

TECHNICAL SPECIFICATIONS – ABATEMENT, DEMOLITION & SITE RESTORATION

FORMER MARSHALL ELEMENTARY SCHOOL LIVONIA, MICHIGAN

Livonia Public Schools
15125 Farmington Road
Livonia, Michigan 48154

January 9, 2026
NTH Project No. 25002747-02



NTH Consultants, Ltd.
41780 Six Mile Rd.
Suite 200
Northville, MI 48168



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ATTACHMENTS

- I. Hazardous Materials Survey Report**
- II. Bid Drawings**
- III. Historical Drawings**

END OF SECTION



DOCUMENT 00 01 15

LIST OF DRAWINGS

The following drawings, accompany and form a part of the Contract Documents:

- NTH Demolition Drawings as follows:

<u>Sheet Number</u>	<u>Title</u>
C-100	Cover Sheet
C-101	Topographic Survey
C-102	Site Demolition Plan
C-103	Utility Demolition Plan
C-104	Soil Erosion and Sedimentation Control Plan
C-105	Proposed Grading and Site Restoration Plan
C-501	City of Livonia SESC Details
C-502	City of Livonia Standard Details

- Marshall School Historical Drawings

END OF DOCUMENT



DOCUMENT 00 21 13

INSTRUCTION TO BIDDERS

ARTICLE 1 - DEFINITIONS

- 1.01 Bid Documents include the Bid Requirements and the proposed Contract Documents. The Bid Requirements consist of the Instructions to Bidders, Bid Form, and other bidding and contract documents provided in Division 00.
- 1.02 Addenda are written, or graphic instruments issued by NTH Consultants, Ltd. (NTH) and LPS prior to the execution of the Contract and which modify or interpret the Bid Documents by additions, deletions, clarifications, or corrections.
- 1.03 A bid is a complete and properly signed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bid Documents.
- 1.04 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bid Documents as the base, to which Work may be added or from which Work may be deleted for sums stated in Alternate Bids.
- 1.05 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bid Documents, is accepted.
- 1.06 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services or a portion of the Work as described in the Bid Documents.
- 1.07 The term “Final Completion”, means when the Contractor is 100% complete with the Work and all required post-construction submittals.

ARTICLE 2 - PROJECT INFORMATION

- 2.01 Project Name: Former Marshall Elementary School
Building Demolition & Site Restoration
33901 Curtis Road
Livonia, Michigan 48152



- 2.02 Project Description: Abatement of asbestos-containing materials, hazardous materials, polychlorinated biphenyls (PCBs) and universal waste, and demolition and removal of the former Marshall Elementary School building, and abandon/removal of utilities and restoration of the Site.
- 2.03 Owner: Livonia Public Schools
15125 Farmington Road
Livonia, Michigan 48154
Office: (231) 536-4470
todd.ingalls@LPSCO.com
- 2.04 Owner's Representative/Engineer: NTH Consultants, Ltd.
41780 Six Mile Road, Suite 200
Northville, Michigan 48168
Attention: Bhushan Modi, Project Manager
Phone No. (734) 744-2537
Email: hlau@livoniapublicschools.org

ARTICLE 3 - BIDDER'S REPRESENTATIONS

- 3.01 By making a Bid, the Bidder represents that:
- A. The Bidder has read and understands the Bid Documents and the Bid is made in accordance therewith.
 - B. The Bidder has visited the site, become familiar with local conditions under which the Work is to be performed and has correlated the Bidder's personal observations with the requirements of the proposed Contract Documents.
 - C. The Bid is based upon the materials, equipment and systems required by the Bid Documents without exception.

ARTICLE 4 - BID DOCUMENTS

- 4.01 Available documents in the Specifications include the following:
- A. Hazardous Material Survey report dated December 16, 2025, included in Attachment I.
 - B. Demolition Drawings (Attachment II).
 - C. Historical Drawings (Attachment III)



- 4.02 In making copies of the Bid Documents available, LPS and NTH do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant permission for any other use of the Bid Documents.
- 4.03 The Bidder shall carefully study and compare the Bid Documents with each other, and with other work being bid concurrently or presently under construction to the extent that it relates to the Work for which the Bid is submitted, shall examine the site and local conditions, and shall at once report to LPS and NTH errors, inconsistencies or ambiguities discovered.
- 4.04 Bidders requiring clarification or interpretation of the Bid Documents shall make a written request for information (RFI), which shall reach LPS and NTH at least seven (7) days prior to the date for receipt of Bids. Specifically, general, commercial, and technical questions shall be electronically forwarded to NTH's Representative and shall be electronically copied to LPS.
- 4.05 Interpretations, corrections and changes of the Bid Documents will be made by Addendum. Interpretations, corrections, and changes of the Bid Documents made in any other manner will not be binding, and Bidders shall not rely upon them.
- 4.06 The materials, products and equipment described in the Bid Documents establish a standard of required function, dimension, weight, appearance, and quality to be met by any proposed substitution.
- 4.07 No substitution will be considered prior to receipt of Bids unless written request for approval has been received by LPS and NTH at least seven (7) working days prior to the date for receipt of Bids. The burden of proof of the proposed substitution's merit is upon the proposer. LPS and NTH shall make the decision of approval or disapproval of a proposed substitution, which shall be final.
- 4.08 Substitutions approved prior to receipt of Bids will be identified in an Addendum. Bidders shall not rely upon approvals made in any other manner. No substitutions will be considered after the Contract award unless specifically provided in the Contract Documents.
- 4.09 Addenda will be mailed or delivered to all who are known by the issuing office to have received a complete set of Bid Documents.
- 4.10 No Addenda will be issued later than two (2) days prior to the date for receipt of Bids except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.
- 4.11 Prior to submitting a Bid, each Bidder shall ascertain that all issued Addenda have been received. The Bidder shall acknowledge receipt of the Addenda in the Bid.



ARTICLE 5 - PRE-BID INFORMATION

- 5.01 Bidders shall attend a mandatory pre-bid conference, held at the project site. At that time, site conditions may be examined and NTH and LPS will be available to answer questions.
- 5.02 Bidder must demonstrate to the satisfaction of LPS and NTH that the Contractor has adequate equipment, personnel, experience and understanding of the specifications to perform service under the contract.
- 5.03 No contract will be awarded to a bidder who, in the opinion of LPS and NTH, is not qualified to perform satisfactorily due to previously unfavorable performance, reputation, or lack of experience, capital, organization, equipment, and/or personnel to conduct and complete the services in accordance with the terms and conditions of the contract.
- 5.04 LPS may make such investigations as he deems necessary to determine the ability of the Bidder to perform the work, and the Bidder shall furnish to LPS all such information and data for this purpose as LPS may request. LPS reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy LPS that such bidder is properly qualified to carry out the obligations of the agreement and to complete the work contemplated therein.

ARTICLE 6 - BID PROCEDURES

- 6.01 Bids shall be submitted on forms identical to the form included with the Bid Documents. All blanks on the Bid Form shall be filled in ink. Interlineations, alterations, and erasures must be initialed by the signer of the Bid. Submitted bids shall be based solely on the materials and construction described in the Bid Documents. The bid shall include the premiums or costs for the insurance coverage required in the Contract Documents. Bids shall be accompanied by a required bid bond in the amount required in Contract Documents.
 - A. The successful Bidder will be required to furnish a Performance Bond and/or Labor and Material Payment Bond. Include the premiums and other charges for such costs as Alternates in the Bid, complying with the laws of the State of Michigan, for the total Base Bid amount as calculated at the time the bids are received.

Performance Bond and Labor and Material Payment Bond shall be from a surety acceptable to LPS and made payable as follows:

1. A bond for the formula amount of the Base Bid running to LPS and guaranteeing the payment of all subcontractors and all indebtedness incurred for labor, materials, or any causes whatsoever on account of the



Contractor in accordance with the laws of the State of Michigan relating to such bonds.

2. A bond for the formula amount of the Base Bid running to LPS to guarantee and insure the completion of work according to the Contract.
- 6.02 All items quoted shall be “F.O.B. Destination”. No additional freight charges will be allowed.
 - 6.03 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change".
 - 6.04 The bidder may, during the bidding period, be advised by Addendum of changes to the Contract Documents. Such changes are included in the Work and become part of the Contract Documents. List each Addendum by number in the space provided on the Bid Form.
 - 6.05 Bidders must satisfy themselves of the accuracy of the estimated quantities in the Bid form by examination of the site and review of the bid documents. After bids have been submitted, the Bidder shall not assert that there was a misunderstanding concerning the quantities of work, or of the nature of the work to be done.
 - 6.06 Submitted Bids shall include a Subcontractor Listing (names of persons or entities, including those who are to furnish materials or equipment, proposed for the principal portions of the Work). Sub-contractors must adhere to the same requirements as the prime contractors.
 - 6.07 LPS is committed to utilizing Michigan based vendors and contractors as sub-vendors and subcontractors to the successful Bidder for this consideration. The vendor or contractor’s W9 must list a Michigan address. This is LPS criterion for determining if a vendor or contractor is a Michigan based company. To that end, the Bid Form shall indicate whether each proposed sub-vendor or subcontractor is a Michigan based company.
 - 6.08 Each copy of the Bid shall include the legal name of the Bidder and a statement that the Bidder is a sole proprietor, partnership, corporation, or other legal entity. Each copy shall be signed in ink on the designated signature line by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have the current power of attorney attached certifying the agent's authority to bind the Bidder.
 - 6.09 Each Bidder shall pledge that the Bidder will enter into a Contract with LPS on the terms stated in the Bid and will furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder.



- 6.10 Submit an electronic version of the Bid Form and required accompanying documents to LPS and to NTH by the due date and time. Do not include documents that are not required by the Bid Form. The email transmission that includes the bid shall be identified with the Project name, the Bidder's name and address, opening date, and RFP number. Electronic Bids received after the bid due date and time will not be accepted. Hard copies of the bid will not be accepted.
- 6.11 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids. Oral, telephonic, or telegraphic Bids are invalid and will not be considered.
- 6.12 A Bid may not be modified, withdrawn, or canceled by the Bidder until after 90 days following the time and date designated for the receipt of Bids, and each Bidder so agrees in submitting a Bid.
- 6.13 Prior to the date and time designated for the receipt of Bids, a Bid submitted may be modified or withdrawn by notice to the party receiving Bids at the place designated for receipt of Bids. Such notice shall be in writing over the signature of the Bidder or electronically, written confirmation over the signature of the Bidder shall be mailed and postmarked on or before the date and time set for receipt of Bids. A change shall be so worded as not to reveal the amount of the original Bid.
- 6.14 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids, provided they are fully in conformance with these Instructions to Bidders.
- 6.15 All Bids and material that accompanies the Bid becomes the property of LPS and will not be returned to the Bidder unless an agreement in writing is secured before the Bid is submitted.
- 6.16 No interpretation of the meaning of the plans, specifications or other Bid documents will be made to any bidder orally. Every request for such interpretation shall be in writing addressed to NTH and LPS. To be given consideration, requests for interpretations must be received at least seven (7) days prior to the date fixed for the opening of Bids. All such interpretations and supplemental instructions will be in the form of written Addenda to the Bid Documents. Failure of a Bidder to receive such Addendum or interpretation shall not relieve such Bidder from any obligation under his/her bid as submitted. All Addenda so issued shall become part of the Contract Documents.

ARTICLE 7 - CONSIDERATION OF BIDS

- 7.01 LPS shall have the right to reject any or all Bids, reject a Bid not accompanied by a required bid bond or by other data required by the Bid Documents, or accept/reject a Bid that is in any way incomplete or irregular if such Bid is deemed to be in the best interest of the Company.



- 7.02 It is the intent of LPS to award a Contract to the lowest qualified, responsible Bidder provided the Bid has been submitted in accordance with the requirements of the Bid Documents and does not exceed the funds available. Consideration will be given to several factors, including but not limited to the experience of the Bidder and major subcontractors (if applicable), the Bid amount and schedule.
- 7.03 LPS shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bid Documents, and to determine the low Bidder on the basis of the sum of the Base Bid and Alternates accepted.
- 7.04 In the case of a discrepancy in the extension of a unit price, the unit price shall govern the total price.
- 7.05 Bids will be privately opened.

ARTICLE 8 - POST-BID INFORMATION

- 8.01 The Bidder will be required to establish, to the satisfaction of LPS, the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bid Documents.
- 8.02 Prior to the award of the Contract, LPS will notify the Bidder in writing if either LPS, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If LPS has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, (1) withdraw the Bid, or (2) submit an acceptable substitute person or entity with an adjustment in the Base Bid or Alternate Bid to cover the difference in cost occasioned by such substitution. LPS may accept the adjusted bid price or disqualify the Bidder. In the event of withdrawal or disqualification, bid security will not be forfeited.
- 8.03 Persons and entities proposed by the Bidder and to whom LPS have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of LPS.

END OF DOCUMENT



DOCUMENT 00 41 00

BID FORM

PROJECT:

Former Marshall Elementary School
Building Demolition & Site Restoration
33901 Curtis Road
Livonia, Michigan 48152

OWNER:

Livonia Public Schools
15125 Farmington Road
Livonia, Michigan 48154
Mr. Harry Lau, Administrator Facilities and Operations
Phone: (734) 744-2537
Email: hlau@livoniapublicschools.org

**OWNER'S
REPRESENTATIVE:**

NTH Consultants, Ltd.
41780 Six Mile Road, Suite 200
Northville, Michigan 48168
Attention: Bhushan Modi
Phone: (248) 662-2740
Email: bmodi@nthconsultants.com



BID FROM:

Bidder: _____

Address: _____

Address: _____

Address: _____

Contact Person: _____

Phone: (____) _____

Fax: (____) _____

Email: _____

1. BID AMOUNTS

The undersigned, having familiarized themselves with all local conditions to be encountered affecting the cost of the work and examined the contract documents, does hereby propose to furnish all labor, materials, equipment, supervision, and necessary services to complete the work for the above project. Perform all work in accordance with the Contract Documents including any addenda noted herein. The cost of all work covered by the following addenda and are included in the lump sum BASE BID FEE.

Addendum No. _____ Date _____

Addendum No. _____ Date _____

Addendum No. _____ Date _____

2. SCOPE FOR BASE BID

The scope of work includes the following:

- A. Mobilization and Demobilization
- B. General conditions, including soil erosion control, dust control, street sweeping, road cleaning, site inspections, road maintenance, tipping / landfill fees, permits, permit fees, submittals, coordination, temporary and permanent security fencing, temporary facilities, and other activities as specified.
 - 1. Install temporary construction fencing around the site and associated construction gate.



2. The Contractor is responsible for providing a Certified Stormwater Operator (CSWO) to inspect the SESC measures weekly and within 24-hours of a significant rain event, maintaining inspection logs and all reports required by law.
 3. Retain an independent engineering firm to conduct perimeter air sampling and analysis continuously during demolition operations in accordance with applicable regulations. Sampling and testing parameters for each location shall include total suspended particulates, asbestos, lead, cadmium, and silica.
 4. Retain independent environmental consulting firm to confirm that imported backfill material and topsoil is “clean” and meets Michigan Department of Environment, Great Lakes, and Energy (EGLE’s) Part 201 Generic Residential Cleanup Criteria (GRCC), based on analytical testing and reporting.
 5. Provide on-site security from the end of each workday to 7:00 a.m. the following day, encompassing all non-work shift hours, including weekends and holidays. Saturdays are acceptable workdays.
- C. Perform the specified abatement, handling and proper disposal of hazardous materials, universal waste, Polychlorinated Biphenyls (PCBs), and Asbestos-Containing Materials (ACM).
 - D. Perform the specified building demolition including all equipment and materials, floor slabs, foundations, underground utilities.
 - E. Remove site features and improvements, including paved sidewalks, driveways, and parking lot, and associated foundations, trees and stumps, shrubs, grass-covered areas, landscape materials, miscellaneous debris, materials, and equipment.
 - F. Perform the specified abandon/removal, cutting and capping of underground utilities, handling, and proper disposal as specified on Project Drawings.
 - G. Backfill and compact the areas where subsurface structures (foundations, underground utilities, etc.) have been removed as shown on Project Drawings. Fill and backfill with specified materials (including fees for an independent engineering firm for testing reporting imported backfill is uncontaminated and complies with these specifications). Retain a qualified testing agency for verifying compacted backfill density as required herein).



- H. Include site grading, filling, topsoil placement, grass seed and protection cover (straw).
- I. Provide final grade topographic elevations after Demolition Work using a Licensed Surveyor, with measurements on a 25-foot grid. The final grades are to match elevations as shown on the Grading Plan.
- J. Provide as-built drawings showing locations of cut and capped utilities, abandoned utilities, and other items not removed as part of demolition.

3. BASE BID FEE

Having carefully read and examined the Specifications, Associated Contract Documents and Addenda which have been issued prior to the date hereof, and the Project Drawings, and having viewed the Site and examined all conditions affective the work, the above-named Bidder hereby proposes to furnish all labor and materials and all tools, equipment and machinery called for and as specified by the said Documents to complete the entire work, including all commissions, overhead, insurance, taxes, fees, permits, profit, subcontracts and any other direct or indirect costs in the entire Base Bid work in accordance with the bidding documents the above-named Bidder hereby proposes to perform the entire Base Bid work in accordance with the bidding documents for the lump sum (including Bonds) of _____dollars (\$ _____) which constitutes the Base Bid.

A. Proposed Base Bid Schedule

- 1. The above-named Bidder hereby proposes to perform the entire Base Bid work in accordance with the bidding documents from site mobilization to demobilization in _____Calendar Days.

4. PRICING

BASE BID BREAKDOWN DESCRIPTION	Lump Sum Price
Mobilization and demobilization	\$
General site conditions	\$
Perform the specified abatement, handling and properdisposal of hazardous materials, universal waste, PCBs, and ACM.	\$
Perform the specified demolition in accordance with specifications and project drawings.	\$
Perform the specified cutting, capping, removal, hauling and disposal or abandonment of underground utilities.	\$
Perform the specified backfilling.	\$



BASE BID BREAKDOWN DESCRIPTION	Lump Sum Price
Perform site grading and restoration including filling, placement of topsoil, sown seed and cover with straw.	\$
Perform restoration in accordance with specifications and project drawings.	\$
Provide 100% Performance Bond for amount of bid as a percentage of the amount of the contract.	\$
Provide 100% Payment (Lien) Bond for amount of bid as a percentage of the amount of the contract.	\$

A. Unit Prices

1. Abatement Contractor shall provide unit prices for labor, equipment, and disposal for the removal of hazardous materials, universal waste, ACM, and PCBs on the Unit Price attachment to this Bid Form.
2. Contractor (Demolition/General) shall provide unit prices for labor, equipment, and materials on the Unit Price attachment to this Bid Form.
3. In the event of “additional emerging work”, LPS will consider these rates. The provided T & M rates must be firm for the period of the agreement.

5. SUBCONTRACTORS

The Bidder agrees to subcontract only for the following work and only to those Subcontractors named below:

Work Description	Subcontractor Name and Address	Percentage of Work

6. INSURANCE

- A. The Bidder agrees to furnish insurance coverage in the amounts indicated in the Contract Documents.



7. GENERAL AGREEMENTS

- A. The Bidder understands that all removed materials are to be disposed of at an appropriate licensed landfill or recycling facility in accordance with State and Federal requirements and manifests must be provided to Owner's Representative.
- B. The Bidder agrees that they have had an opportunity to examine the Site and has examined the Contract documents, and that they have carefully prepared their Bid upon the basis thereof, and that they have carefully examined and checked this Bid and the materials, equipment, and labor required thereunder, and cost thereof, and his figures therefor, and hereby state that the amount or amounts set forth in this Bid is, or are, correct and that no mistake or error has occurred in this Bid or in the Bidder's computations upon which this Bid is based.
- C. The Bidder acknowledges that this bid was developed without any collusion, undertaking, or agreement, either directly or indirectly, with any other Bidder or Bidders to maintain the prices of indicated work or prevent any other Bidder or Bidders from bidding the Work.
- D. The Bid will remain subject to acceptance for 180 days after the day of Bid opening. Bidder agrees to execute a contract, contingent upon receiving notification of selection of the Bid within 180 days of the date set for the opening thereof.
- E. The Bidder understands that LPS will not be liable for amounts in excess of the lump sum Bid, except as expressly stated in written Change Orders duly executed and delivered by the Contractor.
- F. The Bidder declares that in preparing this bid, the bidder has assured the availability of all labor, materials, and products to meet the completion date.
- G. LPS has the right to reject the bid.
- H. Bidder will sign and submit the Purchase Order with the Bonds (if required) and other documents required by the Bidding Requirements within 10 days after receipt.

8. OTHER REQUIREMENTS

- A. Bidder Experience Modification Rate (EMR) is:_____
- B. The Contractor shall comply with all applicable federal, state and local codes and regulations relating to buildings, employment, the preservation of public health and safety, use of streets, and the performance of the Work under this Contract. It



shall be the responsibility of the Contractor to fully understand all such requirements and to ensure that such are fully and faithfully enforced.

- C. Contractor must perform all work in accordance with National Emission Standards for Hazardous Air Pollutants (NESHAP), Michigan Department of Labor and Economic Opportunity (LEO), Michigan Occupational Safety & Health Administration (MIOSHA), Michigan Department of Transportation (MDOT), and City of Livonia requirements.
- D. Contractor will provide the full-time services of a competent superintendent to monitor all work from the start of the work to the date of final completion of the contract.
- E. Bidder proposed Superintendent: _____
- F. Proposed Superintendent years of experience in this role on similar projects:

- G. When directed by the LPS or the Owner's Representative, meetings will be held for the purpose of coordinating and expediting the work. The invited contractors or subcontractors will be required to have qualified representatives at these meetings, empowered to act in their behalf.
- H. Provide a staff adequate to coordinate and expedite the work properly. At all times, maintain competent supervision over all work activities to ensure compliance with contract requirements.
- I. The Contractor is solely responsible for all construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the work under the Contract.
- J. Coordinate work location, staging areas, contractor parking, and any other contractor or work-related areas with the LPS or the Owner's Representative.



ADDRESS, LEGAL STATUS AND SIGNATURE OF BIDDER

The undersigned Bidder does hereby designate the address given below as the legal address to which all notices, directions, or other communications may be served or mailed:

Name of Company _____
Street _____
City _____ State _____ Zip Code _____
Phone No. _____

The undersigned Bidder does hereby declare that the Bidder has the legal status checked below:

- [] Sole Proprietorship
[] Partnership
[] Corporation incorporated under the laws of the State of _____

The names and addresses of all persons indicated as Partners or as President, Secretary and Treasurer of a Corporation in this Bid are as follows:

Table with 2 columns: Name, Address. Multiple rows of blank lines for entry.

This Bid is submitted in the name of:

Name of Contractor

Signed By: _____

Title: _____

Signed and sealed this _____ day of _____ 2026.

END OF DOCUMENT

BID FORM-UNIT PRICES 00 41 00.1

**Demolition of Marshall Elementary School
33901 Curtis Road, Livonia, Wayne County, Michigan 48152**

UNIT PRICES - DEMOLITION		
ITEM	UNIT OF MEASURE	COST
Project Manager	Per Hour	\$
Foreman	Per Hour	\$
Operator	Per Hour	\$
Labor	Per Hour	\$
Material Markup	Percent	%
Subcontractor Markup	Percent	%
Equipment (specify)	Per Hour	\$
Equipment (specify)	Per Hour	\$
Equipment (specify)	Per Hour	\$
Equipment (specify)	Per Hour	\$
Equipment (specify)	Per Hour	\$
Equipment (specify)	Per Hour	\$
Equipment (specify)	Per Hour	\$
Class II sand	Cubic Yard	\$
21AA Aggregate	Cubic Yard	\$
Removal and replacement of concrete sidewalk	Square Foot	\$
Removal of asphalt pavement	Square Foot	\$
Removal of concrete pavement	Square Foot	\$
Pavement saw cutting	Linear Foot	\$
Unknown buried solid waste, building debris, foundations, floors, etc.	Cubic Yard	\$
Soil, removal, transportation and disposal – non-hazardous	Cubic Yard	\$
Soil removal, transportation and disposal – hazardous	Cubic Yard	\$
Groundwater removal, transport, and disposal – non-hazardous	Gallon	\$
Groundwater removal, transport, and disposal – hazardous	Gallon	\$

UNIT PRICE – ABATEMENT AND DISPOSAL COST		
MATERIAL	UNIT OF MEASURE	COST
Sprayed-on Fireproofing	Square Foot	\$
Hard Wall/Ceiling Plaster (all layers, metal or wood lathe)	Square Foot	\$
Soft/Decorative Plaster (all layers, including substrate if necessary)	Square Foot	\$
Popcorn or Sprayed-on Ceiling or Wall Texture (all layers, including substrate if necessary)	Square Foot	\$
Drywall/Mud Compound	Square Foot	\$
Thermal System Insulation (TSI) Straight Pipe < 6-inch diameter	Linear Foot	\$
TSI Straight Pipe > 6-to-12-inch diameter	Linear Foot	\$
TSI Straight Pipe > 12-inch diameter	Linear Foot	\$
TSI Mud Fitting < 6-inch diameter	Each	\$
TSI Mud Fitting > 6-to-12-inch diameter	Each	\$
TSI Mud Fitting > 12-inch diameter	Each	\$
Duct Insulation (cloth or paper)	Square Foot	\$
Duct Insulation (fiberglass with ACM seam mud)	Square Foot	\$
Undercoated Sink	Each	\$
Fire Door	Each	\$
Floor Tile Only (any size)	Square Foot	\$
Floor Tile and Mastic (any size, any mastic type)	Square Foot	\$
Ceiling Tile	Square Feet	\$
Linoleum/Resilient Sheeting	Square Foot	\$
Linoleum/Resilient Sheeting and Mastic (any type)	Square Foot	\$
Window with associated caulk and/or glazing (any size including frame)	Each	\$
Window Caulk	Square Feet	\$
Window Glazing	Each	\$
Furnace, boiler, or tank insulation (mud and jacket)	Square Foot	\$
Transite (Panels, Siding or Board)	Square Foot	\$
Glue, behind paneling, drywall, etc., on wood or concrete. Abatement or complete removal with substrate.	Square Foot	\$
Electrical Panel	Each	\$
Glued-on ceiling tiles (any size) and glue pods	Square Foot	\$
Construction Adhesives/other glue pods	Square Foot	\$
Cove Base	Square Foot	\$
Vermiculite Insulation (wall)	Cubic Yard	\$
Misc. Asbestos Debris (any type, total quantity)	Cubic Foot	\$
Light Fixture Heat Shields	Each	\$
Foundation, wall, or block caulk	Linear Foot	\$
Foundation Tar, Complete removal and disposal	Square Foot	\$
Transite / asbestos utility piping (any size)	Linear Foot	\$
Chimney Mortar	Each	\$
Penetration Mud	Square Foot	\$
Stack Cement	Square Foot	\$
Heat Shield (Vent)	Each	\$

UNIT PRICE – ABATEMENT AND DISPOSAL COST		
MATERIAL	UNIT OF MEASURE	COST
Heat Shield (Used as Fire Barrier)	Square Foot	\$
Plaster	Square Foot	\$
Plaster w/ Debris	Square Foot	\$
Vermiculite w/ Debris	Square Foot	\$

UNIT PRICE – WASTE REMOVAL AND DISPOSAL		
MATERIAL	UNIT OF MEASURE	COST
PCB Caulk	Linear Foot	\$
PCB or other ballasts	Each	\$
Fluorescent light tubes, > 4 feet	Each	\$
Fluorescent light tubes, 4 feet or less	Each	\$
Mercury thermostats or switches	Each	\$
Misc. Household chemical containers	Each	\$
CFC (refrigerator, freezer, any size)	Each	\$
CFC A/C unit	Each	\$
Oil filled equipment	Each	\$
Gas cylinders (any size and type including, but not limited to propane, oxygen, acetylene, etc.)	Each	\$
High pressure light fixtures (sodium, mercury vapor, etc.)	Each	\$
Misc. Aerosol Containers	Each	\$
Vehicle battery	Each	\$
Automobile or truck tires	Each	\$
Television, microwave, computer monitor	Each	\$
Surge Protectors	Each	\$
Smoke detector	Each	\$
Paint cans (latex, oil, etc. any size)	Each	\$
Gas Cans (10-gallons or less)	Each	\$
Lawn mowers/snow blowers (or other small engine item)	Each	\$
Empty 55-gallon drums	Each	\$
55-gallon drum with non-hazardous liquid	Each	\$
Fire extinguishers	Each	\$
Fire Suppression System	Each	\$
Unknown waste material characterization analysis (e.g. TCLP)	Per Waste Stream	\$
Unknown non-hazardous waste disposal	Per drum	\$
Unknown hazardous waste disposal	Per drum	\$



DOCUMENT 01 00 00

GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 FIELD CONDITIONS AND DIMENSIONS

- A. Prior to the start of project, document existing physical conditions at the Site, adjoining public and private properties including structures, roads, easements, sidewalks, fences, etc. Provide documentation consisting of color photographs or video recording depicting existing conditions. In addition, provide written descriptions and locations with respect to deterioration, cracks, and damaged areas. Provide electronic / digital copies of the documentation to Owner's Representative prior to beginning the Work.
- B. Prior to ordering equipment or materials, or doing any work, verify at the Site all dimensions, details and conditions which may affect the work. No allowance for additional compensation will be considered for discrepancies between dimensions indicated on the Project Drawings and actual field dimensions or for the Contractor's failure to comply with this requirement.

1.02 MATERIALS AND SUBSTITUTIONS

- A. Materials of manufacturers, other than those specifically named, will be given equal consideration provided that written approval for the substitution is obtained from Livonia Public Schools (LPS) or their representative.
- B. Costs incurred by dimension changes and weight changes occasioned by this substitution are the responsibility of the Contractor.

1.03 PRE-CONSTRUCTION MEETING

- A. Purpose: To review the project requirements. If possible, all attendees will conduct walk-thru survey of the Site/project area to review the project conditions, Specifications and Project Drawings requirements.
- B. Date: To be scheduled by LPS or the Owner's Representative before the work start date.
- C. Attendees: Owner's Representative, Contractor Representative (including, but not limited to all subcontractors), and others as may be designated.



1.04 PROGRESS MEETINGS

- A. LPS or Owner's Representative may schedule meetings to be held on the Site or remotely whenever needed to obtain or provide information necessary to complete the Work without interruptions.
- B. The Owner's Representative will prepare meeting minutes to document discussions.
- C. The Contractor's representative, with full authority to act on their behalf, must be present at all progress meetings.

1.05 WORKMANSHIP

- A. Contractor is responsible for all construction and demolition means, methods, techniques, sequence, and procedures and for coordinating all portions of the Work under the Contract.
- B. Provide an authorized representative at Site at all times during working hours to receive and execute orders by the Owner's Representative. All such orders given to the Contractor's representative shall be deemed to have been given and received by the Contractor.
- C. Maintain a copy of the Project Specifications on Site at all times.

1.06 CONTRACTOR'S ON-SITE SUPERVISOR

- A. During the construction period, the Contractor shall furnish adequate management and supervisory personnel on the site continuously, in order to ensure expeditious and competent handling of the Work.
- B. The Contractor's field organization shall include experienced staff adequate to manage coordination with abatement contractors, demolition, and restoration.
- C. Contractor shall employ a competent representative knowledgeable in the scope of the work being performed who shall be present at the project site during the progress of the work. The representative shall be satisfactory to LPS and shall not be changed except with the consent of LPS.
- D. The supervisory personnel shall remain on the job from the time the Contractor moves on the job until Official Acceptance of the Work by LPS.



- E. LPS reserves the right to request the removal from the project any of the Contractor's employees, if in the judgment of LPS, such removal is necessary to protect LPS's interests.

1.07 FIELD RECORDS

- A. The Contractor shall maintain an orderly and adequate file of up-to-date copies of the demolition specifications, demolition plan, permits, waste manifest, truck tickets, inspections, test results, and other Contract Documents and supplementary data.
- B. The Contractor shall maintain a continuous record of all field changes by means of a set of drawings marked to indicate current "as-built" conditions. This "as-built" set of drawings shall be available to the Owner's Representative to ascertain that they are kept current/updated. Proprietary documents, if any, shall be available for review at the Site. At the conclusion of the work, the "as-built" drawings and above documents will be provided in the Contractor's Closeout Report as specified in Section 01 78 00.

1.08 SAFETY, HEALTH, AND ACCIDENT PREVENTION

- A. The Contractor shall employ a competent safety representative knowledgeable in Federal and State safety regulations.
- B. Contractor is to provide daily safety meeting notes.
- C. The Contractor shall conduct all operations under this Contract in a manner to prevent bodily harm and damage to property and adjacent sites. The Contractor shall continuously inspect all operations, work, materials, and equipment; shall conduct health surveys of all work areas; and shall be solely responsible for the discovery, determination, and correction of conditions which constitute a risk of bodily harm or property damage.
- D. The Contractor shall be completely responsible for the safety and protection of the personnel and the public on the site of the work and shall employ all methods necessary to achieve such safety. These methods shall include, but not be limited to, providing barriers, guard structures, insulating guards, warning signs, and prevention of unauthorized access to property.
- E. The Contractor shall adhere to the LPS' designated smoking areas.



1.09 WORKING HOURS

- A. No work shall be done between 5:00 p.m. and 7:00 a.m. or Sundays or legal holidays without the written consent of LPS.

1.10 UNFAVORABLE CONDITION AND LOSSESS FROM NATURAL CAUSES

- A. During periods of unfavorable weather, wet grounds, or other unsuitable construction conditions, the Contractor shall, if possible, confine his operations to work which will not be adversely affected thereby. No portion of the Work shall be performed under conditions which would adversely affect the quality or efficiency thereof.
- B. All loss or damage arising out of the nature of the Work, or from the action of the elements, or from floods or overflows, or from ground water, or from any unusual obstruction or difficulty, or any other natural or existing circumstance either known or unforeseen which may be encountered in the prosecution of the work, shall be sustained, and borne by the Contractor at his own cost and expense.

1.11 CODE AND REGULATION COMPLIANCE

- A. All work is to be conducted in accordance with these Project Specifications.
- B. Comply with all applicable federal, state, and local codes and regulations relating to buildings, employment, the preservation of public health and safety, use of streets, and the performance of the Work under this Contract. It shall be the responsibility of the Contractor to fully understand all such requirements and to ensure that such are fully and faithfully enforced.
- C. Any Work performed by the Contractor known or should have been known to be contrary to existing laws, rules, and regulations, and for which the Contractor fails to give notice of such fact to the Owner's Representative, shall be the responsibility of the Contractor. The Contractor shall bear all costs arising there from and hold LPS harmless for any such violation.
- D. Upon completion of the Work, submit to LPS a certificate of inspections by Authority Having Jurisdiction (AHJ), showing that the work has been properly inspected and approved to meet current code requirements.

1.12 PROJECT SAFETY

- A. SAFETY IS OF ABSOLUTE IMPORTANCE. At all times, the Contractor is solely responsible for initiating, maintaining, and supervising all safety



precautions and programs associated with the Work. Under no circumstances shall the Contractor's activities jeopardize the safety of the general public. Onsite safety meetings shall be conducted by the contractor on a daily basis.

- B. All Work must be accomplished in accordance with all applicable Construction Safety Standards rules and regulations for Construction Operations, as set forth by Occupational Safety and Health Administration (OSHA), and Michigan OSHA (MIOSHA).
- C. The requirements indicated in this section are to be considered as minimal. Where the requirements of any of the listed authorities having jurisdiction conflict with the requirements of this section, the maximum condition shall prevail.
- D. Furnish, install, and maintain as long as necessary and remove when no longer required, adequate barriers, shoring, warning signs and lights or other necessary or prudent safety measures at all dangerous locations during work operations for the protection of Contractor personnel, building occupants, and the general public. Provide and erect all such safety precautions in accordance with federal, state, and local codes and other legal requirements.
- E. Whenever lifting materials or equipment over or near existing or occupied buildings, provide advance notice of such activities and arrange to have any potentially endangered spaces vacated.
- F. During work operations, provide temporary partitions, barriers, curtains, and guards as necessary to confine materials, dust, and debris to the immediate work areas. Do not allow dust or debris to enter the interior of nearby structures. Coordinate the location of temporary barriers or partitions with the Owner's Representative and LPS.
- G. Remove all temporary protection when Work is completed and restore disturbed areas to their original condition.
- H. Contractor shall hold LPS and NTH harmless from damage or claims arising out of any injury or damage that may be sustained by any person or persons as a result of the work under the Contract.
- I. The Contractor shall provide for its own first aid requirements.

1.13 PROTECTION OF SITE

- A. Coordinate all work operations with the Owner's Representative so that adequate protection, as necessary, is provided and disruption to normal



operations in nearby residential buildings is minimized. Repair all property damage caused by lack of such protection to the satisfaction of LPS and the Owner's Representative.

- B. Confine equipment, storage of materials, debris, and the operations and movements of workmen within the physical limits and time limits directed by the Owner's Representative. Such activities are to be governed by applicable local building codes and the traffic regulation and safety and fire regulations of local authorities.
- C. During work operations, provide protection for existing nearby residential buildings, parking lots, fences, sidewalks, utilities, etc. Repair or replace building components or property damaged during the Work to match its condition before the damage. If the Contractor fails to repair or replace such damage, LPS will have the Work done by others and the costs of such Work will be charged to the Contractor.
- D. The Contractor shall hold LPS and NTH harmless against all claims of damage or alleged damage to any such structure arising out of the Work under this Contract.

1.14 FIRE SAFETY

- A. No open fire is permitted on the Site at any time.
- B. Take all precautions to eliminate possible fire hazards at the Site, including but not limited to the following:
 - 1. Remove all combustible debris from the Contractor storage areas on a daily basis.
 - 2. Store flammable materials in locations with secondary containment devices, well-ventilated areas; mixing and preparation of such materials are also restricted to such areas. Manage all such materials in accordance with the requirements of authorities having jurisdiction.
 - 3. If possible, avoid storage of large quantities of flammable materials at the Site.
 - 4. No open flame, torching, welding, grinding, etc., shall be done without LPS's approval. Any torch cutting will be conducted in accordance with MIOSHA Part 603 (Lead Exposure in Construction) and MIOSHA Part 609 (Cadmium Exposure in Construction).



5. Contractor is to provide fire watch for a minimum of 2 hours after any torch activity.
- C. The Contractor's supervisory personnel and a sufficient number of workmen shall be instructed in proper methods for extinguishing fires and shall be assigned specific fire protection duties. When trained personnel leave the job, new personnel shall be trained in their duties. All workmen shall be instructed in the selection and the operation of each type of fire extinguisher for each type of fire which might be encountered.
- D. The Contractor shall provide adequate fire protection equipment in each work area the Contractor is occupying as specified herein. Access to sources of fire extinguisher shall be identified and kept open at all times. Each fire extinguisher shall be of a type suitable for extinguishing fires which might occur in the area in which it is located. Each extinguisher shall be placed in a convenient, clearly identified location which will most likely be accessible in the event of fire. Fire protection equipment size and quantity shall satisfy insurance requirements and shall be satisfactory to the LPS and the Owner's Representative.
- E. The Contractor alone shall be responsible for providing adequate fire protection. Failure of the Contractor to comply with, or LPS to enforce, the above requirements shall not relieve the Contractor from any responsibility or obligation under this Contract.

1.15 SECURITY

- A. The Contractor is responsible for the security of this Site. Maintain and construct barricades, screens, railings, and fences as necessary and in strict accordance with applicable codes for protection of pedestrians and motorists.
- B. The cost for any damage caused by vandalism to material or equipment or that which occurs to items finished or installed under this contract is to be borne by the Contractor. The Contractor is responsible for such vandalism from the start of demolition until it is conditionally accepted by the Owner's Representative.

1.16 TEMPORARY UTILITIES AND FACILITIES

- A. Water is available in the area where Work will be performed.
- B. Electric power must be supplied by the Contractor. The Contractor shall pay costs for installation and removal of temporary connections including necessary safety devices and controls.



1.17 MISCELLANEOUS FACILITIES AND CONTROLS

- A. The Contractor will have an Owner-designated area on the premises to confine equipment and store materials.
- B. Contractor, subcontractors, and their employees or suppliers will not use or interfere with existing public access, drives, roads, or parking lots, except as specifically indicated by prior arrangement with the Owner's Representative.
- C. Contractor's employee parking, delivery trucks and other construction vehicle parking will only be allowed in areas designated by the Owner's Representative.
- D. Provide portable sanitary facilities. Maintain such facilities in a neat and sanitary condition acceptable to the Owner's Representative for the duration of Work.

1.18 REMOVAL OF DEBRIS

- A. Remove all debris from the Site. The premises shall be maintained as clean as practical, consistent with the neatness required for the Owner's normal operations.
- B. No storage of removed items or debris will be permitted on the Site unless so directed by the Owner's Representative.
- C. During non-construction hours, prevent dust or wind-blown debris from leaving the Work area.
- D. Upon completion, ensure that the Work and Site is left in a clean, neat, and finished condition.

1.19 EXPLOSIVES

- A. No explosives of any type are permitted on Site.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF DOCUMENT



DOCUMENT 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Site is located at 33901 Cutris Road in Livonia, Wayne County, Michigan. The subject building is a single-story school building and has a footprint of approximately 44,000 square feet. The building was constructed in circa 1960 with additions in 1962 and 1992.
- B. Project Drawings are provided.
- C. NTH Consultants, Ltd. conducted an environmental investigation at the Site and included the following:
 - 1. Hazardous Materials Survey report dated December 16, 2025, included in Attachment I.
- D. The Contractor shall provide a Certified Stormwater Operator (CSWO) to inspect the SESC measures weekly and within 24 hours of a significant rain event and maintain inspection logs and reports required by law.
- E. Comply with all applicable federal, state, and local regulatory requirements related to the Work.
 - 1. Obtain all required permits.
 - 2. Submit all required notifications.
- F. Provide all required Submittals to the Owner's Representative.
- G. Provide Existing Conditions documentation to the Owner's Representative prior to the start of Work for this Project, including:
 - 1. Document existing conditions of adjoining public and private properties including structures, parking lot, fences, roads, sidewalks, etc. Documentation should be in the form of video recordings or photographs along with written descriptions.
- H. Protect the general public, adjacent buildings and properties, including:



1. Soil Erosion and Sediment Controls
 2. Noise Controls
 3. Dust Controls
 4. Traffic Controls
 5. Site Security
 6. Protect existing utilities, sidewalks, paved areas, trees, etc. that are to remain.
- I. Perform all additional work as required by the Specifications and depicted on Project Drawings.

PART 2 - DEMOLITION

2.01 WORK INCLUDES

- A. Mobilization and Demobilization
- B. General site conditions including soil erosion control, dust control, dust monitoring, street sweeping, road cleaning, site inspections, road maintenance, fees, permits, permit fees, submittals, coordination, temporary security fencing, temporary facilities, and other activities as specified.
1. The Contractor shall provide a Certified Stormwater Operator (CSWO) to inspect the SESC measures weekly and within 24 hours of a significant rain event and maintain inspection logs and reports required by law.
 2. Retain an independent environmental consulting firm to conduct perimeter air sampling and analysis continuously during demolition operations in accordance with applicable regulations. Sampling parameters for each location shall be total suspended particulates, asbestos, lead, cadmium, and silica.
 3. Provide an on-site security guard during non-working hours and weekends.
- C. Perform the specified abatement, handling and proper disposal of hazardous materials, Universal Waste, Polychlorinated Biphenyls (PCBs), and Asbestos-Containing Materials (ACM).



- D. Perform the specified demolition including all equipment and materials, floor slabs, foundations, pits, underground utilities beneath the building.
- E. Remove site features and improvements, including paved sidewalks, driveways, and parking lots, concrete curbing, guardrails, fencing, bollards, trees and stumps, shrubs, grass-covered areas, and landscape materials as specified on Project Drawings.
- F. Perform the specified abandon/removal, cutting and capping of underground utilities, light poles, handling, and proper disposal as specified on Project Drawings.

PART 3 – RESTORATION

- A. Retain independent environmental consulting firm to confirm that imported backfill material and topsoil is “clean” and meets Michigan Department of Environment, Great Lakes, and Energy (EGLE’s) Part 201 Generic Residential Cleanup Criteria (GRCC), based on analytical testing and reporting.
- B. Retain independent quality control testing agency to perform the required soil density testing and reporting.
- C. Backfill and compact the areas where subsurface structures (underground utilities, pits, foundations, etc.) have been removed.
- D. Filling, site grading, placement of topsoil, sown seed and protection cover (straw).
- E. Provide final grade topographic elevations after restoration work using a Licensed Surveyor, with measurements on a 25-foot grid. The final grades are to match elevations as shown on the Grading Plan.
- F. Provide as-built drawings showing locations of cut and capped utilities, abandoned utilities, and other items not removed as part of demolition.

PART 4 – PRODUCTS (Not Used)

PART 5 – EXECUTION (Not Used)

END OF DOCUMENT



DOCUMENT 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Requirements for material storage, utilities, barriers and fences, security, controls, and fire precautions.

1.02 RELATED SECTIONS

- A. Other sections of the specifications, not referenced below, shall also apply to the extent required for proper performance of this Work.
- B. Section 01 33 00 - Submittals Procedures
- C. Section 01 57 13 - Temporary Erosion and Sediment Control
- D. Section 01 57 16 - Temporary Pest Control
- E. Section 01 57 19 - Temporary Environmental Controls (Dust and Air)
- F. Section 02 41 00 - Demolition
- G. Section 31 10 00 - Earthwork
- H. Section 31 23 19 - Dewatering
- I. Section 32 00 00 - Site Restoration

1.03 REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with National Electric Code, Occupational Safety and Health Administration (OSHA), Michigan OSHA (MIOSHA), Michigan Department of Transportation (MDOT), Wayne County and City of Livonia codes and ordinances.



1.04 SUBMITTALS

- A. See Section 01 33 00 – Submittal Procedures.
- B. Prepare and submit to the Owner’s Representative, for approval prior to starting Work, a plan/layout showing arrangement of storage areas, temporary trailers, construction equipment, and storage and work areas as applicable.
- C. Prepare and submit to the Owner’s Representative, for approval prior to starting Work, a Traffic Plan showing access routes (gates) to the Site and proposed trucking routes to and from the Site, and showing location of mud mats as depicted on Project Drawings.

1.05 STORAGE

- A. Store all materials in Owner’s Representative approved areas. Arrange stored materials to maintain full access to the site and Work. Materials stored outdoors shall be neat and orderly and covered to prevent damage or vandalism. When stored in a central storage area, transport to the site via covered truck and/or trailer only those materials intended for use that day.

1.06 LAND FOR CONTRACTOR’S USE

- A. Access Roads and Parking
 - 1. Contractor employee parking is not to interfere with the progress of Work under this contract.
 - 2. Track Out: Minimize the quantity of dirt and debris leaving the Site. Inspect all vehicles leaving the Site for compliance with this provision. Clean roads as necessary and additionally when requested by the Owner’s Representative at no additional cost to LPS.
 - 3. Vehicles leaving the construction Site, or vehicles driven by LPS or the Owner’s Representative, must pass through the vehicle decontamination pad.
 - 4. Remove temporary access road and construction parking areas prior to the final acceptance, unless otherwise required by the Contract Documents.



1.07 TRAFFIC MAINTENANCE AND CONTROL

A. Road Closing

1. Any work within the right-of-way will require a right-of-way permit from the Authority Having Jurisdiction (AHJ). Contractor is responsible for payment of any application fees, permit, bonds, etc.
2. Do not close streets, roads, or sections thereof to through traffic unless authorized by the AHJ over the roads. Prior to closing a street, road, or section thereof, provide the Owner's Representative with a copy of a Traffic Plan approved by the AHJ over the roads.
3. In the event roads or streets are to be closed, notify the local fire department, police department, local road authority, ambulance and emergency services, public transit authority and public school system daily as to what streets will be partly blocked or closed, the length of time the streets will be blocked or closed, and when the streets will be reopened to traffic. Designate one employee to be responsible for this notification.

B. Maintaining Traffic

1. Provide access for local traffic by means of temporary roads, drives or other means approved by the Owner's Representative. Grade, add surfacing materials, and dust palliatives to temporary roads and drives as necessary for the proper maintenance of traffic.
2. Where the shoulder is used to maintain traffic, ensure the shoulder is graded, surfaced, treated for dust, constructed, or reconstructed. If the Work is suspended due to weather conditions or for any other reason, ensure that sufficient labor, materials, and equipment are always ready for immediate use for proper maintenance of traffic. Apply surfacing materials and dust palliatives at such times and locations and in such amounts to maintain traffic and reduce dust.
3. Furnish, erect, and maintain signs, barricades, lights, traffic regulators, in accordance with the requirements of the current "Michigan Manual of Uniform Traffic Control Devices". Provide flagmen and watchmen to maintain and safeguard traffic along the entire Site. Include the cost for maintaining traffic in the Base Bid. Failure to comply with these requirements may result in a stop work order, which will remain in effect until all necessary devices are in place and operational. The



issuance of a stop work order is not a reason for granting additional compensation or an extension to the contract time.

C. Sidewalk Closures

1. Do not close sidewalks or sections thereof unless authorized by the AHJ over the sidewalks. Prior to closing a sidewalk or section thereof, provide the Owner's Representative with a copy of approval by the AHJ over the sidewalks.
2. Contractor is responsible for and shall include payment of any fees associated with applications, permits, bonds, etc.
3. Where sidewalk or section thereof is closed off to the public, erect and maintain warning signs, barricades, and lighted devices as required.

1.08 AVAILABILITY AND USE OF UTILITY SERVICES

A. Temporary Facilities

1. Furnish and install all temporary facilities and controls required by the Work under this contract, remove them from the Site upon completion of the Work, and restore the Site as required in the Specifications.

B. Payment and Utility Services

1. Arrange for utility services as required. The charges for each utility service consumed will be charged to and paid by the Contractor.
2. Carefully conserve any utilities that are in use/active.
3. Coordinate utility use with the AHJ and/or appropriate utility company.

C. Temporary Electric

1. Provide and maintain temporary electrical power for temporary lighting and power required for this Work.
2. At the completion of the Work, all such temporary electrical facilities shall be removed by the Contractor.
3. Temporary electrical power shall comply with the regulations and requirements of the National Electrical Code.
4. Coordinate temporary electric services with appropriate utility as needed.



D. Temporary Sanitary Facilities

1. Provide portable sanitary facilities. Maintain such facilities in a neat and sanitary condition acceptable to the Owner's Representative for the duration of Work.
2. Locate portable sanitary facilities within the designated set-up areas.
3. Facilities must meet applicable federal, state, and local regulatory requirements.

E. Temporary Water

1. Provide all temporary water for dust suppression and street cleaning.
2. Provide booster pumps as may be needed to maintain water pressure for dust suppression.
3. Coordinate temporary water services and all necessary equipment (backflow preventer, meter, etc.) with AHJ. If not provided by the City of Livonia, Contractor shall provide meter(s) and backflow preventer(s) acceptable to the City of Livonia.

1.09 BARRIERS/TEMPORARY FENCES

A. Barrier Placement

1. Furnish, install, and maintain, as long as necessary, adequate barriers, warning signs, or lights at all dangerous points throughout the Site for protection of properties, workers, and the public and security of the Site.
 - a. Such barricades are required whenever safe public access to paved areas such as roads or sidewalks is prevented by demolition / restoration activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic.
 - b. Securely place barricades, making them clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both days and nights.
2. Remove barriers, warning signs, or lights when deemed no longer required.



B. Temporary Fence

1. Furnish, install, and maintain temporary metal chain-link fencing surrounding the demolition area and a gate as shown on Project Drawings. The interior of the fence will be covered using polyethylene screening or other materials to block line of sight access to demolition activity and reduce windblown debris from leaving the Site. The gate will be secured with a lock and chain.
2. Post adequate/appropriate number of signs “No Trespassing” on all temporary and permanent fences surrounding the Work Site.
3. Remove temporary and existing fencing and restore the Site as required in the Specifications and show on the Project Drawings when deemed no longer required by the Owner’s Representative.

1.10 SECURITY

- A. The Contractor is responsible for the security of this Project. Maintain pedestrian walkways and construct barricades, screens, railings, and fences as necessary and in strict accordance with applicable codes for protection of pedestrians and motorists.
- B. Provide security during all non-working hours and weekends.
- C. Contractor to secure all building openings to prevent trespassing.

1.11 TEMPORARY CONTROLS

- A. Noise Control: Conform to City of Livonia requirements.
- B. Dust Control: Furnish all labor, materials, equipment, supervision, and incidentals necessary to contain dust and debris within the Site.
- C. Traffic Control: Conform to City of Livonia, Wayne County and State of Michigan requirements.



1.12 TEMPORARY CONSTRUCTION

- A. Where necessary, construct and maintain temporary access roads and drives as directed by the Owner's Representative. Remove the temporary access roads and drives when directed by the Owner's Representative. Restore the grounds in accordance with the Project Drawings and Specifications or to its original condition as much as is practical. Ensure that the restoration is compatible with adjacent areas.
- B. Complete all restoration work as soon as possible so as to cause a minimum of interference with the normal usage of the land by the LPS and for the control of soil erosion and siltation. Perform the restoration or reconstruction of drainage structures and other facilities as soon as practicable and in cooperation and compliance with and directed by the Owner's Representative.
- C. Neatly construct and arrange temporary construction facilities on the Site in an orderly manner. The general arrangement of such facilities is subject to approval by the Owner's Representative. Ensure that construction equipment and other facilities, such as ladders, scaffolding, ramps, etc. are strong, substantial, safe, and suitable for the purpose intended and meet all the applicable requirements of the OSHA or MIOSHA, and other authorities having jurisdiction in the area of the Work.
- D. When temporary trailers, construction equipment, and other facilities are no longer needed for the Work, promptly dismantle these items, and remove them from the Site.

1.13 FIRE PRECAUTIONS

- A. Take necessary actions to eliminate possible fire hazards and to prevent damage to construction staging areas, existing nearby structures, equipment, and other property.
- B. Provide the type and quantity of fire extinguishers and fire hoses to meet safety and fire prevention practices by appropriate rules and regulations.
- C. Provide the necessary personnel and fire-fighting equipment to effectively control incipient fires resulting from flame cutting or other operations involving the use of flame, sparks or sparking devices. During such operations,



remove all combustible or flammable materials from the immediate working area. If removal is impossible, protect such materials with suitable non-combustible shield against sparks, flame, or hot metal. Contractor is to provide fire watch for a minimum of 2 hours after any torch activity.

- D. Not more than one day's supply of flammable liquids such as oil, gasoline, paint, paint solvent, etc. shall be brought into the building at any one time. Flammable liquids having a flash point of 110° F. or below which must be brought into the buildings shall be confined in Underwriters Laboratories (UL) labeled safety cans. Store the bulk supply of flammable material at least 50 feet from any buildings and other combustible material. Spigots on drums containing flammable liquids are prohibited on the Site. Use drums equipped with approved vented pumps.
- E. Only a reasonable working supply of flammable materials shall be located inside the buildings or on Site.
- F. Place all oil-soaked rags, papers, and other similar combustible materials at the close of each day's work, or more often if necessary, and place these materials in metal containers, with self-closing lids.
- G. Materials and equipment stored in cardboard cartons, wood crates or other combustible containers shall be stored in an orderly manner and accessibly located. Place fire-fighting equipment of approved types in the immediate vicinity of any materials or equipment stored in this type of crate or carton.
- H. Do not dispose of oil, gasoline, or like combustible materials into the ground, sewers, manholes, or traps.
- I. Remove and legally dispose of all rubbish from the Site. Burning of rubbish, waste materials or trash on the Site shall not be permitted.
- J. The Contractor is responsible for the conduct of employees relative to smoking with all smoking to be in areas outside the Site boundaries.



PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF DOCUMENT



DOCUMENT 01 57 13

TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Contractor will obtain the Soil Erosion and Sediment Control Permit from Authority Having Jurisdiction (AHJ) and will obtain a Notice of Coverage from EGLE, if needed. Contractor shall implement and comply with all permit requirements. The Demolition and Soil Erosion and Sedimentation Control Plan is included in the Project Drawings.
- B. Prevention of erosion due to demolition/construction activities.
- C. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
- D. Restoration of areas eroded due to insufficient preventive measures.
- E. Performance bond.
- F. Contractor will compensate LPS for fines levied by authorities having jurisdiction due to non-compliance with the permit requirements.

1.02 RELATED SECTIONS

- A. Other sections of the specifications, not referenced below, shall also apply to the extent required for proper performance of this Work.
- B. Section 01 33 00 - Submittals Procedures
- C. Section 01 50 00 - Temporary Facilities and Controls
- D. Section 01 57 19 - Temporary Environmental Controls (Dust and Air)
- E. Section 02 41 00 – Demolition
- F. Section 31 10 00 – Earthwork



- G. Section 31 23 19 - Dewatering
- H. Section 32 00 00 - Site Restoration

1.03 REFERENCES

- A. Part 91 of Act 451 of 1994 Soil Erosion and Sedimentation Control Act (formerly P.A. 347 of 1972, as amended).
- B. ASTM D 4355 - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus.
- C. ASTM D 4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
- D. ASTM D 4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
- E. ASTM D 4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
- F. ASTM D 4751- Standard Test Method for Determining Apparent Opening Size of a Geotextile.
- G. ASTM D 4833 – Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
- H. ASTM D 4873 - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples.
- I. ASTM D6462 - Standard Practice for Silt Fence Installation.
- J. Environmental Protection Agency (EPA), National Pollutant Discharge Elimination System (NPDES), Construction General Permit; current edition; <https://www.epa.gov/npdes/2022-construction-general-permit-cgp>.
- K. FHWA FLP-94-005, “Best Management Practices for Erosion and Sediment Control,” Federal Highway Administration.
- L. Permits issued or required by governmental agencies.

1.04 SUBMITTALS

- A. See Section 01 33 00 for submittal procedures.



- B. Erosion and Sedimentation Control Plan:
1. Acknowledge intent to implement the approved Demolition and Soil Erosion and Sedimentation Control Plan and permit requirements and provide the planned date not less than 7 days prior to anticipated start of clearing, grading, or other work involving disturbance of ground surface cover.
 2. Include:
 - a. The approved Demolition and Soil Erosion and Sedimentation Control Plan.
 - b. Indicate any additional measures and associated costs that may be deemed necessary for Demolition and Soil Erosion and Sedimentation Control. Additional measures must be approved by LPS and Owner's Representative, prior to implementation.
 - c. Where extensive areas of soil will be disturbed, include storm water flow and volume calculations, soil loss predictions, and proposed preventive measures.
 - d. Schedule of temporary preventive measures and cleaning activities, in relation to ground disturbing activities.
 - e. Other information required by law.
 - f. Format required by law is acceptable, provided any additional information specified is also included.
 3. Do not begin work without the approval of the Demolition and Soil Erosion and Sedimentation Control Plan by AHJ.
- C. Certificate: Mill certificate for silt fence fabric attesting that fabric and factory seams comply with specified requirements, signed by legally authorized official of manufacturer; indicate actual minimum average roll values; identify fabric by roll identification numbers.
- D. Identify a responsible person employed by the Contractor who will oversee the implementation of the Demolition and Soil Erosion and Sedimentation Control Plan. A state-certified storm water control officer (CSWO) is required for this project. Submit CSWO certificate of responsible person prior to commencing work.
- E. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished. Inspection reports shall comply with all requirements of authority having jurisdiction. Submit monthly, or more frequently if requested,



to Owner for record. Comply with all AHJ inspections and correct identified deficiencies to their satisfaction and the satisfaction of the Owner at no additional cost.

- F. Maintenance Instructions: Provide instructions covering inspection and maintenance for temporary measures that must remain after Substantial Completion.

1.05 PERFORMANCE REQUIREMENTS

- A. Comply with all requirements and conditions of permits issued and required by any other governmental agencies.
- B. Comply with the requirements of the approved Demolition and Soil Erosion and Sedimentation Control Plan and submit periodic inspection reports to the AHJ. Copies of the inspection reports shall be made available to the Owner upon request.
- C. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits. The cost of the permits will be the responsibility of the Contractor.
- D. Provide to Owner a Performance Bond covering erosion and sedimentation preventive measures only, in an amount equal to 100 percent of the cost of erosion and sedimentation control work.
- E. Timing: Put preventive measures in place prior to disturbance of surface cover.
- F. Storm Water Runoff: Control increased storm water runoff from disturbance of surface cover due to construction activities for this project.
 - 1. Prevent runoff into waterways, open drainage ways, and storm and sanitary sewers, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
 - 2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.
- G. Erosion On-Site: Minimize wind, water, and vehicular erosion of soil on Site due to demolition activities for this Project.
 - 1. Control movement of sediment and soil from temporary stockpiles of soil.
 - 2. Repair ruts due to equipment and vehicular traffic on a daily basis.



3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to LPS.
- H. Erosion Off-Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the Site due to demolition activities for this Project.
1. Prevent windblown soil and debris from leaving the Site.
 2. Prevent tracking of mud onto public roads outside Site.
 3. Prevent mud and sediment from flowing onto sidewalks and pavements.
 4. If erosion occurs due to non-compliance with these requirements, restore eroded areas and arrange to have offsite areas cleaned and returned to pre-construction condition at no cost to LPS.
- I. Sedimentation of Waterways on Site: Prevent sedimentation of waterways on the Site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
1. If sedimentation occurs, install or correct preventive measures immediately at no cost to LPS; remove deposited sediments; comply with requirements of authorities having jurisdiction.
 2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.
- J. Open Water: Prevent standing water that could become stagnant.
- K. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Comply with the Project Plans, City, and County Standard Details and requirements, as applicable.



PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine Site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

- A. Do not discharge any excavation groundwater to the sanitary sewer, storm sewer, lake, river, stream or similar natural or constructed feature. Prevent construction runoff from entering the sewer system or similar natural or constructed feature by using silt fences or other suitable methods.
- B. Prevent construction runoff from entering the sanitary sewer, storm sewer, river, stream or similar natural or constructed feature by using silt fences or other suitable methods.
- C. Protect surrounding soils from erosion.
- D. Install sedimentation control devices prior to beginning Work. Maintain effective functioning soil erosion and sedimentation control devices at all times during the Work.
- E. If permanent erosion resistant measures have been installed, temporary preventive measures are not required.
- F. Dust Control
 - 1. Mitigate airborne dust at all times, including non-working periods.
 - 2. Sprinkle soil at the site, haul roads, and other areas disturbed by operations or treat with dust suppressants.
 - 3. Dry power-broom activities are NOT PERMITTED.
- G. Construction Entrances:
 - 1. Provide vehicle track-out mat: Comply with Demolition Plan and Soil Erosion and Sedimentation Control Plan.
 - 2. A “vehicle decontamination area” will be constructed at the Site exit, to provide a zone through which loose soil can dislodge from truck tires. The area will be constructed on the existing pavement or 1 to 3 inches of crushed concrete or aggregate and will be a minimum of 50 feet



long. Should soil be tracked out onto the roadway, provisions for cleaning the street, such as a wet sweeper, will be initiated immediately.

3. Remove and properly handle soil or contaminants in accordance with applicable state or federal regulations.
- H. Linear Sediment Barriers: Made of silt fences.
1. Provide linear sediment barriers as shown on the Soil Erosion and Sedimentation Control Plan.
- I. Storm Drain Inlet Sediment Trap: As detailed on Project Drawings. Install inlet filters on all drains, manholes, and other drainage structures inside and outside of all building units.
- J. Soil Stockpiles: Protect using following measures:
1. Cover with polyethylene film, secured by placing soil on outer edges.
 2. The soil staging areas shall be limited to areas covered by an impervious barrier (such as paved surfaces or plastic sheeting).
 3. Encompass all exposed soil stockpiles with silt fence until exposed soil has temporary vegetation cover applied or exposed soil is removed from the Site.
- K. Temporary Seeding and mulching: Use where temporary vegetated cover is required.

3.04 INSTALLATION

- A. General: Install soil erosion and sedimentation control devices in accordance with manufacturer's recommendations, and in conformance with these specifications. Refer discrepancies to Owner's Representative for resolution.
- B. Silt Fences: Refer to the details and requirements on the Project Drawings.
- C. Mulching Over Large Areas:
1. Dry Straw and Hay: Apply 2-1/2 tons per acre; anchor using dull disc harrow.
- D. Mulching Over Small and Medium Areas:
1. Dry Straw and Hay: Apply 4 to 6 inches depth.
 2. Erosion Control Matting: Comply with manufacturer's instructions.



- E. Erosion Control Blankets: Peg at the pattern and rate recommended by the manufacturer, but not less than 1.75 pegs per square yard.

3.05 MAINTENANCE

- A. Inspect preventive measures weekly, within 24 hours after the end of any storm, and daily during prolonged rainfall.
- B. Repair deficiencies immediately.
- C. Silt Fences:
 - 1. Promptly replace fabric that deteriorates.
 - 2. Remove silt deposits that exceed one-third of the height of the fence.
 - 3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.
- D. Clean out temporary sediment control structures weekly and relocate soil on Site.
- E. Place sediment in appropriate locations on site; do not remove from site.
- F. Refer to the details and requirements shown on the Project Drawings.

3.06 CLEAN UP

- A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Owner's Representative.
- B. Clean out temporary sediment control structures that are to remain as permanent measures.
- C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF DOCUMENT



DOCUMENT 01 57 16

TEMPORARY PEST CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section specifies pest/rodent control requirements within the Site and surrounding properties. Perform this Work prior to demolition so that rodents and other pests do not disperse from the Site.
- B. The Contractor shall develop and implement an Integrated Pest Management (IPM) program.
- C. The Contractor shall provide pest management measures as are needed to control the pests, in accordance with the applicable standards (Good Practice Statements) of the National Pest Control Association, and to maintain the areas “pest free.”

1.02 RELATED SECTIONS

- A. Other sections of the specifications, not referenced below, shall also apply to the extent required for proper performance of this Work.
- B. Section 01 33 00 - Submittals Procedures
- C. Section 01 50 00 - Temporary Facilities and Controls
- D. Section 02 41 00 - Demolition

1.03 REQUIREMENTS OF REGULATORY AGENCIES

- A. Perform all pest control work in a safe manner and in accordance with the most modern and effective scientific pest control measures and in accordance with all provisions of the Natural Resources and Environmental Protection Act 451 of 1994, Part 83, Pesticide Control and the rules promulgated thereunder.
- B. The Contractor shall comply with all IPM standards required by Michigan Regulation 637, Rule 14, including but not limited to applicator training, site inspections, consideration of all pest management alternatives, program evaluation recommendations, and recordkeeping.



1.04 SUBMITTALS

- A. See Section 01 33 00 – Submittal Procedures.
- B. Submit to the Owner’s Representative copies of pesticide applicator certifications and licenses within ten (10) days of the start of pest/rodent control activities.
- C. After performing the survey described in Article 3.01 below and before initiating baiting, submit to the Owner’s Representative a written description of proposed pest control procedures, indicating materials, quantities, methods, and time schedule. For all pesticides to be used, submit a copy of the pesticide manufacturer's EPA-approved pesticide label with application directions.
- D. Submit to the Owner’s Representative documentation of pest control activities and results and follows:
 - 1. Weekly - Submit data sheets with locations of sites treated, amounts and types of pesticide used, number and types of traps set, survey and inspection results, sanitation conditions, complaint calls investigated, and any problem that occurred.

1.05 QUALIFICATIONS

- A. The Contractor shall perform this work in accordance with the following minimum standards and as acceptable to the Owner’s Representative.
 - 1. The Contractor and key personnel shall have experience with commercial and residential accounts and construction projects; have experience and technical training in vertebrate pest management and integrated pest management; have experience with various rodent control techniques, equipment, and strategies; have training and experience with insect control; and have knowledge of and experience with techniques to reduce non-target hazards.
 - 2. The supervisor and/or applicators shall be licensed and certified by the Michigan Department of Agriculture and Rural Development (MDARD) as a commercial pesticide applicator. The supervisor shall have specific training and experience in vertebrate pest management, commercial rodent control, general pest control, and integrated pest management.



1.06 COORDINATION

- A. Perform this Work in cooperation with the other Work performed under the Contract.
- B. Initiate the Work on or before field mobilization begins for the Contract and with adequate timing to achieve control before environmental disruptions. Provide a maintenance program until the building and associated improvements have been removed from the Site.
- C. The Work could potentially require performance any day of the week and any hour of the day or night, regardless of weather.
- D. The Contractor shall make emergency service calls when requested by the Owner's Representative. Such calls shall be made at no additional charge.
- E. Perform this Work in such a manner that toxicant or other control tools do not pose a hazard to persons, domestic animals, or non-target wildlife.

1.07 PERMITS

- A. Obtain and maintain in coordination with the Contractor appropriate permit(s) from city or state agencies for pest control activities associated with this Work.
- B. Obtain and maintain in coordination with the Contractor all right of entry permits required for the performance of this Work. This includes all utilities and private properties to which entrance is required.

PART 2 - PRODUCTS

2.01 PRODUCTS

- A. Furnish and use only pesticide formulations registered under the Natural Resources and Environmental Protection Act, Act No. 451, Public Acts 1994, Part 83, Pesticide Control.
- B. Furnish and use devices and supplies (e.g., traps and bait stations) to facilitate the management and effectiveness of the pest control program, where appropriate and as acceptable to the Owner's Representative.



PART 3 - EXECUTION

3.01 SURVEY

- A. Prior to baiting, survey the Site and accessible or observable bordering areas and record signs of rodent activity and sanitation conditions. Maintain survey records in the manner described in Section 3.6 below.
- B. Thoroughly inspect the Site and accessible or observable bordering areas, and any nearby areas designated by the Owner's Representative, for rodent activity and sanitation deficiencies weekly. Maintain inspection records in the manner described in Article 3.6 below.
- C. Plan the control program and allocate resources based on survey and inspection data and as acceptable to the Owner's Representative.

3.02 APPLICATION FOR RODENT CONTROL

- A. Apply rodenticide in strict accordance with EPA-approved label directions and the Rules and Regulations of the MDARD. Maintain records of all bait placements in the manner described in Article 3.6 below.
- B. Where appropriate, especially for surface placements of rodent baits, use properly secured and tamper-resistant bait stations consistent with EPA regulation. Individually number and properly identify all bait stations.
- C. Surface Applications
 - 1. Initial Surface Baiting

Rid the Site of all detectable rodents before beginning demolition, or as acceptable to the Owner's Representative. Bait all observable rodent burrows. Install and secure bait stations at regular and appropriate intervals and locations, and document rodent activity (burrows, droppings, and bait consumed dead rodents). Replenish bait and shift bait stations as necessary to ensure complete control of rodent populations. Bait the perimeter of the Site as necessary to ensure that rodents will not be dispersed by demolition activities and that rodents will not infest the Site.



2. Maintenance Surface Baiting

Establish a maintenance baiting program prior to mobilization by the Contractor and check bait placements weekly. Use survey and baiting data to determine the most effective distribution of baiting locations and bait quantities. Shift and distribute bait and bait stations as appropriate to ensure continued control.

D. Subsurface Applications

1. General

For situations involving underground construction/demolition, utility relocation, or utility construction and for other situations when determined necessary by the Owner's Representative, initiate subsurface baiting and rid underground environments of all detectable rodents before demolition begins. Assign an identifying number to each manhole and catch basin where bait is placed so that locations of bait placements can be identified, and rodent activity (droppings and bait consumed-dead rats) can be documented. Access manholes according to the requirements of appropriate agencies and utility companies. Coordinate the Work with appropriate municipal agencies and utility companies.

2. Initial Subsurface Baiting

Apply appropriate baits to control rodent populations in manholes and catch basins. This will involve suspending and securing bait using noncorrosive wire (e.g., 24-gauge plastic coated). Place bait in all accessible manholes and catch basins within the Site. In addition, bait an appropriate set of manholes and catch basins in the immediate vicinity of the Site and as acceptable to the Owner's Representative. Identify all baited manholes and catch basins with a standardized paint mark on the street and a numbered tag to be attached to the suspending wire. Approximately seven days after completion of the first baiting, check all manhole and catch basin baits and record estimates on the amount of bait consumed. Replenish or increase the amount of bait applied according to the amount consumed or as acceptable to the Owner's Representative. Repeat this process again approximately fourteen days later and until there is little or no bait consumed. Check manholes and catch basins weekly when they repeatedly have 100 percent of the bait consumed.



3. Maintenance Subsurface Baiting

Prior to mobilization by the Contractor, establish a maintenance baiting program appropriate for the rodent infestation patterns identified during initial subsurface baiting. This program shall ensure continued control and shall be performed in a manner acceptable to the Owner's Representative. Maintain bait in manholes and catch basins that have rodent activity and those that had activity during initial baiting. Check each bait station according to rodent activity levels. This could range from weekly to every month, depending upon the recent history of bait consumption and duration of the Project. Use utility maps and baiting data to determine the most effective distribution of baiting locations and bait quantities. Shift and distribute baiting locations as necessary to ensure adequate interception points for controlling immigrating rodents.

E. Cleanup

1. Remove visible rodent carcasses and dispose of them daily consistent with the pesticide label directions and applicable codes, laws, and regulations.
2. Upon completion of any pest control operations at the Site, remove remaining bait and dispose in accordance with the pesticide label and applicable codes, laws, and regulations. Also remove all wires used for subsurface baiting and any bait stations or traps.

3.03 SANITATION

- A. Prior to demolition and throughout the duration of this Contract, identify and document harborage and food sources available to rodents on the Site and in observable bordering areas. It also includes any bordering areas with sanitation conditions or structural deficiencies that violate City or State sanitation codes.
- B. Maintain records of sanitation conditions in the manner described in Article 3.06 below.

3.04 COMPLAINT CALLS

- A. During demolition, respond to pest-related complaints from the "adjacent" neighborhood (i.e., within 200 feet of the project limits) within 12 hours when directed by the Owner's Representative. Inspect the premises and adjacent properties for sanitation and structural deficiencies, as well as for evidence of historic and recent pest activity. Provide sanitation and structural maintenance information to LPS. Use pesticides or traps as necessary and appropriate to



resolve the complaint when there is a relationship between the pest infestation and demolition activities, or when directed by the Owner's Representative.

- B. Maintain records of all complaints investigated, including location, contact person, inspection results, and actions taken. Document the relatedness of the pest infestation to demolition activities.

3.05 GENERAL PEST CONTROL

- A. When directed by the Owner's Representative, the Contractor shall determine appropriate methods for any pest control task not specifically identified above and shall submit them in writing to the Owner's Representative for approval in advance. Such pest control tasks would relate to unanticipated pest control needs within the Site or adjacent areas. This could include control of insects or vertebrates other than rats and mice.
- B. Maintain records of general pest control activities and results in the manner described in Article 3.6 below.

3.06 RECORD KEEPING

- A. Use standardized data sheets acceptable to the Owner's Representative to maintain accurate records of date, placement, type, and volume of pesticides or other control tools (e.g., traps) applied. Similarly, maintain records of surveys, inspections, changes in pest activity, sanitation conditions, and complaint calls. Submit data in a format acceptable to the Owner's Representative and as required under Section 1.03 above.

END OF DOCUMENT



DOCUMENT 01 57 19

TEMPORARY ENVIRONMENTAL CONTROLS (DUST AND AIR)

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Employ generally accepted methods for air and dust control on Site. Contractor shall limit potential migration of contamination of adjacent properties. Submit a project specific control methods and execution Dust Control Plan.
- B. Retain an independent environmental consulting firm to perform perimeter air monitoring and analytical testing and reporting. Provide summary reports to Owner's Representative within 48 hours of sampling.

1.02 RELATED SECTIONS

- A. Other sections of the specifications, not referenced below, shall also apply to the extent required for proper performance of this Work.
- B. Section 01 33 00 - Submittals Procedures
- C. Section 01 50 00 Temporary - Facilities and Controls
- D. Section 01 57 13 Temporary - Erosion and Sediment Control
- E. Section 02 41 00 – Demolition
- F. Section 02 8000 – Universal and Hazardous Materials Remediation
- G. Section 02 8200 - Asbestos Remediation
- H. Section 02 8400 - Polychlorinated Biphenyls (PCBs) Remediation
- I. Section 31 10 00 – Earthwork
- J. Section 31 23 19 - Dewatering
- K. Section 32 00 00 - Site Restoration



1.03 REFERENCES

- A. 40 CFR Part 61 Subpart M, National Emission Standard for Asbestos (State Regulations adopted by reference in Rule 942)
- B. OSHA 29 CFR 1910.1001 (General Industry Standards)
- C. OSHA 29 CFR 1926.1101 (Construction Industry Standards)
- D. MIOSHA Part 603 (Lead Exposure in Construction)
- E. MIOSA Part 609 (Cadmium Exposure in Construction)
- F. MIOSHA Part 690 (Silica in Construction)

1.04 SUBMITTALS

- A. See Section 01 33 00 – Submittals Procedures.
- B. Dust Control and Air Monitoring Plan
 - 1. Prior to proceeding with the demolition, submit a Dust Control and Air Monitoring Plan that includes:
 - a. Means, methods, and procedures proposed for dust control to meet the requirements of the Specifications.
 - b. Corrective measures to be implemented in the event that visible emissions are observed, or aerosol / heavy metal levels exceed the specified levels.
 - c. Alternative corrective measures to be implemented in the event that the initial corrective measures are not effective.
- C. Analytical Testing
 - 1. Provide analytical results to the Owner's Representative within 48 hours of sampling.
 - 2. Data shall include concentrations of total suspended particulates, asbestos, lead, cadmium and silica at each location, and locations of each sample and wind direction.
 - 3. A final air monitoring report shall be considered part of the project closeout submittals.



PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 GENERAL

- A. Implement the Dust Control and closely monitor dust levels on the Site. At no time during the Work shall dust emission be visible. If a visible dust forms, stop Work until the cloud dissipates, provide additional wetting, and obtain approval to proceed from the Owner's Representative.
- B. Independent engineering firm shall set up at least three sampling locations at the Site's perimeter. One sampling location shall be downwind of prevailing weather patterns. The second sampling site shall be upwind of prevailing weather patterns. The third sampling site shall be close to the nearest occupied structure. Adjust sampling locations when necessary or as directed by the Owner's Representative.
- C. Conduct sampling and analysis continuously during demolition operations in accordance with Michigan Department of Licensing and Regulatory Affairs (LARA), Michigan Occupational Safety and Health Administration (MIOSHA), and National Emission Standards for Hazardous Air Pollutants (NESHAPs) requirements. Sampling parameters for each location shall be total suspended particulates, asbestos, lead, cadmium, and silica. Following any reduction in sampling frequency or when the nature of the work changes significantly, reinstate air monitoring, sampling, testing, and reporting as directed by the Owner's Representative.

3.02 WATERING

- A. If watering is used for dust control, follow the requirements of this subsection.
- B. Do not create hazardous or objectionable conditions such as ice, flooding, pollution, and electrical shock. Should such conditions arise, immediately stop work until corrections are made.
- C. Cover/protect all nearby drop inlets/manhole covers and those to be temporarily used during demolition to prevent silting/plugging of sewer lines.

END OF DOCUMENT



DOCUMENT 01 78 00

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Section includes requirements for project closeout.

1.02 GENERAL

- A. Upon completion of all work detailed in the Contract Documents, schedule a meeting with LPS and the Owner's Representative at the Site to close out the Project. Conduct a walk-through of the Site.
- B. Upon review of the completed Site, the Owner's Representative will provide a punch list of items to be addressed. Address the punch list items immediately to LPS and the Owner's Representative satisfaction.
- C. Provide the Owner's Representative with a final Project Report that includes, but is not necessarily limited to, the following:
 - 1. As-Built drawings, indicating all work completed; location of abandoned utilities and final grade elevations prepared by a Licensed Surveyor on a 25' grid, final construction limits, quantities, and amounts; installation variations from the contract documents; etc.
 - 2. Provide all warranties and guarantees described in these Specifications and Contract.
 - 3. Permitting, Bond, Plan Review, and Inspection documentation, including payment and close-out documentation.
 - 4. Operation and maintenance manuals.
 - 5. Provide copies of the inspection and test records as well as records of any corrective actions taken to address any problems encountered.
 - 6. Provide copies of all licenses, certifications, permits, agreements, manifests, chain of custody records, weigh tickets, meter recordings, delivery tickets, and receipts required or issued for the disposal of materials, the methods used, and the disposal areas and facilities.
 - 7. Provide copies of the results of tests performed to comply with the requirements of each disposal facility.
 - 8. Submit copies of the official manifests to prove the delivery of the materials to an approved licensed disposal facility for each shipment of removed materials including, but not limited to:



- a. Building and structure debris.
 - b. Concrete and brick debris.
 - c. Contaminated soils and liquids.
 - d. Hazardous and non-hazardous materials.
 - e. Miscellaneous debris and solid waste.
- D. Manifests to comply with the requirements of ALL the applicable federal, state and local regulations.
- E. Air / Dust monitoring test results.
- F. Final request for payment in accordance with the Contract Documents.
- G. Provide the Owner's Representative with Unconditional Waivers of Lien from all subcontractors and suppliers employed on this Project.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF DOCUMENT



DOCUMENT 02 41 00

DEMOLITION

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Permits issued or required by governmental agencies.
- B. Furnish all materials, labor, equipment, etc., to facilitate demolition and restoration of the Former Marshall Elementary School Site.
- C. Demolition of the structures will include, but are not limited to associated overhangs and canopies, floor slabs, foundations, pads, sumps, pits, oil/water separator, underground utilities beneath the buildings, and associated improvements including paved sidewalks, driveways, and parking lots and curbing, light poles and associated foundations, fencing and associated foundations, signs, trees/shrubs, landscape materials, abandon/removal of underground utilities as depicted on the Project Drawings.
- D. Locate, cap, abandon or remove utility connections in accordance with Specifications and Authority Having Jurisdiction (AHJ) requirements or the appropriate utility company as depicted on the Project Drawings. Repair areas outside the Site to their original condition.

1.02 RELATED SECTIONS

- A. Other sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this Work.
- B. Section 01 33 00 - Submittals Procedures
- C. Section 01 50 00 - Temporary Facilities and Controls
- D. Section 01 57 13 - Temporary Erosion and Sediment Control
- E. Section 01-57 16 - Temporary Pest Control
- F. Section 01 57 19 - Temporary Environmental Controls (Dust and Air)
- G. Section 02 41 16 – Removal and Abandoning Utilities



- H. Section 02 80 00 – Universal and Hazardous Materials Remediation
- I. Section 02 82 00 - Asbestos Remediation
- J. Section 02 84 00 - Polychlorinated Biphenyls (PCBs) Remediation
- K. Section 31 10 00 - Earthwork
- L. Section 31 23 19 - Dewatering
- M. Section 32 00 00 - Site Restoration

1.03 REFERENCES

- A. Permits issued or required by governmental agencies.
- B. National Electric Code, Michigan Department of Licensing and Regulatory Affairs (LARA), Michigan Occupational Safety & Health Administration (MIOSHA), Michigan Department of Transportation (MDOT), Wayne County, and City of Livonia codes and ordinances.
- C. MIOSHA Part 603 (Lead Exposure in Construction).
- D. MIOSHA Part 609 (Cadmium Exposure in Construction).
- E. MIOSHA Part 690 (Silica in Construction).

1.04 SCOPE OF WORK

- A. Furnish all materials, labor, and equipment to demolish the former Marshall Elementary School and appurtenant structures.
- B. Demolition of the buildings will include all equipment and materials, overhangs and canopies, floor slabs, foundations, pads, sumps/pits, underground utilities, and associated improvements including paved sidewalks, driveways, and parking lots and curbing, light poles and associated foundations, fencing and associated foundations, signs, trees/shrubs, landscape materials, abandon/removal of underground utilities.
- C. Locate, cap and/or plug utility connections in accordance with Specifications and the requirements of the AHJ or the appropriate utility company as depicted on the Project Drawings. Repair areas outside the Site to their original condition.



1.05 DEMOLITION PERMITS

- A. The permits listed below cover the general description of the permits required for demolition. It is the Contractor's responsibility to be aware of, obtain, and comply with all applicable permits needed to complete the Project. Permits are to be paid by the Contractor. All permits must be obtained in a timely manner to not impede or delay Work. The permits described below are not necessarily all the permits required for completion of this Project.
1. Demolition Permit – LARA and City of Livonia
 2. Hydrant Permit –City of Livonia
 3. Soil and Erosion Control Permit – City of Livonia (Contractor to obtain permit and maintain SESC controls).
 4. Soil and Erosion Control Permit, Notice of Coverage (NOC) – Michigan Department of Environment, Great Lakes, and Energy (EGLE). Contractor to obtain Permit and maintain SESC controls, if necessary.
 5. AHJ ROW permits if required.

1.06 SUBMITTALS

- A. See Section 01 33 00 – Submittals Procedures.
- B. Required Permits
- C. Demolition Work Plan
1. Prior to proceeding with the demolition, removal, and disposal work, submit a Demolition Work Plan that includes:
 - a. Means, methods, and procedures proposed for the accomplishment of the demolition, removal, and disposal work.
 - b. Detailed description of the methods and equipment to be used for each operation and the sequence of operations.
 - c. Name and location of the disposal facilities of all removed materials and soils.
 - d. Detailed schedule including activities and activity duration.
- D. Site-Specific Health and Safety Plan.
- E. List of emergency after-hours telephone numbers.
- F. Environmental Emergency Response Plan for addressing environmental emergencies, such as equipment fluid or fuel spills.



- G. Notice of completion of hazardous materials abatement including removal and disposal of asbestos-containing materials, universal waste, PCBs and other hazardous materials and contents.

1.07 WORK REQUIRED

A. Demolition of Structures

- 1. Demolish, remove, transport and dispose/recycle the buildings including foundations, walls, floor slabs, overhangs/canopies, and underground utilities beneath the buildings as specified on the Project Drawings.
 - a. The protection of adjacent structures, fences, security entrances and utilities surrounding the Site is the responsibility of the Contractor.

B. Demolition of Ancillary Improvements

- 1. Complete removal of paved sidewalks, driveways, and parking lots and curbing, light poles and associated foundations, fencing and associated foundations, signs, trees/shrubs, landscape materials, abandon/removal of underground utilities.
- 2. Locate, cap and/or plug utility connections in accordance with Specifications and the requirements of the City of Livonia, and the appropriate utility company. Repair areas to remain and areas outside the Site to remain to their original condition.
 - a. Remove/abandon, load, haul and dispose of existing utilities within the Site as specified on the Project Drawings.
 - b. Underground utilities are to be cut and capped as depicted on Project Drawings.

C. Removal and Disposal of Structure Debris and Specified Debris

- 1. Remove and dispose of debris generated by the demolition of the buildings including miscellaneous debris, equipment, and contents within the buildings. Removal and disposal costs of structural steel removed from buildings are incidental to the Project.



- D. Removal and Disposal of Concrete Debris
 - 1. Remove and dispose of or recycle debris generated by the demolition of floor slabs, foundations, utility pipes, pits, sumps, vaults, and other concrete material.
 - 2. The cost for removal, disposal, or recycling of reinforcing steel from concrete or any other materials that are not acceptable in products considered Crushed Concrete Aggregate is incidental to the Project.
- E. Perform air monitoring and dust control during the entire period of demolition and removal operations in accordance with the Dust Control and Air Monitoring Plan and in accordance with the Specification Section 01 57 19 – Temporary Environmental Controls (Dust and Air).
- F. Collect samples and submit analysis of building materials, and manifesting of transported materials, as related to demolition, removal and disposal of all building debris and materials.
- G. Collect appropriate samples for landfill disposal of excess soils, manifesting, transportation, and disposal. The cost for removal and disposal of excess soils from the Site is incidental to the Project.
 - 1. Analytical testing as required under this Section is to be paid for by the Contractor.
 - 2. Employ a laboratory for testing and analysis. The laboratory must routinely provide analytical services acceptable to the EGGLE.

1.08 SITE CONDITIONS

- A. Coordinate the Work in this Section with all other work. Hazardous materials abatement including removal and disposal of asbestos-containing materials, liquid wastes, universal waste, PCBs and other hazardous materials and contents of the buildings shall be completed prior to commencing demolition activities.
- B. Minimize production of dust due to clearing operations.
- C. Maintain sewers to remain and surface drainage within the Site limits and immediately adjacent to the Site in a free to discharge manner during demolition and restoration operations. Immediately repair, replace, or clear drainage facilities that are not designated to be abandoned but are damaged or whose drainage function is impaired by Contractor operations at no cost to LPS.



- D. Locations of known utilities shown on the Project Drawings are approximate; coordinate Work with utility companies; notify before starting Work and comply with their requirements to protect existing facilities; and obtain required permits.
- E. Before any excavation is started, all underground utilities shall be located via use of existing drawings and underground location services (e.g., ground penetrating radar, Miss-Dig and/or the public agency or utility having jurisdiction to request verification of utilities at the Site.
- F. Hand dig to expose utility lines prior to excavation to determine if conflicts with the proposed improvements exist. Contractor is responsible for the cost of relocating items as required to resolve conflicts. Contact the Owner's Representative for any utility relocation.
- G. Protect sewers, drainage structures, manholes, water gate wells, hydrants, water mains, electrical transformers, utility poles, overhead lines, underground conduits, underground cables, pavement, and other improvements that are outside the limits of the Work area or are to remain. Repair or replace structures and improvements outside the limits of the Work area damaged by Contractor operations at no cost to LPS.
- H. Do not disrupt public utilities without permits from authority having jurisdiction. Unless otherwise indicated, maintain flow in existing utilities by diversion, pumping, fluming, relocation, or by other methods. At the conclusion of demolition, return and reinstall diverted and relocated utilities to their original condition.
- I. Comply with MIOSHA regulations and other applicable safety requirements.
- J. LPS will provide utility clearances.
 - 1. Electrical Disconnection
 - a. Verify that on-site electrical wiring entering structures to be demolished is disconnected and de-energized prior to proceeding with demolition operations.
 - b. Protect electrical service to nearby buildings that could be damaged by demolition operations.
 - c. Obtain a demolition permit verify that all electrical clearances have been submitted.
 - 2. Water Disconnection



- a. Verify that on-site water service entering structures is disconnected and/or properly capped prior to proceeding with demolition operations.
 - b. Protect water lines that could be damaged by demolition operations.
 - c. To obtain a demolition permit verify that water clearances have been submitted.
3. Sewer Disconnection
- a. Locate and bulkhead all sewer connections from the structures prior to proceeding with the Work.
 - b. Perform work in accordance with AHJ requirements.
 - c. Protect sewer service to nearby buildings that could be damaged as a result of demolition operations.
 - d. To obtain a demolition permit, verify that sewer clearances have been submitted.
4. Gas Disconnection
- a. Verify that gas lines/mains entering structures are disconnected and/or properly capped prior to proceeding with the demolition operations.
 - b. Protect gas service to nearby buildings that could be damaged as a result of demolition operations.
 - c. Coordinate with the local utility company for all gas disconnection Work.
 - d. To obtain a demolition permit verify that gas clearances have been submitted.
5. Telephone/Cable/Data
- a. Verify that on-site telephone/cable lines within or entering structures are disconnected prior to proceeding with demolition operations.
 - b. Protect telephone/cable/data service to nearby buildings that could be damaged because of demolition operations.
 - c. Coordinate with the local telephone/cable companies for all telephone/cable/data disconnection Work.



1.09 GENERAL REQUIREMENTS

- A. The Work includes demolition and removal of resulting debris.
- B. No explosives may be used on the Site.
- C. Remove debris from the Site daily, unless otherwise directed, to avoid accumulation at the Site. Materials that cannot be removed daily shall be stored in areas approved by the Owner's Representative.
- D. In the interest of safety, perform the Work protecting personnel, all properties and eliminating dust and windblown debris.
- E. Dust Control and Dust Monitoring
 - 1. Take all necessary means and procedures to control dust and avoid airborne dust from impacting the surrounding properties as a result of demolition operations.
- F. Pest and Rodent Control
 - 1. This Work is to be performed prior to demolition so that rodents and other pests do not disperse from the Site.
- G. Protection of Personnel
 - 1. Continuously evaluate the conditions of the items being demolished and take immediate action to protect all personnel working in and around the Site.
 - 2. No area, section, or component of floors, walls, or other structural elements will be allowed to be left standing without sufficient bracing, shoring, or lateral supporting to prevent collapse or failure while personnel perform other Work in the immediate area.
 - 3. Ensure that no elements determined to be unstable are left unsupported.
 - 4. Place and secure bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition Work performed under this Contract.
- H. Protection of Existing Work
 - 1. Protect existing nearby buildings, streets, sidewalks, and parking lots from damage resulting from the demolition process.
 - 2. Correct defects, deterioration, cracking, which occur during this Project as a result of demolition activities.



3. Ensure that corrections to damage caused during this Project are to the satisfaction of the Owner's Representative.
 4. Prior to the start of Work on this Project, document existing conditions of nearby structures, parking lots, fences, dumpster enclosure, sidewalks, etc. These documents may consist of photographs, videotapes, and written descriptions with respect to deterioration, cracks, and deferred maintenance.
 5. Provide electronic / digital copies of the condition reports to LPS and Owner's Representative.
 6. At the completion of the Project, the Owner's Representative will conduct a follow-up condition survey to document any changed conditions. The Contractor is responsible for subcontracting with qualified restoration contractors to perform the necessary repairs to the damaged nearby structures, parking lots, sidewalks, etc. to the satisfaction of the Owner's Representative.
- I. Ownership of Removed Materials
1. Remove and dispose of materials and debris in a fashion that complies with all local, state, and federal codes and regulations.
 2. Items and materials ownership transfers to the Contractor when they are physically removed from the Site.
- J. Sequencing and Scheduling
1. Perform the Work considering that any asbestos-containing materials (ACM), PCB-impacted materials, PCB-containing equipment, universal wastes, and contaminated materials and liquids and containers, or as directed by the Owner's Representative are to be removed or cleaned-up prior to demolition.
 2. Install soil erosion and sediment control devices prior to demolition.
 3. Install inlet filters in all manholes and floor drains within the buildings prior to demolition.
 4. Install construction fencing and screening prior to demolition.
- K. Burning and Use of Explosives
1. Burning waste and debris materials at the Site is prohibited.
 2. The use of any explosive material at the Site is prohibited.



PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 DUST CONTROL

- A. Employ engineering controls and watering/misting operations to prevent emission of dust and migration of airborne materials offsite to surrounding properties.
- B. Watering
 - 1. Constant watering of the Site is required to prevent dust emissions during the demolition and removal operations in accordance with the Specifications and Contractor's Dust Control Plan and Air Monitoring Plan.
 - 2. The water for dust control may be available for use from the fire hydrants located in the area.
 - 3. Verify water availability with AHJ. Confirm receipt of hydrant permit. Coordinate temporary water services and all necessary equipment (backflow preventer, meter, etc.) with City of Livonia. If not provided by the City, Contractor shall provide meter(s) and backflow preventer acceptable to the City.
 - 4. Installation, use, and removal of any temporary connections, including necessary safety devices and controls, will be at no cost to LPS.
 - 5. Do not create hazardous or objectionable conditions such as ice, flooding, pollution, and electrical shock.
- C. Cover/protect all nearby drop inlets/manhole covers and those to be temporarily used during demolition to prevent silting/plugging of sewer lines.

3.02 DEMOLITION AND REMOVAL

- A. Building
 - 1. Demolish and remove the buildings and ancillary improvements as specified in Part 1.4 of this section and depicted on the Project Drawings.
 - 2. Perform the specified building demolition including all equipment and materials, floor slabs, foundations, and underground utilities beneath the buildings.
 - 3. Sharp edges or abrupt protrusions will not be allowed.



4. Remove and dispose debris piles in their entirety. The cost for removal of structural steel and reinforcing steel from concrete is incidental to the project.
- B. Water and Utilities
1. Cut and cap underground utility lines such as for water, electric, telephone/cable/data, alarms, storm and sanitary sewers and gas as required by the AHJ and or utility owners or as depicted on Project Drawings.
 2. Locate and bulkhead all sewer connections from the Site prior to proceeding with demolition operations. Provide the exact location(s) of all such bulkheads to the Owner's Representative.
 3. Remove or abandon utilities in accordance with the Specifications, Project Drawings and/or City of Livonia, LPS requirements.
- C. Pavement
1. Where concrete and bituminous pavement is required to be removed as noted on the Demolition Plans, include removing and disposing of pavement, integral and separate curbs (and gutters), and sidewalks. Remove pavement to an existing joint or cut parallel to the existing pavement joints.
 2. Perform wet saw cutting with a power-driven concrete saw in such a manner to not generate silica and dust.
 3. Provide the minimum depth of saw as necessary to prevent damage to adjacent pavement to remain.
 4. Old pavement with a concrete or bituminous cap is considered as one pavement, whether there is a separation layer of earth, aggregate, or bituminous material between the old material and the cap.
 5. Remove and replace pavement that is damaged by the Contractor in areas beyond the designated removal limits at no additional cost to the LPS.
- D. Hazardous Contaminated Materials
1. Remove and dispose of hazardous or contaminated materials in the structures or contaminated as a result of the demolition activities as specified in Sections 02 80 00, 02 82 00 and 02 84 00.
 2. Remove and dispose of hazardous material prior to beginning the demolition work.
 3. Notify the Owner's Representative immediately of potentially hazardous or contaminated materials, not specified, which are unearthed during the demolition and removal operations.



4. Perform demolition and removal work in compliance with the MIOSHA Part 603: Lead Exposure in Construction, Part 609: Cadmium Exposure in Construction and Part 690: Silica in Construction.
5. Take care to prevent the mixture of non-hazardous debris and waste materials with regulated hazardous materials. Non-hazardous materials must also be prevented from coming in contact with materials identified as being hazardous, so as to prevent increasing the volume of hazardous materials (by contact).

3.03 DEBRIS DISPOSAL

A. General

1. Remove from the Site the buildings identified for demolition, debris, wastes, equipment, and unsatisfactory materials resulting from this Work, unless otherwise specified or directed by the Owner's Representative.
2. Conform to federal, state, and local requirements for all disposals.
3. Document all removed materials by manifests and disposal facility tickets with copies given to the Owner's Representative 48 hours after removal from the Site.
4. Only use disposal sites licensed to accept the type of material being disposed.

3.04 WATER CONTROL

A. General

1. Provide the means, methods, and procedures necessary to collect, remove and dispose of groundwater, construction water produced from demolition efforts, and storm water during the project duration.
2. Furnish, operate, and maintain equipment for the control, collection, and disposal of construction water. Damages arising from improper construction control and storm water are the responsibility of the Contractor.
3. Obtain Owner's Representative approval for temporary storage areas for potentially contaminated water.
4. Protect floor drains, manholes, reservoirs, pits, and cavities from water infiltration from demolition efforts and storm water using silt fencing, sandbags or a method approved by Soil Erosion and Sediment Control Plan and/or the Owner's Representative.
5. Obtain all appropriate local, State and Federal permits and provide manifests for the activities performed.



B. Testing, Removal and Disposal

1. Coordinate all testing and analysis of the collected water from groundwater, construction, and storm water to determine the proper means of offsite disposal.
2. Retain a laboratory, which routinely provides analysis acceptable to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to perform required analytical testing and sampling. Costs of sample collection, shipping, and testing shall be borne by Contractor and are incidental to the Contract. Sampling as required or as specified by the Owner Representative shall be performed by the Contractor.
3. Manage liquids determined to be hazardous using the criteria set forth in the Michigan Hazardous Waste Management Act and the Federal Resources Conservation and Recovery Act in accordance with the provisions and regulations of those Acts.
4. Submit the appropriate manifests and related documents to the Owner's Representative within 48 hours of the final disposal.
5. Based on the analytical results, handle, transport, and properly dispose of groundwater, surface water accumulations, and construction water in accordance with federal, state, and local regulatory requirements.

3.05 QUALITY CONTROL

- A. Establish and maintain a quality control system for contract requirements and maintain records of its quality control for all operations performed, including, but not limiting to, to following:
1. Electrical, telephone/cable/data, alarm, water, gas, sanitary and storm sewer disconnection
 2. Noise and vibration control
 3. Demolition, removal, and cleanup
 4. Observance of safety regulations
 5. Observance of environmental regulations
 6. Protection of nearby occupied buildings and properties
 7. Air and Dust controls
 8. Soil Erosion and Sediment Controls
 9. Waste disposal

END OF DOCUMENT



DOCUMENT 02 41 16

REMOVING/ABANDONING UTILITIES AND STRUCTURES

PART 1 – GENERAL

1.01 SUMMARY

- A. Contractor shall furnish all labor, materials, tools, supervision, transportation, and incidentals required to abandon and/or remove utilities and structures, consistent with all applicable permits and approvals, and as necessary to complete the Work to the satisfaction of LPS.

1.02 RELATED REQUIREMENTS

- A. Other sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this Work.
- B. Section 01 33 00 - Submittals Procedures
- C. Section 01 57 13 - Temporary Erosion and Sediment Control
- D. Section 01 57 19 - Temporary Environmental Controls (Dust and Air)
- E. Section 02 41 00 – Demolition
- F. Section 31 10 00 - Earthwork
- G. Section 31 23 19 – Dewatering
- H. Section 32 00 00 - Site Restoration

1.03 REFERENCES

- A. American Society of Civil Engineers (ASCE)
 - 1. ASCE 38-02 Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data
- B. ASTM International (ASTM)
 - 1. ASTM C1107 Standard Specification for Packaged Dry, Hydraulic-Cement Grout (No shrink)



- C. Michigan Department of Transportation (MDOT) Standard Specifications for Construction, 2020
 - 1. Section 203 Removing Drainage Structures, Culverts, and Sewers
 - 2. Section 402 Storm Sewers
 - 3. Other applicable sections
- D. Michigan Plumbing Code, 2015
- E. Michigan Occupational Safety and Health Act (MIOSHA)
- F. Occupational Safety and Health Act (OSHA)

1.04 SUBMITTALS

- A. As part of the Contractor Closeout documents the Contractor shall submit to the Owner's Representative and LPS as-built drawings depicting the locations of abandoned and in-service utilities.

1.05 QUALITY ASSURANCE

- A. Perform all groundwater control operations within excavations in accordance with Section 31 23 19 Dewatering.
- B. Perform all operations in accordance with applicable regulations of the county/local municipality, MIOSHA, and Federal Government.

PART 2 – PRODUCTS

2.01 GROUT

- A. Grout shall conform to the specifications outlined in ASTM C 1107.



PART 3 – EXECUTION (ON SHORE)

3.01 EXCAVATION

- A. Before any excavation is started, all underground utilities shall be located via use of existing drawings and underground location services (e.g., ground penetrating radar, Miss-Dig). Contractor is responsible for avoiding damage to all live utilities and demolishing interfering materials (e.g., utilities, foundations) which are no longer in service with LPS' approval. Trench slopes shall be adequately sheeted and braced when necessary to prevent caving. All excavations and trenching shall comply with the requirements of OSHA Standard 1926.652, and OSHA Technical Manual, Section V, Chapter 2. Surplus excavated soil shall be disposed of according to applicable project specifications in Section 31 10 00 Earthwork. Alternative means of excavation including vacuum extraction shall also be considered to avoid existing construction or challenging subsurface conditions.
- B. Trenches in the vicinity of roadways or any existing foundation structures shall be made with the use of shoring, sheet piling, or trench boxes to prevent movement or undermining of the existing foundations and roadways.
- C. All ditches, pumping, covering, and other methods required to protect and keep excavations and trenches free from water at all times during the construction period shall be furnished, installed, and maintained by the Contractor. If the trench bottom becomes unstable, all unsuitable materials shall be removed and replaced by suitable replacement material (e.g., clean granular fill, flowable fill) over proof-rolled or compacted sub-grade as approved by the Owner' Representative. Compaction shall be performed in accordance with project specifications in Section 31 10 00 Earthwork.
- D. Manage excavation spoils on-site and control any water infiltration into the excavation by appropriate means for storm water or ground water control. Protect existing site features from disturbance during excavation.
- E. Surplus excavation spoils may be temporarily stockpiled in a predetermined and approved location prior to final disposal. All stockpiled materials must adhere to appropriate project specifications in Section 01 57 13: Soil Erosion and Sedimentation Control. Place all excavated contaminated material and surplus excavated fill soil that is stockpiled on an impervious barrier (such as paved surfaces or plastic sheeting). Cover stockpiles daily with plastic sheeting to prevent fugitive dust, runoff, and erosion. Anchor, weight, or otherwise secure cover so as to prevent lifting by wind and place in such a manner as to prevent rain and snow intrusion. On a daily basis, visually inspect the stockpile



cover to ensure it remains intact and secure. Immediately repair any portion of the cover found to be torn or loose or otherwise unfit for dust control. Contractor shall be responsible for the appropriate disposal of all used sheeting.

- F. Handle all site groundwater according to applicable project specifications in Section 31 23 19 Dewatering.
- G. Methods and equipment of excavating shall produce a trench without excessive width or irregularity. The width of trench shall be sufficient to allow the pipe to be removed and/or abandoned and to allow the backfill to be placed and compacted properly.
- H. Excavations shall be backfilled according to project specifications.

3.02 REMOVAL AND ABANDONMENT

- A. Verify that all pipes have been emptied and purged and all inlets and outlets have been shut off or disconnected.
- B. Locate the pipe by means of as-built records, soft digging, or Ground Penetrating Radar (GPR).
- C. Contact the Owner' Representative to determine if additional cleaning or environmental notifications/procedures need to be performed prior to abandoning.
- D. Determine if the pipe to be abandoned has an existing cathodic protection system and if additional measures are required to maintain protection.

3.03 PIPE REMOVAL

- A. Determine the limits of the pipe which will be removed.
 - 1. Field locate the pipeline to be removed.
 - 2. Contact a Ground Penetrating Radar (GPR) or other underground utility locating service, if necessary.
 - 3. If the entire pipe is not being removed, determine the most applicable bulkheading method.
- B. Excavate, expose, install bulkheads (if applicable), and remove the pipe. Excavation practices shall be in accordance with Section 31 10 00 Earthwork and MIOSHA regulations.



- C. Backfilling procedures vary depending on the location of the pipe in relation to existing surface features.
- D. Grade the excavated area to allow for adequate stormwater flow and prevent ponding of water.

END OF DOCUMENT



DOCUMENT 02 80 00

UNIVERSAL AND HAZARDOUS MATERIALS REMEDIATION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Provide all labor, materials, equipment, transportation, packaging, sampling and testing, and incidentals required to remove and dispose of universal waste and hazardous materials from the former Marshall Elementary School located at 33901 Curtis Road in Livonia, Michigan. Work shall be performed in accordance with applicable federal, state, and local laws and regulations. Universal waste and hazardous materials found in the building include, but are not limited to:
1. Mercury-containing devices such as 2', 4', u-shaped and circular fluorescent light tubes, CFL light bulbs, mercury vapor lights, bulbs, thermometers, and gauges/switches.
 2. Oil containing equipment such as air compressor tank, hydraulic door closers, motors, riding lawn mower, 55-gallon drum of unknown contents, and oil/water separators.
 3. CFC-containing equipment in air-conditioning units, drinking fountains, refrigerator, kitchen cooler and air handling units.
 4. Batteries and battery-containing equipment in exit signs, emergency lights, and smoke detectors.
 5. Compressed gases in fire suppression system and fire extinguishers and propane tanks.
 6. Cathode ray tubes (CRT) and metals containing equipment such as printer, monitors, central processing unit, keyboard, and scanner.
 7. Radioactive source equipment in microwave and smoke detectors.
 8. Tires
 9. Stored chemicals or chemical-containing products such as, cement, aerosols, varnish, oils, denatured alcohol, sealant, cleaners, remover, lacquer and unknown chemical.
 10. Lead-containing paint was also found in the building.
- B. The Hazardous Materials Survey (HMS) for the subject building has been conducted by NTH Consultants, Ltd. (NTH) and the findings are presented in the report included as Attachment I. Verify all information.



1.02 RELATED SECTIONS

- A. Other sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this Work.
- B. Section 02 41 00: - Demolition
- C. Section 02 82 00 - Asbestos Remediation
- D. Section 02 84 00 - Polychlorinated Biphenyls (PCBs) Remediation

1.03 REFERENCES

- A. General Applicability of Codes, Regulations, and Standards: Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.
- B. The references in this Article may apply to the work under this Section. This list shall not be considered complete, and it is the Contractor's responsibility to perform all work in accordance with all federal, state, and local laws and regulations.
- C. Code of Federal Regulations (CFR)
 - 29 CFR Part 1910 Occupational Safety and Health Standards
 - 29 CFR Part 1926 Safety and Health Regulations for Construction
 - 40 CFR Part 61 Subpart M National Emission Standard for Hazardous Air Pollutants (NESHAP)
 - 40 CFR Part 261 Identification and Listing of Hazardous Waste
 - 40 CFR Part 262 Standards Applicable to Generators of Hazardous Waste
 - 40 CFR Part 263 Standards Applicable to Transporters of Hazardous Waste



40 CFR Part 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR Part 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
49 CFR Part 171	Department of Transportation Regulations to Stipulate Requirements for Containers and Procedures for Shipment of Hazardous Waste
40 CFR Part 761	Polychlorinated Biphenyls (PCB) Manufacturing, Processing, Distribution in Commerce and Use Prohibitions
D.	National Fire Protection Association (NFPA)
NFPA 30	Flammable and Combustible Liquids Code
NFPA 70 B	Recommended Practice for Electrical Equipment Maintenance
NFPA HAZ	Fire Protection Guide to Hazardous Materials
E.	State of Michigan
PA 451, PART 201	Michigan Natural Resources and Environmental Protection Act (NREPA)
PA 451, PART 111	Michigan, NREPA Hazardous Waste Management Act
PA 451, PART 115	Michigan, NREPA Solid Waste Management Act
PA 451, PART 121	Michigan Liquid Industrial By-Product Act
F.	Michigan Labor and Economic Opportunity (LEO) and Michigan Occupational Safety and Health Administration (MIOSHA) Safety Standards relating to asbestos include but are not limited to:
1.	Part 1 General Provision
2.	Part 451 Respiratory Protection



3. Part 42 Hazard Communication
4. Part 20 Demolition
5. Part 45 Fall Protection
6. Part 6 Personal Protective Equipment
7. Part 7 Welding & Cutting
8. Part 19 Tools
9. Part 12 Scaffolds & Scaffold Platforms
10. Part 609 MIOSHA – Cadmium in Construction
11. Part 603 MIOSHA – Lead Exposure in Construction
12. Part 690 MIOSHA – Silica in Construction

1.04 SUBMITTALS

At least two weeks prior to beginning work, submit the following items. Do not begin work until they are acknowledged as received and accepted by the Owner's Representative.

A. Work Plan

1. Prior to proceeding with any removal and disposal work, submit a work plan for the removal and disposal of hazardous materials. Provide detailed descriptions of the methods and equipment to be used for each operation and sequence of operations.

B. Submit a health and safety plan in accordance with MIOSHA requirements with confined space entry provisions.

C. For all disposal facilities:

1. Submit the name, location, 24-hour telephone number, and federal, state, and local license or permit numbers.
2. Submit the name and address, and federal, state, and local permit or identification numbers of the proposed transportation contractor.
3. Submit for Owner Representative to review prior to LPS's signature, the disposal facility's approval application (waste profile) filled out in its entirety, inclusive of required laboratory data. Within 5 days, the Owner's Representative will either return the LPS signed waste profile to the Contractor or reject the application. Contractor is responsible for the contents of the waste profile, and disposal facility rejection of an LPS signed waste profile shall not be cause for additional compensation.
4. Submit the approved waste profile after receiving disposal facility approval prior to removing hazardous material from the sites. Each approval shall contain the facility's waste approval number.



5. Submit a sample manifest filled out in accordance with the requirements of this Section and include the site EPA ID number (where applicable), the site name and address, the Owner's name and address, the name of the approved disposal facility, the name of the approved transporter, and the disposal facility approval number.
- D. Submit the name and address of any environmental testing laboratory to be utilized.

1.05 SAMPLING AND ANALYTICAL TESTING

- A. Retain a laboratory, which routinely provides analysis acceptable to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to perform required analytical testing and sampling. Costs of sample collection, shipping, and testing shall be borne by Contractor and are incidental to the Contract. Sampling as required or as specified by the Owner Representative shall be performed by the Contractor or Contractor's personnel. The sampling and testing requirements for hazardous material disposal shall be the Contractor's responsibility.

1.06 GENERAL REQUIREMENTS

- A. Contractor Responsibility: Assume full responsibility and liability for compliance with all applicable federal, state, and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the sites, and persons occupying areas adjacent to the sites. Provide medical examinations and maintain medical records of personnel as required by the applicable federal, state, and local regulations. Hold LPS and the Owner Representative harmless for failure to comply with any applicable work, hauling, disposal, safety, health, or other regulation on the part of Contractor, Contractor's employees, or subcontractors.
- B. The locations of decontamination areas, dumpster, and entrances that may be used for the movement of supplies and personnel are subject to the Owner Representative approval.
- C. Obtain all required permits, including confined space entry permits. Provide approved containers, vehicles, equipment, labor, labels, manifests and other documents necessary for accomplishment of the work.



D. Safety Guidelines

1. Perform work associated with hazardous materials using appropriate Personal Protection Equipment, as defined by MIOSHA or more stringent if required.
2. Ensure that personnel conducting work under this Section are trained and thoroughly familiar with the safety precautions, procedures, and equipment required for controlling the potential hazards associated with this work.

1.07 QUALITY ASSURANCE

- A. Contractor will be experienced in the removal, packaging, handling, transportation, and proper disposal of hazardous material and have all necessary local permits and/or approvals.
- B. Contractor is responsible for the proper handling of material being disposed from the time the Contractor moves the material until the material is disposed off-site at the licensed disposal facility. The Contractor is responsible for the cleanup of all spills that occur during loading, hauling and final disposal at no cost to LPS. Contractor shall immediately notify the Owner Representative of any spills and appropriately clean up and dispose of all material and impacted media required for cleanup.
- C. Complete all work required by and in accordance with all applicable federal, state and local government regulatory agencies and arrange for all permits and licenses for the packaging, loading, hauling, and final disposal operations.
- D. If additional data is required to obtain disposal facility approval, collect and analyze appropriate samples. Notify the Owner Representative in writing at least one week in advance of sampling with an explanation for the additional testing and the date and time of the sampling so that the Owner's Representative will have the opportunity to collect co-located samples.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Protective Equipment – Provide disposable coveralls, head covers, footwear covers, gloves, respirator mask, etc., for on-site personnel and for use by the Owner Representative and other authorized representatives who may inspect the Site.



- B. Miscellaneous Materials – Sampling equipment, hand tools, packaging materials, etc.

2.02 EQUIPMENT

- A. Manlifts, scaffolding, water pumps, vacuum trucks, etc.

PART 3 – EXECUTION

3.01 GENERAL REMOVAL

- A. Prior to the start of removal operations, determine which waste materials may be hazardous. Keep hazardous waste segregated from solid waste, so that proper disposal of the waste material can be achieved.
- B. Retain a licensed Mechanical Contractor to properly evacuate refrigerants and fire suppression compressed gases into appropriate containers for transportation, and recycling or disposal.
- C. Properly evacuate oils and/or other contaminants from equipment and association lines and hoses, oil/water separators, and motors, into appropriate containers for transportation and disposal. Hydraulic door closures containing oil can be removed intact and packaged for proper disposal.
- D. Collect, and dispose or recycle fluorescent light tubes, thermometers, gauges, vapor lights, thermostats, E-waste and microwave, batteries and battery-containing equipment, compressed gases, hydraulic door closers, fire extinguishers, exit signs, smoke detectors, and emergency lights, and chemical containers, etc.

3.02 PACKAGING AND HANDLING REQUIREMENTS

- A. General Packaging and Handling
 - 1. Inspect containers to determine if they are broken, leaking, or deformed. In the case of over-packed, leaking, or broken containers of hazardous materials, remove hazardous contents, and place them in new drums.
 - 2. Categorize and containerize materials by contents and disposal compatibility. Perform compatibility tests, so the waste can be segregated in the interim storage area without risk of fire or explosion.



3. Package small containers of waste to meet all applicable U.S. Department of Transportation (DOT) and/or Michigan Department of Transportation (MDOT) requirements.
4. Properly label all containers prior to shipment in accordance with all MDOT and other applicable regulations.
5. Provide for the safe storage of waste on-site prior to disposal. For security reasons, restrict access to waste storage areas.
6. Provide covered dumpsters and storage containers with appropriate hazard labels.
7. Do not place waste on unprotected ground. Adequately shield waste to prevent dispersion of the debris by wind or rainwater.
8. Evidence of improper storage shall be cause for immediate shutdown of the project until corrective action is taken.

B. Hazardous Waste Packaging and Handling

1. Store and handle the on-site hazardous waste debris in accordance with the requirements of 40 CFR 262 and 40 CFR 265, with special attention given to proper labeling, use of proper containers, and personnel training. Provide preparedness, prevention, and contingency plans (PPCP) in accordance with 40 CFR 265 Subpart C and Subpart D for the steps to be taken in the event of an unplanned release or emergency.
2. Do not exceed hazardous waste accumulation limits or storage time limits set forth in federal and state regulations for LPS's generator size status.
3. Inspect hazardous waste storage areas as required by federal and state regulations.

C. Additional Requirements

1. Lead was detected in various paints in the building, as detailed in the HMS report included in Attachment I; therefore, contractors shall comply with the requirements outlined in the following MIOSHA regulations:
 - a. MIOSHA Part 603: Lead Exposure in Construction
2. Silica: Cutting and crushing of concrete, masonry block and brick is anticipated during demolition of the building. The contractor shall comply with the requirements outlined in the following MIOSHA regulation:
 - a. MIOSHA Part 690: Silica in Construction



3.03 DISPOSAL AT A LICENSED DISPOSAL OR RECYCLING FACILITY

A. General

1. All waste shall be disposed of or recycled at an approved Vendor.
2. If required to obtain disposal approval, characterize the material to be disposed by collecting samples at a frequency required by the disposal facility and have the samples analyzed by the independent analytical laboratory for parameters required by the disposal facility. Provide results to Owner's Representative. The Contractor is responsible for all costs and coordination for this testing.
3. Take special care when removing waste from the sites in order to avoid environmental contamination or injury to workers. Containers shall be moved and packed into the truck with care. When possible, use hand trucks, dollies, or pull carts, along with ramps or trucks with lift gates. These procedures will help minimize container breakage.
4. All vehicles hauling material shall comply with applicable DOT and MDOT regulations. Vehicles shall be properly licensed under and comply with all applicable federal, state, and local laws and regulations.
5. Trucks and trailers used for transporting material shall be in good repair, free from holes, have tailgates in good working order, and have tarps that cover the truck's box and trailers.
6. Vehicles found to be leaking vehicle fluids shall not be loaded until the source of the leak is located, contained, and repaired to the satisfaction of the Owner's Representative. Report all spills immediately to the Owner's Representative. Cleanup of vehicle fluids released to the ground is the Contractor's responsibility.
7. Prior to loading, provide LPS and/or Owner's Representative with one manifest for each load of material. Each manifest will be pre-printed with the site EPA ID number, the site name and address, the LPS address, the name of the disposal facility, the name of the transporter, and the disposal facility approval number.
8. During loading, the Owner's Representative will provide a manifest signed on behalf of LPS for each load.
9. Transport hazardous materials, universal waste and non-hazardous waste to a licensed treatment storage and disposal facility or recycling facility for disposal.
10. Within 24 hours of the load arriving at the disposal or recycling facility, provide to the Owner's Representative an original manifest and a corresponding disposal facility receipt ticket that have been signed by the disposal or recycling facility.



B. Liquid and Hazardous Waste Disposal:

1. Transport hazardous waste in accordance with the requirements of 40 CFR 263 and other applicable state and federal requirements and disposed of properly. Use only licensed transporters. Transporters shall have an EPA ID Number and must meet DOT requirements for shipping containers.
2. Dispose of hazardous waste in accordance with 40 CFR 264 and 40 CFR 268 at a disposal facility licensed to accept the waste.

END OF DOCUMENT



DOCUMENT 02 82 00

ASBESTOS REMEDIATION

PART 1 – GENERAL

1.01 DESCRIPTION

- A. The type of work under this specification involves proper removal and disposal of asbestos-containing materials (ACM) from the former Marshall Elementary School located at 33901 Curtis Road in Livonia, Wayne County, Michigan.
- B. The Hazardous Materials Survey (HMS) for the subject building has been conducted by NTH Consultants, Ltd. (NTH) and the findings are presented in the report included as Attachment I. Verify all information.

1.02 RELATED SECTIONS

- A. Other sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this Work.
- B. Section 02 41 00 - Demolition
- C. Section 02 80 00 – Universal and Hazardous Materials Remediation
- D. Section 02 84 00 – Polychlorinated Biphenyl (PCB) Remediation

1.03 REFERENCES

- A. General Applicability of Codes, Regulations, and Standards: Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.
- B. The references in this Article may apply to the work under this Section. This list shall not be considered complete, and it is the Contractor's responsibility to perform all work in accordance with applicable Federal, State and local laws and regulations.



- C. Federal Requirements: Requirements that govern asbestos-abatement work or hauling and disposal of asbestos waste materials include, but are not limited to, the following:
 - 1. U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA), including but not limited to:
 - a. 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 (CFR)
 - b. Respiratory Protection Title 29, Part 1910, Section 134 of the CFR
 - c. Construction Industry Title 29, Part 1926, of the CFR
 - d. Access to Employee Exposure and Medical Records Title 29, Part 1910, Section 2 of the CFR
 - e. Hazard Communication Title 29, Part 1910, Section 1200 of the CFR
 - f. Specifications for Accident Prevention Signs and Tags Title 29, Part 1910, Section 145 of the CFR
 - 2. U.S. Environmental Protection Agency (EPA) including, but not limited to:
 - a. Worker Protection Rule 40 CFR Part 763, Subpart G
 - b. Regulation for Asbestos Title 40, Part 61, Subpart A of the CFR
 - c. National Emission Standard for Asbestos Title 40, Part 61, Subpart M (Revised Sub-part B) of the CFR
 - 3. U.S. Department of Transportation (DOT) including but not limited to:
 - a. Hazardous Substances: Final Rule Regulation
 - b. 49 CFR, Parts 171 and 172
 - c. State and Local Requirements: Abide by all local requirements that govern asbestos abatement work or hauling and disposal of asbestos waste materials.
- D. Michigan Labor and Economic Opportunity (LEO) and Michigan Occupational Safety and Health Administration (MIOSHA) Safety Standards relating to asbestos include but are not limited to:
 - 1. Part 1 General Provision
 - 2. Part 451 Respiratory Protection
 - 3. Part 42 Hazard Communication
 - 4. Part 20 Demolition



5. Part 45 Fall Protection
6. Part 6 Personal Protective Equipment
7. Part 7 Welding & Cutting
8. Part 19 Tools
9. Part 12 Scaffolds & Scaffold Platforms
10. Part 602 Asbestos Standards in Construction

- E. National Institute of Occupation Safety and Health (NIOSH 7400) – Asbestos and Other Fibers by Phase Contrast Microscopy (PCM).

1.04 DEFINITIONS

- A. Adequately wet: To sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from asbestos-containing material, then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wet.
- B. Aerosol: A system consisting of particles, solid or liquid, suspended in air.
- C. Air Cell: Insulation, normally used on pipes and ductwork, which is comprised of corrugated cardboard that is frequently comprised of asbestos combined with cellulose or refractory binders.
- D. Air Erosion: The passage of air over friable ACM, which may result in the release of asbestos fibers.
- E. Air Monitoring: The process of measuring the fiber content in a specific volume of air.
- F. Amended Water: Water to which a surfactant has been added. Use a mixture of surfactant and water that results in wetting of the ACM and retardation of fiber release during disturbance of the material equal to or greater than that provided using one (1) ounce of a surfactant consisting of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with 5 gallons of water.
- G. Asbestos: The asbestos-form varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite. For purposes of determining respiratory and worker protection, both the asbestiform and non-asbestiform varieties of the above minerals, and any of these materials that have been chemically treated and/or altered, shall be considered as asbestos.



H. Asbestos Abatement means any of the following:

1. The wrecking or removal of structural members that contain friable asbestos-containing material.
2. The following practices intended to prevent the escape of asbestos fibers into the atmosphere:
 - a. Removing friable ACM from pipe, duct, boiler, tank, reactor, furnace, or other structural members.
 - b. Removing facility components that are asbestos-covered or asbestos-containing.
 - c. Explanatory Note: These are the phases of asbestos abatement in chronological order:
 - i. Pre-Abatement: Means the time period covering the commencement of construction of the containments and all other preparations (including any necessary pre-cleaning) taking place prior to the actual abatement of ACM. This abatement phase does not include the transport of materials and equipment to the Site. The transport of materials and equipment to the Site is the only activity that is allowed by an uncertified person.
 - ii. Active Abatement: Means the time period beginning with the completion of the pre-abatement phase and ending when the area has passed final air sampling and the critical barriers have been completely removed. The active abatement phase includes the actual “gross” removal of ACM and all aspects of “final cleaning” that are conducted prior to the areas being pronounced ready for a final visual inspection. The final visual inspection, final clearance air monitoring, and the removal of critical barriers are the last activities included in the active abatement phase.
 - iii. Post-Abatement: Means any point in time following the termination of the active abatement phase.

I. Asbestos Abatement Contractor: Any person hired to conduct asbestos abatement.

J. Asbestos-Containing Material (ACM): Surfacing asbestos-containing material, thermal system insulation asbestos-containing material, or miscellaneous asbestos-containing material that is found in or on interior structural members or other parts of a building.

Any material containing more than 1% by weight of asbestos of any type or mixture of types.



- K. Asbestos-Containing Waste Material (ACWM): Any material that is or is suspected of being or any material contaminated with an ACM, which shall be removed from a work area for disposal.
- L. Authorized Visitor: The Owner, Owner's Representative, testing lab personnel, or a representative of any federal, state and local regulatory or other agency having authority over the project.
- M. Barrier: Any surface that seals off the work area to inhibit the movement of fibers.
- N. Breathing Zone: A hemisphere forward of the shoulders with a radius of approximately 6 to 9 inches.
- O. Ceiling Concentration: The concentration of an airborne substance that shall not be exceeded.
- P. Certified Industrial Hygienist (CIH): An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.
- Q. Clean Room: An uncontaminated area or room that is a part of the worker decontamination enclosure system, with provisions for storage of workers' street clothes and clean protective equipment.
- R. Critical Barrier: A single layer of 6-mil or greater polyethylene sheeting or an equivalent airtight barrier installed initially over all doors, windows, ventilation openings, drains, wall penetrations, etc., as an additional measure to prevent contaminated air from escaping the work area.
- S. Curtained Doorway: A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms.
- T. Cutting: To penetrate with a sharp-edged instrument and includes sawing, but does not include shearing, slicing, or punching.
- U. Decontamination enclosure system: A series of three (minimum) connected rooms, separated from the work area and from each other by air locks or curtained doorways, for the decontamination of workers and equipment.
- V. Demolition: The wrecking or taking out of any load-supporting structural member of a facility together with related handling operations or the intentional burning of any facility.



- W. Disposal Bag: Six (6) mil thick leak-tight plastic bags used for transporting asbestos waste from work and to disposal site. Each is labeled as follows:

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

- X. Duct Tape: Provide duct tape in 2-inch or 3-inch widths as indicated, with an adhesive that is formulated to aggressively stick to sheet polyethylene.
- Y. Encapsulant: A material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent release of fibers.
1. Bridging encapsulant: An encapsulant that forms a discrete layer on the surface of an in-situ asbestos matrix.
 2. Penetrating encapsulant: An encapsulant that is absorbed by the in-situ asbestos matrix without leaving a discrete surface layer.
 3. Removal encapsulant: A penetrating encapsulant specifically designed for removal of asbestos-containing materials rather than for in-situ encapsulation.
- Z. Encapsulation: The application of a liquid material to asbestos-containing material to control the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).
- AA. Enclosure: The construction of an airtight, impermeable, permanent barrier around asbestos-containing material to control the release of asbestos fibers into the air.
- BB. Equipment room: A contaminated area or room that is part of the worker decontamination enclosure system, with provisions for storage of contaminated clothing and equipment.
- CC. Fiber release episode: Any uncontrolled or unintentional disturbance of ACM resulting in visible emissions.



- DD. Filter: A media component used in respirators to remove solid or liquid particles from the inspired air.
- EE. Final cleaning: The cleaning of all dust and debris from the work areas near the end of the active abatement phase, immediately prior to the final visual inspection.
- FF. Fixed object: A piece of equipment or furniture in the work area that cannot be readily removed from the work area.
- GG. Friable: Any material, when dry, that may be crumbled, pulverized, or reduced to powder by hand pressure, including previously non-friable material after such previously non-friable material becomes damaged to the extent that, when dry, it may be crumbled, pulverized, or reduced to powder by hand pressure.
- HH. Glove bag: A sack (typically constructed of 6-mil transparent polyethylene or polyvinyl chloride plastic) with two inward projecting long-sleeved gloves that are designed to enclose an object from which an asbestos-containing material is removed.
- II. Grinding: To reduce to powder or small fragments, including mechanical chipping or drilling.
- JJ. HEPA Filter Vacuum Collection Equipment (or vacuum cleaner): High efficiency particulate air (HEPA) vacuum cleaner with a filter system capable of collecting and retaining asbestos fibers. Filters shall be of 99.97% efficiency for retaining fibers of 0.3 microns or larger.
- KK. Negative Pressure Respirator: A respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.
- LL. Negative Pressure Ventilation System: A local exhaust system, utilizing HEPA filtration, capable of maintaining a negative pressure inside the work area and a constant air flow from adjacent areas into the work area and exhausting that air outside the work area.
- MM. Negative Pressure: Air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (work area).
- NN. Personal Monitoring: Sampling of the asbestos fiber concentrations within the breathing zone of an employee.



- OO. Phase Contrast Microscopy (PCM): Method used to measure fiber concentrations of air samples.
- PP. Pre-cleaning: The cleaning of the work area of visible dust and debris prior to active abatement.
- QQ. Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 4.0 or 6.0-mils thick as indicated, clear, frosted, or black as indicated.
1. Flame-resistant Polyethylene Sheet: Flame resistant polyethylene film conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films.
 2. Reinforced Polyethylene Sheet: Translucent, nylon reinforced or woven polyethylene, laminated, flame resistant, polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films.
- RR. Project Design: The preparation of plans, specifications, project procedures, containment design/placement, descriptions of engineering controls, and shop drawings for an asbestos-abatement project or response action. It shall include an accurate and detailed scope of work, quantities of material to be removed, removal methods, and air exchange calculations. Drawings shall include locations of ACM to be abated, location of the decontamination unit, waste load out, negative air units, air intake and exhaust, and emergency exits when applicable.
- SS. Protection Factor: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.
- TT. Regulated Area: Area established by the Contractor to demarcate areas where asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos exceed or there is a reasonable possibility they may exceed the permissible exposure limit.
- UU. Regulated Asbestos-Containing Material (RACM): Any of the following: (a) Friable asbestos material, (b) Category I, non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to



sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by forces expected to act on the material during demolition or renovation operations.

1. Category I Non-friable Asbestos-Containing Materials (ACM): Asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than one percent asbestos as determined using Polarized Light Microscopy.
 2. Category II Non-friable ACM: Any material, excluding Category I non-friable ACM, containing more than one percent asbestos as determined using Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
- VV. Respirator: A device designed to protect the wearer from inhalation of harmful atmospheres.
- WW. Shower room: A room between the clean room and the equipment room in the worker decontamination enclosure suitably arranged for complete showering during decontamination.
- XX. Spray Cement: Spray adhesive in aerosol cans that is specifically formulated to stick to sheet polyethylene.
- YY. Staging area: The holding area or an area near the waste transfer airlock where containerized asbestos waste has been placed prior to removal from the work area.
- ZZ. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.
- AAA. Transmission Electron Microscopy (TEM): An analytical technique used for the definitive identification of asbestos.
- BBB. Time Weighted Average (TWA): The average concentration of a contaminant in air during a specific time period.
- CCC. Visible Emissions: Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.



DDD. Waste load-out area: A specially constructed airlock system utilized as a short-term storage area for bagged or barreled waste and as a port for transferring waste to the transport vehicle. This area is separate from the decontamination unit.

EEE. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils that have been dampened with amended water or diluted removal encapsulant and, afterwards, thoroughly decontaminated or disposed of as asbestos-contaminated waste.

FFF. Wetting Materials: For wetting prior to disturbance of asbestos-containing material, use either amended water or a removal encapsulant.

GGG. Work Area: The area where asbestos-related work or removal operations are performed and that is defined and/or isolated to prevent the spread of asbestos dust, fibers or debris, and entry by unauthorized personnel. Work area is a Regulated Area as defined by 29 CFR 1926.

HHH. Workday: Means Monday through Friday, not including holidays that falls on any of the days Monday through Friday.

1.05 SUBMITTALS

At least two weeks prior to beginning work, submit the following items. Do not begin work until they are acknowledged as received and accepted by the Owner's Representative.

- A. Notices: Submit notices required by federal, state and local regulations, together with proof of timely transmittal, to agency requiring the notice, including a copy of the Notification of Intent to Renovate/Demolish which is required to be submitted to Michigan Department of Environment, Great Lakes, and Energy (EGLE) and LEO.
- B. Licenses: Submit copies of all state licenses necessary to conduct the work of this contract, including a copy of the Contractor's license under Michigan Public Act 135 of 1986.
- C. For the proposed disposal facility, submit the name, location, 24-hour telephone number, and Federal, State, and local license or permit numbers. Also, provide copies of all licenses and approvals permitting the disposal of asbestos and provide satisfactory evidence that the facility complies with 40 CFR 61.154 and all other applicable laws and regulations for disposal of asbestos.



- D. Submit the name and address, and federal, state, and local permit or identification numbers of the proposed transportation contractor.

- E. Asbestos Abatement Action Plan. Contractor shall prepare and submit an Asbestos Abatement Action Plan (Plan). The Plan shall be submitted to the Owner's Representative for review and approval at least **5 business days prior to the start of the work**. No work shall be allowed until the Plan has been approved. The Plan shall include drawings and narratives, sufficient in detail to demonstrate and indicate the following:
 - 1. Description of materials scheduled for removal in the building.
 - 2. The specific areas of work in the building.
 - 3. Removal methods and work practices to be performed by employees.
 - 4. Locations of critical barriers.
 - 5. Delineation of the regulated area.
 - 6. Personal protection equipment and clothing to be worn by employees.
 - 7. Location of Decontamination Enclosure Systems or Decontamination Area.
 - 8. Personal hygiene and equipment decontamination procedures.
 - 9. Location of waste accumulation.
 - 10. Location of waste dumpster.
 - 11. Location of remote decontamination enclosure system (if applicable).
 - 12. Location of negative air machine exhaust points and path of exhaust ducts.

- F. Other:
 - 1. Evidence of training of all workers as required by the State of Michigan.
 - 2. Copies of Contractor's written respiratory protection program, engineering controls, and work practices.
 - 3. Copies of all medical approvals for all applicable workers to use respiratory protective equipment.
 - 4. Records of respirator fit testing for all workers.
 - 5. Identification of designated competent person under 29 CFR 1926.1101 and phone numbers for 24-hour contact.

- G. Historic Airborne Fiber Data: Submit airborne asbestos fiber count data from an independent air monitoring firm to demonstrate the ability to perform work of this Section while maintaining an airborne fiber count below 0.1 fibers per cubic centimeter in the breathing zone of the individual performing the work. Include the following data for each procedure required by the work:



1. Date of measurements; operations monitored; sampling and analytical methods used and evidence of their accuracy; and number, duration, and results of samples taken.

1.06 GENERAL REQUIREMENTS

- A. Contractor Responsibility: Assume full responsibility and liability for compliance with all applicable federal, state, and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the Site, and persons occupying areas adjacent to the Site. Provide medical examinations and maintain medical records of personnel as required by the applicable Federal, State, and local regulations. Hold the Owner and Owner's Representative harmless for failure to comply with any applicable work, hauling, disposal, safety, health, or other regulations on the part of Contractor, Contractor's employees, or subcontractors.
- B. Decontamination area location, Contractor parking, dumpster location, and entrances that may be used for the movement of supplies and personnel are subject to the Owner's Representative approval.
- C. Allow the Owner's Representative to inspect and approve all equipment and materials used before the start of any work.
- D. Allow the Owner's Representative to check or evaluate air monitoring methods, procedures, and quality assurance.
- E. All personnel performing work under this specification from pre-clean/prep to and including tear down shall be State of Michigan-certified asbestos workers or contractor supervisors.
- F. Asbestos abatement procedures are outlined in this specification document. Contractors may submit alternate abatement procedures for compliance with State and Federal requirements. These procedures will require approval by the Owner's Representative prior to commencing abatement activities.

1.07 POTENTIAL ASBESTOS HAZARD

- A. The disturbance or dislocation of ACM may cause asbestos fibers to be released into the building's atmosphere, thereby creating a potential health hazard to workers. Apprise all workers, supervisory personnel, subcontractors, and consultants who will be at the Site of the seriousness of the hazard and of proper work procedures, which must be followed.



- B. Take appropriate measures as necessary to protect workers from the potential hazard of exposure to airborne asbestos. Such measures include the procedures and methods described herein, and compliance with regulations of applicable federal, state, and local agencies.

1.08 STOP WORK

- A. If the Owner's Representative presents a written stop work order, immediately stop all work. Do not re-commence work until authorized by the Owner's Representative.

1.09 PROJECT COORDINATION

- A. Project Superintendent - Provide a full-time Project Superintendent who is experienced in administration and supervision of asbestos abatement projects, including work practices, protective measures for building and personnel, disposal procedures, etc.
 - 1. The Project Superintendent is the Competent Person for the Contractor, as required by OSHA in 29 CFR 1926.1101, and is the Contractor's Representative responsible for compliance with all applicable federal, state, and local regulations.
 - 2. This person must have completed a course at an EPA Training Center or equivalent certificate course in asbestos abatement procedures and have had a minimum of two (2) years on-the-job training. The Project Superintendent shall be accredited as an Asbestos Abatement Supervisor in accordance with the AHERA Regulation 40 CFR, Part 763, Subpart E, Appendix C.
 - 3. Duties of Project Superintendent
 - a. Coordination: Coordinate the work of all subcontractors and material suppliers.
 - b. Supervision: Supervise the activities of every phase of the asbestos abatement work taking place on the project.
 - c. Communication: Establish lines of authority and communication at the Site.
 - d. Permits: Obtain building and special permits required for asbestos abatement.
 - e. Location: Be present on the Site at all times when work is being performed.
 - f. Regulations: Ensure compliance with all applicable federal, state, and local regulations with regard to ACM.



1.10 NOTICES

- A. U.S. Environmental Protection Agency / State and Local Agencies
 - 1. Submit notices required by federal, state, and local regulations, together with proof of timely transmittal, to agency requiring the notice. All associated fees are considered incidental to the project.

1.11 AIR MONITORING

- A. Personal air monitoring required by federal, state, and local regulations is the work of the Contractor.
- B. The Owner's Representative shall conduct air monitoring to verify that the buildings beyond the work area and the outside environment remain uncontaminated. The Owner's Representative shall also perform clearance sampling.
- C. Use Phase Contrast Microscopy (PCM) analysis for air sampling before and during abatement. Transmission Electron Microscopy (TEM) will be used at the discretion of the Owner's Representative.
- D. PCM Clearance Criteria: All final air sampling results shall be at or below 0.01 fibers per cubic (f/cc) centimeter to achieve clearance.
- E. TEM Clearance Criteria: All final air sampling results shall be at or below 70 structures per square millimeter (s/mm²) to achieve clearance.
- F. The Clearance Criteria set forth in this Section also serves as airborne fiber concentrations indicative of a release from the work area.
- G. The following procedure will be used to resolve disputes regarding fiber types when a project has been stopped due to excessive airborne fiber counts.
 - 1. Airborne Fibers: Includes all fibers regardless of composition as counted by phase contrast microscopy (PCM), unless additional analysis by transmission electron microscopy (TEM) demonstrates to the satisfaction of the Owner's Representative that non-asbestos fibers are being counted. "Airborne Fibers" counted in samples analyzed by TEM shall be all asbestos fibers.
 - 2. Phase Contrast Microscopy (PCM): Performed using the NIOSH 7400 method at the Site.



3. Transmission Electron Microscopy (TEM): Performed using the analysis method set forth in the AHERA Regulation 40 CFR, Part 763, Appendix A.

H. Secure air samples before start of work to establish a baseline.

1.12 WORKER TRAINING AND ACCREDITATION

- A. AHERA Accreditation: All workers are to be accredited as Abatement Workers as required by the AHERA Regulation 40 CFR 763, Appendix C, Subpart E, April 30, 1987, and Michigan Public Act 440 of 1988.
- B. Train, in accordance with 29 CFR 1926, all workers in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures.
- C. All on-site personnel working under this specification shall, at a minimum, be State of Michigan Asbestos Workers. The work must be overseen by an on-site State of Michigan Asbestos Contractor Supervisor.

1.13 QUALITY ASSURANCE

- A. Contractor shall be experienced in the removal, packaging, handling, transportation, and proper disposal of asbestos containing material and have all necessary local permits and/or approvals.
- B. Contractor shall be responsible for the proper handling of material being disposed of from the time the Contractor moves the material until the material is disposed off-site at the licensed disposal facility. The Contractor shall be responsible for cleaning up all spills that occur during loading, hauling and final disposal at no cost to the Owner. Contractor shall immediately notify the Owner's Representative of any spills and appropriately cleanup and dispose of all material and impacted media required for cleanup.
- C. Complete all work required by and in accordance with all applicable federal, state, and local government regulatory agencies and arrange for all notifications and licenses for the removal, packaging, loading, hauling, and final disposal operations.
- D. If additional data is required to obtain disposal facility approval, collect, and analyze appropriate samples. Notify the Owner's Representative in writing at least one week in advance of sampling with an explanation for the additional testing and the date and time of the sampling so that the Owner's Representative will have the opportunity to collect co-located samples.



- E. The Owner's Representative will observe abatement operations, inspect critical barriers and other enclosures, and conduct air monitoring. If the Owner's Representative shuts down the project because the clearance level is exceeded outside of the work area, do not resume until corrections are made.

1.14 PROJECT CLOSEOUT

- A. Preliminary Procedures: When requesting inspection for Substantial Completion, list exceptions in the request.
- B. Inspection Procedures: On receipt of a request for inspection, the Owner's Representative will either proceed with inspection or advise the Contractor of unfilled requirements.
- C. The Owner's Representative will perform a visual inspection and verify that the work has been substantially completed.
- D. Results of the completed visual inspection and clearance sample results will form the basis of requirements for final acceptance.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Protective Equipment – Provide disposable coveralls, head covers, footwear covers, gloves, respirator mask, etc., for on-site personnel and for use by the Owner's Representative and other authorized representatives who may inspect the Site.
- B. Miscellaneous Materials – Sampling equipment, hand tools, packaging materials, materials to build barriers and enclosures, etc.
- C. Sheet Plastic:
 - 1. Polyethylene Sheet
 - 2. Flame-resistant Polyethylene Sheet: Where needed, provide flame resistant polyethylene film. Provide largest size possible to minimize seams, 6.0 mil thick as indicated, frosted or black as indicated.



3. Reinforced Polyethylene Sheet: Where plastic sheet constitutes the only barrier between the Work Area and the building exterior, provide reinforced polyethylene sheet. Provide largest size possible to minimize seams, 6.0 mil thick as indicated, frosted or black as indicated.

D. Glovebags

2.02 EQUIPMENT

- A. Manlifts, scaffolding, high efficiency particulate air (HEPA) filtered vacuum, negative air systems, etc.

PART 3 - EXECUTION

3.01 GENERAL PROCEDURES

- A. Remove asbestos containing material in strict accordance with the requirements of OSHA 29 CFR 1926.1101 and this Section.
- B. Provide asbestos banner tape and warning signs at each visual and physical barrier.
- C. Properly remove additional materials that may be suspected of containing asbestos. Perform all work necessary to remove ACM that is encountered during demolition.
- D. Comply with Article 3.08 – Worker Protection.
- E. All incoming electrical supplies shall be equipped with ground fault circuit interrupters.
- F. Pre-cleaning
 1. HEPA vacuum or wet wipe all surfaces in the asbestos abatement work area contaminated with visible dust or debris. Clean movable objects free of dust and debris by HEPA vacuum or wet wiping before removal from the work area.
 2. Dispose of all dust and debris, filters, mop heads and other contaminated waste as ACM.
 3. After pre-cleaning the work area, begin prep of work area.



4. Pick up and containerize ACM-debris in each work area prior to setting up the work area.

G. Impermeable Drop Cloths

1. Install an impermeable drop cloth (i.e., a clear 6-mil sheet plastic) in all areas where asbestos removal work is to be conducted. Completely cover work area around work activity.
2. Remove drop cloth at end of each work shift or as work in an area is completed. Fold plastic toward the center of sheet and pack in disposal bags. Keep material on plastic continuously wet until bagged.

H. Airborne Fiber Counts

1. Use work procedures that result in a fiber count outside the work area less than that indicated in Article 1.11 of this Specification.
 - a. If airborne fiber counts exceed the specified level, immediately mist the area with amended water to lower fiber counts and revise work procedures to maintain airborne fiber levels within the required limit.
2. Use respiratory protection based on fiber counts as indicated in Article 3.9 of this Specification.

- I. On a daily basis, stockpile and clean up all rubbish, trash, debris, etc., caused by work done under this project.

3.02 ACCEPTABLE REMOVAL METHODS

A. Use wet removal techniques for all ACM removal.

1. Thoroughly wet, to satisfaction of Owner's Representative, ACM to be removed prior to stripping and/or tooling to reduce fiber dispersal into the air. Accomplish wetting by a fine spray (mist) of amended water or removal encapsulant. Saturate material sufficiently to wet to the substrate without causing excess dripping. Allow time for water or removal encapsulant to penetrate material thoroughly. If amended water is used, spray material repeatedly during the work process to maintain a continuously wet condition. If a removal encapsulant is used, apply in strict accordance with manufacturer's written instructions. Perforate outer covering of any installation that has been painted and/or jacketed to allow penetration of amended water or removal encapsulant. Where necessary, carefully strip away while simultaneously spraying amended water or removal encapsulant on the installation to minimize dispersal of asbestos fibers into the air.



2. Mist work area continuously with amended water whenever necessary to reduce airborne fiber levels.
 3. Remove saturated ACM in small sections. Do not allow material to dry out. As it is removed, simultaneously pack material while still wet into asbestos disposal bags. Twist the neck of the bags, and seal with minimum three (3) wraps of duct tape. Clean outside and move to wash down station adjacent to material decontamination unit. Waste shall be double bagged or bagged and placed in a second impermeable container (i.e., cardboard drum).
- B. Removal of pipe insulation and pipe fitting insulation are classified as "Class I asbestos work" under current OSHA's 29 CFR 1926.1101 Asbestos in Construction. Adhere to the following minimum requirements during removal:
1. Pipe insulation and pipe fittings: Remove these materials in accordance with Article 3.04 Work Area Isolation Enclosures and Article 3.05 Negative Pressure System Requirements for Enclosures or Article 3.07 Glovebag Removal.
 - a. HVAC system(s) shall be shut down.
- C. Removal of transite panels, floor tiles, window and door caulk, window glazing, vibration dampeners, door gasket, sink undercoating, light heat shield, coating on roof vent, fire doors and switchgear components are classified as "Class II asbestos work" under OSHA's 29 CFR 1926.1101 Asbestos in Construction.
1. Floor tiles: Remove these materials in a regulated area and in accordance with Article 3.04 Work Area Isolation.
 - a. An adjacent decontamination station with HEPA-vacuum shall be set up adjacent to the regulated area for worker and equipment decontamination.
 - b. Floor tiles shall not be sanded.
 - c. Floor tiles shall be removed intact using wet methods and hand tools, such as wedges or spuds, to lift the material from the floor, keeping the tile as intact as possible.
 - d. Dry ice can be used for intact removal of tiles.
 - e. Alternatively, if mechanical means are used for removal of floor tile or tile will become friable during abatement, perform the removal work in accordance with Article 3.04 Work Area Isolation Enclosures and Article 3.05 Negative Pressure System Requirements for Enclosures.
 - f. The waste material shall be placed in 6-mil thick polyethylene bags, which in turn, shall be placed in a second impermeable container (i.e., cardboard drum).



6. Remove sinks with asbestos undercoating intact and double-wrap in polyethylene sheeting before placing in the on-site refuse dumpster.
7. Remove fire doors/frames intact and double-wrap in polyethylene sheeting before placing in the on-site refuse dumpster.
8. Remove transite panels and switchgear components intact using wet methods and hand tools and either double bagged or wrapped in polyethylene sheeting. Cordon off the area around the removal area with asbestos banner tape and place drop cloths under the removal areas. Construct a decontamination station with HEPA- vacuum adjacent to the regulated for work and equipment decontamination.
 - a. Verify electricity is terminated prior to removal activities involving electrical or switchgear components.

3.03 AIR MONITORING – TEST SERVICES

- A. The purpose of air monitoring outside of the work area is to detect faults in the work area isolation such as:
 1. Contamination of the building outside of the work areas with airborne asbestos fibers.
 2. Failure of filtration or rupture in the negative pressure system.
 3. Contamination outside the buried structure demolition area.
- B. Background and Perimeter Area Air-Monitoring: The Owner’s Representative will monitor airborne fiber counts outside of the work area. Perimeter area monitoring must meet clearance criteria in Article 1.11 or not exceed background levels representing the same area before the asbestos work began. The results of such monitoring will be made known to the Owner no later than 48 hours from the end of the work shift represented by such monitoring.
- C. Sample Analysis
 1. Sample analysis will be performed using PCM before, during and after asbestos abatement. TEM analysis will be performed if deemed necessary by the Owner or Owner’s Representative.
 2. Provide a microscope and technician at the Site or send samples daily by overnight mail to a testing laboratory so that verbal reports on air samples can be obtained within 24 hours.



D. Personal Monitoring

1. Perform all monitoring to meet MIOSHA requirements (Part 602. Asbestos Standards is Construction) for maintenance of time-weighted average (TWA) fiber counts for types of respiratory protection provided. Submit results within 1 week of receipt of data.

3.04 WORK AREA ISOLATION

A. General

1. When required by the acceptable removal method, completely isolate the work area from other parts of the building to prevent asbestos-containing dust or debris from passing beyond the isolated area. Should the area beyond the work area(s) become contaminated with asbestos-containing dust or debris, determined through visible observations or perimeter air monitoring results, immediately notify the Owner's Representative and clean those areas in accordance with the proper procedures. Perform all such required cleaning or decontamination at no additional cost to Owner.
2. Place all tools, scaffolding, staging, etc. necessary for the work in the area to be isolated before erection of plastic sheeting temporary enclosure. Remove all uncontaminated removable furniture, equipment, and/or supplies from the work area before commencing work, or completely cover with two (2) layers of 6-mil polyethylene sheeting securely taped in place with duct tape. Such furniture and equipment shall be considered outside the work area unless covering plastic or seal is breached.
3. Disable Ventilating Systems and any other system that brings air into or out of the work area. Disable the system by disconnecting wires, removing circuit breakers, by lockable switch or other positive means that will prevent accidental premature restarting of equipment.
4. Comply with Article 3.09 – Respiratory Protection.
5. The Owner's Representative must visually observe and approve all work area set-up before commencing any removal activities.
6. Allow for work area clearance in accordance with Article 3.10 prior to dismantling the enclosure.



B. Control of Access

1. Permit access to the work area only through the Decontamination Unit. Close off all other means of access and seal. Display warning signs on the clean side of the sealed access.
2. Physical Barrier: Where the area adjacent to the work area is accessible to the public, construct a solid barrier on the public side of the sheeting to protect the sheeting. Construct barrier with nominal 2-inch by 4-inch (2" x 4") wood or metal studs 16-inch (16") on center, securely anchored to prevent movement, covered with minimum 1/4-inch (0.25") thick hardboard, 1/2-inch (0.5") gypsum wall board, or 1/2-inch (0.5") plywood.
3. Provide asbestos banner tape and warning signs at each visual and physical barrier.

C. Critical Barriers

1. Completely separate the work area from other portions of the building and the outside by sheet plastic barriers at least 6-mil in thickness, or by sealing with duct tape.
2. Individually seal all ventilation openings (supply and exhaust), lighting fixtures, clocks, doorways, windows, convectors and speakers, and other openings into the work area with duct tape alone or with polyethylene sheeting at least 6-mil in thickness, taped securely in place with duct tape. Maintain seal until all work, including project decontamination, is completed. Take care in sealing off lighting fixtures to avoid melting or burning of sheeting. Use flame resistant or reinforced polyethylene sheet where required.

3.05 NEGATIVE PRESSURE ENCLOSURES

A. The negative pressure enclosure shall consist of the following components:

1. Personnel decontamination unit, which consists of a dirty room, shower, and clean room. Attach the decontamination unit to the enclosure.
2. Enclosure: Construct an enclosure where the abatement work is to be performed in accordance with this section.



3. Change Room: Provide an approximately 3-foot by 3-foot Change Room, with additional space as required for storage, attached to each enclosure. Fabricate Change Room from 6-mil sheet plastic in the same manner as the first layer of the work room. Locate so that access to Work Area is through the Change Room.
4. Step-Off Area: Cover floor in front of entry to Change Room with one layer of 6-mil sheet plastic. Securely anchor sheet plastic to prevent slipping.
5. Flapped Door Construction: Provide flapped door as entry to Change Room and entry from Change Room to Work Room. Fabricate each flapped door from overlapping contacting layers of sheet plastic.
 - a. Fasten each layer on the top and one side. Fabricate each flap three-inches (3") longer than door opening. Reinforce free side and bottom of each sheet with duct tape. Alternate sides that are fastened on each layer. Form arrows pointing to entry side from duct tape on inside and outside of door.

B. Construction:

1. Cover walls with two-layers of polyethylene sheeting, overlapping in alternate layers with three-layers of polyethylene sheeting covering the floor. Note: Floor requirements listed below are not applicable for removal of floor tile and mastic within enclosures.
2. Use fire resistant polyethylene sheeting if the potential for fire hazard exists.
3. If flooring materials are not scheduled for abatement, and after flooring material scheduled for abatement has been removed, cover floors with three-layers of 6-mil (minimum) polyethylene sheeting.
4. Polyethylene sheeting shall be sized to minimize seams. If the floor area necessitates seams, space successive layers of sheeting to reduce the potential for water to penetrate to the flooring material. Seams shall not be located at wall/floor joints.
5. Floor sheeting shall extend, at minimum, 12-inches (12") up the side walls of the work area.
6. Cover walls with a minimum of two-layers of 4-mil polyethylene sheeting. Where polyethylene sheeting must remain attached to porous wall surfaces for more than 48 hours, use furring strips (or the equivalent) in addition to duct tape and/or spray glue to secure the wall plastic in place.



7. Place critical barriers of 6-mil polyethylene sheeting over penetrations to outside work areas (vents, windows, holes, etc.).
8. Size polyethylene for walls to minimize seams. Stagger seams and separate seams by a distance of at least 6-feet where possible.
9. Overlap polyethylene floor sheeting by a minimum of 24-inches beyond the wall/floor joint to provide a better seal against water damage and to enhance the negative pressure strategy.
10. Where construction of barrier wall frames is required, space the 2-inch by 4-inch studs on 24-inch centers and cover with two (2) layers of 6-mil fire resistant polyethylene sheeting attached to the framing. If the attachment medium penetrates the sheeting, seal the penetration with duct tape.

C. Pressure Differential

1. Provide a fully operational negative air system within the work area maintaining continuously a pressure differential across work area enclosures of -0.020 inches of water. Demonstrate to the Owner's Representative the pressure differential by use of a pressure differential meter or a manometer before disturbance of any ACM. At all times, the differential of the work area to the clean area shall be, at a minimum, -0.020 inches of water and shall be recorded using a strip chart recorder or its equivalent. In addition, smoke tubes shall always be readily available on the outside of containment barriers so that airflow direction may be determined. At all times airflow direction shall be from the exterior of the containment barriers into the interior of the containment barriers. If at any time the pressure differential falls below -0.020 inches of water, work shall stop until negative pressure is above -0.020 inches of water.

D. Preparation of the Work Area

1. Determining the Ventilation Requirements: Provide fully operational negative pressure systems supplying a minimum of one (1) air change every 15 minutes. Determine the volume in cubic feet of the work area by multiplying floor area by ceiling height. Determine total ventilation requirement in cubic feet per minute (CFM) for the work area by dividing this volume by the air change rate.
2. Ventilation Required (CFM) = Volume of work area (cu. ft.) / 15 min.



3. Determine number of units needed to achieve 15-minute change rate by dividing the ventilation requirement by capacity of exhaust unit(s) used. Capacity of a unit for purposes of this section is the capacity in cubic feet per minute with fully loaded filters (pressure differential which causes loaded filter warning light to come on) in the machines labeled operating characteristics.
 4. Number of Units Needed = Ventilation Requirement (CFM) / Capacity of Unit with Loaded Filters (CFM).
 5. Add one (1) additional unit as a backup in case of equipment failure or machine shutdown for filter changing.
 6. Location of exhaust units: Locate exhaust unit(s) so that makeup air enters work area primarily through decontamination facilities and traverses work area as much as possible. This may be accomplished by positioning the exhaust unit(s) at a maximum distance from the worker access opening or other makeup air sources.
 7. Place the end of unit or its exhaust duct through an opening in the plastic barrier or wall covering. The plastic around the unit or duct shall then be sealed with tape.
 8. Vent to outside of building unless authorized by the Owner's Representative.
- E. Use of the Negative Static Pressure System
1. General: A dedicated minimum 115V-20A circuit shall service each unit with overload device tied into an existing building electrical panel that has sufficient spare capacity to accommodate the load of all negative pressure units connected. Dedication of an existing circuit may be accomplished by shutting down existing loads on the circuit.
 2. Testing the System: Test negative pressure system before any asbestos-containing material is wetted or removed. After the work area has been prepared, the decontamination facility is set up, and the exhaust unit(s) installed, start the unit(s) (one at a time). Demonstrate operation and testing of negative pressure system to Owner's Representative.
 3. Demonstrate Operation of the negative pressure system to the Owner's Representative will include, but not be limited to, the following:
 - a. Plastic barriers and sheeting move lightly in toward work area.
 - b. Curtain of decontamination units move lightly in toward work area.



- c. There is a noticeable movement of air through the decontamination unit. Use smoke tube to demonstrate air movement from Clean Room to Shower Room, from Shower Room to Equipment Room, and from Equipment Room to Work Area.
 - d. Use smoke tubes to demonstrate a positive motion of air across all areas in which work is to be performed.
 - e. Use a differential pressure meter or manometer to demonstrate a pressure difference of at least 0.02 inches of water across every barrier separating the Work Area from the balance of the buildings or outside.
 - f. Modify the Negative Static Pressure System as necessary to successfully demonstrate the above.
- F. Use of System during Abatement Operations:
- 1. Start exhaust units before beginning work (before any asbestos-containing material is disturbed). After abatement work has begun, run units continuously to maintain a constant negative pressure until decontamination of the work area is complete. Do not turn off units at the end of the work shift or when abatement operations temporarily stop.
 - 2. Start abatement work at a location farthest from the exhaust units and proceed toward them. If an electric power failure occurs, immediately stop all abatement work and do not resume until power is restored and exhaust units are operating again.
 - 3. At completion of abatement work, allow exhaust units to run to remove airborne fibers that may have been generated during abatement work and cleanup and to purge the work area with clean makeup air. The units will be required to run until clearance by the Owner's Representative is given.
- G. Dismantling the System -When a final inspection and the results of final air tests indicate that the area has been decontaminated, exhaust units may be removed from the work area. Before removal from the work area, remove and properly dispose of pre-filter, and seal intake to the machine with 6-mil polyethylene to prevent environmental contamination from the filters.
- H. Extension of Work Area
- 1. Extension of Work Area: If the enclosure barrier is breached in any manner that could allow the passage of asbestos debris or airborne fibers, then add the affected area to the work area, and enclose it as required by this Specification.



- I. If the integrity of the enclosure fails, immediately cease asbestos abatement activities until the fault is corrected. Do not re-commence work until authorized by the Owner's Representative.
 1. Results of perimeter air monitoring exceeding Clearance Criteria shall be evidence of enclosure failure.
 2. Visual observation of damage to the enclosure shall be evidence of enclosure failure.

3.06 WORKER ENTRY AND DECONTAMINATION/MATERIAL DECONTAMINATION

- A. Entry to Work Room: Every time that a worker enters the Work Room, require adherence to the following procedure:
 1. Outside of the Change Room, remove all street clothes and don clean coveralls and respirator. A swimsuit or second disposable suit may be worn beneath outer coveralls.
 2. Ensure that the entry is completely closed after entering the Change Room.
 3. Ensure that the entry is completely closed after entering the Work Room.
- B. Worker Decontamination: Every time that a worker leaves the work area, require adherence to the following procedure:
 1. Maintain a bucket of clean potable water in the Work Area. Do not amend with the wetting agent.
 2. Remove contaminated suit inside the Work Area. Leave respirator in place.
 3. Wash hands, face, and surface of respirator with water and wet paper towels. Use caution to avoid breaking seal between respirator face piece and face.
 4. Proceed with respirator in place to Change Room.
 5. Be sure that entry to Work Area is completely closed.



6. In the Change Room, don clean disposable suit leaving respirator in place.
 7. When exiting the Change Room, be sure that entry to Change Room is completely closed.
 8. At end of workday, decontaminate fully in accordance with Article 3.08 Worker Protection.
 9. For work in enclosures, workers must exit through the decontamination unit and shower prior to entering the clean room/area.
- C. Material Decontamination: Require that the following procedure be used in removing equipment and bagged debris from the Work Room.
1. Three workers are required: one in the Work Room, one in the Change Room, and one on Step-Off Area.
 2. Remove equipment and bagged debris from the enclosure in separate operations.
 3. Worker in Work Room cleans equipment and bagged debris and hands one piece of equipment or one bag of debris at a time to worker in Change Room.
 4. Worker in Change Room wet-cleans each piece of equipment or bag and store them in Change Room. Seal equipment completely in 6-mil sheet plastic in the Change Room.
 5. When the amount of stored material in the Change Room becomes large enough that the worker cannot clean incoming material without contacting previously cleaned material, close the door between the Work and Clean Room.
 6. The worker in the Changing Room then passes each item into a new disposal bag held open (by the worker on the Step Off Area) in the doorway between the Changing Room and Step Off Area. The worker on the Step-Off Area places each bag in a sealed cart for transport to the load-out area.
 7. Transport all bags through the building in clean, sealed containers that have never been in an asbestos Work Area, Enclosure, or Decontamination Unit.



3.07 GLOVEBAG REMOVAL

A. Glovebag

1. Use the glovebag technique for removal of pipe and pipe fitting insulation. Provide a glove bag that consists of a specially designed 6 to 12-mil bag fitted with long sleeved gloves, a tool pouch, a small opening for water, and a small opening for a HEPA vacuum hose. Use the glove bag for removal of pipe insulation following the "single use" technique - one bag to one spot of asbestos. Do not move the bag along the pipe. The Owner's Representative has the authority to inspect and approve all glove bags proposed for use before use on the job.
2. Use two people to perform glove bag removal. Do not perform removal with a glove bag on hot pipes because the heat can cause the bag to melt.
3. Remove ACM inside a glove bag according to the following procedure:
 - a. Mix amended water according to the manufacturer's instructions.
 - b. Wear appropriate respiratory protection and protective clothing.
 - c. Inspect pipe where the work will be performed prior to removal. If the insulation is damaged in locations that cannot be handled inside the glove bag, wrap these areas in polyethylene and secure with duct tape.
 - d. Place one layer of duct tape around the pipe at each location where the ends of the glove bag will be.
 - e. Slit open the top and sides of the glove bag to accommodate the pipe.
 - f. Place the required tools into the pouch located inside the glove bag. This will usually include bone saw, utility knife, rags, scrub brush, wire cutters, tin snips, steel wool pad, and pre-wetted cloth.
 - g. Place the glove bag around the pipe and seal the plastic edges with duct tape.
 - h. Fill the bag with smoke, using a smoke tube and aspirator bulb, seal off the water hose port, and gently squeeze the glove bag from top to bottom. If any leaks exist, the smoke will exit through the leaks. Repair leaks in the glove bag with duct tape. Retest with smoke, as necessary. The smoke leak test is recommended, but other methods will be considered but shall be submitted to the Owner's Representative for approval before use.



- i. Caution: Some glove bags have a ready-made hose port at midpoint or lower on the bag. If this is the case, do not use that port, but carefully seal it off with duct tape. Next, cut another port of equal size near the top of the bag for the water wand use and insert the wand of the garden sprayer through the hose port and tape the plastic tightly around the wand.
- j. Place one person's hands into the long-sleeved gloves, while the second person directs the garden sprayer at the work. Thoroughly wet material to be worked on with amended water or penetrating encapsulant and allow soaking in. Wet adequately to penetrate and soak material through to substrate.
- k. A flexible cable-saw or bone-saw may be used to cut through the asbestos at each end of the section to be removed. A bone saw is a serrated, heavy gauge wire with ring-type handles at each end. While cutting, keep the asbestos thoroughly soaked with amended water.
- l. Slit the section of insulation from end to end using a utility knife. Make the slit shall along the bottom of the pipe and keep continuously wetted.
- m. Rinse the tools with water inside the glove bag and place back into the pouch.
- n. Lift the insulation off the pipe and lower it carefully to the bottom of the glove bag.
- o. Using a brush, wool pad, rags, and water, clean the pipe of remaining residue.
- p. Clean, re-usable tools may be removed from pouch, depending upon type of glove bag. Place tools on glove inside the bag. Pull glove out of bag. Twist and seal the glove on the sleeve portion. Cut the glove sleeve through the twisted/taped section. Cover ends with duct tape. Place the tool pouch with the tools in a bucket of water, open underwater and clean and dry the tools. Discard rags as asbestos waste and filter water to 5 microns.
- q. Remove the water wand from the bag and attach the nozzle of the HEPA vacuum. Briefly operate the vacuum to collapse the bag.
- r. Twist the bottom part of the bag and secure with duct tape.
- s. Remove the hose and seal the opening.
- t. Slip a 6-mil disposal bag over the glove bag, remove the glove bag from the pipe, and fold down into the disposal bag.
- u. Remove the disposable clothing and place it into the disposal bag.
- v. Collapse the bag with a HEPA vacuum twist top of bag, seal with at least three (3) wraps of duct tape, bend over and seal again with at least three (3) wraps of duct tape.



- w. Apply an encapsulant and after the encapsulant sets, brush a second coat of encapsulant on to completely seal the exposed ends of the insulation.
- 4. NOTE - The procedure outlined is a known and proven procedure. Other alternative methods and procedures may be acceptable, but only with approval by the Owner's Representative.

3.08 WORKER PROTECTION

A. General

- 1. Provide worker protection as required by the most stringent LARA, OSHA and/or EPA standards applicable to the work. The procedures listed in this item are to be adhered to regardless of fiber count in the work area. Before beginning work with any material, provide workers with the required protective equipment.
- 2. Always require that appropriate protective equipment be used.
- 3. Each time the work area is entered, remove all street clothes in the Changing Room of the Personnel Decontamination Unit and put on new disposable coverall, new head cover, and a clean respirator. Proceed to the equipment room and put on work boots.

B. Decontamination Procedures - Require all workers to adhere to the following personal decontamination procedures whenever they leave the work area:

- 1. When exiting area, remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the Equipment Room.
- 2. The following procedure is required as a minimum:
 - a. Thoroughly wash hair, hands, and face (and other exposed skin).
 - b. Carefully wash face piece of respirator inside and out.
 - c. Proceed to outside work area.

C. Within Work Area

- 1. Do not allow workers to eat, drink, smoke, or chew gum or tobacco in the work area. To eat, chew, drink, or smoke, the workers shall follow the decontamination procedure described above, and then dress in street clothes before entering the non-work areas of the building.



3.09 RESPIRATORY PROTECTION

A. General

1. Respiratory Protection Program: Comply with OSHA 29 CFR 1910 and 1926 (also MIOSHA Part 451), and MIOSHA Part 602 Asbestos.
2. Always require that respiratory protection be used when there is any possibility of disturbance of asbestos-containing materials whether intentional or accidental.
3. Require that a respirator be worn by anyone in a work area at all times, regardless of activity, during a period that starts with any operation which could cause airborne fibers until the area has been cleared for re-occupancy in accordance with Article 3.10 – Work Area Clearance.
4. Regardless of airborne fiber, require that the minimum level of respiratory protection used will be a half-face and air purifying respirators with high efficiency filters.
5. Do not allow the use of single use, disposable, or quarter face respirators for any purpose.

B. Fit Testing

1. Initial Fitting: Provide initial fitting of respiratory protection during a respiratory protection course of training. “Fit type” respirators are to be worn by each individual. Allow an individual to use only those respirators for which he/she has been trained and fit.
2. On a Weekly Basis: Check the fit of each worker's respirator by having irritant smoke blown onto the respirator from a smoke tube.
3. Upon Each Wearing: Require that each time an air-purifying respirator is put on, it be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions.

C. Type of Respiratory Protection Required

1. Provide Respiratory Protection as indicated in this Article. Using paragraph E of this Article, determine the proper level of protection by dividing the airborne fiber count in the work area by the "protection factors" given below. The level of respiratory protection that supplies an airborne fiber level inside the respirator, at the breathing zone of the wearer, at or below the permissible exposure limit (PEL) is the minimum level of protection allowed.



D. Permissible Exposure Limits (PEL)

1. 8-Hour Time Weighted Average (TWA) of asbestos fibers to which any worker may be exposed shall not exceed 0.1-fibers/cubic centimeter.
2. 30-Minute Exposure Limit (EL): 1.0 fibers/cubic centimeter.
3. Fibers: For purposes of this Section, fibers are defined as all fibers regardless of composition as counted in the OSHA Reference Method (ORM), NIOSH 7400 procedures, or asbestos fibers of any size as counted using a transmission electron microscope.

<u>Airborne Fiber Concentration</u>	<u>Required Respiratory Protection</u>
Not in excess of 1.0f/cc	Half-mask air purifying with HEPA Cartridges; minimum requirement for all activities
Not in excess of 5.0f/cc	Full facepiece respirator with HEPA filters
Not in excess of 10.0f/cc	Any tight fitting, full facepiece PAPR with HEPA filters
Not in excess of 100f/cc	Full facepiece supplied air operated in pressure demand mode
In excess of 100f/cc	Any supplied air respirator operated in the pressure-demand mode, equipped with auxiliary SCBA

E. Air Purifying Respirators

1. Negative pressure - half or full-face mask: Supply a sufficient quantity of respirator filters approved for asbestos so that workers can change filters routinely. Require that respirators be wet-rinsed each time a worker leaves the work area. Store respirators and filters at the Site in the Changing Room and protect totally from exposure to asbestos prior to their use.



2. Powered air purifying - half or full-face mask: Supply a sufficient quantity of high efficiency respirator filters approved for asbestos so that workers can change filters at any time that flow through the face piece decreases to the level at which the manufacturer recommends filter replacement. Require that regardless of flow, filter cartridges be replaced according to the subjectivity of the employee or the written respiratory program of the Contractor. Require that HEPA elements in filter cartridges be protected from wetting during showering. Require entire exterior housing of respirator, including blower unit, filter cartridges, hoses, battery pack, face mask, belt, and cords to be washed each time a worker leaves the work area. Use caution to avoid shorting battery pack during washing.

3.10 WORK AREA CLEARANCE

A. Summary

1. Air testing and other requirements that must be met for decontamination of the Work Area before release of Contractor and re-occupancy of the work area are specified in this Article.
2. Decontaminate air in the Work Area that has been, or may have been, contaminated by the elevated airborne asbestos fiber levels generated during abatement activities, or which may previously have had elevated fiber levels due to asbestos containing materials in the space.
3. Clean and decontaminate all surfaces (ceiling, walls, floor, etc.) of the Work Area and all furniture or equipment in the Work Area.
4. Perform visual inspection and complete Certificate of Visual Inspection.
5. The Owner's Representative will perform final clearance sampling.
6. Clean, decontaminate, and remove temporary facilities installed prior to abatement work, including critical barriers erected by work of Article 3.4 – Work Area Isolation Enclosures.

B. Start of Work

1. Previous Work: During completion of the asbestos abatement work specified in other Articles, a layer of polyethylene sheeting will have been removed and disposed of along with any gross debris generated by the asbestos abatement work.



2. Start of Work: Work of this Article begins with cleaning of the enclosure. At start of work the following will be in place:
 - a. Two layers of polyethylene sheeting on floor.
 - b. Critical Barrier which forms the sole barrier between the work area and other portions of the building or the outside.
 - c. Critical Barrier Sheeting over lighting fixtures and clocks, ventilation openings, doorways, convectors, speakers, and other openings.

- C. First Cleaning
 1. First Cleaning: Conduct a first cleaning of all surfaces of the work area, including items of remaining sheeting, tools, scaffolding and/or staging, by use of damp-cleaning and mopping, and/or a High Efficiency Particulate Air (HEPA) filtered vacuum. Do not perform dry dusting or dry sweeping.
 2. Use each surface of a cleaning cloth once only and then dispose of as contaminated waste.
 3. Continue this cleaning until there is no visible debris from removed materials or residue on plastic sheeting or other surfaces.

- D. Final Cleaning: Conduct a final cleaning of all surfaces in the work area in the same manner as the first cleaning.

- E. Visual Inspection
 1. The Owner's Representative shall perform a Complete Visual Inspection of the entire work area including decontamination unit, all plastic sheeting, seals over ventilation openings, doorways, windows, and other openings; look for debris from any sources, residue on surfaces, dust or other matter. If any such debris residue, dust or other matter is found, repeat final cleaning and continue decontamination procedure from that point.

When the area is visually clean, complete the Certificate of Visual Inspection. Visual inspection is not complete until confirmed in writing, on the certification, by the Owner's Representative performing the abatement air monitoring.

- F. Encapsulation: After a satisfactory visible inspection by the Owner's Representative, the abated surfaces shall be sealed with an encapsulant.



G. Final Air Sampling / Clearance Criteria

1. Phase Contrast Microscopy (PCM):
 - a. Upon receipt of the Certificate of Visual Inspection, the Owner's Representative will, within 24 hours, collect air samples in accordance with the PCM methods and frequency set forth in 40 CFR Part 763 Subpart E and Article 1.11. The Owner's Representative will have the samples analyzed in accordance with the procedures for PCM set forth in 40 CFR Part 763 Subpart E and Article 1.11. The analyst will be NIOSH 582 certified.
 - b. If Clearance Criteria is not met, repeat Final Cleaning and visual inspection. Resubmit Certificate of Visual Inspection and have the Contractors Consultant perform clearance sampling again.
 - c. If Clearance Criteria is met, remove the interior polyethylene wall of the negative pressure enclosure, leaving in place only the Critical Barriers separating the work area from the rest of the building and the operating negative pressure system.
 - d. Remove small quantities of residual material found upon removal of the plastic sheeting with a HEPA filtered vacuum cleaner and local area protection. If significant quantities, as determined by the Owner's Representative are found, then decontaminate the entire area affected as specified herein for the Final Cleaning.

2. Transmission Electron Microscopy (TEM) – if deemed necessary by the Owner's Representative.
 - a. Upon receipt of the Certificate of Visual Inspection, the Owner's Representative will, within 24 hours, collect air samples in accordance with the TEM methods and frequency set forth in 40 CFR Part 763 Subpart E and Article 1.11. The Owner's Representative will have the samples analyzed in accordance with the procedures for TEM set forth in 40 CFR Part 763 Subpart E and Article 1.11.
 - b. If Clearance Criteria is not met, repeat Final Cleaning and continue decontamination procedure, including clearance sampling from that point.
 - c. If Clearance Criteria is met, remove the interior of the decontamination unit, leaving in place only the Critical Barriers separating the work area from the rest of the building and the operating negative pressure system.



- d. Remove small quantities of residual material found upon removal of the plastic sheeting with a HEPA filtered vacuum cleaner and local area protection. If significant quantities, as determined by the Owner's Representative, are found, then decontaminate the entire area affected as specified herein for the Final Cleaning.

H. Completion of Abatement Work

1. Asbestos Abatement Work is complete upon meeting the work area clearance criteria and fulfilling the following:
 - a. Remove all equipment, materials, and debris from the Site.
 - b. Dispose of all asbestos-containing waste material as specified in Article 3.11.
 - c. Repair or replace all interior finishes damaged during the course of asbestos abatement work.
 - d. Fulfill Project Closeout Requirements of Article 1.14 and Article 3.10.

- I. Certificate of Visual Inspection: Complete the appended "Certificate of Visual Inspection" with the Owner's Representative for signature. Submit with air sampling results and keep on file for the length of the project.



CERTIFICATE OF VISUAL INSPECTION

The Contractor hereby certifies that he has visually inspected the work area (all surfaces including pipes, beams, ledges, walls, ceiling and floor, decontamination unit, polyethylene sheets, etc.) in accordance with Article 3.10 E and has found no dust, debris or residue.

By: _____
(Signature)

Date: _____

Name: _____

Title: _____

OWNER'S REPRESENTATIVE CERTIFICATION

The Owner's Representative hereby certifies that he/she has accompanied the Contractor on his visual inspection and verifies that this inspection has been thorough and to the best of his knowledge and belief, the Contractor's certification above is a true and honest one.

By: _____
(Signature)

Date: _____

Name: _____

Title: _____

Company: _____



3.11 OFF-SITE TRANSPORTATION AND DISPOSAL

- A. All waste shall be disposed of only at approved disposal facilities.
- B. Load drums, bags, and wrapped components that have been removed from the work area into an enclosed or covered truck/trailer for transportation. If a rented vehicle is used, notify the owner of the vehicle of its intended use and give a copy of the notification which shall be given to the Owner's Representative.
- C. All vehicles hauling material to the disposal site shall comply with applicable MDOT regulations. Vehicles shall be properly licensed under and comply with all applicable federal, state, and local laws and regulations.
- D. Maintain the enclosed cargo area of the vehicle free of debris and line with two layers of 6-mil polyethylene sheeting to prevent contamination from leaking or damaged containers. Install floor sheeting first and extend up to the sidewalls. Lap the wall sheeting over the floor sheeting and tape into place.
- E. Provide proper tools/equipment to safely expedite container handling. Place drums on level surfaces in the cargo area and pack tightly together to prevent shifting and tipping. Secure large structural components to prevent shifting.
- F. Protect personnel handling asbestos-containing waste by disposable clothing, including head, body and foot protection, and at a minimum, half-face piece, air-purifying, dual cartridge respirators equipped with high efficiency filters.
- G. Prior to loading, provide the Owner's Representative with one manifest for each load of material. Each manifest will be pre-printed with the Site name and address, the Owner's name and address, the name of the landfill, the name of the transporter, and the landfill approval number.
- H. During loading, the Owner's Representative will provide a manifest signed on behalf of the Owner for each load.
- I. Transport contaminated material to a Type II landfill disposal facility licensed to accept asbestos for disposal.
- J. Dispose of asbestos-containing waste material and debris that is packaged in accordance with the provision of this Specification at the approved landfill in accordance with the regulatory requirements of the NESHAP and any applicable state and local guidelines and regulations.



- K. Within 24 hours of the load leaving the Site, provide the Owner's Representative an original manifest and any other documentation indicating receipt signed by the landfill.

- L. Obtain and provide certification by and other satisfactory evidence from the owner(s) or operators(s) of the waste disposal facility(ies) attesting to the fact that all disposal activities were conducted and concluded in conformance with the requirements of 40 CFR 61 Subpart M and all other applicable laws and regulations.

END OF DOCUMENT



DOCUMENT 02 84 00

POLYCHLORINATED BIPHENYL (PCB) REMEDIATION

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Provide all labor, materials, equipment, transportation, packaging, sampling and testing, and incidentals required to remove and dispose of polychlorinated biphenyl (PCB) containing or contaminated materials from the former Marshall Elementary School located at 33901 Curtis Road in Livonia, Wayne County, Michigan. Work shall be performed in accordance with all Federal, State and local laws and regulations. PCB-containing materials include, but are not limited to:
 - 1. Consider fluorescent light ballasts to be PCB-containing unless clearly labeled No-PCB.
 - 2. Any and all other materials or items such as caulks, glazing compounds and sealants (as identified in Section 3.3 of the Hazardous Materials Survey Report) containing or suspected to contain PCBs.
- B. The existing pole-mounted electrical transformers located at the northern extent of the parking lot are owned DTE Energy and are not scheduled to be removed.
- C. The Hazardous Materials Survey (HMS) for the subject buildings has been conducted by NTH Consultants, Ltd. (NTH) and the findings are presented in reports included as Attachment I. Verify all information.
- D. Dispose of waste only at approved disposal facilities.
- E. Provide a summary report on items disposed of for compliance with 40 CFR 761.180 (a).

1.02 RELATED SECTIONS

- A. Other sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this Work.
- B. Section 02 41 00 - Demolition



C. Section 02 80 00 - Universal and Hazardous Materials Remediation

D. Section 02 82 00 - Asbestos Remediation

1.03 GENERAL REQUIREMENTS

- A. Contractor Responsibility: Assume full responsibility and liability for compliance with all applicable federal, state and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site and persons occupying areas adjacent to the site. Provide medical examinations and maintain medical records of personnel as required by the applicable Federal, State, and local regulations. Hold the Owner and Owner's Representative harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of Contractor, Contractor's employees or subcontractors.
- B. Decontamination area location, dumpster location and entrances that may be used for the movement of supplies and personnel are subject to approval by the Owner's Representative.

1.04 REFERENCES

- A. General Applicability of Codes, Regulations, and Standards: Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.
- B. The references in this Article may apply to the work under this Section. This list shall not be considered complete, and it is the Contractor's responsibility to perform all work in accordance with all Federal, State and local laws and regulations.

C. CODE OF FEDERAL REGULATIONS (CFR)

- 29 CFR Part 1910 Occupational Safety and Health Standards
- 29 CFR Part 1926 Safety and Health Regulations for Construction
- 40 CFR Part 761 Polychlorinated Biphenyls (PCB) Manufacturing, Processing, Distribution in Commerce and Use Prohibitions (referred to herein as TSCA)



D. STATE OF MICHIGAN

R 333.5001 – 408.49103 General Industry and Construction Safety and
Occupational Health Standards

1.05 SUBMITTALS

At least **20 working days** prior to beginning work, submit the following items. Do not begin work until they are acknowledged as received.

A. Work Plan

1. Submit work plans describing the means, methods, and procedures proposed for removing, transporting and disposing of regulated PCB-containing materials.
2. The work plans shall address safety issues dealing with removal, handling, storing, and transporting the regulated PCB-containing materials and products used to remove PCBs, including methods of preventing all materials from entering sewers, the generation of airborne dust and spread of contamination.
3. Submit health and safety plans in accordance with Michigan Occupational Safety and Health Act (MIOSHA) requirements.

B. For all disposal facilities:

1. Use only disposal facilities approved by LPS. If a waste requires a specialty disposal method that approved facility cannot provide, submit a request to the Owner's Representative with an explanation of why an alternate facility is required.
2. Submit the name, location, 24-hour telephone number, and Federal, State and local license or permit numbers.
3. Indicate which material classification(s) are intended to be disposed of at each facility (PCB Remediation Waste, PCB Product Waste, mixed hazardous and PCB waste, etc.)
4. Submit the name and address, and federal, state and local permit or identification numbers of the proposed transportation contractor.
5. Submit for Owner's Representative review prior to LPS's signature, the disposal facility's approval application (waste profile) filled out in its entirety, inclusive of required laboratory data. Within 5 days, the Owner's Representative will either return the LPS signed waste profile



to the Contractor or reject the application. Contractor is responsible for the contents of the waste profile, and disposal facility rejection of an LPS signed waste profile shall not be cause for additional compensation.

6. Submit the approved waste profile after receiving disposal facility approval prior to removing hazardous material from the sites. The approval shall contain the facility's waste approval number.
 7. Submit a sample manifest filled out in accordance with the requirements of this Section and 40 CFR 761.207.
- C. Submit the name and address of any environmental testing laboratory to be utilized.

1.06 SAMPLING AND ANALYTICAL TESTING

- A. If additional data is required to obtain disposal facility approval, for characterization, post remediation verification or post decontamination verification, collect and analyze appropriate samples. Notify the Owner's Representative in writing at least one week in advance of sampling with an explanation for the additional testing and the date and time of the sampling so that the Owner's Representative will have the opportunity to collect co-located samples.
- B. Retain a laboratory which routinely provides analysis acceptable to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to perform required analytical testing and sampling. Costs of sample collection, shipping, and testing shall be borne by the Contractor and are incidental to the Contract. Sampling as required or as specified by the Owner's Representative shall be performed by the Contractor.
- C. Provide a copy of the laboratory results to the Owner's Representative.

1.07 QUALITY ASSURANCE

- A. Contractor will be experienced in the removal, packaging, handling, transportation, and proper disposal of PCBs and have all necessary local permits and/or approvals.
- B. Contractor shall be responsible for the proper handling of material being disposed from the time the Contractor moves the material until the material is disposed off-site at the licensed disposal facility. The Contractor shall be responsible for cleaning up of all spills that occur during loading, hauling and



final disposal at no cost to LPS. Contractor shall immediately notify the Owner's Representative of any spills and appropriately clean up and dispose of all material and impacted media required for cleanup.

- C. Do all work required by and in accordance with all applicable federal, state and local government regulatory agencies and arrange for all permits and licenses for the packaging, loading, hauling, and final disposal operations.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Use only products designed to remove PCBs from surfaces and allowed under TSCA.

PART 3 – EXECUTION

3.01 GENERAL

- A. Preparation
 - 1. Obtain all required permits. Provide approved containers, vehicles, equipment, labor, labels, manifests and other documents necessary for accomplishment of the work.
- B. Safety Guidelines
 - 1. Perform all work associated with PCB cleanup using appropriate personal protective equipment as defined by MIOSHA or more stringent if required.
 - 2. Personal protective equipment shall include respiratory protection and/or ventilation for vapors or particulates associated with PCB removal, building material removal, or other activities if appropriate.
 - 3. Make the work areas safe for the Owner's Representative and other authorized agents of the Owner.
 - 4. Ensure that personnel conducting work under this Section are trained and thoroughly familiar with the safety precautions, procedures, and equipment required for controlling the potential hazards associated with this work.



3.02 GENERAL REMOVAL

A. Packaging and Handling Requirements

1. Prior to the start of removal operations, determine which waste materials may be hazardous. Keep hazardous waste segregated from solid waste, so that proper disposal of the waste material can be achieved.
2. Inspect containers to determine if they are broken, leaking or deformed. In the case of over-packed, leaking, or broken containers of hazardous materials, remove hazardous contents, and place in new drums.
3. Categorize and containerize materials by contents and disposal compatibility. Perform compatibility tests, so waste can be segregated in the interim storage area without risk of fire or explosion.
4. Package small containers of waste to meet all applicable U.S. Department of Transportation (DOT) and/or Michigan Department of Transportation (MDOT) requirements. Collect liquid waste in drums (55-gallons or smaller).
5. Properly label all containers prior to shipment in accordance with all, TSCA, MDOT and other Federal and State regulations. Label each container (and item if not within a container) with the number and type of each item contained within, the earliest date an item within was removed from service, and a unique identifying number. Labeling requirements apply to all items and containers, including packages, boxes, drums, roll-offs, trucks and other bulk containers.
6. Label all storage containers with appropriate hazard labels.
7. Provide for the safe storage of waste on-site, prior to disposal. For security reasons, restrict access to waste storage areas. Comply with requirements of 40 CFR 761.65. Do not store any materials on-site more than 30 days after removal unless a plan for longer term storage has been submitted and approved.
8. Do not place waste on unprotected ground. Adequately shield waste to prevent dispersion of the debris by wind or rainwater.
9. Evidence of improper storage shall be cause for immediate shutdown of the project until corrective action is taken.

3.03 PCB CONTAINING AND SUSPECTED PCB MATERIALS AND ITEMS

A. General

1. Properly remove, segregate from other materials and properly containerize, in accordance with TSCA and other regulations, other suspected PCB containing items and suspected PCB materials not otherwise described herein and notify the Owner's Representative.



3.04 FLUORESCENT LIGHT BALLASTS

A. General

1. Properly remove, segregate from other materials, and containerize fluorescent light ballasts not clearly labeled as No-PCB.
2. Fluorescent light ballasts containing PCBs only in an intact and non-leaking PCB Small Capacitor are regulated for disposal under 40 CFR 761.60(b)(2)(ii).
3. Fluorescent light ballasts containing PCBs in the potting material are regulated for disposal as PCB bulk product waste under 40 CFR 761.62.
4. Leaking fluorescent light ballasts are regulated for disposal as PCB bulk product waste under 40 CFR 761.62(a) or (c).

3.05 PCB REMEDIATION WASTE – POROUS SURFACES

A. General

1. PCB Remediation Waste at the facility will include materials with PCB concentrations greater than 1 ppm or $\geq 10 \mu\text{g}/100 \text{ cm}^2$ that were not manufactured with PCBs, such as stained concrete floors.
2. Floor coverings in contact with concrete floors classified as PCB Remediation Waste may also be considered PCB Remediation Waste in the absence of laboratory data collected in accordance with TSCA Subpart N to the contrary.
3. Remove the full thickness of each item unless it has been shown that the PCBs have penetrated only a specific distance into an item.
4. Dispose of PCB Remediation Waste in accordance with Performance-based disposal requirements in 40 CFR 761.61 (b).

B. Materials that Cannot be Removed Intact

1. Construct an enclosure in the area of removal using 6 mil fire retardant plastic sheeting and laid down on the surface below the work area.
2. Place 6-mil fire retardant plastic sheeting at least 10 feet wide or to the furthest point of gravity fall for dislodged debris by methods used, whichever is further.
3. Place 6-mil fire retardant plastic sheeting outside the enclosure for use as a decontamination area. A 6-mil fire retardant plastic sheeting overlapping curtained doorway shall be installed at the entrance to the enclosure.



4. All windows and vents within the work area and 25 feet from all sides of the work area shall be closed or sealed using 6-mil fire retardant plastic sheeting.
5. Remove materials approximately in a manner to prevent releases of dust.
6. For all work areas with use of electromechanical tools for removals, HEPA filtered negative air ventilation units must be installed in the enclosure area and operate continuously during removal operations to establish negative pressure. A minimum of 4 air changes per hour must be maintained within work area during removals and cleanings until work area clearance is obtained.
7. When using electromechanical tools use HEPA vacuum attachments to contain the dust generated.
8. All removed materials shall be placed into 6 mil plastic disposal bags or other suitable container. Sharp components likely to tear disposal bags shall be placed in fiber drums or boxes and then wrapped with sheeting. If reusable containers are to be used, line with 6 mil plastic and pad with cardboard or other suitable materials to prevent material from tearing the sheeting.

C. Partial Removal of Items

1. For items where PCBs have been shown to have penetrated only a specific distance into the concrete, it is permissible to remove and dispose the outer surface to a depth where testing has shown that PCBs are less than or equal to 1 ppm.
2. If partial removal of items without depth data is desired, test each item in accordance with TSCA Subpart N and submit data for approval.
3. If partial removal is performed using electromechanical means, follow the procedures under Subsection B of this Section.
4. After partial removal, conduct verification in accordance with TSCA Subpart O.
5. Partial removal is successful if the concentration of PCBs in all samples is ≤ 1 ppm. If decontamination is not successful, decontaminate again or dispose of the entire item as PCB Remediation Waste.

3.06 PCB REMEDIATION WASTE – NONPOROUS SURFACES

A. General

1. PCB Remediation Waste at the facility includes materials with PCB concentrations greater than 1 ppm or $\geq 10 \mu\text{g}/100 \text{ cm}^2$ that were not manufactured with PCBs.
2. Remove the full thickness of each item.



3. If removal is performed using electromechanical means, follow the procedures under Subsection B of Section 3.07.
4. Dispose of PCB Remediation Waste in accordance with Performance-based disposal requirements in 40 CFR 761.61 (b), unless decontamination is performed in accordance with Subsection B of this Section.

B. Decontamination Option for Nonporous Surfaces

1. Nonporous surfaces may be decontaminated using the procedures of 40 CFR 761.79.
2. If decontamination is performed using electromechanical means, follow the procedures under Subsection B of Section 3.07.
3. After decontamination, conduct verification in accordance with TSCA Subpart P.
4. Decontamination is successful if the concentration of PCBs in all samples is $\leq 10 \mu\text{g}/100 \text{ cm}^2$. If decontamination is not successful, decontaminate again or dispose of the item as PCB Remediation Waste.
5. Dispose of Decontamination Waste and Residues in accordance with 40 CFR 761.79.

3.07 DECONTAMINATION

A. General

1. When removal of PCB materials is completed, the decontamination process shall consist of vacuuming (with a HEPA filter), wet wiping/mopping and a repeated vacuuming (with a HEPA filter) of the entire work area. All surfaces in and around the work area must be free of dust generated during the work.
2. Decontaminate all tools and equipment before removal from the work area.
3. If dust or debris has migrated to areas of the building other than the immediate work area, those areas shall be incorporated into the work area and thoroughly decontaminated to ensure all visible dust generated by the activity is eliminated.
4. Visually inspect the area for any remaining dust or debris. Vacuum (with HEPA filter) and wet wipe until space is clean. Dispose of vacuum contents as PCB waste.
5. Upon completion of decontamination and removing temporary dust barriers, a final inspection shall be performed by the Contractor and Owner's Representative. Contractor will clean or re-clean any areas at no additional expense to the LPS.



6. Dispose of decontamination waste in a manner consistent with the source waste, TSCA and other state and federal regulations.

3.08 DISPOSAL AT A LICENSED DISPOSAL OR RECYCLING FACILITY

A. General

1. Obtain disposal approval, including collection of samples if required, in accordance with the requirements of Section 1.05, 1.06 and 1.07 of this Article.
2. Take special care when removing waste from the site in order to avoid environmental contamination or injury to workers. Containers shall be moved and packed into the truck with care. When possible, use hand trucks, dollies, or pull carts, along with ramps or trucks with lift gates. These procedures will help minimize container breakage.
3. All vehicles hauling material shall comply with applicable Federal DOT and MDOT regulations. Vehicles shall be properly licensed under and comply with all applicable federal, state, and local laws and regulations.
4. Trucks and trailers used for transporting material shall be in good repair, free from holes, have tailgates in good working order, and have tarps that cover the truck's box and trailers.
5. Vehicles found to be leaking vehicle fluids shall not be loaded until the source of the leak is located, contained, and repaired to the satisfaction of the Owner's Representative. Report all spills immediately to the Owner's Representative. Cleanup of vehicle fluids released to the ground is the Contractors' responsibility.
6. Prior to loading, provide Owner's Representative with one manifest for each load of material. Each manifest will be pre-printed with the site EPA ID number, the site name and address, the Owner's name and address, the name of the approved disposal facility, the name of the approved transporter, and the disposal facility approval number. Also, if applicable, include the information required by 40 CFR 761.207, including the number and type of each item in each container, the earliest date an item within each container was removed from service, and the container's unique identifying number.
7. During loading, the Owner's Representative will provide a manifest signed on by or on behalf of LPS for each load.
8. Within 24 hours of the load arriving at the disposal or recycling facility, provide to the Owner's Representative an original manifest signed by the disposal or recycling facility. Also provide a corresponding Certificate of Disposal, which includes the actual weight of each container.



- B. Hazardous Materials, Universal Waste and/or Non-Hazardous Waste Disposal
 - 1. Transport hazardous materials, universal waste and non-hazardous waste to a licensed treatment storage and disposal facility or recycling facility for disposal.

- C. Hazardous Waste and/or PCB Waste Disposal
 - 1. Transport hazardous waste and/or PCB waste in accordance with the requirements of 40 CFR 263, 40 CFR 761 and other applicable state and federal requirements.
 - 2. Use only licensed transporters. Transporters shall have an EPA ID Number and must meet DOT requirements for shipping containers.
 - 3. Dispose of waste in accordance with 40 CFR Part 761, 40 CFR 264 and 40 CFR 268 at a disposal facility licensed to accept waste with the concentrations of PCBs and the TSCA regulatory status.
 - 4. If the waste is both asbestos and PCB containing, follow the most stringent requirements for both types of waste.

- D. PCB Disposal Summary Report
 - 1. Provide a summary report on items disposed of for compliance with 40 CFR 761.180 (a). For each PCB waste container (including trucks carrying bulk waste), include at a minimum, the unique number identifying assigned to each container, the manifest number used for disposal (if applicable), the type of item(s) in the container, the number of items of each type within the container, serial numbers for each Article in the container (if applicable), the weight of the container, the date the first item within was first removed from service, the date the container placed into transport, and the date of disposal.

END OF DOCUMENT



DOCUMENT 31 10 00

EARTHWORK

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Furnish all materials, labor and equipment and perform all excavations to remove and backfill pavements, foundations, sumps, , and utilities as indicated and as required to complete the Work. Perform all related work including fill placement, compaction and dewatering.
- B. Provide Soil Erosion and Sedimentation Control Measures as required.
- C. Surplus excavated soil shall be removed from the Site to a licensed landfill facility in accordance with the requirements of the landfill including sampling and waste characterization analysis. Off-site soil disposal activities shall be recorded with appropriate manifest documentation. Characterization of the soil will be conducted by the contractor at their expense.
- D. The accumulated groundwater, storm water, and/or construction water within the excavations must be characterized prior to determining appropriate pre-treatment and/or disposal options. Characterization of the water will be conducted by the contractor at their expense.
- E. Retain independent environmental consulting firm to confirm that imported backfill material and topsoil is “clean” and meets EGLE’s Part 201 Generic Residential Cleanup Criteria (GRCC), based on analytical testing and reporting.

1.02 RELATED SECTIONS

- A. Other sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this Work.
- B. Section 01 33 00 - Submittals Procedures
- C. Section 01 57 13 - Temporary Erosion and Sediment Control
- D. Section 01 57 19 - Temporary Environmental Controls (Dust and Air)



- E. Section 02 41 00 – Demolition
- F. Section 02 41 16 – Removal and Abandoning Utilities
- G. Section 31 23 19 – Dewatering
- H. Section 32 00 00 - Site Restoration

1.03 REFERENCES

Latest editions of the following:

- A. Contract Documents
- B. Michigan Department of Environmental, Great Lakes, and Energy (EGLE) Part 201- established Generic Residential Cleanup Criteria (GRCC), dated December 30, 2013, pursuant to 1994 P.A. 451, Part 201, as amended.
- C. ASTM D 422 – Standard Test Method for Particle Size Analysis of Soils.
- D. ASTM D 1241 – Materials for Soil-Aggregate Subbase, Base, and Surface Courses.
- E. ASTM D 1557 – Test Method for Laboratory Compaction Characterization of Soil Using Modified Effort.
- F. ASTM D 2049 – Standard Test Method for Relative Density of Cohesionless Soils.
- G. ASTM D 2922 – Density of Soil In-Place by Nuclear Methods.

1.04 SUBMITTALS

- A. See Section 01 33 00 – Submittal Procedures.
- B. Documentation on the origin and environmental status of the backfill/fill material to be used.
- C. Site-specific Health and Safety Plan.
- D. List of emergency after-hours telephone numbers.
- E. Environmental Emergency Response Plan for addressing environmental emergencies, such as equipment fluid or fuel spills.



- F. Disposal Facility Information: Include name, address, and intended media to be disposed.
- G. Waste Approval from Disposal Facility: Submit prior to disposal.
- H. Example Waste Disposal Manifest: Prepare to the extent possible, including disposal location, waste approval number, and waste codes.
- I. Waste Disposal Records: Include original “generator’s copy” of the manifest signed by the disposal facility, and documentation from the disposal facility indicating the quantity of material disposed. Provide to Owner’s Representative within 2 business days of removal.
- J. Temporary Earth Retention System (TERS) Plan: Prior to the start of excavation work, submit a TERS engineering plan along with engineering system design drawings and supporting calculations prepared and sealed by a registered professional engineer in the State of Michigan experienced with the design and installation of the TERS system to be utilized during this project.
 - 1. Contractor’s Qualifications: The excavation, bracing, and shoring will be performed by the Contractor with suitable equipment, competent and adequate number of personnel, and a reputation of satisfactorily performing the work. The Contractor and relevant subcontractors will have a minimum of three years successful experience and a minimum of three successful installations for their respective tasks on projects of a similar size and scope to this project. Submit evidence of above to Owner’s Representative.

1.05 QUALITY ASSURANCE

- A. Contractor will be experienced in the management of excavation, transportation, and proper disposal of excavated material and have all necessary local permits and/or approvals.
- B. Contractor is responsible for the proper handling and disposal of all surplus excavated soil/material as defined herein. The Contractor is responsible for clean-up of all spills that occur during loading, hauling, and disposal at no cost to LPS. Immediately notify the Owner’s Representative of any spills and appropriately clean up and dispose of all material and impacted media required for cleanup.



- C. Complete all work required by and in accordance with all applicable federal, state, and local government regulatory agencies and arrange for all permits and licenses for the excavating, loading, hauling, and disposal operations.
- D. Perform all operations in accordance with all requirements and applicable regulations of the City of Livonia, Wayne County, LARA, MIOSHA, EGLE, and Federal Government.
- E. Employ erosion control program as required.
- F. Obtain necessary permits for work in roads and rights-of-ways. Also obtain permits as required by local, state, and federal agencies for discharging water from excavations.
- G. Comply with OSHA Standard, Title 29, Code of Federal Regulations, Part 1926, Section 650 (Subpart P - Excavations).

1.06 SITE CONDITIONS

- A. Verify that survey benchmark and intended elevations for the Work are as indicated.
- B. Protect nearby buildings, streets, sidewalks, utilities, trees, and other improvements that are to remain or are outside the limits of the Work area. Repair or replace improvements damaged by Contractor operations at no cost to the LPS.
- C. Do not disrupt public utilities without a permit from Authority Having Jurisdiction (AHJ). Unless otherwise indicated, maintain flow in existing utilities by diversion, pumping, fluming, relocation, or by other methods. At the conclusion of demolition, return and reinstall diverted and relocated utilities to their original condition.
- D. Provide and maintain barricades, warning lights, warning signs, and other protection required by applicable laws for safety of persons and property.
- E. Do not strip pavements if weather conditions are unsuitable.
- F. Existing Structures
 - 1. Surface structures and underground structures shown on the Project Drawings are based on existing records and limited investigation. This information is provided for the convenience of the Contractor and is not guaranteed to be complete or correct.



2. Explore ahead of the required excavation to determine exact locations of structures.
3. Support and protect existing structures from damage. Immediately restore damaged and broken structures at no cost to LPS, if damage or breakage was the result of Contractor operations.

G. Existing Utilities

1. Locate existing underground utilities in the areas of Work. If utilities are to remain in place, provide adequate means of protection.
2. If uncharted or incorrectly charted piping or other utilities are encountered during excavation, consult piping or utility owner and Owner's Representative immediately for direction. Cooperate with LPS and utility owners in keeping services and facilities in operation. Repair damaged utilities to the satisfaction of utility owners.
3. Do not interrupt utilities serving facilities occupied and used by LPS or others, except when permitted in writing by LPS and/or Owner's Representative and then only after acceptable temporary utility services have been provided.
4. Demolish and completely remove from site underground utilities indicated to be removed. Fill site underground utilities identified to be abandoned with flowable fill in accordance with Section 02 41 16. Coordinate with utility companies for shutoff of services if lines are active.

H. Protection of Persons and Property

1. Barricade open excavations occurring as part of the Work and post with warning lights. Operate warning lights for hours from dusk to dawn each day and as otherwise required.
2. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

I. Dust Control: Conduct operations and maintain areas of activity to minimize creation and dispersion of dust, including sweeping and sprinkling of roadways. Calcium chloride may be used to control serious or prolonged dust problems, only when explicitly approved in advance by Owner's Representative.

J. Temporary Fencing: Furnish and install a temporary fence surrounding excavations.



PART 2 – PRODUCTS

2.01 FILL / BACKFILL

- A. Backfill and filling: On-site material free of debris and/or Class II natural sand conforming to the requirements of MDOT Standard Specification for Construction.
- B. Undercut Material: Aggregate Series 21 Class AA, crushed natural aggregate conforming to the requirements of MDOT Standard Specification for Construction.
- C. Undercut Material: 1” to 3” crushed concrete.
- D. Geotextile Stabilizing Fabric: MDOT 910.03 D, with the physical properties described in MDOT Table 910-1; where soft soils are encountered in the field.
 - 1. Use Tensar TriAx 140 or approve equal and follow Tensar TriAx 140 Installation Guide or approved equal.

2.02 SOURCE QUALITY CONTROL

- A. All Fill: Independent engineering firm will be selected and paid by Contractor to verify the source and/or analytical data to prove that the imported fill soil/backfill material is non-contaminated / “clean” and meets EGLE’s Part 201 GRCC. If the material is from a licensed borrow pit, a letter from the pit will suffice.
- B. A qualified testing consultant will be selected and paid by the Contractor to perform laboratory and field compaction tests on fill materials. Test results and laboratory recommendations will be provided to the Owner Representative.
- C. Provide samples of each fill material from the proposed source of supply. Allow sufficient time for testing and evaluation of results before material is needed. Submit samples from alternate sources if required.
- D. Owner Representative will be sole and final judge of suitability of all material.
- E. Tests of material as delivered may be conducted from time to time. Materials in question may not be used pending test results. Remove rejected materials and replace them with new approved material.



- F. Provide materials of each type from the same source throughout the Work.

PART 3 – EXECUTION

3.01 SHEETING, SHORING AND BRACING

- A. Furnish, place and maintain sheeting, shoring, and bracing of the excavation to ensure safety of people in and around the excavation. Protect the new Work, existing construction, and pedestrian and vehicular traffic.
- B. Be responsible for the design and installation of sheeting, shoring, and bracing. Design to provide strength, quality, dimension and spacing of sheeting, shoring and bracing of existing soil conditions so as to prevent caving, loss of ground, and squeezing within the lines of the excavation and effectively restrain movement of the adjacent soil.
 - 1. Design in conformance with current federal, state, and local regulations for safety.
 - 2. Do not permit sheeting, shoring, and bracing to come into contact with pipes. Install sheeting, shoring and bracing to prevent concentrated loads and horizontal thrusts from being transmitted to the pipe.
- C. Provide support for pipes, conduits and similar construction that crosses the excavation. If required, leave such support in place.
- D. Do not remove sheeting, shoring, and bracing until excavations and/or trenches have been properly backfilled to sufficiently support the external loads.
- E. Do not remove earth material below the bottom of a shield beyond the limits established by the engineering design plan, ordinances, codes, laws and regulations.
- F. When removing or moving a shield ahead, take care to prevent movement of pipe or structures and avoid disturbing the bedding for pipes and structures. Remove and reinstall pipes and structures that are disturbed.

3.02 TEMPORARY EARTH RETENTION SYSTEM (IF APPLICABLE)

- A. Examine the areas and conditions under which the TERS is to be installed.
- B. Accurately locate all underground utilities prior to starting excavation and take the required measures necessary to relocate or protect them from damage.



- C. Maintain continuous protection of the excavation during construction around the perimeter of the TERS so that no slope stability and/or soil erosion can occur.
- D. Divert any surface flow from rain or water discharges away from the excavation. Coordinate installation with groundwater control system installation, if applicable. See Section 31 23 19.
- E. TERS Removal: In general, abandon TERS in place. Obtain permission before the removal of any shoring or bracing. Retain the responsibility for injury to structures or to other property or persons from failure to leave such shoring and bracing in place even though permission for removal has been obtained. Remove elements to five feet below finished grade.

3.03 EXCAVATION

- A. Locations of existing utilities shown are approximate. Coordinate Work with utility companies, obtain required permits, notify before starting Work and comply with their requirements to protect existing facilities.

Contact MISS DIG and the public agency or utility having jurisdiction to request verification of utilities at the Site. As necessary, hand dig to expose utility lines prior to excavation to determine if conflicts with the proposed improvements exist. Contractor is responsible for the cost of relocating items as required to resolve conflicts. Contact the Owner of the utility for relocation.

- B. Notify Owner's Representative of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- C. Unless otherwise indicated, provide open excavations for structures and pipelines. Utilize protection systems as follows:
 - 1. Excavation Less Than Three Feet Deep: Excavations in soils where there is no potential for a cave-in as determined by the on-site competent person may be made with vertical sides. For other soils, provide excavations that are sloped and benched, shielded, or shored and braced.
 - 2. Excavation More Than Three Feet Deep: Provide excavations that are sloped and benched, shielded, or shored and braced in accordance with MIOSHA requirements and industry standards.
 - 3. Install and maintain protection system(s) in compliance with the approved Excavation Plan and TERS engineering plan, as applicable.



- D. Perform pavement cutting by wet saw or other methods satisfactory to the authorities having jurisdiction. Do not perform pavement breaking by drop weight or other impact type equipment.
- E. Soil removed from the subsurface will be either directly loaded for transportation to a landfill facility or stockpiled in a predetermined and approved location prior to use as general fill or disposal. Place all excavated contaminated material and surplus excavated fill soil that is stockpiled on-site on a minimum of 30 mil plastic sheeting. Cover stockpiles daily with a minimum of 30 mil plastic sheeting to prevent fugitive dust, runoff, and erosion. Anchor, weight, or otherwise secure cover to prevent lifting by wind and place in such a manner as to prevent rain and snow intrusion. Daily, visually inspect the stockpile cover to ensure it remains intact and secure. Immediately repair any portion of the cover found to be torn or loose or otherwise unfit for dust control. Contractor shall be responsible for the appropriate disposal of all used sheeting.
- F. Handle surplus excavated soil as if contaminated and properly dispose in a licensed landfill facility.
- G. If required to obtain landfill disposal approval, characterize the material to be disposed by collecting soil samples at a frequency required by the landfill and have the samples analyzed by the independent analytical laboratory for parameters required by the landfill. Provide results to Owner's Representative. The Contractor is responsible for all costs and coordination for this testing.
- H. Transport, handle, load, and stockpile material in such a manner as to minimize spillage and to prevent visible emission of dust and migration of airborne materials off-site in accordance with best management practices. Spray areas of non-vegetated ground surface, open excavations, stockpiled soils, etc., with water or dust suppressant as necessary to prevent airborne dispersion. The Owner's Representative may stop work if visible emissions are observed.
- I. Notify Owner's Representative immediately if soil is encountered with a chemical/petroleum odor or oily staining, or if subsurface containers or underground storage tanks (USTs) are encountered.
- J. Protect excavations by shoring, bracing, sheet piling, underpinning, or other methods required to prevent soil movement.
- K. Protect excavations by shoring, bracing, sheet piling, underpinning, or other methods required to prevent soil movement.



- L. During excavation dewater and dispose groundwater, surface runoff, and/or construction in accordance with Specification Section 31 23 19 – Dewatering.

3.04 BACKFILL / FILLING – GENERAL

- A. Provide enough backfill/fill materials to meet project schedule and requirements when necessary, and store materials on Site in advance of need.
- B. When backfill/fill materials need to be stored on Site, locate stockpiles where indicated by Owner’s Representative.
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.
- C. Remove all construction debris, refuse, compressible or decayable materials and standing water prior to placing any fill or backfill. Do not place backfill/fill when fill material or layers below it is frozen.
- D. Notify Owner’s Representative when excavations are ready for inspection. Do not fill or backfill until City of Livonia and/or Wayne County open-hole inspection has been completed and conditions have been approved by Owner’s Representative.
- E. Backfill/filling shall be continuously graded during placement operations to provide for positive site drainage. No ponding water on the ground surface will be allowed.
- F. Place all backfill/fill materials in uniform horizontal layers or lifts of thicknesses compatible with the type and condition of the material being placed, area of placement, and type of compaction equipment being used to obtain a minimum of 95 percent of the maximum dry density as determined by the ASTM D 1557 (Modified Proctor). Place all backfill/fill materials at or near its optimum moisture content. Compact each layer of backfill/fill and verify that specified density has been achieved before placing the next lift.
- G. Use placement methods that do not disturb or damage other Work.
- H. Reshape and re-compact backfill/fills subjected to vehicular traffic or disturbed areas.



3.05 BACKFILLING - TRENCHES

- A. Do not place backfill materials until the Owner's Representative has approved them.
- B. Do not backfill until City of Livonia and/or Wayne County open-hole inspection has been completed and conditions have been approved by Owner's Representative.
- C. Backfill pipe trenches with general backfill in horizontal layers not exceeding 8 inches in depth. Thoroughly compact each layer before placing the next layer.

3.06 BACKFILLING - EXCAVATIONS

- A. Do not backfill excavations until all the following are complete:
 - 1. Owner's Representative acceptance.
 - 2. City of Livonia and/or Wayne County open-hole inspection approval.
- B. Place backfill uniformly.
- C. The effort required to achieve the specified compaction and the equipment used to achieve that compaction is the sole responsibility of the Contractor.

3.07 FIELD QUALITY CONTROL

- A. Perform proof-roll of subgrade soils using suitable equipment. Notify Owner's Representative to observe proofing operations. At the direction of the Owner's Representative, undercut unstable subgrade soil, and backfill and re-compact.
- B. Perform compaction density testing on compacted fill in accordance with ASTM D 2922.
- C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D 1557 ("Modified Proctor").
- D. If tests indicate work does not meet specified requirements, perform additional compaction, and if necessary, recondition the backfill/fill materials, or remove work, replace and retest.



3.08 DEBRIS AND CLEAN-UP

- A. Remove debris, junk, and trash from Site.
- B. Leave Site in clean condition, ready for subsequent Work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF DOCUMENT



DOCUMENT 31 23 19

DEWATERING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Provide all equipment, tools, materials and labor required for dewatering of groundwater, construction water produced as a result of their demolition efforts, and storm water in excavations during demolition and earthwork activities, and to dispose of the pumped water.
- B. Provide Soil Erosion and Sedimentation Control Measures as required.

1.02 RELATED SECTIONS

- A. Other sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this Work.
- B. Section 01 33 00 - Submittals Procedures
- C. Section 01 57 13 - Temporary Erosion and Sediment Control
- D. Section 01 57 19 - Temporary Environmental Controls (Dust and Air)
- E. Section 02 41 00 – Demolition
- F. Section 02 41 16 – Removal and Abandoning Utilities
- G. Section 31 10 00 - Earthwork
- H. Section 32 00 00 - Site Restoration

1.03 SUBMITTALS

- A. See Section 01 33 00 – Submittal Procedures.
- B. Submit, for the Owner’s Representative record, copies of discharge Permits prior to pumping or discharge into a utility line.



- C. Submit manifests and disposal facility tickets from an approved facility to document appropriate disposal of contaminated water and related materials produced as a result of the dewatering activities to the Owner and / or Owner's Representative within seven calendar days of the final disposal.

1.04 QUALITY ASSURANCE

- A. Comply with federal, state and local codes, ordinances and regulations for collection and disposal of discharged water.

1.05 SITE CONDITIONS

- A. Protection of Existing Structures:
 - 1. Determine and verify the location of existing underground utilities and existing structures before starting excavation. If utilities are to remain in place, provide protection from damage during excavation operations.
 - 2. Do not interrupt existing utilities serving facilities occupied and used by the Owner or others, except when permitted in writing by Owner, and only after acceptable temporary utility services have been provided.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 GENERAL

- A. Provide auxiliary dewatering equipment to ensure continuous dewatering capacity.
- B. Coordinate demolition operations to minimize duration and extent of dewatering required.
- C. Perform groundwater control operations in a manner that will protect roads, structures, and utilities. Contractor is solely responsible for preventing damage,



as a result of groundwater control operations, to roads, buildings or structures, sewers and other utility installations, pavements, sidewalks, and other property.

- D. At no additional costs to LPS, immediately repair damage that results from the dewatering operations.
- E. Control sediments in the discharge water in accordance with all federal, state and local code rules and regulations.

3.02 MONITORING AND CONTROL

- A. Provide standby equipment to ensure continuity of dewatering operations.

3.03 REMOVAL

- A. Groundwater, construction water, and/or storm water accumulates within any excavation pits in sufficient quantities that it must be removed, the accumulated water must be characterized prior to determining appropriate pre-treatment and/or disposal options.
- B. Characterization of the water will be conducted by the contractor at their expense.
- C. Disposal options may consist of, but are not limited to, the following, as appropriate:
 - 1. Direct discharge to the ground surface.
 - 2. Direct discharge to the sanitary sewer with appropriate approval and clearances from the City of Livonia and/or GLWA.
 - 3. Pre-treatment prior to discharge to the sanitary sewer.
 - 4. Temporary on-site storage (e.g., frac tank) and subsequent discharge to the combined sewer or transport to a licensed disposal facility.

END OF DOCUMENT



DOCUMENT 32 00 00

SITE RESTORATION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Furnish all materials, labor and equipment and perform restoration of the Site as indicated and as required to complete the Work.
- B. Restoration of ground areas disturbed after demolition, excavation, and removal work is complete.
- C. Placing additional backfill materials, if necessary, to meet existing proposed grades.
- D. Maintenance of site drainage conditions.
- E. Provide Soil Erosion and Sedimentation Control Measures as required.

1.02 RELATED SECTIONS

- A. Other sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this Work.
- B. Section 01 33 00 - Submittals Procedures
- C. Section 01 57 13 - Temporary Erosion and Sediment Control
- D. Section 02 41 00 – Demolition
- E. Section 02 41 16 – Removal and Abandoning Utilities
- F. Section 01 57 19 - Temporary Environmental Controls (Dust and Air)
- G. Section 31 10 00 - Earthwork
- H. Section 31 23 19 – Dewatering

1.03 REFERENCES

- A. Part 91 Soil Erosion and Sedimentation Control Act.



- B. Permits issued or required by governmental agencies.
- C. MDOT Standard Specifications for Construction, 2012 Edition
- D. ASTM D 1557 – Moisture-Density Relations of Soils and Soil-Aggregate Mixture Using 10 lb Rammer and 18-Inch Drop (Modified Proctor).
- E. ASTM D 2049 – Standard Test Method for Relative Density of Cohesionless Soils.
- F. ASTM D 2922 – Density of Soil In-Place by Nuclear Methods.

1.04 SUBMITTALS

- A. See Section 01 33 00 – Submittal Procedures.
- B. Documentation on the origin and environmental status of the fill material to be used.
- C. Soil Erosion and Sedimentation Control Plan and Permit.

1.05 PROJECT CONDITIONS

- A. Protect above and below-grade utilities that remain.
- B. Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving, and curbs, designated to remain, from grading equipment and vehicular traffic.
- C. Provide temporary erosion and sediment control in compliance with Section 01 57 13.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Retain independent engineering firm to confirm the imported fill and topsoil is not contaminated and meets EGLE's Part 201 GRCC, based on analytical testing and reporting.
- B. Imported fill and topsoil soil for use on the Site will be virgin or clean/non-contaminated material.



- C. Fill: On-site material free from debris and/or Class II natural sand conforming to the requirements of MDOT Standard Specification for Construction.
- D. Topsoil: MDOT Section 917.06, free of large or frozen lumps, sod, wood, debris large rocks and weeds. All topsoil subject to the approval of LPS.
- E. Erosion and Sedimentation Controls: Temporary erosion and sedimentation control devices in accordance with Soil Erosion and Sediment Control Plan and requirements of laws and regulations.

2.02 QUALITY CONTROL

- A. Establish and maintain a quality control system for all operations performed under this Section to assure compliance with contract requirements and maintain records of its quality control for all operations performed, including, but not limited to, the following:
 - 1. Observance of safety regulations
 - 2. All Fill: Independent engineering firm will be selected and paid by Contractor to verify the source and/or analytical data to prove that the imported fill soil/backfill material is non-contaminated / “clean” and meets EGLE’s Part 201 GRCC. If the material is from a licensed borrow pit, a letter from the pit will suffice.
 - 3. Provide samples of each fill material from the proposed source of supply. Allow sufficient time for testing and evaluation of results before material is needed. Submit samples from alternate sources if required.
 - 4. Tests of material as delivered may be made from time to time. Materials in question may not be used pending test results. Remove rejected materials and replace them with new approved material.
 - 5. Provide materials of each type from same source throughout the Work.
 - 6. A qualified testing consultant will be selected and paid by the Contractor to perform laboratory and field compaction tests on fill materials. Test results and laboratory recommendations will be provided to the Owner Representative.
 - 7. Protection, maintenance and repair of both Soil Erosion and Sedimentation Control devices, as well as restoration materials.



PART 3 – EXECUTION

3.01 PREPARATION

- A. Verify that survey benchmark and intended elevations for the Work are as indicated.
- B. Identify required lines, levels, contours, and datum.
- C. Stake and flag locations of known utilities.
- D. Locate, identify, and protect utilities to remain, from damage.
- E. Call Miss Dig three days in advance of work and notify utility company to remove and/or relocate utilities.
- F. Devise erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to surrounding properties, street, and sidewalks.
- G. Rake or screen the disturbed areas to remove all construction debris and refuse.
- H. Remove compressible or dead or decaying materials and remove standing water prior to placing any fill.
- I. Proof-roll all subgrades satisfactory to the Owner and / or Owner's Representative prior to placing fill.

3.02 SOIL STOCKPILE

- A. Stockpile topsoil to be re-used on site; remove remainder from site. Locate stockpiles as near the original location as possible.
- B. Stockpile subsoil to be re-used on site in an approved area and remove remainder from Site. Segregate contaminated fill suitable for reuse as backfill from native uncontaminated soil and from imported engineered fill.
- C. Stockpiles: Use areas designated on Site; pile depth not to exceed 10 feet; protect from erosion; avoid diversion of storm water runoff, creating standing water, and interference of controlled irrigation.
 - 1. Do not stockpile around trunks and roots of trees to be preserved.
 - 2. Maintain stockpiled topsoil separate from stockpiled subsoil.



3. Locate and retain soil materials at least 100 feet away from edge of excavations.

3.03 ADJUST STRUCTURES

- A. Adjust storm structure elevations to meet final grades.
- B. Carefully remove and store the existing frame and cover. Reinstall frame and cover on the same structure unless a new frame and cover is required.
- C. Remove or install clay brick or concrete block adjustment rings as necessary to adjust the structure's frame and cover to the proper elevation. Set clay brick and concrete block adjustment rings in ASTM C270 Type S or Type M mortar, unless otherwise shown on the Project Drawings or determined by the Owner's Representative.
- D. Provide a Portland cement plaster coat on the outside surface of the new clay brick or concrete block structures, a minimum of 1/2 inch (10 mm) thick, in accordance with ASTM C926. Clean the structure prior to backfilling.
- E. Backfill the structure in compliance with Section 31 10 00.
- F. Maintain flow in the entire system while performing the Work.
- F. Properly dispose of unsuitable material.

3.04 ROUGH GRADING

- A. Remove existing pavements from areas to be further excavated or re-graded, without mixing with foreign materials.
 1. Do not strip pavements if weather conditions are unsuitable.
- B. Remove and dispose of material detrimental to site improvement in accordance with Section 31 10 00.
- C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded. Remove subsoil parallel to proposed finished grades and to elevations that allow for thickness of topsoil. Do not over-excavate.
- E. Do not remove wet subsoil unless it is subsequently processed to obtain optimum moisture content.



- F. When excavating through roots, perform work by hand and cut roots with sharp axe.
- G. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.
- H. Filling
 - 1. Place fill materials up to 3-inches below finish grades to allow for placement of topsoil.
 - 2. Place all fill materials in uniform horizontal layers or lifts of thicknesses compatible with the type and condition of the material being placed and type of compaction equipment being used.
 - 3. Compact each layer of fill to not less than 95 percent of the maximum dry density, as determined by ASTM D 1557 – Modified Proctor. All fill materials are to be placed at or near the optimum moisture content.
 - 4. Do not place fill materials in wet or frozen areas.

3.05 FINISH GRADE

- A. Place a minimum of 3-inches of topsoil on top on all disturbed areas.
- B. Final grade all areas of contract limits to match grades depicted on the Grading Plan. Final grades will be free of voids and soft spots and with a smooth finished surface and will not allow any ponding of water.
- C. Repair areas of settlement or wash-out that occurs in backfilled areas prior to acceptance of the Work.

3.06 TOLERANCES

- A. Top Surface of Subgrade: Plus, or minus (+/-) 1/10 foot from required elevation.
- B. Top Surface of Finish Grade: Plus, or minus (+/-) 1/2 inch.

3.07 RESTORATION IN RIGHT-OF-WAY AND YARD AREAS

- A. Restore repair existing nearby buildings, fences, streets, sidewalks and utilities and other improvements that are outside the limits of the Work area damaged by Contractor operations.
- B. Crown finish grade of all disturbed areas to prevent ponding and promote positive drainage, and blend with the surface of surrounding undisturbed areas.



3.08 DISPOSAL

- A. Remove the materials required to be removed and disposed of, all wastes, excess and unsatisfactory materials resulting from Work required under this Section, unless otherwise specified or directed by the Owner's Representative. Upon removal of these materials and waste, they become the property of the Contractor. All disposals shall conform to local, state and federal regulatory requirements.

3.09 CLEAN-UP

- A. Cleanup any migrating materials from gutters, curbs, streets, catch basins, and sidewalks such that all debris generated from the demolition is removed and disposed of to an appropriate facility. Clean all sewers to remain in service before leaving the Site.
- B. Remove unused stockpiled topsoil and subsoil. Grade the stockpile area to prevent standing water.
- C. Leave site clean and raked, ready to receive landscaping.

END OF DOCUMENT



DOCUMENT 32 90 00

SEEDING

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Provide all labor, equipment, materials, supervision, and incidentals necessary to complete groundcover, topsoil, topsoil amendments, and initial maintenance of planting materials.

1.02 RELATED SECTIONS

- A. Other sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this Work.
- B. Section 01 33 00 - Submittals Procedures
- C. Section 01 57 13 - Temporary Erosion and Sediment Control
- D. Section 01 57 19 - Temporary Environmental Controls (Dust and Air)
- E. Section 31 10 00 - Earthwork
- F. Section 31 23 19 – Dewatering
- G. Section 32 00 00 - Site Restoration

1.03 REFERENCES

- A. MDOT Section 816, “Turf Establishment,” Michigan Department of Transportation Standard Specifications for Construction
- B. MDOT Section 917, “Turf and Landscaping Materials,” Michigan Department of Transportation Standard Specifications for Construction

1.04 SUBMITTALS

- A. See Section 01 33 00 – Submittal Procedures.



- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations
 - 2. Storage and handling requirements and recommendations
 - 3. Installation methods
- C. Notices: Submit seven-day written notice prior to turnover to LPS for watering and maintenance.

1.05 WARRANTY

- A. Warrant grass groundcover for a period of one year after date of Substantial Completion, against defects including death and unsatisfactory growth and except for defects resulting from neglect by the Owner, abuse by others, or natural phenomena. Replace unsatisfactory plant material at end of warranty period at no additional expense to the Owner. One replacement is required.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 2-year experience installing similar products.
- B. Testing: Laboratory testing for suitable soil amendments and fertilizer.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products as recommended by supplier until ready for installation.
- B. Handling: Handle materials to avoid damage.

1.08 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside supplier's recommended limits.

1.09 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.



PART 2 – PRODUCTS

2.01 MATERIALS

- A. Provide Seed Mixture per MDOT Table 816-11.
- B. Straw: Straw that will decompose under natural conditions and be compatible with grass seed.
- C. Erosion and Sedimentation Controls: Temporary erosion and sedimentation control devices in accordance with Soil Erosion and Sediment Control Plan and requirements of laws and regulations.
- D. Final restoration of the Site may proceed in general agreement with the existing, adjacent areas. Final restoration shall include the placement of a minimum 3” of screened Sandy-Loam topsoil meeting requirements under MDOT 917.06, followed by the installation of seed, fertilizer, and blanket cover mat in accordance with the current MDOT Standard Specifications for Construction, Section 816.03. Seed will be Turf Seed Mixture TDS, per MDOT Table 917-2 Seed Mixtures.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Contractor of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

- A. Install materials in accordance with approved submittals. Install landscape work in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.



- B. Provide maintenance and watering until turnover to LPS for maintenance and watering. Replace damaged materials and dead or unhealthy plants prior to turnover to Owner.
- C. Work shall be performed in accordance with MDOT Standard Specifications for Construction 816: Turf Establishment.

3.04 PROTECTION

- A. Touch-up, repair or replace damaged products before Substantial Completion.

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