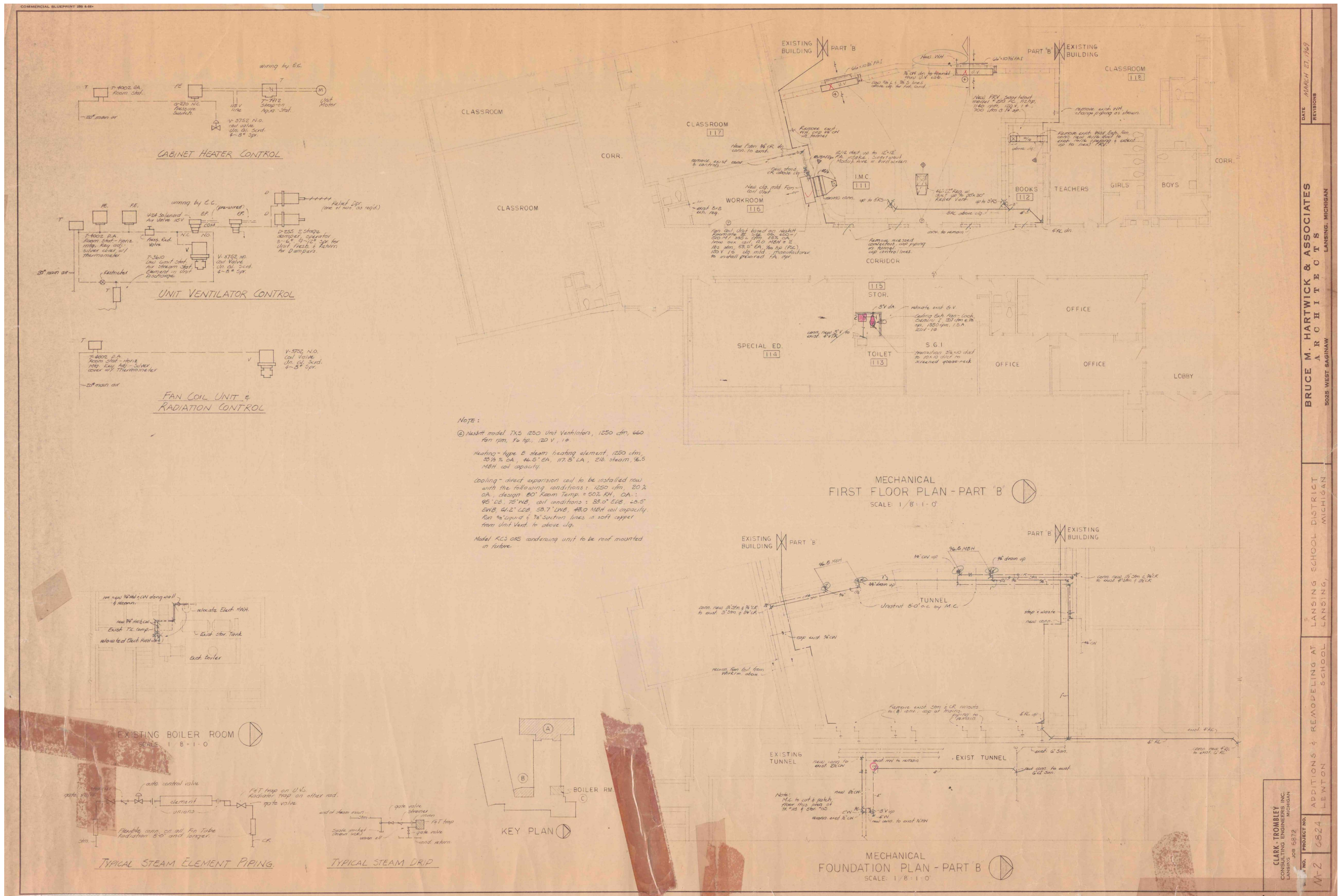




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EX 1.10

 KINGSCOTT ASSOCIATES INC. KALAMAZOO, MICHIGAN





PROJECT SAFETY MANUAL

**Lansing School District
Lewton – Demo & Abatement
Lansing, MI**

May 15th, 2025

Project Name/Number

Statement of Safety Program

It is a fundamental value of The Christman Company that safety always is a primary consideration. It is our policy and a top priority to do all in our power to provide a safe work place for all workers and to mandate the use of good safety practices. Adherence to established safety standards and procedures is required of everyone at all times on the Willow Project site.

There is no phase of the operation that has greater importance than accident prevention and the preservation of human resources.

This Project Specific Safety Program has been developed in support of these concepts to serve as a reference in assisting all project trade contractors in satisfying their responsibility “to provide a safe, healthful work place, free of recognized hazards.”

The Christman Company
Austin Brown
Assistant Project Manager

The Christman Company
Andrew Dobbs
Project Manager

The Christman Company
Rob Crowe
Vice President

The Christman Company
Donald V. Staley
Vice President/Safety Director

Project Name/Number

Table of Contents

- ◆ **PROJECT SAFETY MANUAL**
 - I. Introduction
 - II. Implementation Responsibility
 - III. Subcontractor Safety Programs
 - IV. Discipline Policy
 - V. Weekly Safety Meetings
 - VI. Safety Inspections
 - VII. Drug/ Substance Abuse Testing Program
 - VIII. Hazardous Material Control Program
 - IX. Existing Hazardous Material
 - X. Personal Protective Equipment and Clothing
 - XI. Emergency Telephone Numbers
 - XII. First Aid
 - XIII. Injury/ Accident Reporting and Investigation
 - XIV. Assured Grounding Program
 - XV. General Jobsite Safety Rules
 - XVI. Housekeeping
 - XVII. Ancillary Safety Procedures
 - XVIII. Smoking
 - XIX. Crane Inspections
 - XX. Visitor Policy
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- ◆ **ATTACHMENT I - DRUG SCREENING LIST**
- ◆ **ATTACHMENT II - ACCIDENT INVESTIGATION REPORT**
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- ◆ **ATTACHMENT VI - EMERGENCY EVACUATION PLAN**
- ◆ **ATTACHMENT VII - EMERGENCY EVACUATION MAP**

Project Name/Number**I. Introduction**

This Project Safety Manual provides an administrative structure within which The Christman Company and subcontractors present on the Project site shall provide for the safety and health of their employees and other individuals affected by their activities and for the protection of property. This Manual does not relieve subcontractors of any of their traditional or specific legal responsibilities with respect to occupational safety and health or the protection of property. Instead, this Manual provides for coordination among the various subcontractors' individual programs, monitoring of subcontractors' conformance with their individual programs, and the requirements of this Manual, initiation of corrective actions when nonconformances are identified, and documentation of safety related programs, meetings, and incidents. This Project Safety Manual for Willow has been developed to assist all subcontractors working at the Project site in satisfying their responsibility to provide a safe and healthful work place, free of recognized hazards, for their employees.

All employees, subcontractors, trades people, and visitors are required to watch The Christman Company Safety Orientation Video prior to performing work at the site. The video may be viewed at the site office.

II. Implementation Responsibility

Each and every person working at the Project site shall be responsible to be knowledgeable of the contents of this Manual and comply with every requirement contained herein.

III. Subcontractor Safety Programs

Each subcontractor is required to submit a copy of its written safety program to The Christman Company prior to commencing work at the Project site. Each program shall meet the requirements of the codes and regulations of OSHA, local and other authorities having jurisdiction over the work to be performed and shall include disciplinary procedures and safety orientation training procedures applicable to subcontractor personnel.

Each subcontractor safety program shall include, as a minimum, the following requirements:

- A. All trades are to complete a Jobsite Hazards Analysis (JHA) form every day for all work activities.
- B. Conduct weekly safety (Tool Box) meetings.
- C. Monitor jobsite safety issues daily.
- D. Conduct fire inspections.
- E. Review project specific requirements with employees.
- F. Conduct tool and equipment inspections.
- G. Review all personal protective equipment with employees.
- H. Address fall protection measures.

Project Name/Number

- I. Address Right-To-Know regulations, including Safety Data Sheets (SDS')
- J. Provide hazardous material awareness training.

IV. Discipline Policy

All Subcontractors entering onto this Project are required to comply with all aspects of the project safety program requirements. Those that do not adhere to this program will be subject to this discipline policy. The Project will utilize a three step process for minor infractions; repeat or major offenses of the safety program are subject to immediate removal from the Project.

1. Any re-entry employment programs for safety violations will be initiated only by The Christman Company Superintendent and Project Manager.
2. Verbal warning - The verbal warning **shall be considered given** at the signing of the contract. This warning is to be communicated by the Subcontractor to **all** Subcontractor personnel prior to entering this Project.
3. Written warning - The second warning will be a written warning, documented, with a copy sent to the employee's Supervisor and Corporate Office.
4. A written warning, at the discretion of The Christman Company Superintendent, can result in either removal from the Project or re-orientation of the safety program. The re-orientation will be attended by both the violator and his/her Foreman. This re-orientation may consist of:
 - Video training in the related area of the violation
 - Written verification by the employee that he/she is capable of identifying the hazards related to the violation.
 - The completion of a written Job Hazard Analysis by the employee and his Foreman for the task in which the violation occurred.
5. In addition, any Foreman that has had his/her crew members attend three (3) re-orientation sessions for any reason is subject to removal from the Project.
6. The third infraction of the same safety program issue will result in removal from the Project.
7. Any Foreman, General Foreman, or Superintendent who forces or directs any employee to violate a safety procedure, will be removed from the Project immediately.
8. Any violation deemed threatening to life, limb or major property damage will be grounds for immediate removal from the Project.

Subcontractors will comply with all provisions of The Christman Company's safety program. In the event of Subcontractor's noncompliance, the Subcontract may be canceled, terminated, or suspended, in whole or in part, and The Christman Company may complete the work at the cost of the Subcontractor in accordance with the Subcontract Agreement.

Project Name/Number**V. Weekly Safety Meetings**

The Christman Company will hold weekly construction coordination/safety meetings. All active, on-site subcontractors shall be represented at these meetings. At the beginning of each meeting current safety topics, issues, concerns and problems will be discussed.

Each active, on-site subcontractor shall conduct weekly toolbox meetings. Every worker active on site shall attend. Each subcontractor shall furnish the following documentation to The Christman Company after each toolbox meeting: date, topic(s) discussed, names of attendees, subcontractor's name, and any safety concerns noted.

VI. Safety Inspections

The Christman Company's Project Superintendent will conduct informal inspections of conditions, practices and equipment on a daily basis. The Christman Company's Safety Manager shall schedule visits to the Project site, unannounced, to inspect the work in progress. All safety discrepancies noted shall be reviewed with the Project Superintendent responsible to ensure that corrective measures are implemented.

Supervisors of all active on-site subcontractors are responsible to conduct daily inspections of conditions, practices, and equipment relating to their work areas/activities. Safety discrepancies discovered, along with the corrective measures taken, shall be reviewed with The Christman Company Project Superintendent.

VII. Drug/ Substance Abuse Testing Program

- A. Any employee injured at the Project site and needing offsite medical attention will be tested for alcohol and drugs.** If the injured party was hurt by the action of another person who was not injured, this person must also submit to substance abuse testing. Additionally, any employee causing or contributing to a major incident not resulting in injury will be tested for alcohol and drugs. An employee who tests positive for illegal substances or alcohol will not be allowed to return to the project site. Any employee who refuses to submit to substance abuse testing will not be allowed to work at the project site.
- B. It is the responsibility of the employer to make sure that the testing is performed at the time of the incident.** It is also the responsibility of the employer to cover any costs incurred due to the testing. Results of the testing will be considered confidential. **An employee that is tested late (not within 8 hours of the incident) will be considered as "not tested" and will not be allowed to return to work on the project site.**

Notes:

- I. Visitors and delivery personnel are not included.

Project Name/Number

2. The drug-screening test shall include testing for cannabinoids, depressants, dissociative anesthetics, hallucinogens, opioids and morphine derivatives, and stimulants. **Refer to Attachment I.**

VIII. Hazardous Material Control Program

Each subcontractor is responsible for the safe storage, use and disposal of any hazardous material required to perform their scope of work. Each subcontractor using such materials shall provide The Christman Company with a copy of their Hazardous Material Control Program before any of his material is delivered to the Project site. Each program shall, at a minimum, include the following:

- A. Identification and classification of hazardous materials
- B. Safety and health precautions
- C. Training in safe storage, handling and use
- D. Transporting, labeling, packaging, documenting and disposal requirements
- E. Safety Data Sheets (SDS) for all chemicals

Each subcontractor is to submit to The Christman Company a complete list of hazardous chemicals that may be used at the Project site along with a copy of a Safety Data Sheet (SDS) for each. Copies of any subsequent SDS amendments, additions, or corrections shall also be promptly submitted. Additionally, a list of the chemicals that are on site is to be submitted to The Christman Company.

The Christman Company will maintain a master file of all jobsite SDS' for every subcontractor in the on-site Project office. This information will be made available to any employee upon request.

It is the responsibility of each subcontractor to provide proper and adequate employee training as required under this Act.

Compliance with the storage, use and disposal requirements as outlined on labels and SDS's is mandatory for all users; full understanding of these requirements is expected of all users and suppliers of hazardous materials.

IX. Existing Hazardous Material

The Christman Company Site Manager and / or Superintendent and Owner/Client shall review all areas of the Project site for existence of hazardous materials, such as asbestos and lead. If asbestos exists in areas that involve construction work, the Owner/Client shall arrange to remove the asbestos before any construction work takes place in each area.

If lead-based paint exists in areas, which involve construction work, each Subcontractor working in the areas shall be responsible for complying with the requirements of the OSHA standard for lead exposure. The recognition of possible contaminated areas is key to avoiding

Project Name/Number

exposure. If you discover an area that you suspect lead may be present you are to bring it to the attention of The Christman Company Project Superintendent.

Proper communication regarding the hazardous materials is to be conveyed to all people that may possibly be exposed to the hazard.

Remember - If a suspect hazardous material is discovered notify The Christman Company's Project Superintendent immediately.

X. Personal Protective Equipment and Clothing

Each subcontractor shall supply each of their workers with the proper safety equipment, take any necessary precautions to maintain the equipment according to current regulations and specifications and accept responsibility to assure that proper safety equipment is used when required. All workers shall be required to wear appropriate personal protective equipment and clothing where there is an exposure to hazardous conditions and where needed to reduce hazards to the worker. The following list represents the minimum requirements:

A. Outer Garments

- I. Suitable outerwear is defined as clothing designed to protect from expected hazards. Outer garments should be well fitting. Short sleeve garments may be worn where no hazards to exposure exist. **High Visibility Shirts or Vests must be worn at all times.** For daytime and nighttime work within the right-of-way, apparel shall be labeled as meeting the requirements of ANSI 107-1999 standard performance for Class 2 risk exposure. For the same condition described above but the activity is flagging traffic, a type 3 is to be used.

Tank tops or "muscle shirts" are not permitted. Full pants are to be worn. Neckties should not be worn when working around moving machinery. All employees are to avoid loose sleeves, frills or trims that could present hazards. Racist or profane slogans on outer garments are not permitted.

B. Gloves

Hands are to be protected as dictated by working conditions. Gloves, mittens or hand leathers will be of the type consistent with the hazards present.

C. Hardhats

Hardhats must be worn on site at all times. Acceptable hardhats must meet the requirements of ANSI Standard Z89.1 – Type I Class E.

D. Eye and Face Protection

- A. Safety glasses are required at all times. Acceptable safety glasses must meet the requirements of the most current ANSI Standard Z87.1.
- B. Employees shall be required to wear proper eye and face protection during operations where a hazard or risk of injury exists from flying objects or particles, harmful contacts, exposures such as glare, liquids, injurious radiation, electrical flash, or a combination of these hazards.

Project Name/Number

- C. Contact lenses or US food and drug administration standard hardened lenses shall not be considered as eye protection.
 - D. An employee who needs corrective lenses in spectacles where eye protection is required shall be protected by one of the following:
 - a. Spectacles whose protective lenses provide optical correction.
 - b. Goggles that can be worn over the corrective lenses without disturbing the adjustment of the spectacles.
 - c. Goggles that incorporate corrective lenses mounted behind the protective lenses.
 - E. Face and eye protection equipment shall be of proper size to fit the employee and protect against the intrusion of foreign objects. Face and eye protection shall be kept clean and in good repair. Equipment with structural or optical defects shall not be used.
 - F. Face shields and goggles shall be used, as required, to provide eye and face protection when safety glasses are insufficient.
 - G. Employees shall wear welding helmets with filter lenses when engaged in welding, cutting, or burning operations or the employee shall wear safety glasses with side shields or goggles under the shield when the shield is raised and is exposed to flying objects. Manufactured welding shields shall be placed around the work area to prevent flash exposure to other employees.
- E. Jewelry
Bracelets, necklaces, rings and earrings are not to be worn during operations where they present hazards to the wearer.
- F. Foot Protection
Work boots or approved safety shoes are to be worn at all times on the project. Special safety footwear for protection against exposure to electrical shock, chemicals, acids, caustics, and hot or molten materials may be required and it is the responsibility of the employer to provide their employees with the appropriate "special footwear" if it is deemed necessary. If an employee is using a Jack Hammer toe guards are required.
- G. Personal Protective Equipment
The use of personal protective gear, such as gloves, respirators, coveralls, safety glasses, ear protection, and the like, will be required as conditions demand and shall be reviewed at the time of employee orientation or when assigning duties. The contractor is required to supply all required PPE to their employees.
- H. Respirators
Any Subcontractor responsible to perform work that requires respiratory protection shall have a written respiratory program in place. A copy of the program shall be submitted to The Christman Company's Superintendent before commencement of any work activities that require the use of respirators. At a minimum, each respiratory protection program shall provide each employee with training relative to the need for use, fitting, fit testing, cleaning and storage of respirators.

Project Name/Number**I. Fall Protection**

Policy: Fall protection shall be worn and used, 100% of the time, by all persons when there is exposure to a fall greater than six (6) feet unless other provisions such as guardrails, safety nets, or fall restraints have been provided. This includes, but is not limited to, steel erection (including connecting, bolting-up, decking, welding or any other steel erection activity), precast erection, roofing activities and masonry work including overhand laying operations.

Exceptions: The safe use of ladders up to twenty-four (24) feet in length.

Unacceptable means of compliance: Safety monitors.

Example of an acceptable means of compliance: A warning barrier fifteen (15) feet from the potential fall hazard. The exception to this will be for roofers performing roofing activities. They will be allowed to move closer to the edge and establish their warning barrier at six (6) feet. Anyone required to cross the fifteen (15) foot or six (6) foot barrier line must comply with the fall protection policy. The barrier shall consist of ropes, chains or wires supported by stanchion posts erected as follows:

- The system shall be flagged at no more than six (6) foot intervals with a high-visibility material.
- The system shall be rigged and supported in such a way that its lowest point (including sag) is no less than thirty-four (34) inches from the walking/ working surface and its highest point is no more than thirty-nine (39) inches from the walking / working surface.
- After the system is erected, the stanchions shall be capable of resisting, without tipping over, a force of at least sixteen (16) pounds applied horizontally against the stanchion, thirty (30) inches above the walking / working surface, perpendicular to the warning line, and in the direction of the floor, roof or platform edge.
- The system line shall have a minimum tensile strength of 500 pounds and after being attached to the stanchions, shall be capable of supporting without breaking, the loads applied to the stanchions noted in the above item.
- The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.

XI. Emergency Telephone Numbers

Emergency telephone numbers for the ambulance, hospital, fire department, and police shall be posted in each jobsite office at each phone. Each contractor shall furnish The Christman Company with the emergency contact phone numbers for all key project personnel (e.g. jobsite supervisors, project managers, foreman, etc.). Contact numbers shall include mobile home,

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pager and other phone numbers available and necessary to access key personnel in the event of a project emergency. Distribution of these numbers will be limited and considered confidential.

XII. First Aid

Each subcontractor shall provide The Christman Company with the name or names of each designated first-aid certified worker. Each subcontractor is required to have at least one (1) certified worker on site during periods when the subcontractor is active.

The Christman Company will have a first aid kit on site at the Project office. Each subcontractor shall also provide a first aid kit on site.

XIII. Injury/ Accident Reporting and Investigation

Any worker incurring an injury while working at the **Willow** Project site shall report the injury to his supervisor immediately. **All injuries shall be verbally reported to The Christman Company the day of the incident/accident, followed up in writing on the proper forms, within twenty-four (24) hours.** Each incident/accident shall be documented using an accident investigation report similar to The Christman Company report (refer to Attachment II). In the event of an accident, the following steps shall be taken:

- A. Make sure that accident victim receives appropriate medical attention. This may involve calling paramedics, arranging transportation to a hospital, or sending victim to a clinic depending on severity of injury.
- B. Notify The Christman Company's Superintendent immediately regardless of the seriousness of the incident or accident. This includes property damage.
- C. Perform a thorough investigation of all facts and circumstances surrounding the accident. This should include:
 1. Photographs of the accident site and any other pertinent areas or conditions, which document the circumstances existing at the time of the accident.
 2. Determine who, if anyone witnessed the accident. Obtain names, addresses and phone numbers and get written statements from them as to what they saw and any other facts they may be aware of regarding the accident and its cause.
 3. Interview the accident victim to hear his/her explanation of how the accident occurred.
 4. Fully complete an accident investigation report and submit a copy to The Christman Company's Superintendent.

All accidents resulting in property damage shall be reported immediately to The Christman Company Project Superintendent in order to allow for documentation of the extent of damage and determination of any required corrective action.

XIV. Assured Grounding Program

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This program may be used to ensure that the scheduled inspection and safety condition of construction electrical equipment grounding conductors is satisfactory. The program applies to all extension cords and receptacles not part of the permanent building or structural wiring.

A. Inspection Procedure

The inspection procedure for all extension cords, attachment caps, plug/receptacle sets and equipment powered by a plug-in cord will include visual inspection at the beginning of each shift for signs of damage, defects, missing pins or insufficient insulation. Defective equipment will be removed from service until repaired and / or replaced.

B. Test Procedure

The test procedure for all extension cords and receptacles that are not permanent wiring includes testing for electrical conduction and correct attachment to the equipment ground conductor. The frequency of these tests will be as follows:

1. Prior to the first use.
2. Before equipment is returned to service following any repairs.
3. Before equipment is used following an incident which may have resulted in equipment damage.
4. At intervals not exceeding three months. Quarters and tape color should be coded following inspection. Winter (January through March) will be coded in white; Spring (April through June) will be coded in green; Summer (July through September) will be coded in red; and Fall (October through December) will be coded in brown.

Testing for each quarter is expected to occur between 15 days prior to and 15 days after the beginning of that quarter.

Each subcontractor is responsible for assigning a properly qualified person to coordinate their Assured Grounding Program and ensure compliance with this procedure and any other applicable codes and regulations.

Other forms of testing will be accepted as long as the record documentation of the testing can be provided upon request.

XV. General Jobsite Safety Rules

Violation of any of the following general jobsite safety rules is considered to be extremely serious and a detriment to the safety and welfare of all workers. Violation of these safety rules will be cause for disciplinary action up to and including permanent removal from the project.

- A. Report all injuries to the field office. Get first aid promptly.
- B. Keep your mind on your work at all times. No horseplay on the job.
- C. Personal safety equipment must be worn as prescribed for each job, such as: safety glasses for eye protection when sawing or chipping concrete or masonry; hard hats at

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all times within the confines of the Project site; gloves when handling materials that are harmful to the skin; safety shoes for protection against foot injuries – no tennis shoes, sneakers, or other light duty shoes.

- D. Keep your shirt on to prevent sunburn and to protect against acid burns, steam burns, weld splatter and cuts. Minimum clothing for upper body is a “T” shirt. Legs to be protected by long pants – no shorts allowed.
- E. If any part of your body should come in contact with an acid or a caustic substance, rush to the nearest water available and flush over the affected part. Secure medical aid as soon as possible.
- F. Watch where you are walking. Don’t run.
- G. The unauthorized use, sale, possession or distribution of alcohol, narcotics, drugs or controlled substances while working or working while under the influence of these substances is prohibited.
- H. Do not distract the attention of fellow workers – to do so may cause injury.
- I. Sanitation facilities are provided for your use. Use them.
- J. Good housekeeping is a must. Keep your work area free from rubbish and debris. Keep materials, tools, and equipment in a neat and orderly fashion.
- K. Do not use a compressor to blow dust or dirt from your clothes, hair, face, or hands.
- L. Use a respirator when working on operations where dust or fumes are present.
- M. Never work aloft if you are afraid to do so, are subject to dizzy spells, or if you are apt to be nervous or sick.
- N. In case of injury to a fellow worker, go for help. Never move an injured person unless it is absolutely necessary – further injury may result. Keep the injured as comfortable as possible and utilize jobsite first aid supplies until medics arrive.
- O. Know where firefighting equipment is located and learn how to use it.
- P. Learn to lift correctly – with the legs, not the back. If a load is too heavy, GET HELP.
- Q. Riding material hoists, crane ball, and sideboards or with your legs dangling over the ends or sides of trucks is not permitted.
- R. Do not use power tools and equipment until you have been properly instructed in their use and operation. Be sure that all guards are in place. Do not remove, displace, damage, or destroy any safety device or safeguard furnished or provided for use on the job, nor interfere with the use thereof.
- S. Rope off or barricade danger areas. Do not enter an area, which has been roped off or barricaded.
- T. If you must work around backhoes, cranes, trucks, and dozers, make sure operators are aware of your presence. All mobile equipment must have backup alarms.
- U. Never oil, lubricate or fuel equipment while it is running or in motion.
- V. Trenches 4 ft. in depth must have a ladder and over 5 ft. must be shored or sloped as required. Keep out of trenches or cuts that have not been properly sloped or shored. Inspect trenches and banks daily. Backfill material must not be stored closer than two feet from top of bank.
- W. Use the “four and one” rule when using a ladder – one foot of base for every four feet of height. Always secure the bottom of the ladder with cleats and/or safety feet. Lash off the top of the ladder to avoid shifting. Ladders must extend three feet above a landing for proper use. Defective ladders must be properly tagged and removed from service.

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- X. Erect scaffolds according to manufacturers' recommendations.
- Y. Use only extension cords of the three prong type and protected with a GFCI.
- Z. The use of fall protection with safety lines when working from unprotected high places is mandatory. Always keep your lines as tight as possible.
- AA. Never throw anything "overboard". Someone may be passing below.
- AB. Open fires are prohibited.
- AC. Floor perimeter and floor openings shall be properly guarded at all times. Perimeter cabling must be flagged. All covers for floor openings must be secured and marked, "Hole Cover Do Not Remove". A "hole" means a gap or void 2 inches or more in its least dimension, in a floor, roof, or other walking/working surface. Note – this includes mechanical and electrical sleeves.
- AD. All personnel operating a manlift or forklift must be certified.
- AE. No radios, MP3 players or personal listening devices are allowed on site.

XVI. Housekeeping

A clean work place is a safe work place. Every subcontractor and worker shall be responsible to adhere to the following housekeeping guidelines:

- A. Pick up and dispose of trash and debris on a daily basis. A sufficient number of trash receptacles shall be provided and emptied with regularity.
- B. **Work areas are to be kept clean, orderly and floors are to be swept daily.**
- C. Leads, hoses, and extension cords shall be hung up with a nonconductive material, off all floors, stairways, and walkways.
- D. Trash such as drinking cups, cans, and scraps from lunch are not to be thrown down, but disposed of properly in marked containers.
- E. Materials, equipment, concrete forms, pipe, etc., are to be orderly stacked so as not to obstruct walkways, doors, stairways, ladders, other points of access or egress, etc.
- F. Oil, grease, and other such liquid spills shall be cleaned up at the time of spill and are not to be left unattended.
- G. Participation in mandatory cleanup programs if the project requires it.

XVII. Ancillary Safety Procedures

- A. Lockout/Tagout – a procedure for cutting off all sources of energy or flow of medium to a piece of equipment or system. Refer to Attachment III.
- B. Confined Space Entry – a procedure to assure that workers who perform work in a confined space is protected. Refer to Attachment IV.
- C. Cranes – all cranes and cable (wire rope), rigged hoisting equipment shall have a current annual inspection by an accredited agency prior to working at this site. Contractors also are required to maintain a current annual inspection for the duration of the work. An accredited agency is a third party, which is recognized by the Department of Labor, Occupation Safety and Health Agency. A copy of the annual certification must be submitted to the respective general contractor immediately upon arrival on site. Rigging must be inspected and have required capacity tags.

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- D. Powder-Actuated Tool Operator – each powder-actuated tool operator will be certified in accordance with OSHA requirements. Operators will carry their certification card on their person while operating powder-actuated tools.
- F. Hole Covers – Any contractor / trade that creates or exposes a hole or opening in a floor or wall is responsible to immediately protect the opening in accordance with OSHA regulations. At a minimum the hole is to be protected by barricades or a secured cover that is sufficient in strength to support any potential load that may be imposed. Additionally, anyone who removes a hole cover is responsible to protect the area while the exposure is present and to re-secure the cover or protection once the work is completed for that shift.

XVIII. Tobacco Use Protocol

Smoking and the use of all other tobacco products, is strictly prohibited within the boundaries of the Willow project. The use of any tobacco product will be permitted off site. Violation of this policy will be cause for disciplinary action up to and including permanent removal from the project.

XIX. Crane Inspections

Each crane used at the Project site shall have a current annual crane inspection report, which documents that the crane has been inspected within the current year in accordance with established OSHA standards.

XX. Visitor Policy

All visitors to the Project site must report to The Christman Company Project Office upon arrival. All visitors shall comply with the policies and procedures of this Project Safety Manual while on site. Visitors are required to watch The Christman Company safety orientation video and sign the visitor release form. Visitors not sufficiently familiar with the jobsite shall be accompanied at all times by employees familiar with the Project. Visitors must wear a hardhat, Hi-Visibility shirt or safety vest, and proper footwear at all times while on site. Other PPE such as safety glasses are to be worn when the conditions warrant such protection. The contractor requesting approval of the visitor is responsible to issue the proper PPE that may be required.

XXI. Fire Prevention and Protection**A. Fire Prevention****I. Housekeeping**

Proper Housekeeping practices by all subcontractors will help to establish and maintain free and unobstructed egress from the project site. Housekeeping of the project is to be maintained by all subcontractors performing work on the site. It is each subcontractor's responsibility to report areas of the jobsite that present a likelihood of fire to The Christman Company superintendent. Depending on the

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type of construction and the participation of the subcontractors in daily housekeeping efforts, The Christman Company may create and enforce a mandatory cleanup policy that will be adhered to by all subcontractors.

2. Storage of Flammable and Combustible Liquids

A. General Requirements

1. Only approved containers and portable tanks will be used for storage and handling of flammable and combustible liquids.
2. Approved metal safety cans will be used for handling and use of flammable liquids in quantities greater than one gallon. Plastic containers are prohibited. Flammable liquid materials may be used and handled in original shipping containers.
3. For storage, use and handling of flammable liquids in quantities of one gallon or less, only the original container or approved metal safety cans may be used.
4. Flammable or combustible liquids are not to be stored in areas used for exits, stairways or other high-traffic areas.
5. No storage of flammable or combustible materials is to occur on any roof.

B. Indoor Storage

1. No flammable materials may be stored inside.
2. Materials, which will react with water and create a fire hazard, shall not be stored in the same room with flammable or combustible liquids.

C. Outdoor Storage

1. All storage areas are to be created as to prevent the contamination of surrounding areas in the event of a spill. Proper consideration is to be given to the runoff of rainwater vs. the control of spilled or leaking materials.
2. Containers less than 60 gallons in size are to be placed in areas not to exceed a total of 1,100 gallons. Containers are to be separated by a five feet clearance and will not be nearer than 20 feet to a structure.
3. Portable tanks will not be nearer than 20 feet from any structure.

D. Gas and Oxygen Bottles

1. Full and/or partially used compressed gas cylinders must be attached to approved carts and turned off after each use.
2. All compressed gas cylinders regardless of content amount (full, partially full or empty), shall be properly stored and secured in the area designated by The Christman Company.

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3. Valve protecting caps shall always be in place when cylinders are not connected for use.
4. When moving a cylinder, be sure to remove all gauges prior to the move. Be sure to use a rack when lifting a cylinder to and from upper elevations. Never move a cylinder by rolling it or by dropping it down to lower elevations.
5. Oxygen cylinders must be stored 20 feet away from fuel cylinders or separated by a solid 1- hour divider. Storage is considered as not being used within the next shift of work or 24-hour period, which is ever shorter. Oil and grease must be kept away from oxygen cylinders.
6. Compressed gas cylinders shall be legibly marked with the chemical or trade name of the gas. Marking shall be by stenciling, stamping, or labeling and shall not be readily removable.
7. All L.P.G. not connected for use must be properly stored in the designated area. NO EXCEPTIONS!

E. Temporary Heat

1. Temporary heaters must be installed and serviced by authorized technicians only.
2. Housekeeping in the area of the heater is extremely important and all subcontractors are responsible to insure that no materials are stored near the heater or in such a fashion that they may create a hazardous condition.
3. All temporary fuel burning heaters are to have functioning safety valves that will eliminate fuel flow in the event of flame outage.
4. If a heater is to operate for an extended period of time it must have a daily scheduled inspection to insure that it is operating correctly and that the area is clear of possible obstructions.
5. The Christman Company superintendent may assign maintenance, operation, and inspection responsibilities to a subcontractor.
6. All subcontractors are responsible to notify The Christman Company immediately in the event of a malfunctioning heater or potential for a hazardous condition.

F. Hot Work Operations and Permit Procedures

Many of Christman projects are within existing operating facilities. Clients may have established procedures at their facilities to ensure all safety precautions have been taken prior to initiating operations involving Hot Work. Additionally, Hot Work permits may be issued by Client operations personnel to control the work within operating areas and ensure that operator/maintenance/construction personnel are aware of client required safe work practices. It is the responsibility of all personnel entering client controlled operating areas to obtain the proper Client authorization and appropriate work permits. The Christman Company shall be informed of any intended Hot Work prior to initiating. The

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Christman Company will coordinate our Hot Work permitting program with any other existing program being implemented by the Client. Regardless if the Client has a Hot Work procedure, NO Hot Work shall take place without first coordinating with The Christman Company.

The purpose of this procedure is to eliminate the potential for injury to personnel and damage to equipment and property due to fire, sparks, heat or explosion resulting from cutting, welding and similar hot work.

A "Hot Work Permit" will be required by The Christman Company when using any equipment, tools or apparatus capable of generating heat, sparks or flames in any restricted areas; enclosed interior areas or as determined by the project superintendent or site safety manager (Refer to attached Hot Work Permit). The Christman Company, through designation of a Permit Authorizing Individual (PAI), will ensure adherence to this Hot Work permit procedure. Failure to comply with this Hot Work Permit procedure may result in immediate and permanent removal from the project. The discipline policy as described in section IV of the project specific safety manual will be enforced.

Upon issuance of the proper work permit by Christman or the Client's representative, the PAI shall completely perform the required actions indicated on the permit, check all boxes on the permit, and sign off on it. The PAI shall print their name and sign the work permit verifying he has reviewed the permit and understands the limitations and requirements within.

Upon receiving the permit, it is the responsibility of the PAI to review the permit with his employees/crew explaining the precautions and limitations of the proposed task and assure that the permit system is implemented correctly.

The following conditions apply to all hot work permits:

- The contractor will be responsible for providing all the required training, materials, personnel and protective equipment to conduct all hot work.
- Contractor personnel who perform fire watch duties must be trained to perform the task and trained to use a fire extinguisher.
- A permit is not valid for more than one shift. In any case, the duration of the Hot Work Permit shall not exceed 12 hours. A new permit is to be issued if the job/task duration exceeds 12 hours.
- Prior to starting operations, the working areas and any levels below must be reviewed to assure that flammable material and equipment has been removed from harm's way.
- Adjacent contractors have been informed of the impending hot work.
- Contractor supplied firefighting equipment must be in place and readily available for worker use.
- A restricted zone must be established outside of the working area and at any areas levels accessible below.
- A fire watch must be established and maintained for a designated period after hot work has been completed. The duration of the fire watch is dependent

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upon the type of hot work being performed and the working area. Fire watch can range from one (1) to two (2) hours.

- Hot work permits must be prominently displayed within the hot work area and available for review. Workers assigned to fire watch duty must be readily identifiable and within the area. Fire watch must be maintained through break and lunch periods.

Occasionally Special conditions may apply to hot work permits, based on the environment of the work area and the type of operations being performed. Special conditions to the permit may include the following:

- Fume monitoring and control measures.
- Flame retardant ground and wall coverings.
- Extended fire watch
- Dosing or spray down of work areas after hot work completion.
- Use of smoke and carbon monoxide detectors.
- Oxygen and gas monitoring.

Hot work permits are to be collected by the PAI at the expiration of the permit, conclusion of task or end of shift. After the permit has been closed out they are to be submitted to The Christman Company superintendent or site safety manager for review.

Copies of the permit will be retained by The Christman Company for the duration of the project.

B. Fire Protection

1. A means of egress shall be established and maintained. Each subcontractor is responsible to notify The Christman Company if the means of egress is not obvious or if it is obstructed.
2. The rules for evacuation will be posted on the project bulletin board area adjacent to the other OSHA required postings. If the location of the work is such that posting of the rules is not feasible, a copy of the rules and a map of the evacuation route (if applicable) will be given to each subcontractor working on the project. It is the responsibility of each subcontractor to make their employees aware of any such posted or otherwise conveyed rules, maps or procedures for the safe and orderly evacuation of the project.
3. Emergency phone numbers shall be posted next to each phone in the jobsite trailer or office.
4. Firefighting equipment shall be provided by the subcontractor for protection of their employees. In some cases, The Christman Company may provide "common area"

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protection. Each subcontractor is to coordinate their efforts to comply with this rule with The Christman Company superintendent. Defective equipment shall be immediately replaced and brought to the attention of The Christman Company superintendent.

5. Fire walls and exit stairways required for the completed buildings are given construction priority. Fire doors with automatic closing devices shall be hung on openings as soon as practicable.
6. Retain existing fire separations in buildings undergoing alterations or demolition until operations necessitate their removal.

C. Employee Emergency Action Plan

The Christman Company's project superintendent shall be the person in command in the event of a fire or other emergency. It shall be his responsibility to oversee that employees are evacuated and the emergency response team is notified. The superintendent shall designate another employee as second in command. Fires and other emergencies shall be reported to the superintendent immediately. All employees are required to familiarize themselves with the evacuation plan for the site and with the designated contacts for emergency response team.

In the event of a fire or other emergency, employees shall evacuate the building through the nearest exit after determining it is safe to do so. Upon exit from the unsafe area, the employee should contact his superintendent and coordinate efforts to call the emergency response team (911). Each foreman or superintendent is responsible for a head count of their employees after evacuation. The Christman Company superintendent is to be notified of any missing employees.

If critical operations must be conducted or continued within or near an unsafe area during a fire or other emergency and the superintendent deems that limited activity may continue in the area, the superintendent shall establish a plan to monitor those employees in the unsafe area as well as a way to quickly evacuate them should the conditions become worse. If monitoring and quick evacuation are not possible, the operations shall be abandoned until conditions improve.

All employees are responsible for the joint welfare of all other employees. During evacuation, ambulatory employees trained in first-aid/CPR are responsible to assess the conditions of non-ambulatory employees and assist in their evacuation. Employees who cannot be moved must be reported to the superintendent upon evacuation.



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Project Safety Manual

PROJECT SAFETY MANUAL
SUBCONTRACTOR AND TRADE CONTRACTOR ACKNOWLEDGEMENT

I hereby acknowledge receipt and comprehension of the policies and procedures set forth in this Manual and agree to comply with its directives.

In addition, I hereby agree to comply with any field or trade-related guidelines as they apply to the portion of work for which I have been contracted and will incorporate them into the ongoing safety effort. I also understand and agree to comply with any State and Federal OSHA and ANSI regulations, standards, codes and rules as they apply to my portion of the work.

(Signed)

(Print Name)

(Title)

(Company Name)

(Date)

**Please sign and fill out the information requested above and return to
The Christman Company.**